PEMBUATAN *PROTOTYPE* BOTOL MINUMAN *REFILL* KONSEP BARU

SKRIPSI

Untuk memenuhi sebagian persyaratan
mencapai derajat Sarjana S-1
Program Teknik Industri

diajukan oleh :

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PROGRAM STUDI TEKNIK INDUSTRI

FAKULTAS SAINS DAN TEKNOLOGI

UIN SUNAN KALIJAGA YOGYAKARTA

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sudah dapat diajukan kembali kepada Program Studi Teknik Industri Fakultas Sains dan Teknologi UIN Sunan Kalijaga Yogyakarta sebagai salah satu syarat untuk memperoleh gelar Sarjana Strata Satu dalam bidang Teknik Industri.

Dengan ini kami mengharap agar skripsi/tugas akhir Saudara tersebut di atas dapat segera dimunaqsyahkan. Atas perhatiannya kami ucapkan terima kasih.

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Yang menyatakan,

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MOTO

"... Sesungguhnya Allah tidak akan mengubah keadaan suatu kaum sebelum mereka mengubah keadaan diri mereka sendiri ... "

(Q.S. Ar-Ra'ad ayat 11)

***

"... Mohonlah pertolongan (kepada Allah) dengan sabar dan sholat. Sungguh, Allah beserta orang-orang yang sabar."

(Q.S. Al-Baqarah ayat 153)

***

"...Usaha Tanpa Doa dan Pengorbanan Mustahil, Ibarat Memancing Tanpa Kail dan Umpannya."

(Muflikhul Amin)

***

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Kupersembahkan karya ini kepada

Ibunda (Zaenab)

Ayahanda (Abdul Wahab)

Kakak-kakakku (Mas Pur, Mbak watmi, Alm Mbak Latifah, Mbak Aminah, dan Mas Sol)

Keluarga Besar Magelang

“Yang selalu menyemangati Riza Nur Cahyaningtyas”

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Teman-teman kontrakan Pink (Wawan, Mahfut, Yophi, Jojo, Uul, Adnan, Yodhi)

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Teman baik Aan Nurdiyanto dan Dimas Rahmad Widodo

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***

Almamaterku tercinta, Teknik Indstri Fakultas Sains dan Teknologi

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Penyusun

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KONSEP BARU

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ABSTRAK

Konsep kemasan yang sedang berkembang saat ini adalah kemasan *refill.* Dari setiap perkembangan suatu produk pasti memiliki kelebihan dan kekurangan. Kelebihan yag didapat dari kemasan *refill* sendiri adalah konsumen menjadi lebih hemat karena dapat membeli tanpa harus membeli lagi kemasan aslinya. Sedangkan kelemahannya dapat dirasakan pada saat menggunakannya konsumen masih harus memindahkannya ke dalam wadah aslinya. Repot menjadi akibat utamanya, dan akibat yang lain yang dapat ditimbulkan adalah kebersihan dari *refill* menjadi kurang terjaga karena kondisi wadah asli yang diisi *refill* belum tentu *steril.*

Usulan untuk mengembangkan sistem kemasan *refill* yang terdiri dari *body* botol, kemasan *refill* dan *applicator* minum agar dapat mengatasi permasalahan tersebut dilakukan pada penelitian ini dengan menggunakan objek botol minuman. Proses pengembangan diawali dengan melakukan *benchmarking* untuk mendapatkan ide-ide dari konsep yang sudah ada untuk mengembangkan konsep yang baru. *Brainstorming* dilakukan untuk mengevaluasi konsep yang terbentuk dari hasil pencarian melalui *benchmarking*. Penilaian konsep dilakukan dengan menggunakan *Pugh Method* dengan kriteria yang didapat dari hasil wawancara kepada pengguna. Untuk membuktikan bahwa sistem yang dibuat belum pernah ada dengan melakukan analisis paten.

Setelah melalui proses seleksi konsep diperoleh konsep *body* beralur *vertical* yang membentuk *polygon*, konsep *refill* dengan *applicator* dan konsep *applicator flip* yang terangkai menjadi sebuah sitem *refill* konsep baru. Kemudian dibuatlah *prototype* analitik dan fisik yang menggambarkan sistem *refill* tersebut. Melalui analisi paten diketahui bahwa beum pernah ada penelitian yang serupa, sehingga sistem *refill* konsep baru tersebut dapat didaftarkan sertifikasi kekayaan intelektual melalui *draft* paten

Kata Kunci: *refill, benchmarking, brainstorming, Pugh Method, prototype,* paten.

BAB I

PENDAHULUAN

1.1 Latar Belakang

Saat ini perkembangan inovasi yang hampir mencangkup semua bidang, diantaranya sistem pengemasan *(packaging)* terhadap produk mendapat perhatian khusus bagi para produsen, karena konsumen saat ini mempunyai keinginan yang bermacam-macam seperti desain, fungsi, dan nilai lebih yang didapatkan konsumen atas produk yang digunakannya. Selain itu konsumen juga selalu ingin yang praktis dimana ketika mereka selesai menggunakan suatu produkmaka kemasannya langsung dibuang, akan tetapi kebiasaan tersebut bertolak belakang dengan kebijakan pemerintah yang ingin mengurangi sampahguna menjaga keberlangsungan alam. Oleh karena itu, konsep pengemasan menjadi perhatian khusus bagi para produsen yang harus mencakup seluruh proses siklus mulai dari produk keluar dari pabrik sampai ke pemakai terakhir.

Salah satu konsep yang tengah berkembang saat ini adalah kemasan produk *refill.* Produk dengan kemasan *refill* memungkinkan konsumen untuk mengisi kembali kemasan (seperti botol, tabung, dan sebagainya) dengan *refill* yang dapat diperoleh di pasaran, sehingga konsumen tidak perlu membuang kemasan, dan kemasan pun bisa digunakan kembali. Tetapi kemasan *refill* yang ada sekarang masih terdapat kerepotan pemakaian.

Pertimbangan agar kemasan mudah dibawa atau dipegang, dibuka dan mudah diambil sangatlah penting. Pertimbangan ini selain mempengaruhi bentuk dari kemasan itu sendiri juga mempengaruhi kenyamanan pemakai produk atau konsumen (Cenadi ,2000). Dibutuhkan suatu ide inovasi untuk merancang sebuah produk kemasan *refill* yang bisa menjawab masalah-masalah yang dijumpai.

Contoh inovasi yang sudah ada saat ini adalah kemasan *refill* sabun cair yang memiliki bentuk bawah lebar dan salah satu ujung atasnya terdapat lubang bertujuan agar konsumen dapat menggunakannya langsung tanpa menuang ke dalam botol aslinya. Ketika kemasan sudah dibuka, maka kemasan dapat ditaruh pada bidang rata atau memanfaatkan lubang di ujung atas untuk meggantung pada paku atau semacamnya, hal tersebut bertujuan agar sabun tidak tumpah ketika pengguna selesai menggunakannya.

Ide lain adalah penelitian yang dilakukan Fabri Kurniawan (2012) yang telah berhasil mengusulkan sebuah konsep baru botol *refill Plug and Use* untuk produk kecap, dimana desain botol disesuaikan dengan kemasan isi ulang kecap yang sudah ada. Rancangan ini memiliki nilai tambah bagi konsumen berupa kepraktisan penggunaan, yaitu: mudah, hemat waktu, dan kebersihan kemasan terjaga.

Dari uraian diatas, muncul ide inovasi lain untuk menerapkan sistem *refill* pada botol minuman. Dibutuhkan sebuah rancangan kemasan minuman berkonsep *refill*, dimana saat konsumen ingin menggunakannya kembali, bisa digunakan segera, tanpa harus mencuci botol, tanpa perlu repot menuangkan

isi ulangnya ke dalam botol (karena memiliki resiko tertumpah). Akhir dari penelitian ini adalah membuat sebuah *prototype* 3D dan fisik serta mengusulkan sebuah sistem *refill* botol minuman yang terdiri dari kemasan *body, refill,* dan *applicator*. Dimana *body* adalah sebagai master botol yang dapat dibuka untuk dipasang kemasan *refill* didalamnya, sehingga akan mengurangi sampah botol yang terbuang karena digantikan oleh kemasan *refill* yang memiliki volume bahan lebih sedikit. Mengingat fungsi utama botol adalah sebagai tempat minuman maka desain *body* didesain dapat digunakan sebagai tempat minuman langsung tanpa menggunakan kemasan *refill* sebagai fitur pendukung konsep sistem *refill* yang dibuat.

Dengan sistem tersebut akan membantu perusahaan minuman dalam menghemat bahan dalam membuat kemasan, serta limbah botol plastik akan berkurang yang berdampak pada kebersihan lingkungan.

1.2 Rumusan Masalah

Berdasarkan penjelasan latar belakang di atas, didapatkan rumusan masalah sebagai berikut : Bagaimana sebauah konsep baru kemasan botol minuman *refill* dan mewujudkannya dalam sebuah *prototype* ?

1.3 Tujuan Penelitian

Dari rumusan masalah diatas, penelitian ini dilakukan dengan tujuan :

1. Menciptakan rancangan sistem *refill* konsep baru yang terdiri dari *body, refill* dan *applicator*.

2. Membuat *prototype* dari konsep masing-masing bagian *body, refill,* dan *applicator* dalam bentuk 3D desain dan fisik nyata.
3. Menganalisis paten untuk membuktikan bahwa sistem yang dibuat belum pernah ada.

1.4 Manfaat Penelitian

Manfaat yang ingin dicapai dari penelitian ini antara lain :

1. Memberikan referensi berupa teori-teori pengembangan produk, langkah-langkah pemilihan konsep dan pembuatan *prototype* untuk penelitian selanjutnya yang sejenis.
2. Memberikan usulan sistem *refill* botol minuman yang terdiri dari kemasan *body, refill,* dan *applicator*.
3. Mendapatkan *prototype*.
4. Menghemat bahan baku plastik yang tebal untuk botol dan digantikan dengan yang lebih tipis untuk kemasan *refill.*

1.5 Sistematika Penulisan

Rancangan sistematika penulisan secara keseluruhan pada penelitian ini terdiri dari 5 bab, uraian masing-masing bab adalah sebagai berikut:

BAB I PENDAHULUAN, dalam bab ini diuraikan tentang latar belakang permasalahan yang diambil sebagai tema penelitian, rumusan permasalahan yang ada di lapangan, tujuan penelitian, manfaat penelitian, ruang lingkup penelitian , dan sistematika penulisan laporan penelitian.

BAB II LANDASAN TEORI, dalam bab ini mencakup segala hal yang dapat dijadikan sebagai dasar bagi pengambilan tema penelitian, penentuan langkah pelaksanaan dan metode penganalisaan yang diambil dari beberapa pustaka yang ada dan memiliki pembahasan sesuai dengan tema penelitian ini. Di dalam bab II juga dicantumkan beberapa penelitian serupa dengan penelitian ini yang telah dilakukan sebelumnya untuk melihat perbandingan tujuan, metode dan hasil analisa yang ada.

BAB III METODOLOGI PENELITIAN, dalam bab ini diuraikan pola pikir penelitian, data yang dibutuhkan, langkah-langkah cara pengambilan data di lapangan, serta metode penyajian dan analisa data yang akan dipakai untuk mengolah data yang nantinya didapatkan.

BAB IV HASIL PENELITIAN DAN PEMBAHASAN, dalam bab ini akan disajikan data-data yang diperoleh dalam pelaksanaan survei lapangan dan sekaligus uraian pembahasan untuk menjawab tujuan penelitian ini. Hasil analisa ini selanjutnya dibahas secara rinci untuk memudahkan penarikan kesimpulan hasil penelitian.

BAB V KESIMPULAN, bab ini merupakan kumpulan dari butir-butir kesimpulan hasil analisa dan pembahasan penelitian yang telah dilakukan. Kesimpulan juga disertai dengan rekomendasi yang ditujukan untuk peneliti selanjutnya atau untuk penerapan hasil penelitian di lapangan.

BAB II

TINJAUAN PUSTAKA

2.1 Posisi Penelitian

Botol kemasan merupakan salah satu hal yang penting dari suatu produk minuman. Kemasan dapat dimanfaatkan sebagai identitas produk, kemasan juga berfungsi sebagai pelindung produk dari kontaminasi. Sebuah botol harus memenuhi syarat, mudah digenggam, mudah dibawa, mudah saat menggunakan, tidak mudah tumpah, kemasan dapat didaur ulang (Nugrajati 2008). Berbagai desain kemasan botol diciptakan dengan tujuan agar syarat-syarat tersebut dapat terpenuhi, akan tetapi tidak semua dapat terpenuhi. Mudah saat digunakan dapat diartikan botol dapat dengan mudah digunakan kembali agar dapat menguragi sampah tanpa harus didaur ulang. Sehingga kemudahan dalam menggunakan dan dapat didaur ulang masih perlu dikaji kembali.

Pengembangan produk botol minuman memungkinkan untuk dapat menjawab permasalah yang ditimbulkan dari desain botol maupun dampaknya terhadap lingkungan. Nugrajati (2008) mengusulkan *redesign* untuk kemasan fanta 250 ml akan tetapi hanya sampai sebatas usulan tanpa melanjutkan sampai tahap pengembangan produk. Kurniawan (2014) juga mengusulkan sebuah desain botol kemasan dengan objek kemasan *refill* kecap. Diusulkan sebuah desain kemasan botol *Plug and Use* untuk *refiil* kecap dimana *refill* kecap langsung dimasukan kedalam botolnya dan dapat

langsung dipakai, sehingga dapat menjawab permasalahan kemasan yang mudah digunakan.

Ada banyak cara yang digunakan dalam proses pengembangan produk. Nugrajati (2008) menggunakan metode *Quality Function Deployment* (QFD) Dan *Analytical Hierarchy Process* (AHP). QFD digunakan untuk mengolah data yang diperoleh dari penyebaran angket kepada pelanggan. Sedangkan AHP digunakan pada saat pengambilan keputusan yang menjadi solusi alternatif dalam pengembangan produk. Kurniawan (2012) mendapatkan konsep desain baru melalui tahapan pemilihan konsep yaitu penyusunan, pemilihan dan evaluasi konsep. Kemudian dilakukan FGD (*Forum Group Discusstion*), untuk mendapatkan masukan tentang konsep yang dibangun pada kemasan *refill* serta desain yang sesuai. Sementara OuYang dan Weng (2011), mengkosnsturksi satu pendekatan analisis paten yang dinamakan *New Comprehensive Patent Analysis* (NCPA) untuk pengembangan produk baru berdasarkan sekumpulan dokumen paten. NCPA (OuYang dan Weng 2011) didasrkan pada pembentukan patent family dan penelusuran sitasi paten.

Dengan mengacu pada hasil dan cara pengembagan produk diatas, Amin (2014) melakukan penelitian untuk mengembangkan produk kemasan botol minuman dengan sistem *refill* yang terdiri dari subsitem *body, refill* dan *applicator*. Proses dilakukan dengan mengunakan urutan pengembangan produk yaitu dengan menyusun, memilih dan mengevaluasi konsep, serta analisis paten untuk untuk membuktikan bahwa sistem yang dibuat belum pernah ada sebelumnya dan mencari ide-ide dari subsitem yang dibuat.

Tabel 2.1. Tabel Posisi Penelitian

No	Peneliti	Judul penelitian	Hasil penelitian
1	Seffudin Purnama Nugrajati (2008)	Usulan Re-Desain Kemasan Minuman "Fanta 250 ml Menggunakan Metode *Quality Function Deployment* (QFD) Dan *Analytical Hierarchy Process* (AHP)"	kemasan yang mudah digenggam dan dibawa-bawa, mudah dibuka dan ditutup, saat meminum isinya, dan kemasan yang bisa didaur ulang.
2	OuYang dan Weng (2011)	*A New Comprehensive Patent Analysis Approach for New Prosuct Design in Mechanical Engineering*	pendekatan analisis paten yang dinamakan *New Comprehensive Patent Analysis* (NCPA) untuk pengembangan produk baru berdasarkan sekumpulan dokumen paten
3	Fabri Kurniawan (2012)	Perancangan Sistem Kemasan Isi Ulang Plug And Use Untuk Produk Kecap	desain botol kecap dengan konsep baru yang disesuaikan dengan kemasan isi ualng kecap yang sudah ada. Hasil dari penelitian ini masih berupa gambar desain
4	Muflikhul Amin (2014)	Pembuatan *Prototype* Kemasan *Refill* Botol Minuman Konsep Baru	sebuah sistem *refill* dan *prototype* botol minuman yang dapat digunakan tanpa menuang dan lebih mudah dalam menjaga kebersihannya.

2.2 Landasan Teori

Pada bagian ini dipaparkan teori-teori serta pustaka yang dipakai pada waktu penelitian. Teori-teori ini diambil dari buku literatur dan dari internet. Teori yang dibahas meliputi pengertian perancangan produk, tahapan perancangan produk, penyusunan konsep dan pembuatan *prototype*.

2.2.1 Perancangan Produk

Produk merupakan sesuatu yang dijual oleh perusahaan kepada pembeli. Perancangan produk merupakan serangkaian aktivitas yang dimulai dari analisis persepsi dan peluang pasar. Fungsi perancangan memainkan peran penting dalam mendefinisikan bentuk fisik produk agar dapat memenuhi kebutuhan pelanggan. Dalam konteks tersebut, tugas bagian perancangan mencakup desain *engineering* (mekanik, ergonomi, *user interface*) (Ulrich, 2001).

Proses perancangan produk secara garis besar dapat dibagi menjadi dua tipe, yaitu market driven *(market pull*), dan *technology push*. Secara nyata, tipe *market pull* menggunakan atau mengolah data-data *customer needs* untuk mengembangkan konsep produk.

Pada pengembangan produk *technology-push,* perusahaan mulai dengan suatu teknologi teruji yang baru, kemudian mencari pasar yang sesuai untuk menggunakan teknologi ini (berarti teknologi yang mendorong perkembangan).

Banyak produk-produk *technology-push* yang berhasil melibatkan material dasar atau teknologi dengan proses dasar. Hal ini mungkin

disebabkan material atau proses dasar memungkinkan ribuan aplikasi, oleh karenanya karakteristik-karakteristik material dan proses yang baru dan tidak umum dapat dipasangkan dengan aplikasi yang tepat.

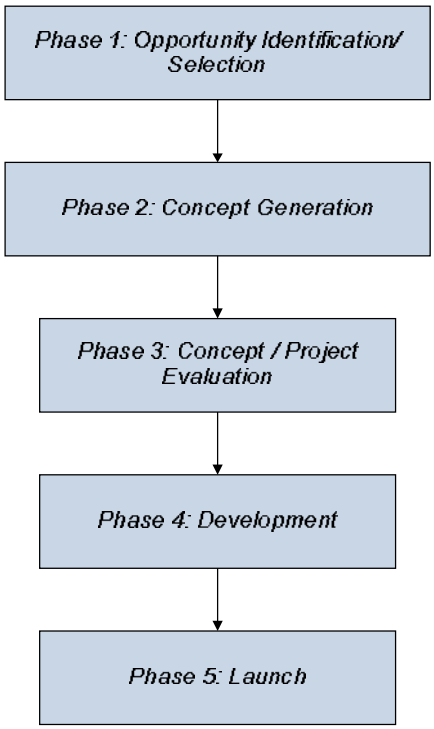
Proses pengembangan produk generik dapat digunakan dengan sedikit modifikasi untuk produk-produk *technology-push*. Proses *technology-push* dimulai dengan fase perencanaan, di mana teknologi yang tersedia dipasangkan dengan suatu pasar. Segera setelah pemasangan ini terjadi, sisa proses pengembangan generik dapat diikuti (Ulrich 2001).

Produk baru dengan *technology-push* diperoleh dari penggunaan teknologi dan kemudahan operasi, dengan sedikit perhatian terhadap pasar untuk memperoleh suatu produk yang akan menjadi kebutuhan pasar. Dengan kata lain suatu produk atau teknologi baru didorong atau dijual ke pasar (*potential customer*) yang tidak meminta atau mengetahui perihal produk atau teknologi baru tersebut.

2.2.2 Tahapan Perancangan Produk

Menurut Crawford dalam buku yang berjudul "*New Products Management*", dikatakan bahwa tahapan pengembangan produk memiliki lima fase yaitu identifikasi dan seleksi peluang dengan cara memanfaatkan produk baru sebagai peluang bisnis. Pengembangan konsep dengan melibatkan konsumen untuk menyusun sebuah konsep baru. Mengevaluasi konsep dengan memberikan bobot terbaik, kedua, atau

ketiga. Mengambangkan konsep dengan pembuatan *prototype* dan meluncurkan kepasaran setelah diujikan kepada konsumen.



Gambar 2.1 Fase Pengembangan Produk

Sumber : *New Products Management*, Crawford et al

Kelima fase ini lebih difokuskan untuk pengembangan produk yang masih baru (Crawford et al, 2003). Tahapan pengembangan produk yang disampaikan oleh *Crawford dan Beneddetto* di atas, sejalan dengan tahapan pengembangan produk yang disampaikan oleh Urich (2001) sebagai berikut:

1. Identifikasi Peluang

   Identifikasi peluang merupakan fase perencanaan pada pengembangan teknologi *push*, di mana teknologi yang tersedia dipasangkan dengan suatu peluang pasar (Ulrich, 2001).

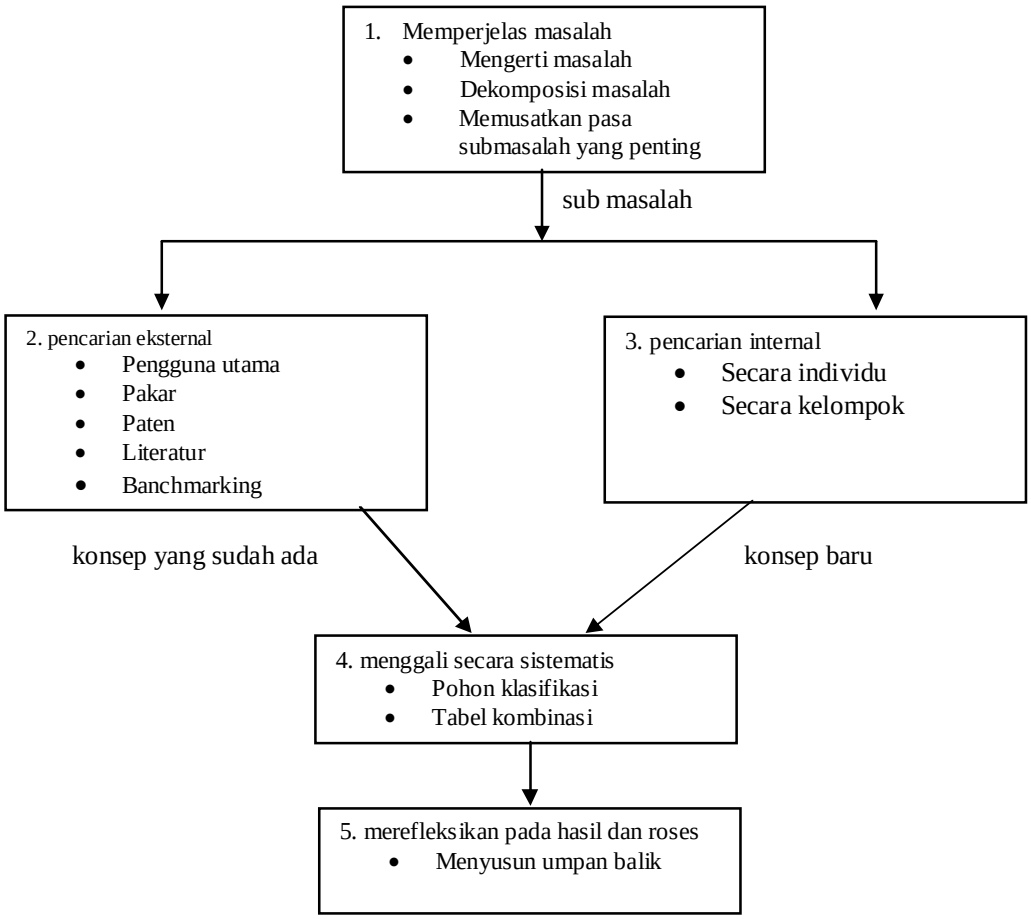
Salah satu sumber peluang bisnis adalah diperoleh dari cara *brainstorming*. *Brainstorming* adalah sebuah perencanaan atau piranti yang digunakan untuk menampung kreatifitas kelompok dan biasanya digunakan untuk menjadikan alat konsensus maupun untuk menjaring ide-ide yang diperlukan.

Pada metode ini, setiap ide dari peserta dianggap sahih dan peserta lain tidak diperkenankan memberi komentar, hanya dicatat saja ide dan saran yang diajukan. Ide dan saran dikumpulkan dan dievaluasi untuk kemudian dipilih beberapa saran yang dianggap sesuai.

2. Penyusunan Konsep

Pada fase pengembangan konsep, kebutuhan pasar target diidentifikasi, alternatif konsep-konsep produk dibangkitkan dan dievaluasi, dan satu atau lebih konsep dipilih untuk pengembangan dan percobaan lebih jauh. Dimana yang dimaksud dengan konsep di sini adalah uraian dari bentuk, fungsi, dan tampilan suatu produk dan biasanya disertai dengan sekumpulan spesifikasi, analisis produk-produk pesaing serta pertimbangan ekonomis proyek (Ulrich, 2001).

Metode penyusunan konsep secara umum terdiri atas lima langkah dengan memecahkan sebuah masalah kompleks yang menjadi submasalah yang lebih sederhana. Berikut gambar dari lima langkah metode penyusunan konsep:



Gambar 2.2 Langkah Metode Penyusunan Konsep
Sumber : Perancangan dan Pengembangan Produk, Ulrich-Eppinger halaman 104

Kemudian dikenalkan konsep penyelesaian untuk submasalah menggunakan prosedur pencarian eksternal dan internal, pencarian eksternal untuk konsep yang sudah ada, sedangkan pencarian internal untuk konsep baru.

Pohon klasifikasi dan tabel kombinasi kemudian digunakan untuk menggali secara sistematis konsep penyelesaian tersebut dan untuk mengintegrasikan penyelesaian submasalah ke dalam sebuah penyelesaian total. Akhirnya dapat dibuat sebuah langkah mundur

untuk merefleksikan validitas dan kemampuan aplikasi dari hasil, seperti yang digunakan oleh proses.

Dari sini akan muncul beberapa macam konsep yang tujuannya sama yaitu untuk menjawab penyelesaian dari submasalah yang sudah difokuskan karena sifatnya memang penting.

Pencarian eksternal bertujuan untuk menemukan pemecahan keseluruhan masalah dan submasalah yang ditemukan selama langkah memperjelas masalah. Pengurutan ini tidak kaku, karena pencarian eksternal terjadi secara terus-menerus selama proses pengembangan.

Pencarian eksternal mencangkup evaluasi terperinci tidak hanya dari produk kompetitif langsung, tetapi juga dari teknologi-teknologi yang digunakan oleh produk yang berhubungan deng subfungsi.

Terdapat lima cara yang baik untuk mengumpulkan informasi dari sumber eksternal, yaitu: wawancara pengguna utama, konsultasi dengan pakar, pencarian paten, pencarian literatur dan menganalisis *(benchmarking)* pesaing.

3. Seleksi Konsep

"Seleksi konsep merupakan proses menilai konsep dengan memperhatikan kebutuhan pelanggan dan kriteria lain, membandingkan kekuatan dan kelemahan relatif dari konsep, dan memilih satu atau lebih konsep untuk penyelidikan, pengujian, dan pengembangan selanjutnya" (Ulrich, 2001 halaman 130).

Beberapa konsep yang sudah terbentuk pasti memiliki kelebihan dan kekurangan masing-masing. Untuk itu seleksi konsep merupakan proses menilai konsep dengan memperhatikan kebutuhan pelanggan dan kriteria lain, membandingkan kekuatan dan kelemahan relatif dari konsep, dan memilih satu atau lebih konsep untuk penyelidikan, pengujian dan pengembangan selanjutnya.

Tabel 2.2 Contoh Seleksi Konsep

Kriteria Seleksi	Konsep		
	1	2	3
Kriteria 1	0	0	0
Kriteria 2	0	0	0
Kriteria 3	-	0	+
Kriteria 4	-	-	+
Kriteria 5	+	+	0
Kriteria 6	-	0	+
Kriteria 7	-	0	+
Jumlah +	1	1	4
Jumlah 0	2	5	3
Jumlah -	4	1	0
Nilai Akhir	-3	0	4
Peringkat	3	2	1
Lanjutkan ?	Tidak	Ya	ya

Sumber : Perancangan dan Pengembangan Produk, Ulrich-Eppinger halaman 137

Metode seleksi konsep pada proses ini didasarkan pada penggunaan matriks keputusan untuk mengevaluasi masing-masing konsep dengan mempertimbangkan serangkaian kriteria seleksi.

Metode seleksi ini dikembangkan oleh Stuart Pugh pada tahun 1980an dan kemudian sering disebut seleksi konsep *Pugh Methode*. Tujuan tahapan ini adalah mempersempit jumlah konsep secara cepat dan untuk memperbaiki konsep.

Proses penyaringan konsep merupakan penilaian yang sederhana yang hanya menggunakan tiga simbol yaitu nilai relatif “lebih baik” (+), jika konsep tersebut lebih baik dari konsep yang lain dalam hal kriteria tersebut. “Sama dengan” (0), jika kriteria konsep tersebut sama dengan konsep lainnya. Dan “lebih buruk” (-), bila konsep tetrsebut lebih buruk dari kriteria konsep. Kemudian jumlah bobot tiap kriteria dijumlahkan untuk masing-masing konsep diberi rangking. Konsep yang dipilih untuk diteruskan adalah satu atau lebih konsep yang memiliki tingkat rangking yang lebih tinggi.

Tahapan berikutnya pada seleksi konsep adalah dengan menggunakan matriks penilaian konsep, dengan cara menambahkan bobot kepentingan ke dalam matriks.

Beberapa pola yang berbeda dapat digunakan untuk memberi bobot pada kriteria seperti menandai nilai kepentingan dari 1-5 atau mengalokasikan nilai 100%. Selanjutnya penetapan rating dapat

dilakukan oleh beberapa responden untuk menentukan apakah bobot yang diberikan sesuai dengan kriteria yang diinginkan.

Tabel 2.3 Matriks penilaian konsep

		Konsep			
Kriteria	Beban	Rating	Nilai Beban	Rating	Nilai Beban
Kriteria 1	5%	3	0.15	3	0.15
Kriteria 2	15%	3	0.45	3	0.45
Kriteria 3	25%	3	0.75	4	1
Kriteria 4	20%	4	0.8	4	0.8
Kriteria 5	10%	4	0.4	3	0.3
Kriteria 6	15%	2	0.3	3	0.45
Kriteria 7	10%	2	0.2	3	0.3
	Nilai Akhir	3.05		3.45	
	Peringkat	2		1	
	Lanjutkan ?	Tidak		Ya	

Sumber : Perancangan dan Pengembangan Produk, Ulrich-Eppinger halaman 141

Nilai rating dan beban dikalikan untuk mendapatkan nilai beban. Nilai beban adalah nilai yang akan dijumlahkan untuk menentukan rangking tiap konsep yang dinilai sama. Sama seperti tahap penyaringan konsep, dimana yang akan terpilih adalah konsep dengan nilai rangking tertinggi.

Dengan dasar kedua matriks seleksi tersebut dapat diputuskan untuk memilih satu atau lebih konsep terbaik, konsep-konsep ini

kemudian dikembangkan lebih lanjut, dibuat *prototype* dan diuji untuk memperoleh umpan balik (Ulrich, 2001).

4. Evaluasi Konsep dan Pengembangan Konsep

   Pada fase ini, kebutuhan pasar target diidentifikasi, alternatif konsep-konsep produk dibangkitkan dan dievaluasi, dan satu atau lebih konsep dipilih untuk pengembangan dan percobaan lebih jauh. Konsep adalah uraian dari bentuk, fungsi, dan tampilan suatu produk dan biasanya disertai dengan sekumpulan spesifikasi.

5. *Benchmarking* dan Wawancara Pengguna Utama

   Menurut Ulrich (2001), dalam konteks penyusunan konsep, *benchmarking* merupakan studi atas produk yang ada sekarang yang memiliki kesamaan dengan produk yang sedang dikembangkan atau dengan submasalah yang menjadi fokus tim. *Benchmarking* dapat mengungkapkan konsep produk yang sudah ada yang telah dipakai untuk memecahkan masalah yang berkaitan, dan juga memberikan informasi mengenai kelemahan dan kekuatan dari persaingan.

   Selain *benchmarking*, wawancara pengguna utama dilakukan untuk pencarian eksternal dalam proses penyusunan konsep. Pengguna utama adalah pengguna produk yang dapat mengidentifikasi kebutuhan-kebutuhan lebih awal sebelum mayoritas pasar menyadari manfaat dari sebuah inovasi. Seringkali para pengguna utama ini telah mencari-cari di pasaran untuk mendapatkan produk baru yang dikembangkan oleh tim atau mereka mungkin telah menemukan

produk yang menerapkan beberapa subfungsi yang diinginkan pengguna.

2.2.3 Pembuatan *Prototype*

Menurut Ulrich (2011) *Prototyping* dapat didefinisikan sebagai sebuah penaksiaran produk melalui satu atau lebih dimensi yang menjadi perhatian.

Prototype dapat diklasifikasikan menjadi dua yaitu *prototype* fisik dan analitik. Contoh dari *prototype* fisik meliputi model yang berbentuk *visual* seperti produk sedangkan contoh *prototype* analitik meliputi simulasi komputer, dan model komputer geometrik tiga dimensi.

Menurut Ulrich (2011) ada emapt kegunaan *prototype*, yaitu :

a. Pembelajaran : dalam suatu pembelajaran *prototype* dapat menjawab dua pertanyaan yang sering muncul yaitu “apakah dapat bekerja?” dan “sejauh mana dapat memenuhi kebutuhan pelanggan?”. Bisa jadi untuk menjawab kedua pertanyaan tersebut diperlukan kombinasi dari kedua tipe *prototype* tersebut sebagai media pembelajaran.
b. Komunikasi : *prototype* dapat dijadikan sebagai sarana komunikasi antara manajeman puncak, penjual, mitra, seluruh anggota tim, pelangan, dan investor. Hal ini dikarenakan sebuah gambaran, alat, atau tampilan tiga dimensi akan lebih mudah dimengerti dibandingkan sebuah penggambaran verbal.

c. Penggabungan : *prototype* digunakan sebagai alat untuk menggabungkan komponen-komponen dan subsitem-subsistem sebuah produk sehingga dapat bekerja secara bersamaan, dalam hal ini *prototype* fisik menyeluruh paling efektif. *Prototype* juga membantu menggabungkan perspektif dari fungsi yang berbeda yang ditampilkan pada tim pengembangan produk.

d. *Millestones* : *prototype* digunakan untuk mendemonstrasikan bahwa produk telah mencapai tingkat kegunaan yang diinginkan. *Prototype mellistones* menunjukan hasil yang nyata dan memperlihatkan kemajuan.

Cara yang sering digunakan dalam membuat sebuah *prototype* fisik antara lain :

1. *Rapid Prototyping*

   Rapid Prototyping (RP) adalah teknologi yang digunakan untuk membangun *prototype* fisik dengan cara yang benar-benar cepat. RP juga disebut teknologi pembuat bentuk bebas yang memungkinkan untuk membuat *prototype* tiga dimensi (3D) dengan cara yang lebih mudah dan lebih murah daripada yang mungkin dilakukan sebelumnya. RP adalah istilah yang digunakan mengacu pada sekelompok teknologi yang disusun untuk menghasilkan model fisik langsung dari data komputer 3D. Biasanya, digunakan untuk memvalidasi desain yang memungkinkan visualisasi produk pada setiap tahap proses dari

desain konseptual untuk penciptaan sebuah desain yang utuh. Hal ini memungkinkan seorang pendesain untuk membuat perubahan pada model pada tahap awal proses desain (Sanches, 2005).

2. Traditional *prototype*

   Secara tradisional, terdiri dari berbagai macam proses, bahan terus dikurangi dari bentuk awal sehingga diperoleh desain yang diinginkan. Metode yang paling cocok dan sesuai pada proses manufaktur dapat dikombinasikan untuk menciptakan sebuah *prototype*. Adapun beberapa cara pembuatan *prototype* secara tradisional adalah sebagai berikut :

   a. Sepenuhnya manual dengan menggunakan tangan, seperti ukiran atau pahatan, untuk membuat objek dari berbagai macam bahan seperti *clay* atau kayu oleh tenaga kerja yang menguasai bidangnya.
   b. Menggunakan kombinasi manual oleh seorang teknisi yang terampil, mampu membaca dan membuat gambar 2 dimensi serta memiliki keterampilan untuk mengoperasikan mesin seperti pengeboran, mesin bubut *(turning),* dan mesin frais *(milling).*
   c. Sepenuhnya otomatis, setelah adanya mesin CNC *(computer numerical control)* yang lebih modern, dapat diciptakan berbagai bentuk yang lebih kompleks dan akurat. Kemajuan terus-menerus pada mesin CNC telah mengakibatkan produksi

semakin cepat, lebih akurat, resolusi, dan presisi yang tinggi, sehingga memungkinkan membuat berbagai macam bentukyang lebih komplek (Zorriassatine, 2003).

2.2.4 Analisis Paten

Ulrich (2001) Paten merupakan informsi teknis yang sudah tersedia yang berisi gambaran terperinci dan penjelasan bagimana cara kerja dari banyak produk. Kerugian utama dari pencarian paten adalah konsep yang ditemukan pada paten yang terbaru umumnya diproteksi (umumnya 20 tahun sejak tanggal paten diterapkan), jadi mungkin ada royalti yang harus dibayarkan dalam menggunakannya. Namun paten juga sangat berguna untuk melihat konsep apa yang sudah dilindungi dan harus dihindarkan atau dimintakan izin. Konsep yang terdapat pada paten asing tanpa perlindungan global dan yang sudah lewat masanya dapat digunakan tanpa pembayaran royalti.

Berdasarkan study yang dilakukan oleh Berkowit'z (1993), analisa paten membantu untuk menemukan tidak hanya pada bagian teknisnya akan tetapi juga pada area yang berada diluar cakupannya.

Patent familly, merupakan kumpulan dari paten terpublikasi yang saling terhubung (termasuk penerapan dan perijinan paten) disajikan dengan gagasan yang sama. Aplikasi yang pertama didokumenkan merupakan aplikasi yang diprioriaskan, Dan selanjutnya mendokumentasikan sampai 12 bulan sesudah aplikasi yang diprioritaskan akan didaftar dengan penomoran. *World Intellectual*

Property Organization (WIPO) bahkan memperpanjang prioritas sampai 30 bulan setelah aplikasi pertama.

Penelitian OuYang dan Weng (2011), mengkosnsturksi satu pendekatan analisis paten yang dinamakan *New Comprehensive Patent Analysis* (NCPA) untuk pengembangan produk baru berdasarkan sekumpulan dokumen paten. NCPA (OuYang dan Weng 2011) didasrkan pada pembentukan patent family dan penelusuran sitasi paten. Prosedur NCPA terdisi dari lima fase yaitu :

1. Kompilasi data base paten
2. Memilih induk paten utama dan membentuk *familly patent*
3. Menyaring anggota dari *familly patent* untuk mendapatkan paten yang relevan terhadap desain produk berdasarkan kata kunci yang sesuai.
4. Menggunakan penelusuran sitasi paten untuk mengecek kembali relevansi kata kunci yang digunakan untuk pengembangan desain produk.
5. Mengunakan metode *Triz* untuk menganalisis relevansi paten terhadap desain produk yang dikembangkan.

2.2.5 Kemasan Produk

Pengemasan disebut juga wadah, pengepakan sangat penting peranannya terhadap suatu produk. Fungsi utama kemasan adalah mengawetkan dan melindungi produk yang dikemas. Pengemasan melindungi produk dari kerusakan fisik, kimia, dan biologis.

Adanya wadah dapat membantu mencegah atau mengurangi kerusakan, melindungi, melindungi bahan yang ada didalamnya, melindungi dari bahaya pencemaran, serta gangguan fisik. Selain itu fungsi dari pengemasan terhadap hasil pengolahan industri agar mempunyai bentuk yang memudahkan dalam penyimpanan, pengangkutan dan distribusi. Pengemasan memudahkan produk untuk dipindahkan dan ditumpuk dalam hal ini membuat penggunaan alat angkut dan ruang penyimpanan menjadi efisien. Dari segi promosi kemasan berfungsi sebagai perangsang atau daya tarik, (Ali, 2008).

Secara ringkas pengemasan mempunyai fungsi antara lain: pengawetan, proteksi terhadap kerusakan dan kontaminasi fisik, kimia, biologi, memudahkan distribusi, dan pengenalan atau identitas.

Untuk dapat berfungsi dengan baik bahan kemasan produk pangan seharusnya memenuhi kriteria : tidak berracun, berfungsi sebagai *barier* terhadap air, oksigen, dan mikroba, mencegah kehilangan produk, mudah dibuka atau ditutup, tidak merusak lingkungan, memenuhi kebutuhan ukuran, bentuk, dan berat, cocok dengan produk pangan yang dikemas.

2.2.6 Kemasan *Refill*

Refill merupakan proses pengisian ulang dengan menggunakan kemasan yang lama atau kemasan aslinya dengan isi yang baru dan sama dengan isi yang aslinya. Ada delapan jenis *refill* diidentifikasi dan diklasifikasikan berdasarkan mekanisme pengiriman dan sistem

pengisiannya. Pengklasifikasian kemasan *refill* ini bertujuan untuk mengetahui dan mengidentifikasi kemasan-kemasan *refill* yang beredar di Indonesia.

Berikut merupakan klasifikasi *refill* beserta penjelasannya. Data pada tabel berikut didapat dari karya Dr. Vicky Lofthouse et al (2006).

Tabel 2.4 Klasifikasi Kemasan *Refill*

No	Contoh *Refill*	Sistem Peng-Isian Ulang	Deskripsi
1.		Self Contained *Refill*	Konsumen membeli *refill*nya, kemudian diisikan pada produk *durable dispenser* (kemasan terpisah). Contoh: Tisu, Pisau cukur, Penyegar udara.
2.		*Refill*ed in Shop	Konsumen membawa kemasan aslinya ke toko tempat pembelian untuk meng*refill* produk yang sama. Contoh: kosmetik, produk perawatan pribadi.
3.		Deposit System	Konsumen mengembali-kan botol asli ke toko atau ke *supplier* (di tempat pembelian semula). Contoh: produk beer, kecap soda.
4.	 	Top Up Card	Konsumen membayar jasa pelayanan dengan cara *refill* yang berupa produk layanan dari penyedia jasa (provider). Contoh: *Refill* pulsa operator seluler, layanan download music digital untuk perangkat *mobile*.

5.		Creation	Konsumen membeli komponen-komponen *(parts)* yang dibutuhkan untuk membuat produk sendiri serta membeli *refill* yang memungkinkan mereka untuk mengulangi proses pembuatan.
6.		Door to Door Delivery – packaging *refill*ed	Konsumen membeli sejumlah kuantitas tertentu yang diantar langsung oleh supplier, produk dikemas dengan kemasan khusus, dan konsumen membayar sesuai dengan kuantitas yang diambil. Penerapan sistem ini dapat ditemukan pada deterjen binatu, pewangi/pelembut binatu atau rumah tangga.
7.		Concentrate Mixed in Original Packaging	Konsumen membeli *refill* yang berupa konsentrat, lalu mereka encerkan dengan air dan dicampur menggunakan kemasan lama. Diaplikasikan untuk produk binatu.
8.	 	Bulk purchase	Pelanggan membeli dalam jumlah besar, lalu dituang-kan ke dalam botol atau kemasan yang ada di rumah. Aplikasi ini termasuk bumbu dapur (seperti minyak, kecap, cuka, merica) dan produk pembersih rumah.

BAB V

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Dari hasil penelitian yang telah dilakukan maka dapat ditarik kesimpulan sebagai berikut :

1. Penelitian berhasil menciptakan rancangan sistem kemasnan refill tipe baru yang terdiri dari konsep *body* dengan alur *vertical, applicator* model *flip* dan *refill* dengan desain menyesuaikan desain *body*.
2. Mendapatkan rancangan dan *prototype* sitem yang terdiri dari *body, refill* dan *applicator*.
3. Beradasarkan penelusuran dokumen paten tahun 2009-2014, ditemukan sebanyak 109 paten, dengan lima kata kunci relevan, tidak ditemukan paten yang serupa dengan penelitian ini. Dengan demikian hasil penelitian ini layak diajukan untuk mendapatkan sertifikat hak atas kekayaan intelektual.

5.2 Saran

Peneliti merasa penelitian masih belum sempurna, untuk itu peneliti memberikan saran :

1. Memperhatiakan kaidah staistika dalam pengambilan sample untuk wawancara, maupun penilain konsep agar diperoleh hasil yang sesuai dengan memperhatikan jumlah populasi yang ada.

2. Dalam proses *brainstorming* sertakan pakar yang *expert* pada bidang pengembangan produk serta konsumen yang lebih sering berhubungan langsung dengan produk-produk sehari-hari misalnya ibu rumah tangga.
3. Melakukan penelitian serupa dengan pengujian mulai dari produsen sampai pengguna serta meneliti daur hidup suatu produk untuk membuat sebuah desain yang dapat bertahan dalam jangka panjang.
4. Menggunakan *software* yang lebih baru agar didapat visualisasi yang lebih baik dan dapat dilakukan pengujian kekuatan bahan agar didapat kriteria pemilihan konsep yang lebih spesifik.

DAFTAR PUSTAKA

Ali, Hikmah M, 2008, *Modul Pembelajaran Berbasis SCL,* Mata Kuliah Pengemasan, Pengepakan, Dan Labeling, Lembaga Kajian Dan Pengembangan Pendidikan, Teknologi Hasil Ternak Fakultas Peternakan Universitas Hasanuddin, Makassar.

Bachriansyah, S. 1997, *Identifikasi Plastik, Makalah Pelatihan Teknologi Pengemasan Industri makanan dan Minuman*, Departemen Perindustrian dan Perdagangan, Bogor

Berkowitz, L. 1993, *Getting The Most From Your Patents*, Res. Technology.

Crawford, 2003, *New Products Management, International Edition, Seventh Edition*, McGraw Hill, Boston.

Kurniawan, Fabri, 2012, *Perancangan Sistem Kemasan Refill Plug And Use Untuk Produk Kecap*, Skripsi, Universitas Islam Negri Sunan Kalijaga, Yogyakarta.

Lane, Marvin, 2013, *Beverage Bottle and Lid with Back Button Release and Button Lock*, Patent, United States

Letchinger, S. John dan Ring, J. Thomas, 2013, *Drinking Bottle Assembly*, Patent United States.

Mulyadi, 1998. *Total Quality Management*. Yogyakarta: Aditya Media Yogyakarta.

Murray, Robert dan John Stofan, 2001. *Formulating Carbohydrate-Electrolyte for Drinks Optional Efficacy*. Di dalam. Mughan J.Rdan Robert Murray (editor). Sport drink CRC press. Boca Raton-London-New York- Washington DC.

Nichols, Patrick Myron, 2009, *Replaceble Bottle Cap Assembly*, Patent, United States

Nugrajati, Seffudin P, 2008, *Usulan Re-Desain Kemasan Minuman "Fanta 250 ml Menggunakan Metode Quality Function Deployment (QFD) dan Analytical Hierarchy Process (AHP),* Skripsi, Universitas Diponegoro, Semarang.

Osborn, Alex F., 1963. *Applied Imagination: Principles and Procedures of Creative Problem-Solving*. Scribner, New York.

OuYang, Kuang. dan Weng, Calvin, S., 2005, *A New Comprehensive Patent Analysis Approach for New Prosuct Design in Mechanical Engineering*, National Yunlin University of Science and Technology, Yunlin, Taiwan.

Sanches, J. Gonzales, Prada J. dan Oyarbide A, 2005 *Using Rapid Prototyping For Free-Form Shapes In Architectural Scale Model.* University Of Navvara, San Sebastian, Spanyol.

Ulrich, Karl T. dan Eppinger, Steven D., 2001, *Perancangan dan Pengembangan Produk*, Salemba Teknika, Jakarta.

Winarno, F.G. dan Jennie, 1982, *Kerusakan Bahan Pangan Dan Cara Pencegahannya*, Ghalia Indonesia, Jakarta

Zorriassatine, F. Wykes, C. Parkin, R dan Gindy, N, 2003 *A Survey of Virtual Prototyping For Mechanical Product Development*, Loughborough University, UK.

LAMPIRAN

Hasil wawancara dari sebanyak 35 responden

1) Botol yang kuat, tahan lama, menarik dan mudah dibawa.
2) Ramping
3) Volume kecil, mudah diawa, unik, tidak cacat
4) Kualitas bahan, merek, simple, bentuk botol sesuai dengan anak muda, universal dapat digunakan untuk segala usia, volume sedang, mudah perawatannya
5) Tahan lama, nyaman, bentuk sesuai dengan anak muda dan seksi (lekuk ditengah)
6) Modelnya bagus/ enak dilihat, tahan bocor, mudah disimpan, unik, simpel dan mudah diabawa kemana-mana
7) Tahan lama, tahan panas, tahan banting, memiliki nilai seni, unik dan simpel
8) Anti gores, volume besar, tidak mudah bau
9) Kualitas, steril, merek, menarik bahannya tebal
10) Merek, steril, lucu, simpel, mudah dibawa kemana-mana
11) Bentuk menarik, praktis, simpel, mudah dibawa kemana-mana, unik dan volume kecil
12) Simpel, bentuk menarik, nyaman saat dipegang, mudah dibawa kemana-mana
13) Ketahanan bahan, aman, tutup rapat, bersih ketika kering, mudah dibawa, dan volume kecil
14) Bersih dan volume besar
15) Volume sedang, bentuk lucu, tidak aneh-aneh, lekuk di tengah, langsing, lubang aplikator keci
16) Bentuk unik, lucu, volume sedang, tutup kuat
17) Kualitas bahan, desain simpel dan unik
18) Bentuk simpel, menarik, bagus dan volume sedang
19) Segel rapat, bentuk menarik, tidak bocor dan tidak ada cacat
20) Tidak bocor, tutup kuat, bentukbagus, menarik

21) Bersih, tidak penyok, bulat, volume besar
22) Volume sedang, bentuk kotak, dan menggunakan sedotan
23) Awet, keren, mengikuti tren, kualitas bagus, tutup rapat, fleksibel
24) Bentuk bagus, volume sedang, bahan awet
25) Tidak mudah pecah
26) Bentuk bagus, unik, tidak ada yang menyamai, berSNI, simpel, mudah dibawa kemana-mana.
27) Bentuk lucu tetapi simpel, volume besar, mudah dipegang dan dibawa
28) Volume sedang, desain menarik, enak digenggam
29) Desain botol simpel, praktis dan mudah dibawa
30) Tidak mudah penyok, dapat didaur ulang, mudah dibawa dan dienggam dengan tangan, ergonomis
31) Aplikator kecil, bentuk menarik, body botol tidak licin
32) Bentuk menarik, beda dari yang biasanya
33) Bentuk menarik dan dapat digunakan kembali
34) Ergonomis, mudah dibawa, tutup kuat,
35) Tidak berbau, bentuk desain unik

Tabel Pembobotan Kriteria Penilaian Konsep *Body*

Responden	Persepsi kekokohan	Kemudahan	*Style*	Kerampingan	Jumlah
1	√	√	√		2
2				√	1
3		√	√	√	3
4			√	√	2
5	√	√	√		3
6		√	√		3
7	√		√		2
8				√	1
9			√		1
10		√	√		2
11		√	√	√	3
12		√	√		2
13		√		√	2
14				√	1
15			√	√	2
16			√	√	2
17			√		1
18			√	√	2
19	√		√		2
20	√		√		2
21	√			√	2
22				√	1
23		√	√		2
24			√	√	2
25	√				1
26		√	√		2
27		√	√	√	3
28		√	√	√	3
29		√	√		2
30	√	√			2
31	√		√		2
32			√		1
33			√		1
34		√			1
35			√		1
Jumlah	9	15	26	15	65

Tabel Pembobotan Kriteria Penilaian Konsep *Applicator*

Responden	Kekuatan	*Style*	Kemudahan	Jumlah
1	√	√		2
2			√	1
3		√		1
4		√	√	2
5		√	√	2
6	√	√	√	3
7	√	√		2
8	√			1
9	√	√		2
10		√	√	2
11		√		1
12		√	√	2
13	√		√	2
14			√	1
15		√	√	2
16	√	√		2
17		√		1
18		√		1
19	√	√		2
20	√	√		2
21	√		√	2
22			√	1
23	√	√		2
24		√		1
25	√			1
26		√		1
27		√		1
28		√	√	2
29		√	√	2
30	√			1
31		√	√	2
32		√		1
33		√		1
34	√		√	2
35		√		1
Jumlah	14	26	15	55

Instrumen Brainstorming

==========

Kepada Yth.
Bapak/Ibu/Saudara Responden
Di tempat

Dengan hormat,
Sehubungan dengan pelaksanaan penelitian dengan judul "**Pembuatan Prototype Kemasan *Refill* Air Minum Konsep Baru**", maka kami memohon kesediaan bapak/ibu/saudara untuk meluangkan waktunya guna mengikuti brainstorming untuk mendapatkan gagasan-gagasan konsep baru ari kemasan refill air minum dimana terdiri dari tiga subsitem yaitu *body*, *refill*, dan *applicator*. Semua keterangan baik pernyataan maupun gagasan yang anda berikan semata-mata hanya untuk kepentingan penelitian. Semua pernyataan maupun gagasan yang bapak/ibu/saudara berikan akan sangat besar sekali artinya untuk kelancaran penelitian yang saya lakukan. Identitas dan data bapak/ibu/saudara dijamin kerahasiaannya. Atas perhatian dan bantuan yang bapak/ibu/saudara berikan saya ucapkan terima kasih.

Hormat saya,
Muflikhul Amin

Latar Belakang

- Inovasi pengemasan baik pada desain, fungsi, dan nilai lebih yang didapatkan konsumen atas produk yang digunakannya.
- Perkembangan produk *refill.*
- Membuat kemasan *refill* yang praktis.
- Menciptakan produk ramah lingkungan.

Tata Cara Brainstorming

Hal-hal yang perlu diperhatikan dalam melaksanakan brainstorming antara lain sebagai berikut :

- Masing-masing anggota sependapat mengenai isu pokok yang akan dibahas.
- Menciptakan kondisi dimana masing-masing anggota merasa bebas dalam mengeluarkan idenya.
- Hindari saling kritik pada ide yang dikemukakan oleh anggota lain.
- Pernyataan atau ungkapan ide yang dikeluarkan perlu ditulis sebagaimana aslinya.
- Pada akhir brainstorming perlu dibuat rangkuman ide-ide yang dikemukakan.

Tujuan

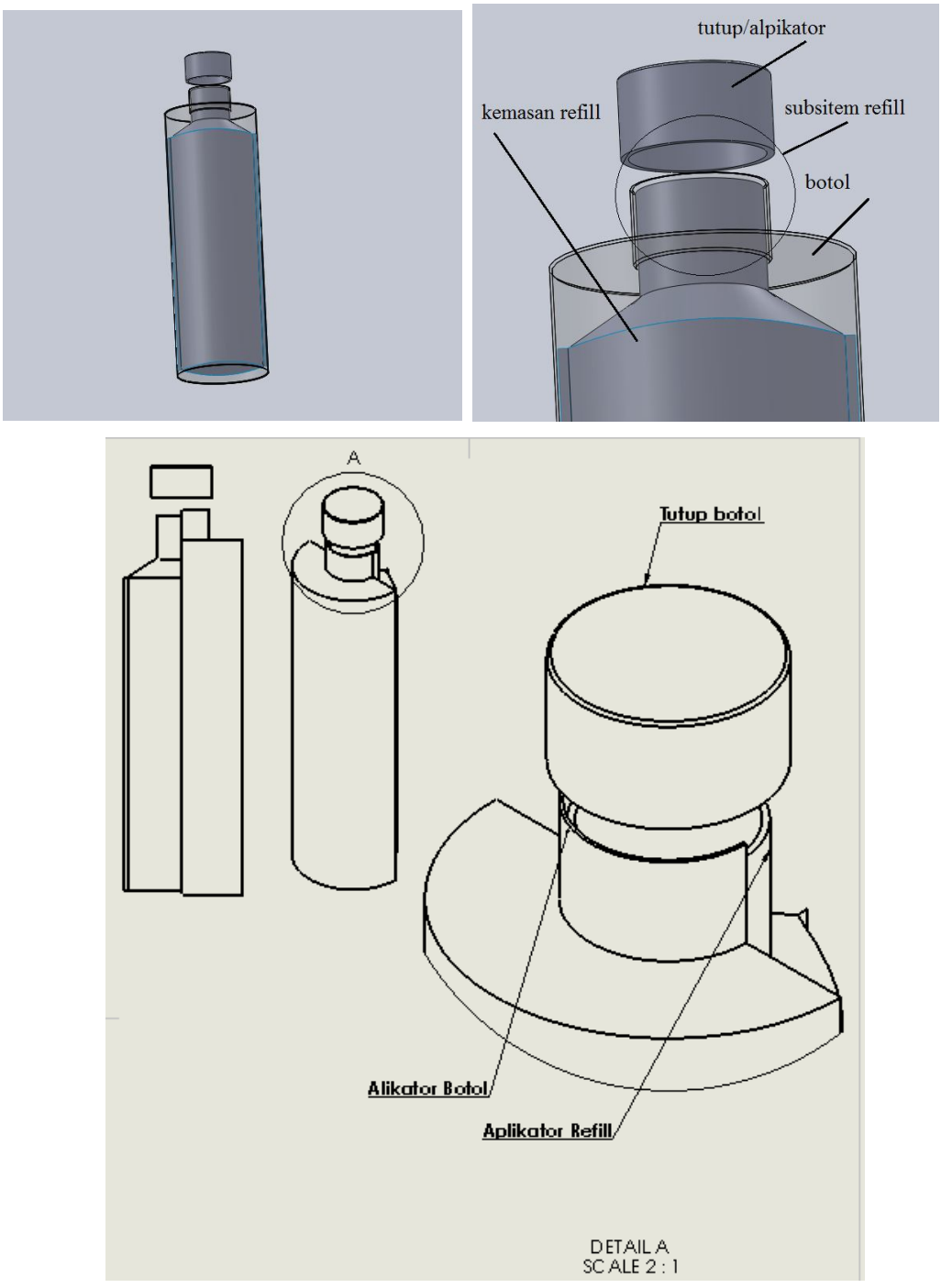
Kegiatan brainstorming ini dilaksanakan dengan tujuan untuk mendapatkan konsep *body, refill* dan *applicator* yang sesuai guna mendukung proses penelitian.

Materi Brainstorming

Berdasarkan tujuan yang telah dipaparkan bahwa brainstorming dilaksanakan untuk mendapatkan konsep-konsep *body, refill,* dan *applicator* yang sesuai. Selain ketiga konsep tersebut juga untuk mandapatkan gagasan-gagasan mengenai subsitem yang akan dibangun sebgai konsep baru, dan sitem kerja kemasan *refill*nya.

Subsitem yang akan dibangun berupa *body, refill,* dan *applicator* adalah interaksi atau antar muka dari ketiga subsitem. Sedangkan sistem kerja *refill*nya

adalah bagaimana kemasan *refill* dapat masuk kedalam botol dengan mudah dan terkunci dengan kuat. Adapun desain kemasan dari ketia subsitem yang akan dibangun adalah sebagai berikut :



Gambar subsitem kemasan *refill*

Dalam menentukan konsep *body* yang akan dibuat ada beberapa kriteria yang perlu diperhatikan antara lain :

1. Persepsi kekokohan

   Ketika melihat suatu desain body maka dapat dinilai kekuatannya dengan melihat lekuk bodynya. Body botol yang polos tanpa lekuk akan kelihatan tidak kokoh, sebaliknya body botol dengan lekuk maka body akan lebih kelihatan kokoh.

2. Kemudahan

   Kriteria kemudahan digunakan untuk menilai seberapa mudah sebuah desain botol pada saat digunakan. Penggunaan disini mencakup saat untuk minum, kemudahan saat digenggam, maupun kemudahan untuk dibawa kemana-mana baik digenggam maupun kemudahan penyimpanan di dalam tas atau kantong.

3. *Style*

   Style menjadi salah satu penlaian penting dalam membuat sebuah desain. Bentuk yang unik, menarik, enak dilihat, bahkan bentuk yang seksi akan menjadi bahan pertimbangan yang penting dalam mendesain sebuah body botol. Dengn desain yang menarik maka secara tidak langsung akan mempengaruhi pengguna untuk memilihnya.

4. Kerampingan

   Orang akan lebih senang menggunakan sebuah kemasan yang kecil atau ramping akan tetapi dapat memuat isi yang banyak.

Sedangkan untuk menentukan konsep apllicator perlu diperhatikan kriteria sebagai berikut :

1. Kekuatan

   Kekuatan yang dimaksud adalah seberapa kuat dan rapat sistem penguncian antara applicator dan body segingga tidak bocor pada saat digunakan saat minum.

2. *Style*

   Seperti halnya pada *body, style* juga sangat berpengaruh terhadap penilaian applicator. Bentuk applicator yang unik, lucu, model bagus, akan menjadi perhatian bagi para pengguna.

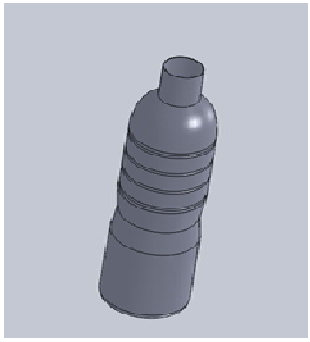
3. Kemudahan

   Sedangkan kemudahan yang dimaksudkan adalah seberapa mudah *applicator* digunakan, tidak tumpah saat digunakan saat minum, steril, dan ergonomis. Kemudahan dalam merawat juga menjadi penilaian penting.

Konsep berdasarkan hasil banchmarking

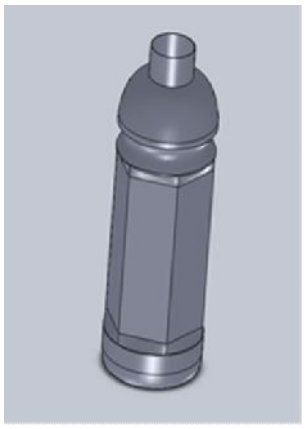
Berdasarkan hasil benchmarking yang telah dilaksanakan, desain body yang diklasifikasikan menjadi empat berdasarkan bentuk bodynya yaitu :

1. Body beralur melingkar

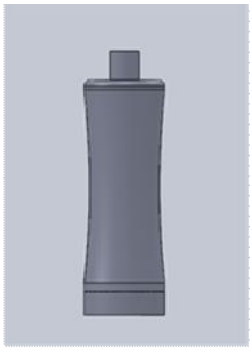


2. Body berleher

3. Body beralur vertical

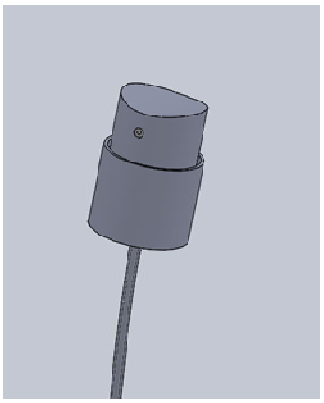


4. Body cekung

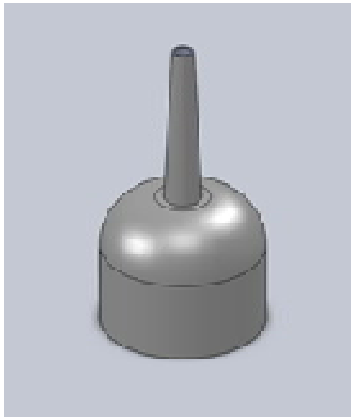


Sedangkan konsep untuk applicator diklasifikasikan berdasarkan cara kerjanya menjadi tujuh yaitu :

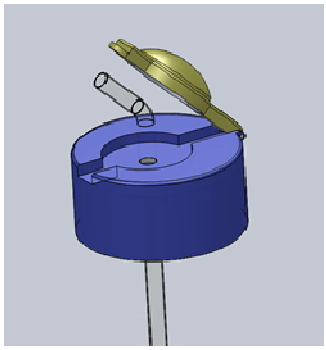
1. Semprot



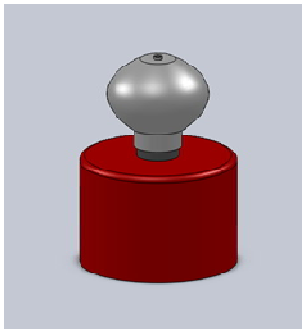
2. Sedot



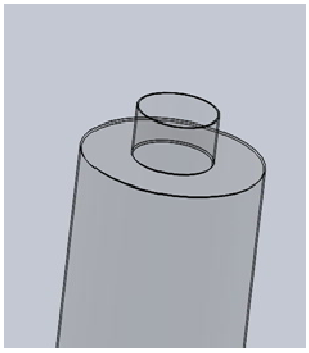
3. Sedot



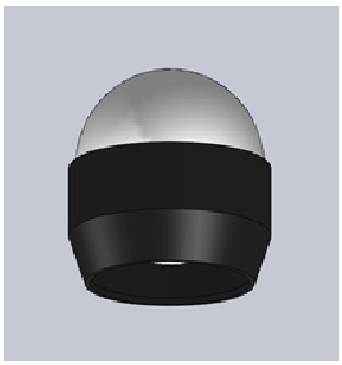
4. Flip



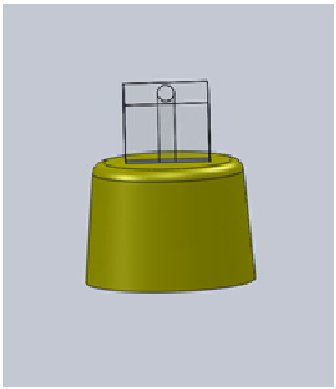
5. Tuang



6. Roll on



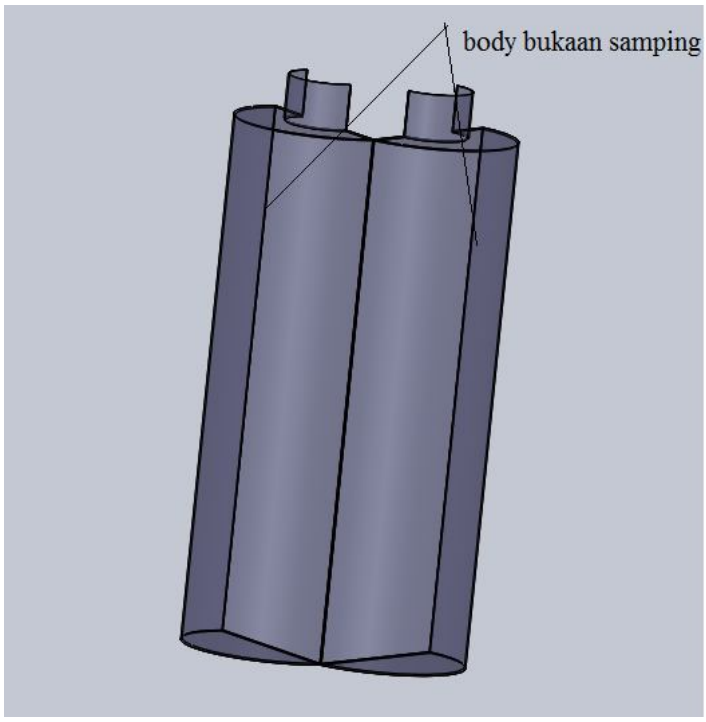
7. Oles

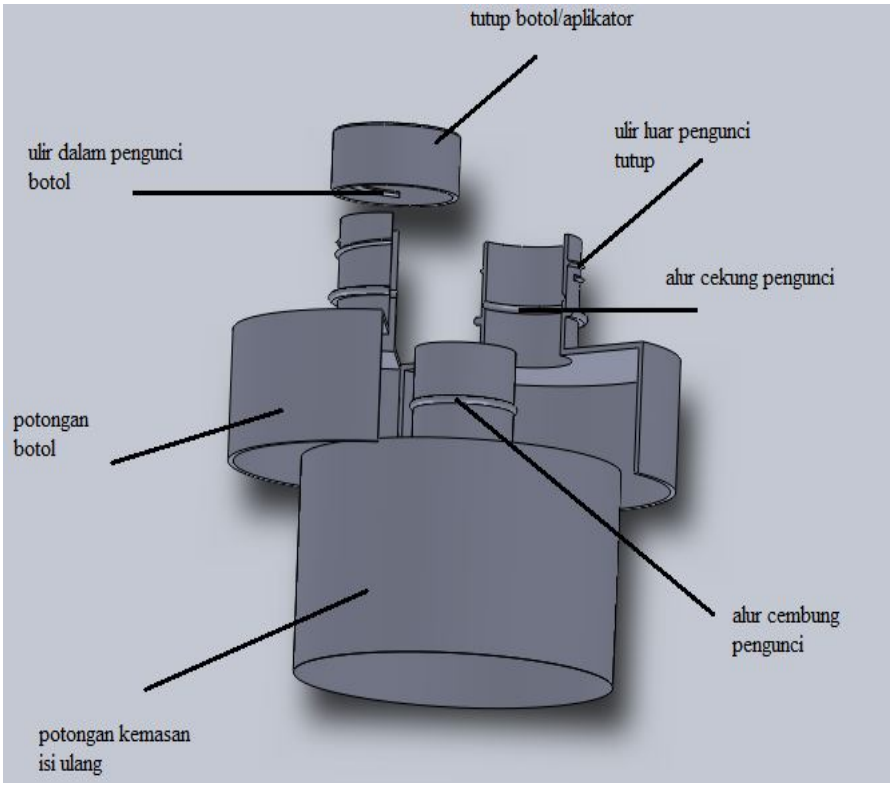


8. Resap

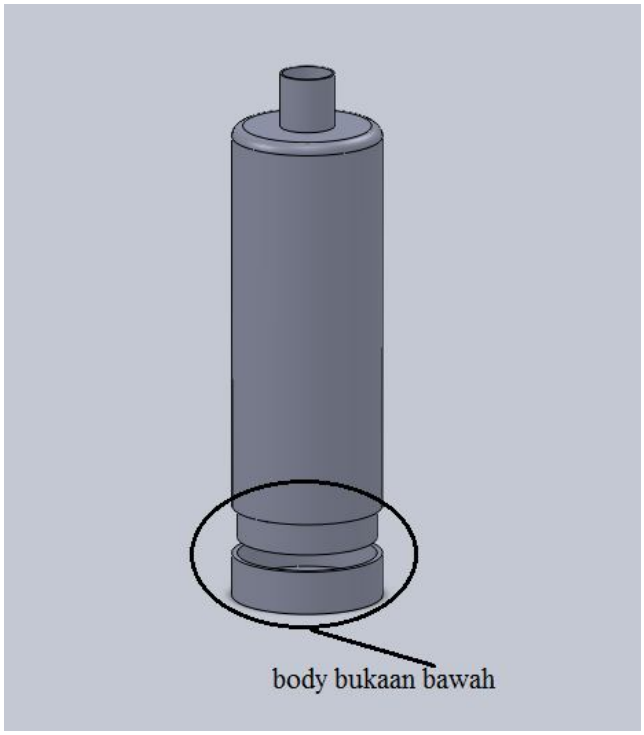
Sistem penguncian *refill* dan cara kerja *refill*

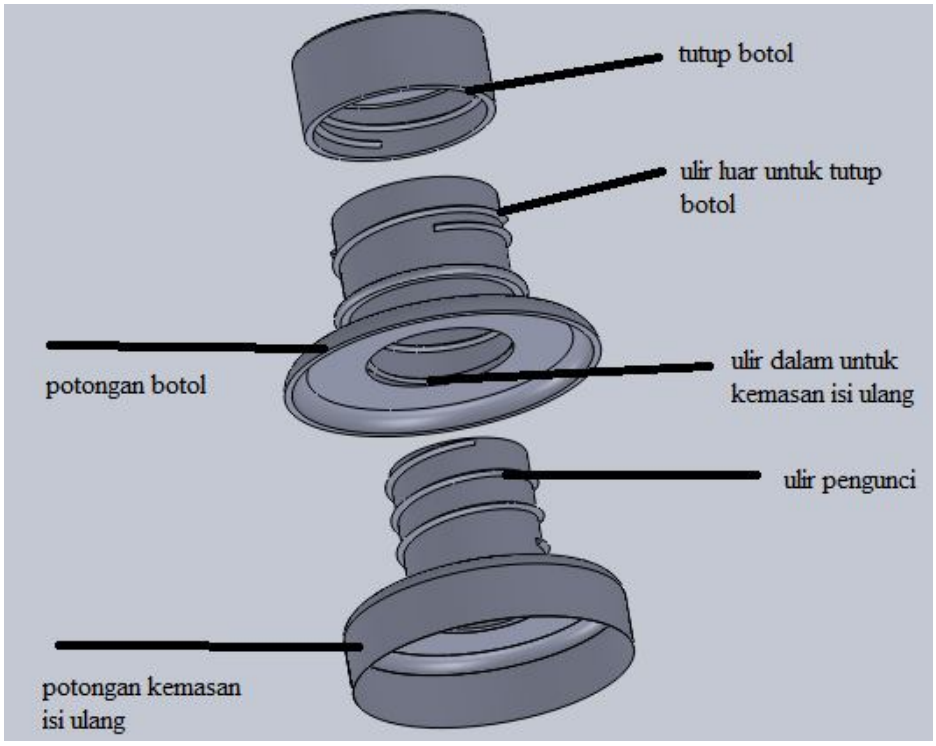
1. Body bukaan samping





2. Body bukaan bawah





Mohon kepada bapak/ibu/saudara untuk memberikan masukan, koreksi, gagasan-gagasan untuk menyempurnakan hasil penelitian. Apapun masukan yang bapak/ibu/saudara berikan akan sangat berarti. Atas partisipasinya kami ucapkan banyak terima kasih.

Penilaian Konsep

==========

Kepada Yth.
Bapak/Ibu/Saudara Responden
Di tempat

Dengan hormat,
Sehubungan dengan pelaksanaan penelitian dengan judul "Pembuatan Prototype Kemasan Refill Konsep Baru", maka kami memohon kesediaan bapak/ibu/saudara untuk meluangkan waktunya guna mengisi form penilaian konsep untuk memilih satu dari bebrapa konsep yang telah tersedia. Semua keterangan yang anda berikan semata-mata hanya untuk kepentingan penelitian. Semua penilaian yang bapak/ibu/saudara berikan akan sangat besar sekali artinya untuk kelancaran penelitian yang saya lakukan. Identitas dan data bapak/ibu/saudara dijamin kerahasiaannya. Atas perhatian dan bantuan yang bapak/ibu/saudara berikan saya ucapkan terima kasih.

Hormat saya,
Muflikhul Amin

Data Responden
Nama :
Alamat :
Pekerjaan :

Tata cara pengisian kolom penilaian :

Berikan nilai pada masing-masing kolom penilaian dimana nilai relatif "lebih baik" (+), jika konsep tersebut lebih baik dari kriteria tersebut. "sama dengan" (0), jika kriteria konsep tersebut sama dengan konsep lainnya. Dan "lebih buruk" (-), bila konsep tetrsebut lebih buruk dari kriteria.

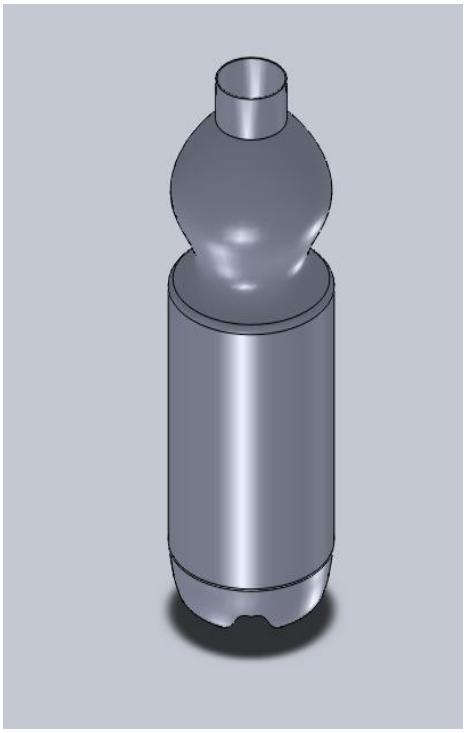
Untuk menilai konsep body botol digunakan empatkriteria yaitu :

1. Persepsi kekokohan
   Ketika melihat suatu desain body maka dapat dinilai kekuatannya dengan melihat lekuk bodynya. Body botol yang polos tanpa lekuk akan kelihatan tidak kokoh, sebaliknya body botol dengan lekuk maka body akan lebih kelihatan kokoh.
2. Kemudahan
   Kriteria kemudahan digunakan untuk menilai seberapa mudah sebuah desain botol pada saat digunakan. Penggunaan disini mencakup saat untuk minum, kemudahan saat digenggam, maupun kemudahan untuk dibawa kemana-mana baik digenggam maupun kemudahan penyimpanan di dalam tas atau kantong.
3. *Style*
   Style menjadi salah satu penlaian penting dalam membuat sebuah desain. Bentuk yang unik, menarik, enak dilihat, bahkan bentuk yang seksi akan menjadi bahan pertimbangan yang penting dalam mendesain sebuah body botol. Dengan desain yang menarik maka secara tidak langsung akan mempengaruhi pengguna untuk memilihnya.
4. Kerampingan
   Orang akan lebih senang menggunakan sebuah kemasan yang kecil atau ramping akan tetapi dapat memuat isi yang banyak.

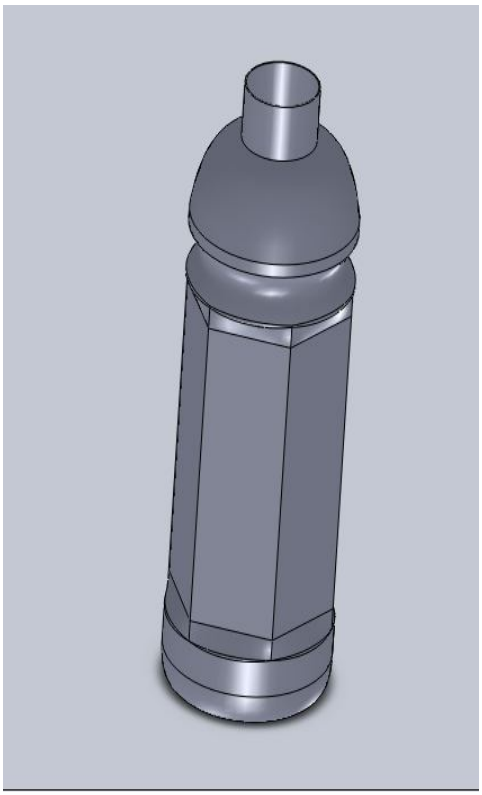
Sedangkan untuk menentukan konsep apllicator dengan menggunakan kriteria sebagai berikut :

1. Kekuatan
   Kekuatan yang dimaksud adalah seberapa kuat dan rapat sistem penguncian antara applicator dan body sehingga tidak bocor pada saat digunakan saat minum.
2. *Style*
   Seperti halnya pada *body*, *style* juga sangat berpengaruh terhadap penilaian applicator. Bentuk applicator yang unik, lucu, model bagus, akan menjadi perhatian bagi para pengguna.
3. Kemudahan
   Sedangkan kemudahan yang dimaksudkan adalah seberapa mudah *applicator* digunakan, tidak tumpah saat digunakan saat minum, steril, dan ergonomis. Kemudahan dalam merawat juga menjadi penilaian penting.

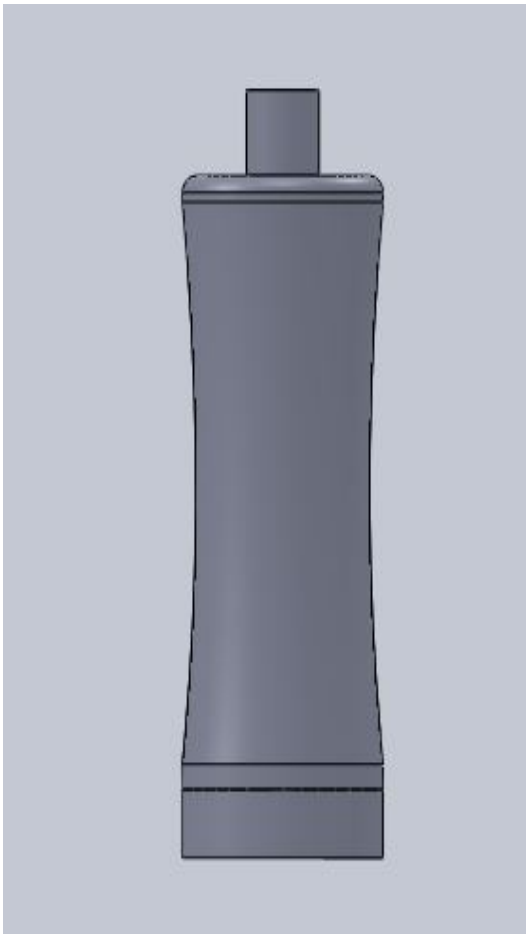
Konsep Body Berleher



Konsep Body Beralur Vertical



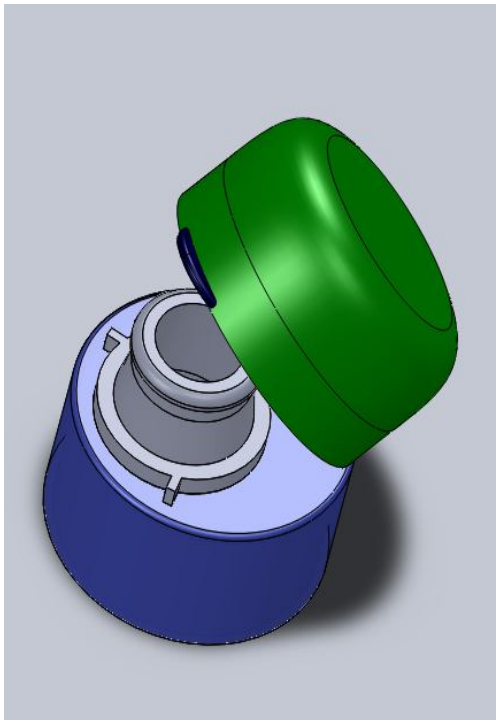
Konsep Body Cekung



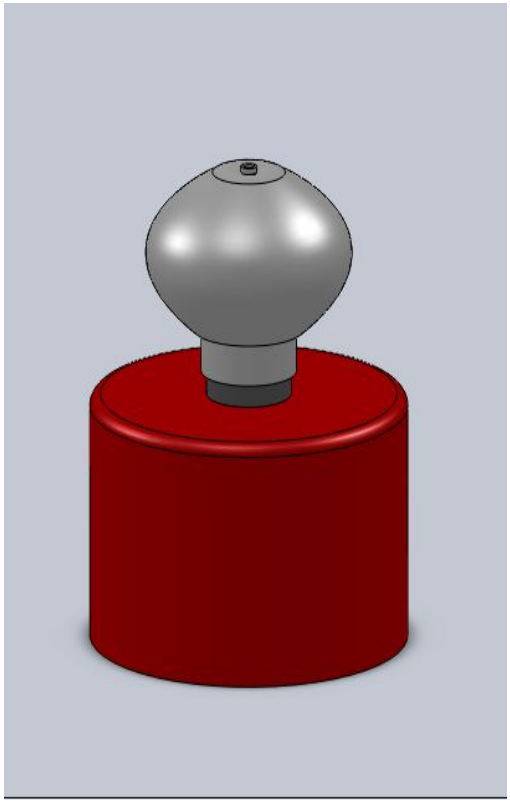
Tabel Penilaian Botol Kemasan

	Body Cekung	Body Alur Vertical	Body Cekung
Persepsi kekokohan			
Kemudahan			
Style			
Kerampingan			
Jumlah +			
Jumlah 0			
Jumlah -			
Nilai akhir			
Lanjutkan ?			

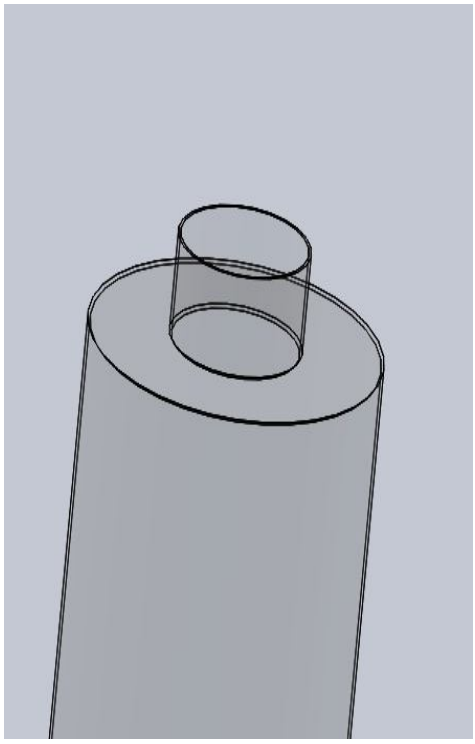
Applicator Flip



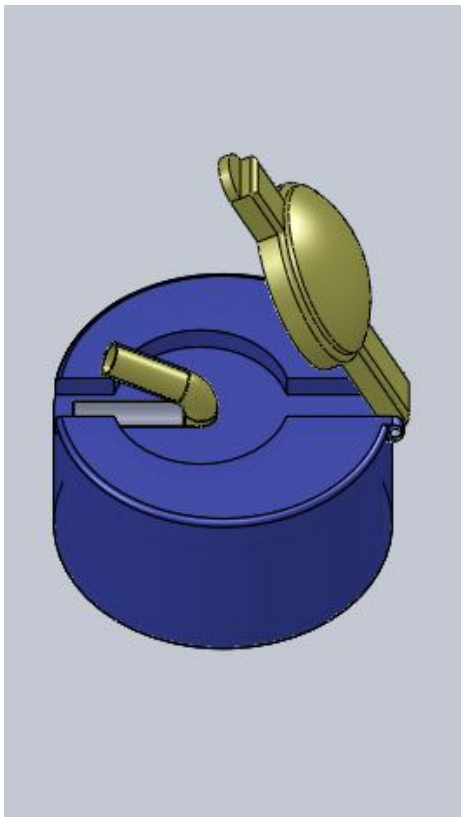
Applicator Pull



Applicator Tuang



Applicator Sedot



Tabel Penilaian Aplikator

	Flip	Pull	Tuang	Sedot
Kekuatan				
Style				
Kemudahan				
Jumlah +				
Jumlah 0				
Jumlah 0				
Nilai akhir				
Lanjutkan **?**				

Tabel Penilaian Konsep *Body*

Responden ke	konsep body		
	Berleher	alur vertikal	cekung
1	√		
2	√		
3		√	
4		√	
5		√	
6			√
7		√	
8		√	
9			√
10		√	
11	√		
12			√
13			√
14	√		
15	√		
16		√	
17	√		
18	√		
19		√	
20		√	
21		√	
22		√	
23		√	
24		√	
25	√		
26		√	
27		√	
28	√		
29		√	
30		√	
31	√		
32			√
33		√	
34		√	
35			√
jumlah	10	19	6

Tabel Penilaian Konsep *Applicator*

Responden ke	konsep body			
	Flip	pull	tuang	sedot
1			√	
2		√		
3	√			
4			√	
5	√			
6		√		
7	√			
8				√
9	√			
10	√			
11				√
12				√
13	√			
14				√
15				√
16				√
17		√		
18		√		
19			√	
20	√			
21	√			
22				√
23				√
24				√
25	√			
26	√			
27	√			
28				√
29	√			
30	√			
31			√	
32		√		
33	√			
34				√
35	√			
jumlah	15	5	4	11

Tabel Hasil Pencarian Paten

Kata kunci	No Paten	Judul Paten	Inventor	Tanggal Publikasi
Refill Bottle	US20120090733	Refill Perfume Bottle	Carmit Turgeman et al	19/04/2014
	US8261943	Spray Bottle With Refill Cartridge	Jae K Sim et al	11/09/2012
	US8528784	Spray Bottle With Refill Cartridge	Jae K Sim et al	10/09/2013
	USD644521	Refill Bottle	Laurie Howell et al	06/09/2011
	US20130340886	Satellite Spray Bottle Use And Refill System	Thomas Perelli et al	26/12/2013
	US8616420	Bottle Clouser Wiyh Breakaway Skirt For Non-Refillable Bottles	Georgy Schrner et al	13/12/2013
	USD651518	Refill Bottle	Christhoper Leonard Padain et al	03/01/2012
	USD650282	Refill Bottle	Christhoper Leonard Padain et al	31/12/2011
	USD646171	Refill Bottle	Laurie Howell et al	04/10/2011
	USD644928	Refill Bottle	Laurie Howell et al	13/09/2011
	USD644519	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644529	Refill Bottle	Christhoper Leonard Padain et al	06/09/2011
	USD644517	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644516	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644520	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644525	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644524	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644527	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644530	Refill Bottle	Christhoper Leonard Padain et al	06/09/2011
	USD644522	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644518	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644526	Refill Bottle	Laurie Howell et al	06/09/2011
	USD644523	Refill Bottle	Laurie Howell et al	06/09/2011
	USD650281	Refill Bottle	Christhoper Leonard Padain et al	13/12/2011
	USD610012	Refill Bottle	John W.R. MacDonald et al	16/02/2010
	US20140041753	A Fluid Refill System	Stephane Beranger et al	13/02/2014

Refill Drinking Bottle	US20130026125	Drinking Bottle Assembly	John S. Letchinger et al	13/01/2013
	US20120103926	Sports Bottle And Fluid Dispensing System, Device, And Methode	Fadi Ibsies et al	03/05/2012
	US20110278216	Drinking Container And Filter Assembly	Kenneth W. Hull et al	17/11/2011
	US20110278206	Drinking Container And Filter Assembly	Kenneth W. Hull et al	17/11/2011
	US8245870	Container Cap With Tether	Larry T. McKinny et al	21/08/2012
	US8376134	Drink Bottle With Multiple Drink Dosage Device	Philip Andrew Underwood et al	19/02/2013
	US8505783	Squeezable Bottle	Yoram Gill et al	13/08/2013
	US20120024812	Water Bottle With Multiple Drink Dosage Device	Philip Andrew Underwood et al	02/02/2012
	US20100123019	Bottle Adaptor For Personal Hydration System	Raanan Zehavi et al	20/05/2010
	US8602278	Aerodynamic Bottle Support Cage For Bicycle	Todd E. Sweighart et al	10/12/2013
	US20120234432	Bottle Filling Device	Jean Phillippe Lamboux et al	20/09/2012
	US8684050	Spill Proof Drink Dispensing System, Kit, And Method	William Jimroglou et al	01/04/2014
	US20100230380	Tray And Reusable Bottle Arrangemen For Storage And Handling	Patrick Spivey et al	16/09/2010
	US20110303561	Cap For Drinking Container	Zu Yheng et al	15/12/2011
	US20130319915	Water Bottle With Flow Meter	Robert Gellibolian et al	05/12/2013
	US8146758	Compartmentalized Baby Bottle And Associated Method	Travis Peres et al	03/04/2012
	US20130214007	Water Botlle With Check Valve	Armond Simonian et al	22/08/2013
	US20140131230	Drinking Vessel	Jeff Steininger et al	15/05/2014
	US20120248141	Drinking Water Dispenser	Kazutoshi Sano et al	04/10/2012
	US8201699	Interconecting Bottle Utilized To Create Structures	Peter Zummo et al	19/06/2012
	US8448772	Appartus And Method For Water Bottle Return	Patrick E. Wind et al	28/05/2013
	US8397962	Hydration Method EmployingReplenishable Drinking Vessel	Thomas P O'Connel et al	19/05/2013
	US8474495	Device For Transfer Product From Refill Container To Applicator Container Without Exposure To Atmosphere	Ian Singleton et al	02/07/2013
	US20110165298	Collapsible Bottle And Method Of Using Same	Seung Hong et al	07/07/2011
	US20100307976	Drinking Water Purification Device	Joseph A. King et al	09/12/2010

Refill Drinking Applicator	US8474495	Device For Transfer Product From Refill Container To Applicator Container Without Exposure To Atmosphere	Ian Singleton et al	02/07/2013
	US20140078857	Apparatus For Mixing Measured Amount Of Concentrate With a Dilutant And Method Of Using Same	Steven D. Nelson et al	20/03/2014
	US20120318706	Rapid Deployment First Aid Kit And System For Refilling	Michael Holstein et al	20/12/2012
	US8679077	System And Method For Delivering Moisturizing Liquid To Lips Of a Subject	Oded Elish et al	25/03/2014
	US8688277	Appartus And Method For Brewed And Espresso Drink Generation	Charles F. Studor et al	01/04/2014
	US8308388	Fluid Delivery System	Gordon Gerald Guay et al	13/11/2012
	US8708194	Dispenser With Movable Dispensing Component Anchored By a Filament	Amanda R. Pascatore et al	29/04/2014
	US8633145	Method For Removal Of Cosmetic Residue From Surfaces	Lynn Dowdle et al	21/01/2014
	US20140011163	Hand-Held Vibratory Dispensing Instrument For Applying Therapeutik Compositions To Teeth And Method Of Using Same	R. Eric Montgomery et al	09/01/2014
	US8074827	Beverage Cup For Drinking Use In Spacecraft Or Weightless Environtment	Donald Roy Pettit et al	13/12/2011
	US8631941	Ampoule Dispenser Assembly And Process	Francesca Fazzolari et al	21/01/2014
	US8591134	Liquid Deliverry Device	Ryan Joseph Cahill et al	26/11/2013
	US20110297094	Calf Feeding Bottle	Hans-Joachim Holm et al	08/12/2011
	US20130255735	Multi-Fold Umbrella Combined With Writing Implement Or Cosmetic Case	Ashoke Banerjee et al	03/10/2013
	US20120156337	Appartus And Method For Brewed And Espresso Drink Generation	Charles F. Studor et al	21/06/2012
	US8585308	Multi-Chambered Dispenser And Process	Richard J. May et al	19/11/2013
	US20110174837	Appartus For Reconstituting And Applying Liquids And Method Of Using Same	Steeven D. Nelson et al	21/07/2011
	US20120219685	Drinkware Rimming Appartus And Method	Mare Radow et al	30/08/2012
	US8297295	Multi-Fold Umbrella Combined With Writing Implement Or Cosmetic Case	Ashoke Banerjee et al	30/10/2013
	US8128006	Appartus And Method For Dispensing Flavoring Substance	Jennifer Goldshein et al	06/03/2012
	US8528736	Frangible Container With Hinge Cover	Bradley Donald Teys et al	10/09/2013

Drinking Bottle Assembly	US20140061248	Dinking Bottle And Cap Assembly	Matt Hoskins et al	06/03/2014
	US20130026125	Drinking Bottle Assembly	John S. Letchinger et al	31/01/2013
	US8408410	Reusable Drinking Straw Holder With Bottle Neck Securing Assembly	Erez Raman et al	02/04/2013
	US8733567	Bottle Caping Assembly	Daniel A. Dopps et al	27/05/2014
	US8505783	Squeezable Bottle	Yoram Gill et al	13/08/2013
	US20110198361	Flip Straw Bottle Cap With Loop Handle Storage Spout	Elisa Chen et al	15/08/2011
	US8727147	Bottle Assembly Having Bottom Vent	Bernard J. Kemper et al	20/05/2014
	US20110278216	Drinking Container And Filter Assembly	Kenneth W. Hull et al	17/11/2011
	US20110278206	Drinking Container And Filter Assembly	Kenneth W. Hull et al	17/11/2011
	US20140131302	Removable Bottle Cap Assembly With Internal Storage Compartment	Timithy Malone et al	15/05/2014
	US8550269	Drinking Bottle And Lid With Cover For Drink Spout	Marvin Lane et al	08/10/2013
	US8672123	Dry And Wet Mixing Baby Bottle	Mario Vallejo et al	18/03/2014
	US8313644	Bootle With Integrated Filtration Assembly That Is Manual Operated Using Plunger	Jordan Harris et al	20/11/201
	US20120043293	Nipple For An Infant Bottle Assembly And An Infant Bottle Assembly Having Such a Nipple	Raymond G. Bryan et al	23/02/2012
	US20110284491	Nipple For An Infant Bottle Assembly And An Infant Bottle Assembly Having Such a Nipple	Raymond G. Bryan et al	24/02/2012
	US20090188885	Replaceble Bottle Cap Assembly	Patrick Myron Nichols et al	30/07/2009
	US20090200260	Bottle Closure Assembly	Jason Durbin et al	13/08/2009
	US20120168451	Brinking Cup That Rotatably Atteches To a PlasticBottle For Clouser And Protection	Dong Ki Lee et al	05/07/2012

Locking Bottle Lids	US8020415	Locking Pill Bottle	Stampp W. Corbin et al	20-Sep-11
	US8662330	Lockable Cap for Medical Prescription Bottle	Joseph C. Simpson et al	04-Mar-14
	US8237541	Bottle Cap with Lock	Chiu Sung Wang et al	07-Aug-12
	US20110139741	Locking Pill Bottle	Joseph John Gartner et al	16-Jun-11
	US 8550269	Drink Bottle and Lid with Cover for Drink Spout	Marvin Lane et al	08-Oct-13
	US20130319966	Beverage Bottle and Lid with Back Button Release and Button Lock	Marvin Lane et al	05-Dec-13
	US20130341298	Bottle Lock	Henry Fisher Jones et al	26-Dec-13
	EP2532601B1	Drink Bottle and Lid with Cover for Drink Spout	Marvin Lane et al	21-May-14
	US8286819	Pail with Locking Lid	Glenn H. Morris, Jr. et al	16-Oct-12
	US20130134121	Locking Cap Apparatus and Related Methods	Protectrx LLC. et al	30-May-13
	US8517193	Combination Locking Bottle Holder	Steven Douglas Small et al	27-Aug-13
	US8286821	Accessory Lid for Bottle	Jennifer M Mejia et al	16-Oct-12
	US8443994	Tethered Bottle Cap Assembly with Means to Retain A Detached Cap Portain	Michael C. Desselle et al	21-May-13
	US8484785	Combination Handle Locking and Beverage Container Opener	Robert M. Kristiansen et al	16-Jul-13
	US20130003487	Small Bottle Shaker	Nanci Ballard et al	03-Jan-13
	US8443993	Bottle Cap Assembly with Means to Retain A Detached Cap Portion	Michael C. Desselle et al	21-May-13
	US8438951	Pill Bottle Opener	Patrick A.McCabe	14-May-13

Tabel Perangkingan Paten Relevan

Kata kunci	No Paten	Judul Paten	Penilaian Relevansi			
			0	1	2	3
Refill Bottle	US20120090733	Refill Perfume Bottle	√			
	US8261943	Spray Bottle With Refill Cartridge	√			
	US8528784	Spray Bottle With Refill Cartridge	√			
	USD644521	Refill Bottle	√			
	US20130340886	Satellite Spray Bottle Use And Refill System	√			
	US8616420	Bottle Clouser Wiyh Breakaway Skirt For Non-Refillable Bottles	√			
	USD651518	Refill Bottle	√			
	USD650282	Refill Bottle	√			
	USD646171	Refill Bottle	√			
	USD644928	Refill Bottle	√			
	USD644519	Refill Bottle	√			
	USD644529	Refill Bottle	√			
	USD644517	Refill Bottle	√			
	USD644516	Refill Bottle	√			
	USD644520	Refill Bottle	√			
	USD644525	Refill Bottle	√			
	USD644524	Refill Bottle	√			
	USD644527	Refill Bottle	√			
	USD644530	Refill Bottle	√			
	USD644522	Refill Bottle	√			
	USD644518	Refill Bottle	√			
	USD644526	Refill Bottle	√			
	USD644523	Refill Bottle	√			
	USD650281	Refill Bottle	√			
	USD610012	Refill Bottle	√			
	US20140041753	A Fluid Refill System	√			

Kata kunci	No Paten	Judul Paten	Penilaian Relevansi			
			0	1	2	3
Refill Drinking Bottle	US20130026125	Drinking Bottle Assembly				√
	US20120103926	Sports Bottle And Fluid Dispensing System, Device, And Methode		√		
	US20110278216	Drinking Container And Filter Assembly	√			
	US20110278206	Drinking Container And Filter Assembly	√			
	US8245870	Container Cap With Tether	√			
	US8376134	Drink Bottle With Multiple Drink Dosage Device	√			
	US8505783	Squeezable Bottle	√			
	US20120024812	Water Bottle With Multiple Drink Dosage Device	√			
	US20100123019	Bottle Adaptor For Personal Hydration System	√			
	US8602278	Aerodynamic Bottle Support Cage For Bicycle	√			
	US20120234432	Bottle Filling Device		√		
	US8684050	Spill Proof Drink Dispensing System, Kit, And Method	√			
	US20100230380	Tray And Reusable Bottle Arrangemen For Storage And Handling	√			
	US20110303561	Cap For Drinking Container	√			
	US20130319915	Water Bottle With Flow Meter		√		
	US8146758	Compartmentalized Baby Bottle And Associated Method	√			
	US20130214007	Water Botlle With Check Valve	√			
	US20140131230	Drinking Vessel	√			
	US20120248141	Drinking Water Dispenser	√			
	US8201699	Interconecting Bottle Utilized To Create Structures	√			
	US8448772	Appartus And Method For Water Bottle Return	√			

Kata kunci	No Paten	Judul Paten	Penilaian Relevansi			
			1	2	3	0
Refill Drinking Applicator	US8474495	Device For Transfer Product From Refill Container To Applicator Container Without Exposure To Atmosphere			√	
	US20140078857	Apparatus For Mixing Measured Amount Of Concentrate With a Dilutant And Method Of Using Same	√			
	US20120318706	Rapid Deployment First Aid Kit And System For Refilling	√			
	US8679077	System And Method For Delivering Moisturizing Liquid To Lips Of a Subject	√			
	US8688277	Appartus And Method For Brewed And Espresso Drink Generation	√			
	US8308388	Fluid Delivery System	√			
	US8708194	Dispenser With Movable Dispensing Component Anchored By a Filament	√			
	US8633145	Method For Removal Of Cosmetic Residue From Surfaces	√			
	US20140011163	Hand-Held Vibratory Dispensing Instrument For Applying Therapeutik Compositions To Teeth And Method Of Using Same	√			
	US8074827	Beverage Cup For Drinking Use In Spacecraft Or Weightless Environtment	√			
	US8631941	Ampoule Dispenser Assembly And Process	√			
	US8591134	Liquid Deliverry Device	√			
	US20110297094	Calf Feeding Bottle	√			
	US20130255735	Multi-Fold Umbrella Combined With Writing Implement Or Cosmetic Case	√			
	US20120156337	Appartus And Method For Brewed And Espresso Drink Generation	√			
	US8585308	Multi-Chambered Dispenser And Process	√			
	US20110174837	Appartus For Reconstituting And Applying Liquids And Method Of Using Same	√			
	US20120219685	Drinkware Rimming Appartus And Method	√			
	US8297295	Multi-Fold Umbrella Combined With Writing Implement Or Cosmetic Case	√			
	US8128006	Appartus And Method For Dispensing Flavoring Substance	√			

Kata kunci	No Paten	Judul Paten	Penilaian Relevansi			
			0	1	2	3
Drinking Bottle Assembly	US20140061248	Dinking Bottle And Cap Assembly		√		
	US20130026125	Drinking Bottle Assembly				√
	US8408410	Reusable Drinking Straw Holder With Bottle Neck Securing Assembly	√			
	US8733567	Bottle Caping Assembly		√		
	US8505783	Squeezable Bottle	√			
	US20110198361	Flip Straw Bottle Cap With Loop Handle Storage Spout	√			
	US8727147	Bottle Assembly Having Bottom Vent	√			
	US20110278216	Drinking Container And Filter Assembly		√		
	US20110278206	Drinking Container And Filter Assembly		√		
	US20140131302	Removable Bottle Cap Assembly With Internal Storage Compartment		√		
	US8550269	Drinking Bottle And Lid With Cover For Drink Spout			√	
	US8672123	Dry And Wet Mixing Baby Bottle	√			
	US8313644	Bootle With Integrated Filtration Assembly That Is Manual Operated Using Plunger	√			
	US20120043293	Nipple For An Infant Bottle Assembly And An Infant Bottle Assembly Having Such a Nipple	√			
	US20110284491	Nipple For An Infant Bottle Assembly And An Infant Bottle Assembly Having Such a Nipple	√			
	US20090188885	Replaceble Bottle Cap Assembly				√
	US20090200260	Bottle Closure Assembly	√			
	US20120168451	Brinking Cup That Rotatably Atteches To a PlasticBottle For Clouser And Protection	√			

Locking Bottle Lids	US8020415	Locking Pill Bottle	√			
	US8662330	Lockable Cap for Medical Prescription Bottle	√			
	US8237541	Bottle Cap with Lock	√			
	US20110139741	Locking Pill Bottle	√			
	US 8550269	Drink Bottle and Lid with Cover for Drink Spout			√	
	US20130319966	Beverage Bottle and Lid with Back Button Release and Button Lock				√
	US20130341298	Bottle Lock	√			
	US8286819	Pail with Locking Lid	√			
	US20130134121	Locking Cap Apparatus and Related Methods	√			
	US8517193	Combination Locking Bottle Holder	√			
	US8286821	Accessory Lid for Bottle		√		
	US8443994	Tethered Bottle Cap Assembly with Means to Retain A Detached Cap Portain		√		
	US8484785	Combination Handle Locking and Beverage Container Opener	√			
	US20130003487	Small Bottle Shaker	√			

US 20130026125A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2013/0026125 A1

(43) Pub. Date: Jan. 31, 2013

Letchinger et al.

(54) **DRINKING BOTTLE ASSEMBLY**

(76) Inventors: **John S. Letchinger**, Glencoe, IL (US); **Thomas J. Ring**, Palos Heights, IL (US)

(21) Appl. No.: **13/568,576**

(22) Filed: **Aug. 7, 2012**

Related U.S. Application Data

(62) Division of application No. 12/245,464, filed on Oct. 3, 2008, now abandoned.

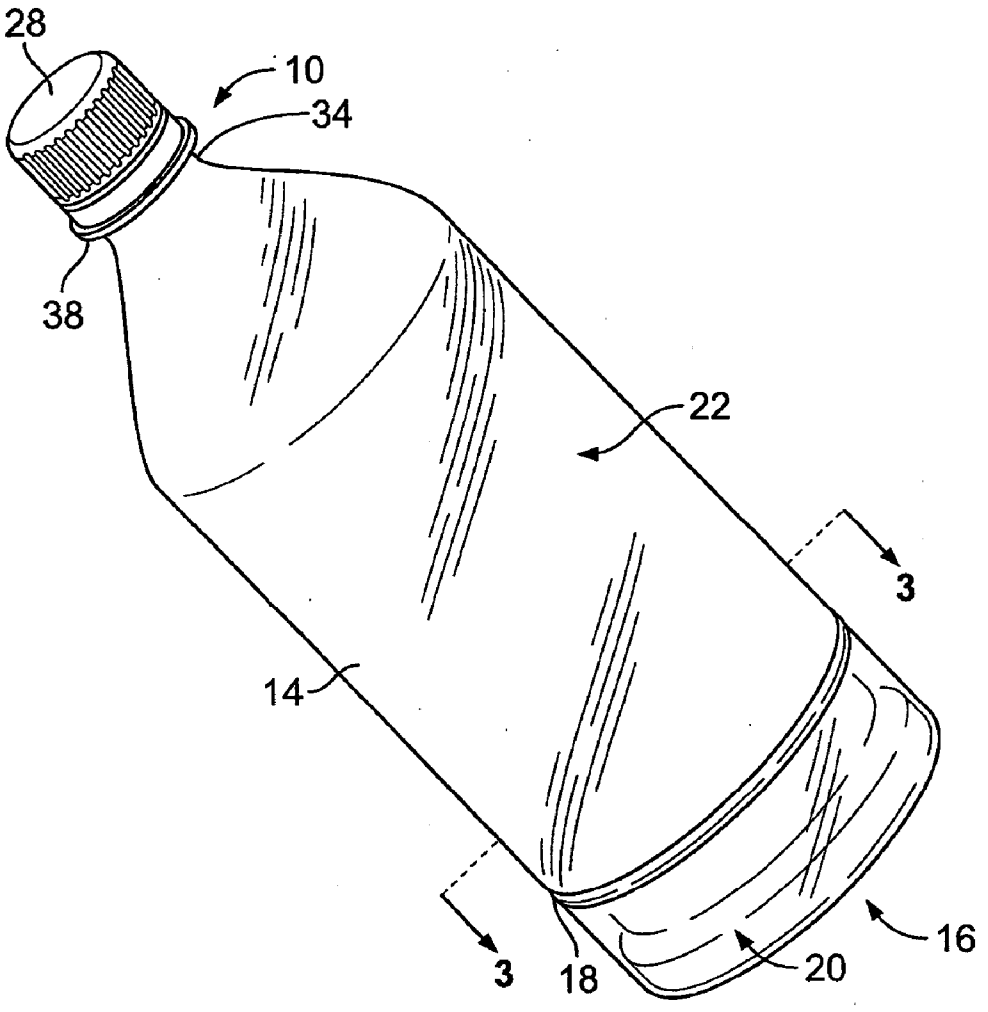
Publication Classification

(51) **Int. Cl.**
B65D 1/02 (2006.01)

(52) **U.S. Cl.** **215/40**; 215/200

(57) **ABSTRACT**

A drinking container including a bottom, a sidewall and a neck which define an interior of the container, wherein the bottom defines an opening of a lesser dimension than the bottom. Included is a panel adapted to cover the opening and enclose the interior of the container wherein the panel is of a dimension less than a dimension of the container formed by an exterior surface of the sidewall positioned adjacent to the bottom and wherein the panel is releasably securable to the bottom to enclose the interior of the container.



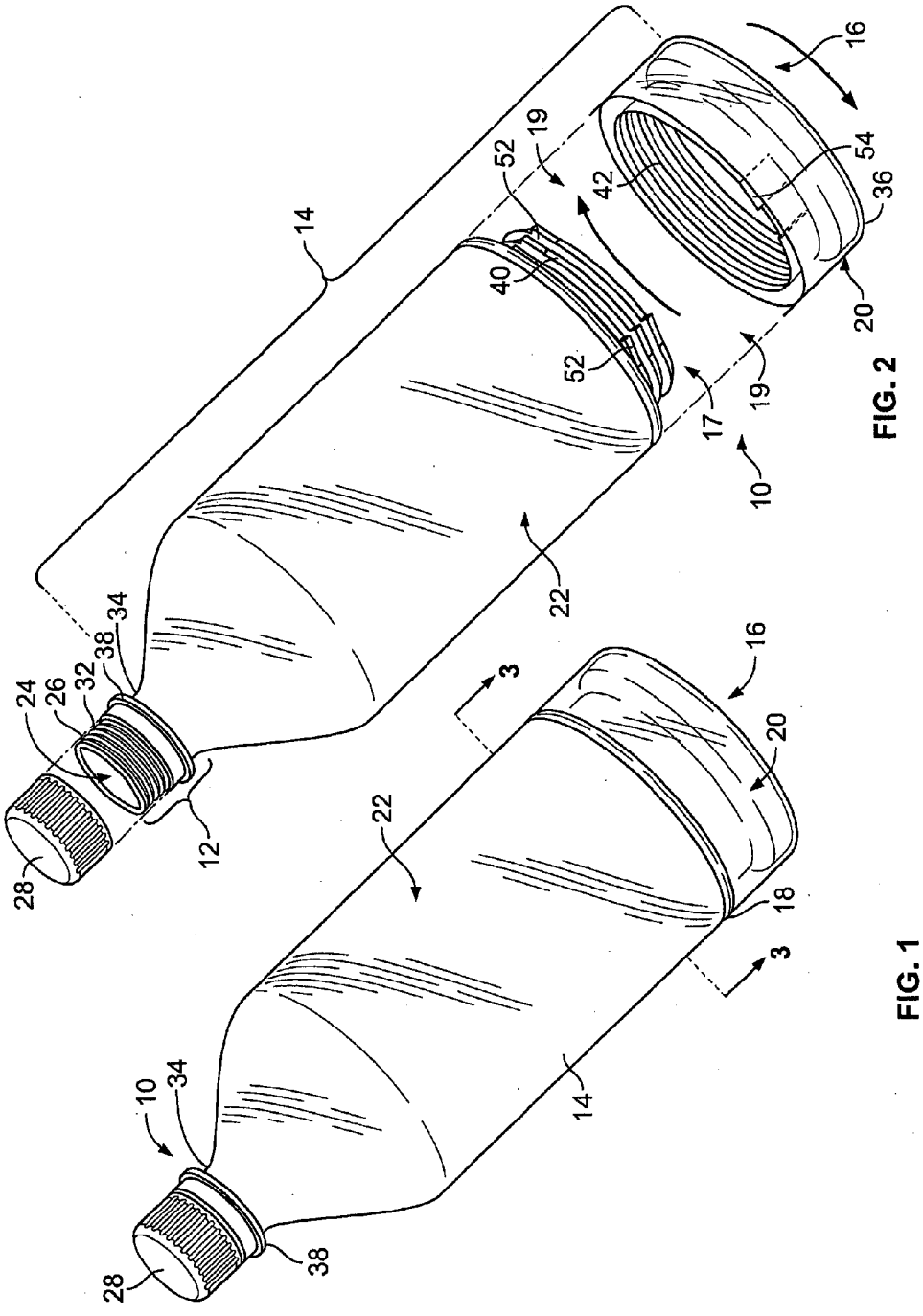

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FIG. 2

FIG. 1

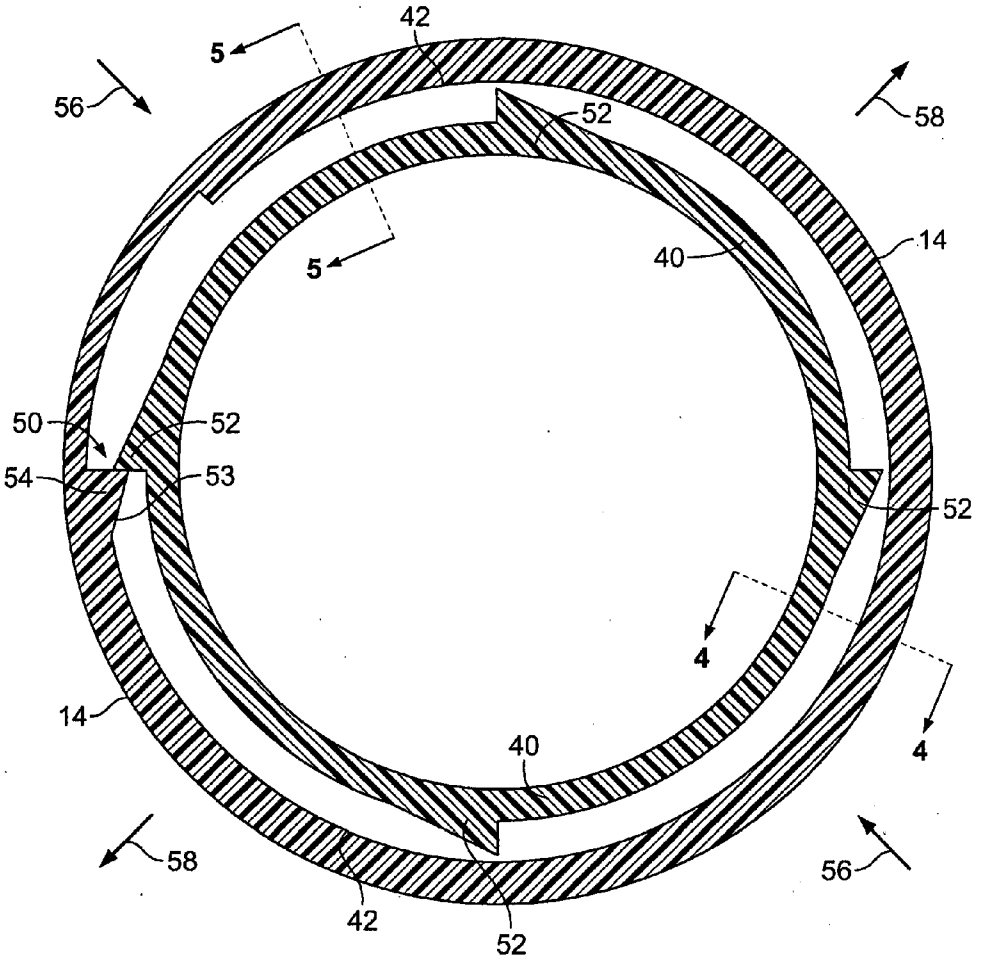


FIG. 3

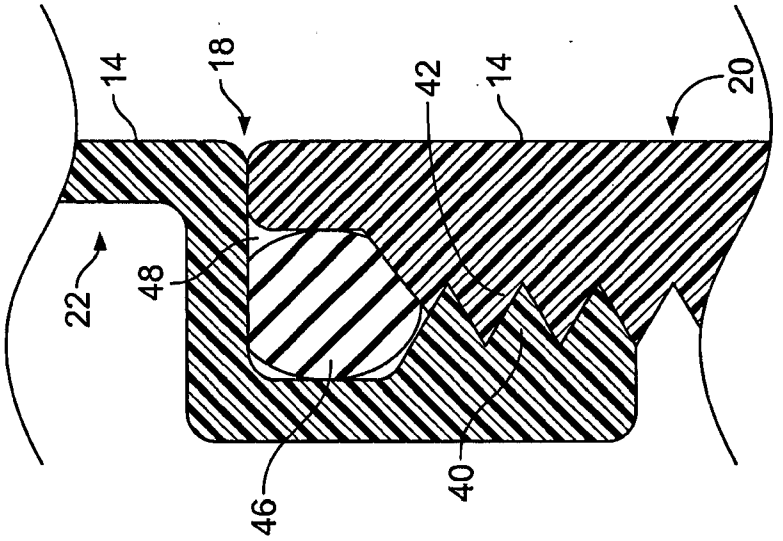


FIG. 5

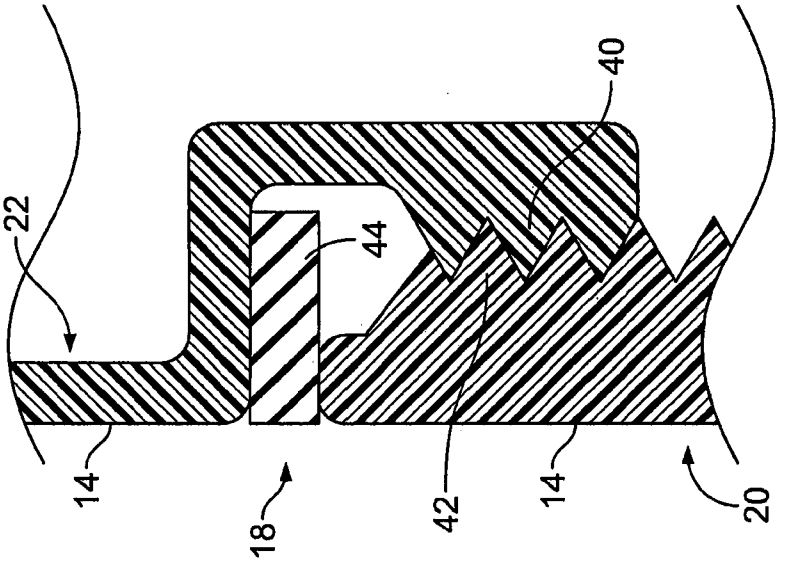


FIG. 4

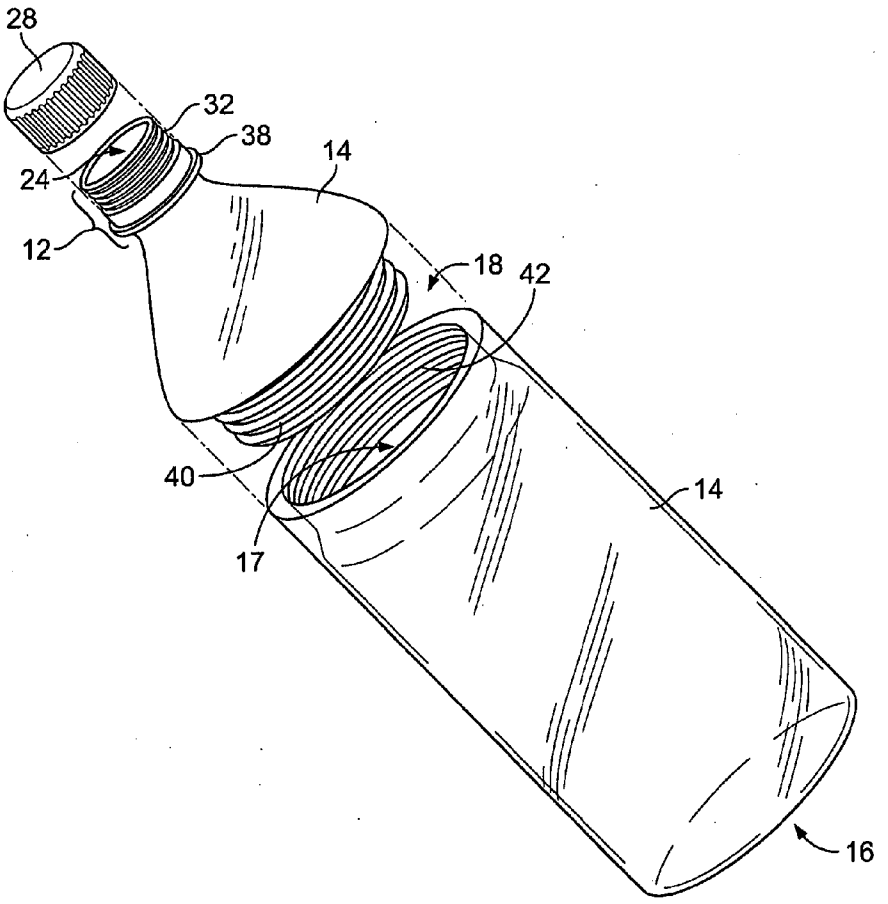


FIG. 6

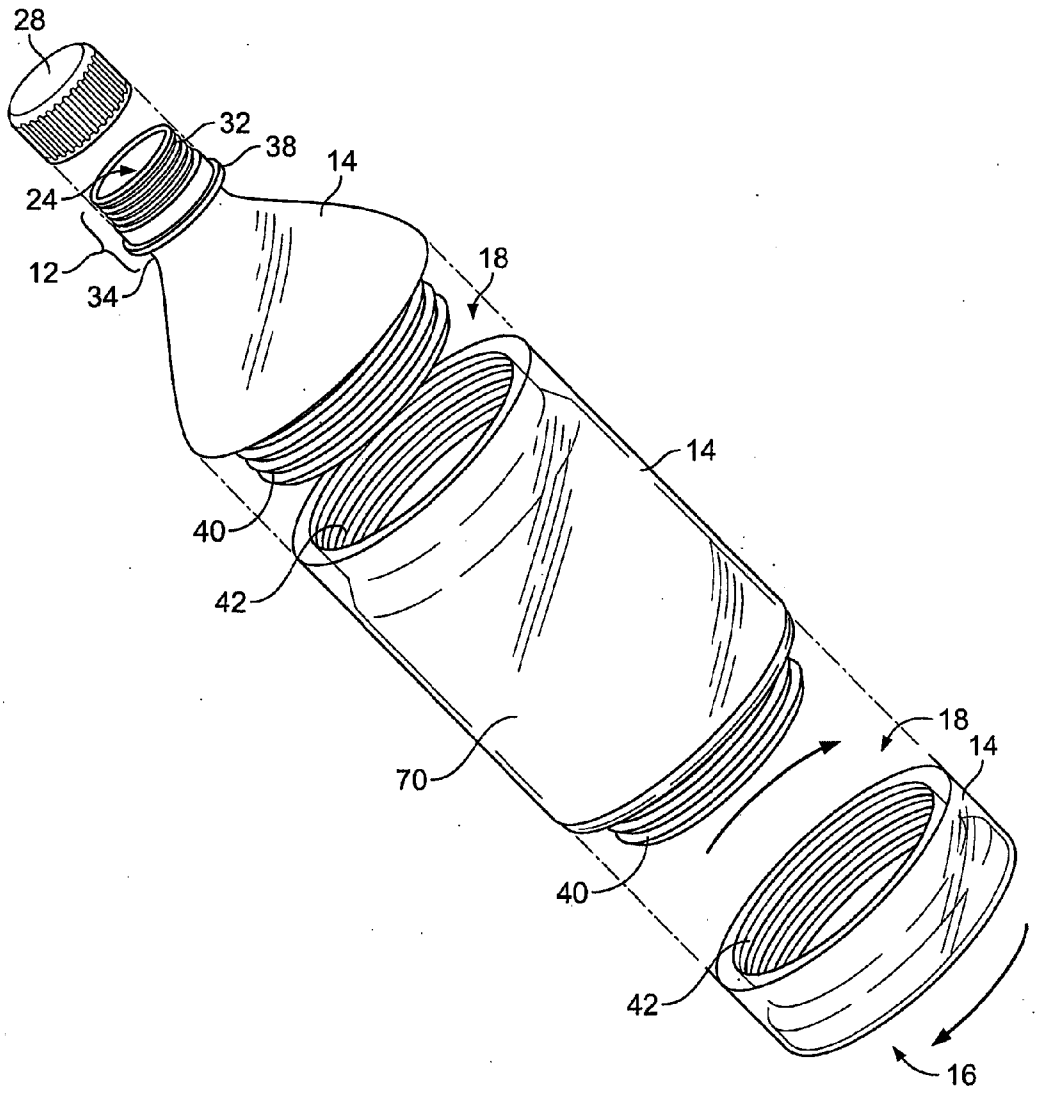


FIG. 7

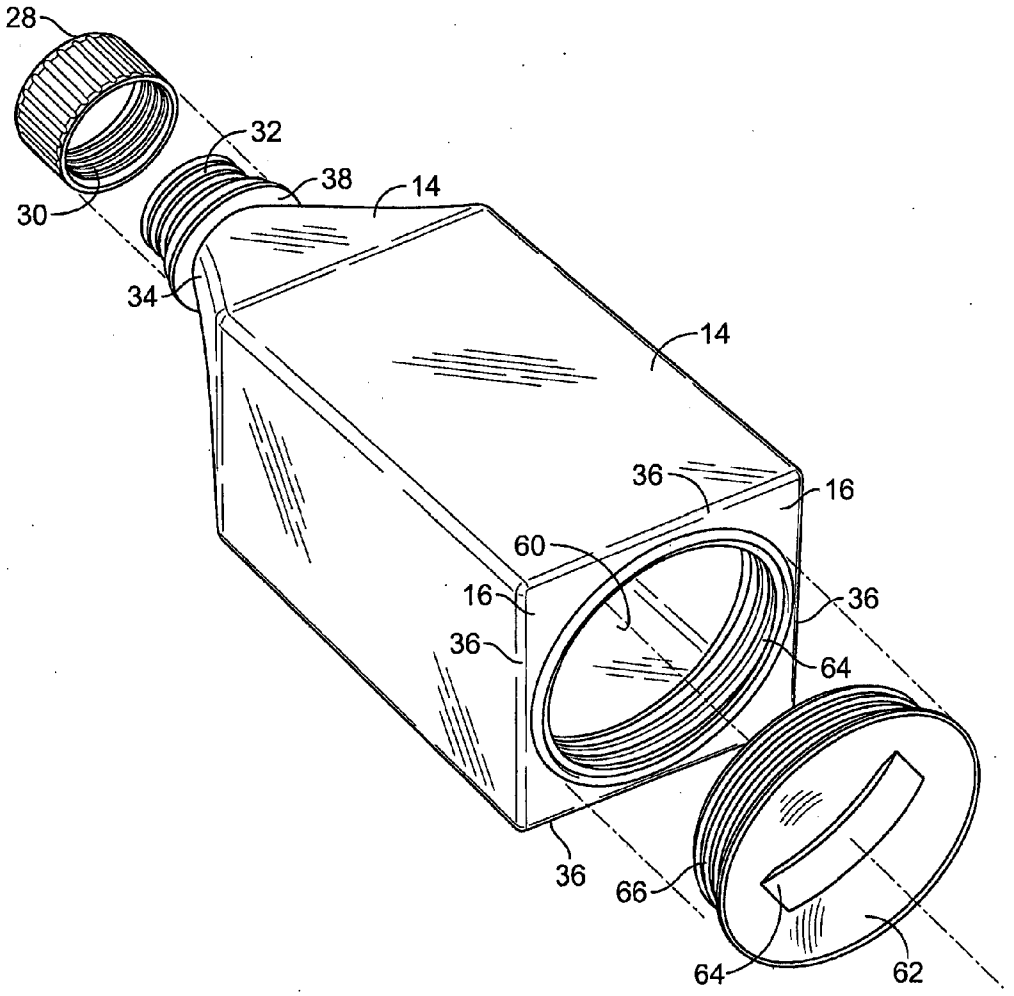


FIG. 8

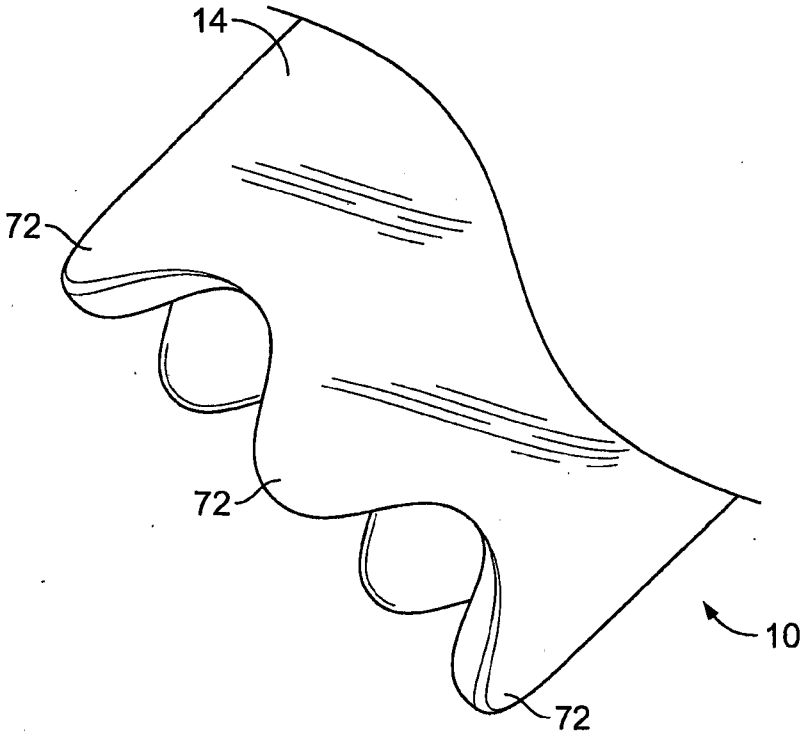


FIG. 9A

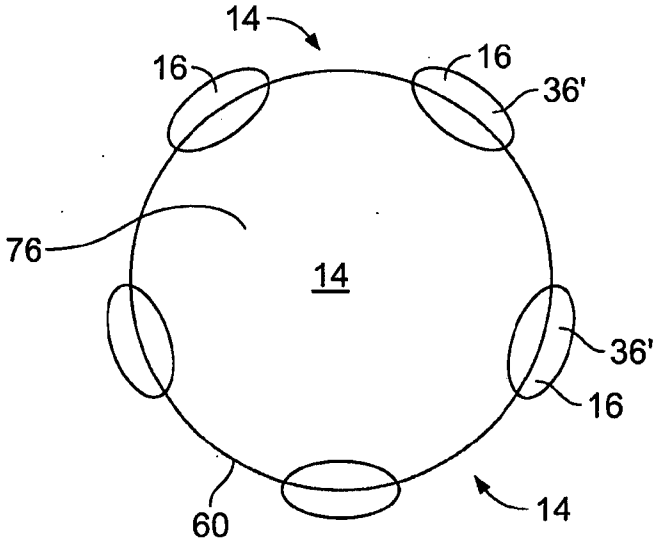
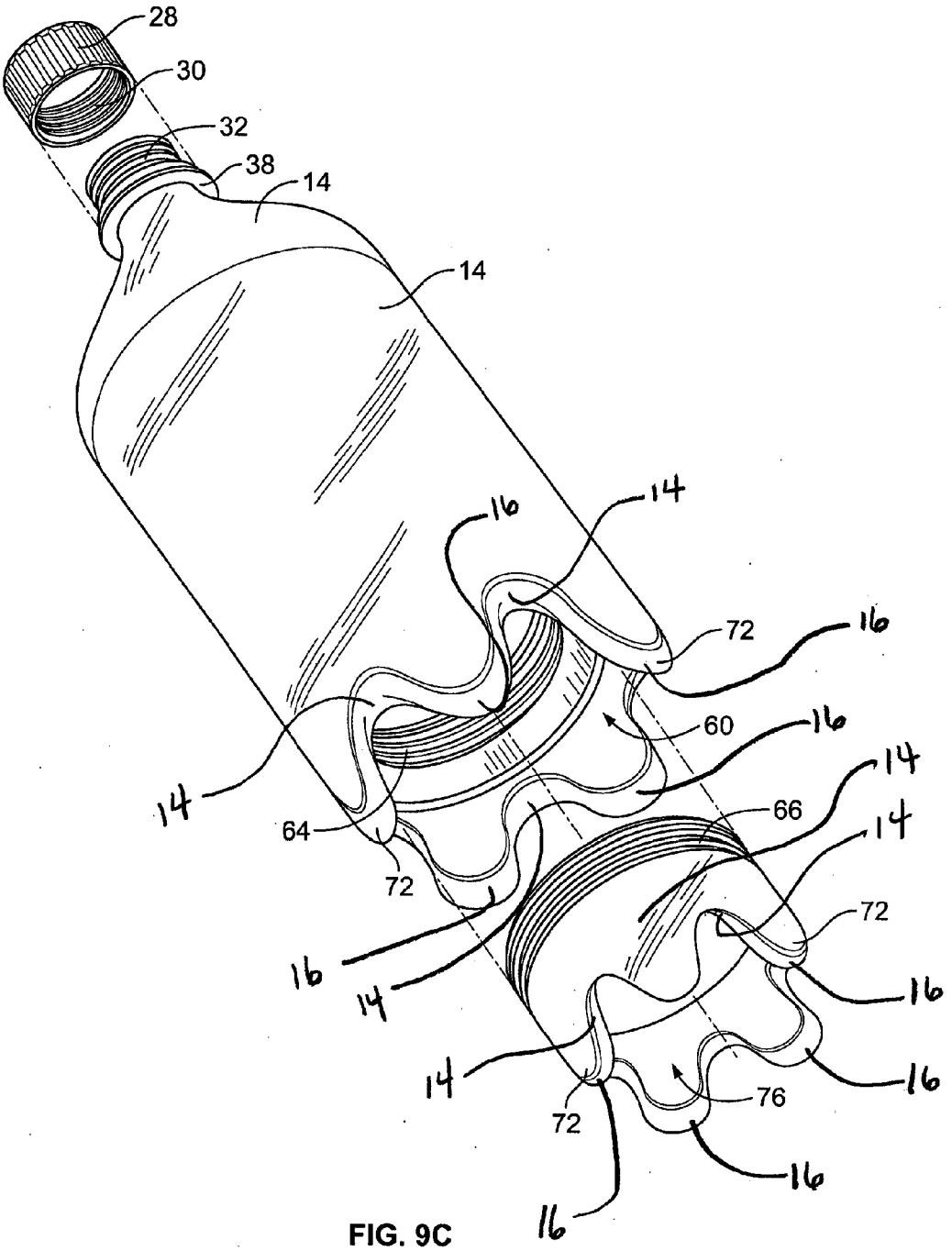


FIG. 9B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14
72
16
60
16
14
14
64
66
14
72
72
16
16
14
14
76
72
16
16

FIG. 9C

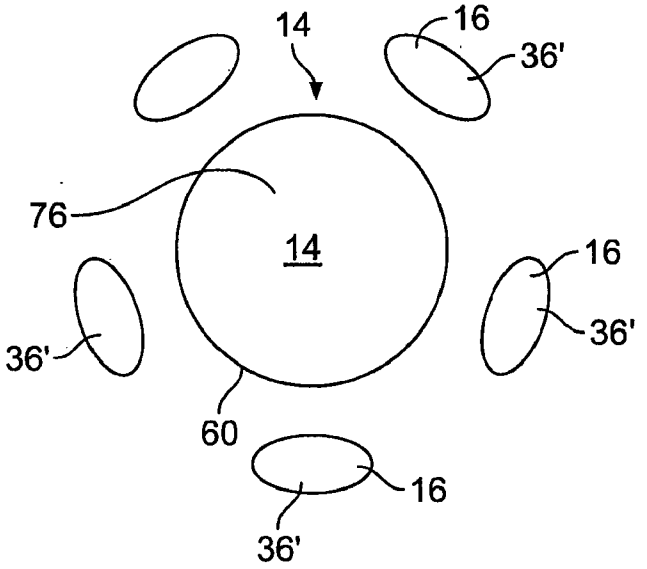

FIG. 10

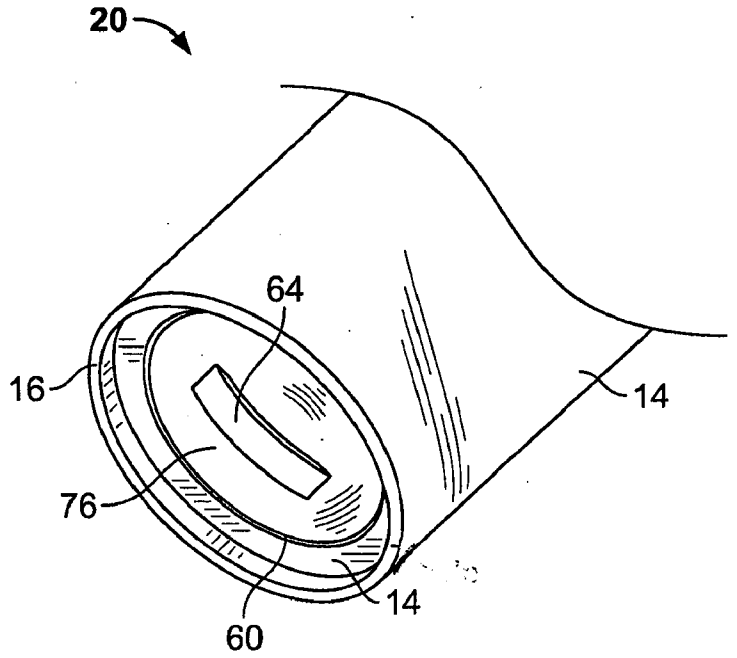

FIG. 11A

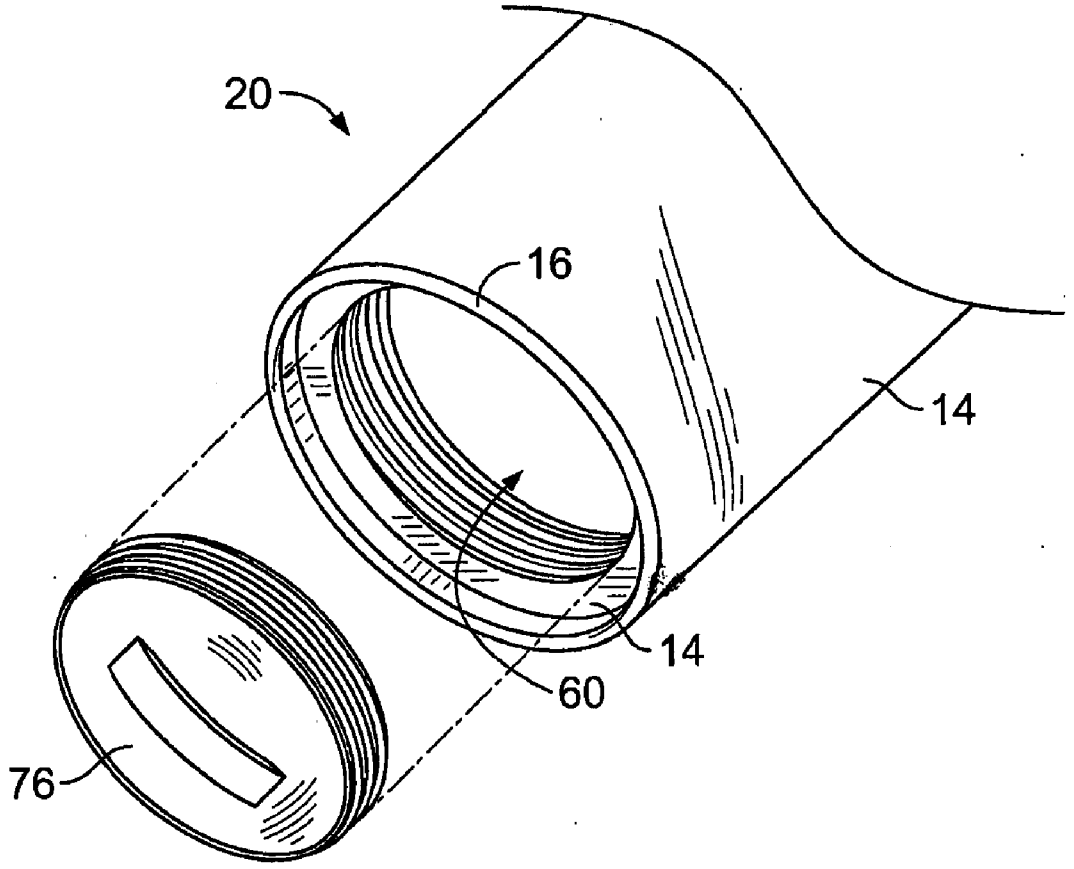

FIG. 11B

DRINKING BOTTLE ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is a divisional of U.S. patent application Ser. No. 12/245,464, filed Oct. 3, 2008, which is incorporated herein by reference.

FIELD OF INVENTION

[0002] This invention relates to the field of drinking containers and more particularly, to drinking containers that are assembled and disassembled.

BACKGROUND

[0003] There is a need for a refillable and thereby reusable drinking container so as to reduce the negative environmental impact on disposing of containers after a single use.

[0004] There is also a need for a refillable drinking container for consuming water since some municipalities have decided to place a tax on bottles of water sold in their jurisdiction.

SUMMARY OF THE INVENTION

[0005] A drinking container constructed of a bottom, a sidewall and a neck which define an interior of the container wherein the bottom defines an opening and the bottom comprises a panel adapted to cover the opening and be removable from the opening such that with the panel removed from the opening access to the interior is provided.

[0006] A drinking container constructed of a bottom, a sidewall and a neck which define an interior of the container; and a separation of the sidewall defined by the sidewall and positioned between the neck and the bottom wherein the separation provides access to the interior of the container.

[0007] A drinking container including a bottom, a sidewall and a neck which define an interior of the container, wherein at least a portion of the sidewall and at least a portion of the bottom define an opening and wherein at least a portion of the sidewall and at least a portion of the bottom comprise a panel adapted to cover the opening and be removable from the opening such that with the panel removed from the opening access to the interior of the container is provided.

[0008] A drinking container including a bottom, a sidewall and a neck which define an interior of the container, wherein the bottom comprises a surface of the container upon which the container rests when positioned on a support surface in an upright position, wherein the surface comprises at least one of, at least two spaced apart bottom surface sections wherein a portion of the sidewall extends between the at least two spaced apart bottom surface sections and at least one continuous bottom surface which forms an encircling configuration, wherein a portion of the sidewall extends between two spaced apart portions of the at least one continuous bottom surface, such that the portion of the sidewall defines an opening in the container.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Certain examples of the present invention are illustrated by the accompanying figures. It should be understood that the figures are not necessarily to scale and that details that are not necessary for an understanding of the invention or that render other details difficult to perceive may be omitted. It should be understood of course, that the invention is not necessarily limited to the particular examples illustrated herein.

[0010] FIG. **1** is a perspective view of an embodiment of the drinking bottle assembly;

[0011] FIG. **2** is an exploded view of the drinking bottle assembly of FIG. **1**;

[0012] FIG. **3** is cross sectional view of the drinking bottle assembly as seen from line **3-3** of FIG. **1**;

[0013] FIG. **4** is a cross sectional view of the drinking bottle assembly as seen from line **4-4** of FIG. **3**;

[0014] FIG. **5** is a cross sectional view of another embodiment of the drinking bottle assembly as seen from line **5-5** of FIG. **3**;

[0015] FIG. **6** is an exploded perspective view of another embodiment of the drinking bottle assembly;

[0016] FIG. **7** is an exploded perspective view of another embodiment of the drinking bottle assembly;

[0017] FIG. **8** is an exploded perspective view of another embodiment of the drinking bottle assembly.

[0018] FIG. **9**A is a partial side elevational view of a lower portion of another embodiment of the drinking bottle assembly;

[0019] FIG. **9**B is a schematic representation of a lower portion of the drinking bottle assembly shown in FIG. **9**A contacting a flat support surface and a circle indicating the location of the opening to the container;

[0020] FIG. **9**C is a bottom perspective partially exploded view of the embodiment of the drinking bottle assembly of FIG. **9**A;

[0021] FIG. **10** is a schematic representation of the lower portion of another embodiment of the drinking bottle assembly contacting a flat surface and a circle indication the location of the opening to the drinking bottle assembly;

[0022] FIG. **11**A is a partial bottom perspective view of another embodiment of the drinking bottle assembly wherein the surface on which the container will be supported includes a surface that projects from the container and encircles the lower portion of the container; and

[0023] FIG. **11**B is an exploded view of the embodiment of the drinking bottle assembly of FIG. **11**A.

DESCRIPTION

[0024] Referring to FIG. **1**, an embodiment of drinking container **10** is shown. In this embodiment, drinking container **10**, generally resembles a bottle for containing a consumable fluid such as water or other common consumable liquids. As will be appreciated herein, drinking container **10** has a number of beneficial attributes, one of which includes the ease in refilling container **10**.

[0025] Container **10** can be constructed of many commonly known materials or combination of materials such as plastic, polycarbonates, glass, metal etc. The thickness of sidewall **14**, as seen in FIGS. **1** and **2**, can take on various dimensions. However, in one example, container **10** is constructed of single relatively flexible plastic wall with a thickness that may vary between 25 and 35 mils. Such thickness provides a user with a desirable flexible feel while gripping container **10**. Other wall thicknesses are contemplated depending on a number of variables such as durability of container **10** or even the temperature of the fluid intended to be carried or maintained by container **10**. For example, for durability container **10** can have sidewall **14** constructed of a relatively thicker wall construction and/or the wall construction can be made of

a more rigid material. In other examples, sidewall **14** can take on a double wall construction, as will be discussed further below, for providing insulation for the contents of container **10**.

[0026] Since drinking container **10** will provide ease in refilling, as will be discussed below, container **10** will likely be refilled and reused a number of times before it is discarded. Because container **10** will often be in a non-sterile environment and come into contact with human hands during the process of refilling, it is desirable that the material used to construct container **10** have an antimicrobial material incorporated into the material. An antimicrobial material such as, PolySept, a registered trademark of Poly Chem Alloy, Inc. described in U.S. Pat. No. 6,284,814, can be employed and will reduce the growth of undesirable bacteria and provide the user with a more sanitary container **10** during reuse.

[0027] Container **10** is contemplated to hold consumable fluids of various temperatures ranging from cold to hot or even room temperature. To maintain the desired temperature of the fluid held within container **10**, container **10** will need thermal insulation capability. This thermal insulation capability can be carried out in a number of well known ways, such as for example, utilizing a high thermal resistant material for constructing the container, such as, thermal resistant plastic material with a thicker wall construction of at least 0.25 inches. Another thermal construction, for example, may include a double-walled construction of sidewall of container **10** wherein gas or air, is trapped between the double-walls. Other methods to insulate contents of container **10** may be employed, such as, placing a sleeve over at least a portion of the outside surface of sidewall of container **10**. This sleeve may be constructed of a number of commonly known insulating materials, such as, an elastomeric foam-like material, paper, cardboard or the like.

[0028] In referring to FIGS. **1** and **2**, drinking container **10** comprises a neck **12**, sidewall **14** and bottom **16**, defining an interior **17**. Sidewall **14** defines a separation **18** in sidewall **14** which, in turn, defines an opening **19** in container **10**, as seen in FIG. **2**. In this example, separation **18** is positioned entirely around the perimeter of sidewall **14** thereby divides container **10** into two portions, lower portion **20** and upper portion **22**. Separation **18** is positioned, in this example, in an orientation generally perpendicular to a longitudinal axis of container **10**. However, separation **18** can be oriented in numerous other positions, locations and orientations, as well as, in various lengths in sidewall **14**. For example, separation **18** may not extend completely around the circumference of container **10**. In other examples, separation **18** may not be oriented in a generally perpendicular orientation relative to a longitudinal axis of container **10**. As seen in FIG. **1**, separation **18**, in sidewall **14**, is positioned closer to bottom **16** than to neck **12**, however, separation may be positioned in a central portion of container **10** or even in a position closer to neck **12** than to bottom **16**.

[0029] As can be appreciated in this embodiment, opening **19**, is larger in dimension than opening **24** defined by neck **12**. This enlarged opening **19** provides ease in refilling container **10** in contrast to opening **24** positioned in neck **12** which is smaller in dimension. One would typically fill container **10** through opening **19**, with cap **28** secured to neck **12** and covering opening **24**. The enlarged opening **19** will result in less spillage and therefore a less messy exercise in refilling container **10**. In addition, larger opening **19** provides the user the ability and ease to refill container **10** with nonliquid items in addition to a consumable fluid. Such items may include ice, food materials, such as, fruits and/or vegetables or the like, or powders, tablets or concentrate fluid providing desirable flavors, nutrients, vitamins, medicines or the like. Positioning these items into interior **17** of container **10** will be made much easier in bringing them through enlarged opening **19** than attempting to bring them through opening **24** of neck **12**. Additionally, this enlarged opening **19** also provides user easy access to interior **17** for also stirring the contents of a liquid and/or other items positioned therein.

[0030] Sidewall **14** of container **10**, in the example shown in FIGS. **1** and **2**, forms a circular cross section, as well as, a plurality of circular cross sections, positioned generally perpendicular to and along the length of container **10**. It is contemplated that in other examples of container **10**, such cross sections can take on different configurations or shapes that are regular formations such as oval, rectangular, square (as seen in FIG. **8**) triangular, as well as, irregular formations. Moreover, other examples of container **10**, contemplate utilizing different shapes or configurations of cross sections in the same container **10**, so as to vary the shape of container **10** along its length. Similarly, the dimension of a cross section of container **10** may also vary along the length of container **10**. Such varying dimension can be employed for cross sections of container **10** that incorporates generally of the same shape along the length of container **10**, and also can be employed for container **10** that varies the configuration or shape of their cross sections along its length.

[0031] Another portion of container **10** comprises neck **12** which, in the example shown in FIGS. **1** and **2**, neck **12** generally takes on a generally circular cross section along its length forming generally a cylindrical shape open at either end. Again, other examples of neck **12** may include various shapes of cross sections and various dimensions as similarly discussed above for sidewall **14**. Neck **12**, in this embodiment, is integrally formed with sidewall **14** as a result of container **10** being manufactured generally from a continuous extrusion or molding process. Neck **12** takes on an interior dimension, measured in a direction generally perpendicular to a length of container **10** which is smaller than that of a corresponding measured dimension of container **10** defined by sidewall **14**.

[0032] Sidewall **14** extends from neck **12** to bottom **16** of container **10**. As seen in FIGS. **1** and **2**, neck **12** extends from opening **24** to and ends at a juncture or position **34** on container **10** where a change in interior dimension, taken generally perpendicular to a length of container **10**, begins to increase in dimension compared to the interior dimension of neck **12**. In the example shown in FIGS. **1** and **2**, the diameter of neck **12** is generally the same along a length of neck **12** and juncture **34** is positioned where the diameter formed by sidewall **14** ends and the diameter formed by sidewall **14** increases in size over that of the dimension of the diameter of neck **12**. Sidewall **14** extends from juncture **34** to bottom **16**, wherein bottom **16** begins at a position or juncture **36**, as seen, for example, in FIG. **8**.

[0033] Juncture **36** is positioned on container **10** where sidewall **14** ends and bottom **16** begins. Juncture **36** is determined or located by moving along sidewall **14** generally toward bottom **16**. Where first contact is made by container **10** on a generally flat support surface with container **10** placed in an upright position, that is juncture **36**. In some instances, juncture **36**, as seen in FIG. **8**, would form a continuous line such as a square or rectangle. In other embodiments, FIGS. **1**

and **2**, a circle. Thus, juncture **36**, in these instances, is a continuous line forming a closed figure and the portion of container **10** positioned within that closed figure is bottom **16**. Juncture **36** will be discussed further here-in-below for containers that will have different structural bottom portions.

[0034] Neck **12**, as shown in FIGS. **1** and **2**, defines opening **24** at end **26** of container **10**. Opening **24**, in this example, is configured and sized to accommodate a user engaging neck **12** at opening **24** with their mouth to drink fluid contained within container **10**. Diameter of opening **24** will generally range between 0.75 to 1.5 inches for ease of user to drink from container **10**. However, other dimensions may be employed.

[0035] Cap **28** is configured to close opening **24** of container **10**. Cap **28** is positioned over opening **24** generally when user is not consuming contents from container **10** to secure fluid within container **10** and is removed from opening **24** to provide access to the drinking fluid contents contained in container **10**. In this example, cap **28** defines threads **30**, as seen in FIG. **8**, and neck **12** define on its exterior surface compatibly sized and shaped threads **32**, such that threads **30** and **32** can engage one another. Through use of threads **30** and **32**, cap **28** can be tightened down onto neck **12** and cover opening **24** such that fluid contents of container **10** are sealed therein. Annular ring **38** is positioned around the exterior of container **10** and is positioned adjacent and below threads **32** of neck **12** such that cap **28** abuts annular ring **38** with threads **30** and **32** fully engaged to one another and cap **28** is tightened onto neck **12**.

[0036] With respect to the embodiment shown in FIGS. **1** and **2**, separation **18** of sidewall **14**, may be positioned in various desired locations and in various orientations in sidewall **14**. With separation **18** positioned, in this example, in a generally transverse or perpendicular plane to a longitudinal axis or length of container **10**, it can be located at various locations along the longitudinal axis of container **10**. As mentioned above, such positions may include separation **18** being positioned closer to bottom **16** than to neck **12**, as seen in FIGS. **1** and **2**; being generally in a mid-portion of container **10**; or even being positioned closer to neck **12** than to bottom **16**, which is shown in FIG. **6**.

[0037] In order to access interior **17** of container **10** to fill or refill container **10** with desired contents, separation **18** in sidewall **14** needs to be opened and subsequently closed before user begins to consume the contents of container **10** through opening **24**. Many forms or securement may be employed to join sidewall **14** positioned on either side of separation **18** together. In a closed position, it is desired to have separation **18** secured closed to form a water tight closure to prevent leaking out of contents from interior **17** of container **10**. In addition, it is also desirable to provide a locking capability of separation **18** in a closed position so as to resist separation **18** from unintentionally separating apart sidewalls **14** positioned on opposing sides of separation **18**.

[0038] With regard to securing together sidewall **14** at separation **18**, threads **40** and **42** are positioned on opposing sides of sidewall **14** as seen in the example shown in FIG. **2**. As mentioned above, container **10** may, for example, be extruded or molded and therefore, threads **40** and **42** would, in that instance, can be integrally formed with sidewall **14**. However, in other instances threads **40** and **42** may be separately constructed and conventionally secured to opposing sections of sidewall **14**. Threads **40** and **42** are compatibly sized and shaped to engage one another and secure to one another, as seen in FIGS. **4** and **5**. A user can apply a turning action to one or other of bottom and top sections **20**, **22** or opposing turning actions to portions **20**, **22** of container **10**, thereby screwing together two portions **20**, **22** and closing container **10** between neck **12** and bottom **16** of the embodiment as shown seen in FIG. **1**. With two portions **20** and **22** secured together, as also seen in FIGS. **4** and **5**, outside surface of sidewall **14** is positioned on opposing sides of separation **18** to align with one another thereby providing a relatively smooth outside surface to container **10**.

[0039] A water tight seal is provided as seen in FIGS. **4** and **5**. In FIG. **4**, gasket **44** is positioned around container **10** and is shown being compressed, by opposing sides of sidewall **14** that define separation **18**. Gasket **44** is compressed with threads **40**, **42** engaged. With gasket **44** compressed, a water tight seal is provided. Another example of sealing separation **18** defined by sidewall **14**, is shown in FIG. **5**. In this instance O-ring **46** is positioned in a closed channel **48** positioned around container **10** and defined by sidewall **14**. O-ring **46** is dimensioned such that with it being positioned within channel **48** and threads **40**, **42** are fully engaged, O-ring **46** is compressed against juncture **41** between threads **40**, **42** providing a water tight seal.

[0040] A locking assembly **50**, can be seen in FIGS. **2** and **3**. Locking assembly **50** is provided to prevent unintentional loosening of the threaded engagement between portions lower and upper portions **20**, **22** of container **10**. Many conventional locking assemblies are contemplated, however, one example is shown in FIGS. **2** and **3**. Locking assembly **50** comprises at least one tab **52** positioned in threads **40** of upper portion **22**, as seen in FIGS. **2** and **3**. Ramp **54** is provided in threads **42** of lower portion **20** such that, with threads **40**, **42** being screwed together, tabs **52** ride up incline **53** of ramp **54** as threads **40**, **42** are tightened together. Once threads **40**, **42** have been tightened together, a tab **52** will have ridden up the incline **53** of ramp **54** and be positioned beyond ramp **54**. Thus if a reverse force is applied to loosen threads **40**, **42**, tab **52** positioned beyond ramp **54** will move toward ramp **54** and be blocked by ramp **54** as seen in FIG. **3**. A loosening force, such as a counterclockwise movement applied to threads **40**, will be blocked by tab **52** abutting ramp **54**. When user desires to unlock threaded engagement of threads **40**, **42**, the user, with this locking example, must first unblock ramp **54** from path of tab **52**. A user applies a compression force to sidewall **14** in direction of arrows **56**. The result is sidewall **14** will begin to deform and bulge outwardly in direction indicated by arrows **58**. This bulging movement outwardly by sidewall **14** will cause ramp **54** to move outwardly away from the path of tab **52**, thereby unlocking the threaded engagement and allowing portions **20**, **22** to be unscrewed apart and separated.

[0041] Another embodiment, is shown in FIG. **8**. In this embodiment, opening **60** is defined in bottom **16** of container **10**. Opening **60**, as shown, may be dimensioned to be of lesser dimension than bottom **16**. In other embodiments opening **60** can be the same size or coextensive to bottom **16**. This coextensive sizing would be readily feasible, for example, as with the container **10** embodiment with a circular bottom **16**, such as seen FIGS. **1** and **2**. As is also seen in FIG. **8**, panel **62** is provided and is properly dimensioned to cover opening **60**.

[0042] In order to secure panel **62** to bottom **16**, threads **64**, **66** are defined in bottom **16** and panel **62**, respectively. In an instance where panel **62** is coextensive with bottom **16**, threads would be positioned in panel **16** and sidewall **14**. Threads **64**, **66** have a similar construction as described above for threads **40**, **42** that are shown in the embodiment in FIG. **2**.

Thus with threads **64**, **66** being compatibly sized and shaped, panel **62** can be releasably secured and tightened to container **10**. Similarly, as described above, locking assembly **50** and water tight sealing constructions, may also be employed in this embodiment as well. Handle **68** is provided for user to apply a turning movement to panel **62** to assist the user in tightening or loosening panel **62** to bottom **16**.

[0043] Another embodiment is shown in FIG. **7**. In this embodiment, two separations **18** are defined in sidewall **14** and are positioned in container **10** generally where the separations are shown in both embodiments portrayed in FIG. **2** and FIG. **6**. Threads **40**, **42** are appropriately positioned in sidewall **14** positioned on either side of each separation **18**. Thus in this embodiment, with two separations defined by sidewall **14**, two positions to open and close container **10** in association with sidewall **14** are provided. It is contemplated that any number of sections **70** could be added to container **10**, thus increasing the length of container **10**. Also, sections of varying external shapes and/or colors may be provided to give a desired look to container **10** or a highly distinctive look. Likewise, as described above, locking assembly **50** and water tight constructions can be employed in this embodiment as well.

[0044] In other embodiments of container **10**, where bottom portion of container **10** is not flat, juncture **36**, as previously discussed above, may not be formed by a continuous line. Another approach is used to determine what will be bottom **16** of such containers **10**. An example of a container **10** where the bottom portion is not flat can be seen in FIG. **9**A, wherein legs **72** project from a bottom portion of container **10**. A bottom surface of legs **72** of container **10** would make a foot print as shown in schematic FIG. **9**B. Sections **36'** represent what a lower surface of legs **72** will contact on a flat surface that supports container **10** in an upright position. Sections **36'** represent generally, in size and shape, what will be considered bottom **16** on legs **72** of container **10**. Any part of container **10** that does not contact a flat support surface in a lower portion of container **10** will be considered to be sidewall **14**.

[0045] In further referring to FIG. **9**B, schematic representation of opening **60** is shown for this embodiment of container **10**. The schematic representation of opening **60** is a circle that passes through, sections **36'**, which represents passing through bottoms **16** on container **10**, and passes through sidewall **14**. Thus opening **60** is defined by the combination of sections **36'**, or what would be bottoms **16** on container **10**, and sidewall **14** on container **10**. The position of panel **76**, used for closing opening **60**, is also shown schematically in FIG. **9**B.

[0046] FIG. **9**C portrays the embodiment of container **10** that is portrayed in FIGS. **9**A and **9**B. Opening **60** cuts through legs **72**, through bottoms **16** and through sidewall **14**, as portrayed in schematic **9**B. Sidewall **14** defines threads **66** and defines compatible threads **64**. Thus, panel **76** is removably securable to container **10** through securement and unsecurement of threads **64** and **66**. Panel **76** is dimensioned and sized to cover opening **60**. As in other embodiments discussed herein, water tight sealing may be employed by gaskets **44** or O-rings **46** and locking assembly **50** may also be employed. Additionally, a handle as earlier shown and discussed can be provided to assist user in applying a turning force to panel **76**.

[0047] As seen in FIG. **10**, another schematic is shown that represents a footprint of another embodiment of container **10**. This embodiment is similar to that shown in FIGS. **9**A-**9**C except bottom surface **16** sections of legs **72** are now positioned so that they surround opening **60**. Thus, in schematic in FIG. **10** opening **60** is now schematically positioned inside sections **36'**. Again, sections **36'** are the schematic footprints of bottom **16** surface sections of legs **72** that contact a flat surface with container **10** being supported in an upright position.

[0048] Since all other surfaces in the lower portion of container **10** that surround bottom surfaces **16** sections, will be considered sidewall **14**, opening **60** in this embodiment is defined by sidewall **14**. Panel **76** is schematically shown in FIG. **10** and is represented to be properly sized to cover opening **60**. Similar construction for this embodiment may be employed, as was described above for other embodiments, such as utilizing compatibly engaging threads such as **66** and **64** to secure panel **76** to container **10**, as well as, water tight seals or gaskets and locking assembly **50**.

[0049] As seen in FIGS. **11**A and **11** B, another embodiment is shown. In this embodiment, bottom **16** is now at least one continuous encircling configuration positioned projecting from container **10** and about the perimeter of container **10** wherein sidewall **14** is positioned in between portions of continuous bottom surface **16**. In this embodiment, continuous bottom surface **16** can be constructed to encircle entirely around the bottom portion of container **10** or it may be positioned as segments to extend less than entirely encircling around. Panel **76** is positioned covering opening **60** positioned, as seen in FIG. **11**A and in **11**B, in between portions of bottom surface **16**. As discussed above threads **64** and **66** are provided to secure and unsecure panel **76** from container **10** thereby opening and closing the opening **60**. Similarly, locking assembly **50** and water tight structures such as O-rings or gaskets may be utilized as well.

[0050] Thus, it is understood that a larger opening is being provided in container **10** to provide easier and less messier refilling of container **10**. The opening allows ease in inserting a variety of items into the interior of container **10** and otherwise accessing the interior of container **10** for other processes such as mixing and removing of items. In addition, container **10** can be easily personalized by utilizing labeling, colorizing or merely utilizing sections of container **10** that has a certain size and shape that is distinctive. Colorizing can also be employed to represent colors of a favorite school or professional team. Similarly, colorizing can be used to designate contents intended to be contained by that container.

[0051] The foregoing description has been presented for purposes of illustration and description, and is not intended to be exhaustive or to limit the invention to the precise form disclosed. The descriptions were selected to explain the principles of the invention and their practical application to enable others skilled in the art to utilize the invention in various embodiments and various modifications as are suited to the particular use contemplated. Although particular constructions of the present invention have been shown and described, other alternative constructions will be apparent to those skilled in the art and are within the intended scope of the present invention.

1. A drinking container, comprising:

a bottom, a sidewall and a neck which define an interior of the container wherein the bottom defines an opening of a lesser dimension than the bottom;

a panel adapted to cover the opening and enclose the interior of the container wherein the panel is of a dimension less than a dimension of the container formed by an exterior

surface of the sidewalls positioned adjacent to the bottom and wherein the panel is releasably securable to the bottom to enclose the interior of the container.

2. The drinking container of claim **1** wherein a cross section through the sidewall defines at least one of a circle, oval, rectangle, square and triangle.

3. The drinking container of claim **1** wherein the neck defines another opening generally circular in shape wherein the other opening has a diameter in the range of about ¾ of an inch to 1 ¼ inch.

4. The drinking container of claim **1** wherein a dimension of an interior cross section of the neck is smaller than a dimension of an interior cross section at the sidewall.

5. The drinking container of claim **1** wherein the opening comprises a circular shape.

6. The drinking container of claim **5** wherein the panel comprises a circular shape, wherein the bottom defines threads and the panel defines other threads and wherein the threads and other threads are sized and shaped to engage one another.

7. The drinking container of claim **1** further including one of an O-ring seal and gasket positioned around the opening.

8. The drinking container of claim **1** further including a locking assembly associated with the panel and with at least one of the sidewall and the bottom.

9. The drinking container of claim **8** wherein the locking assembly comprises at least one tab in association with the threads positioned in one of the panel and at least one of the bottom and sidewall; and a ramp associated with the other of the panel and at least one of the bottom and sidewall to which the tab is not associated and wherein the ramp is positioned in blocking relationship to the at least one tab with the threads of the panel and of at least one of the bottom and the sidewall are fully engaged.

10. The drinking container of claim **9** wherein the sidewall is deformable to provide separation of the tab and the ramp.

11. The drinking container of claim **1** wherein the container is constructed of a material which contains an antimicrobial material.

12. The drinking container of claim **1** wherein a wall thickness of the sidewall of the body portion comprises a thickness in the range of about 25 mils to about 35 mils.

13. The drinking container of claim **1** wherein the bottom is a round shape.

14. The drinking container of claim **1** wherein the bottom is a square shape.

* * * * *

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(54) **REPLACEABLE BOTTLE CAP ASSEMBLY**

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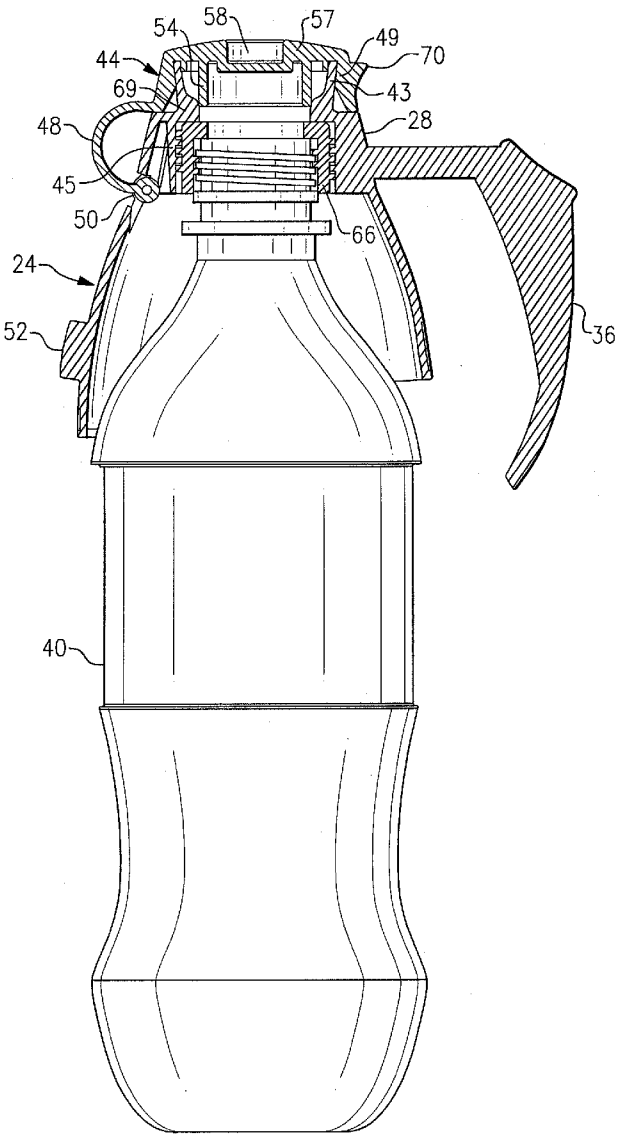
B23P 11/00 (2006.01)

(52) **U.S. Cl.** **215/272**; 29/428

(57) **ABSTRACT**

A replaceable bottle cap assembly includes a body that conforms to the top of a threaded beverage container, the assembly including an internally threaded portion that mates with the threaded neck of the beverage container. A hinged cap of the assembly provides selective access to the contents of the attached bottle wherein the assembly is sealingly and releasably attached to the container.



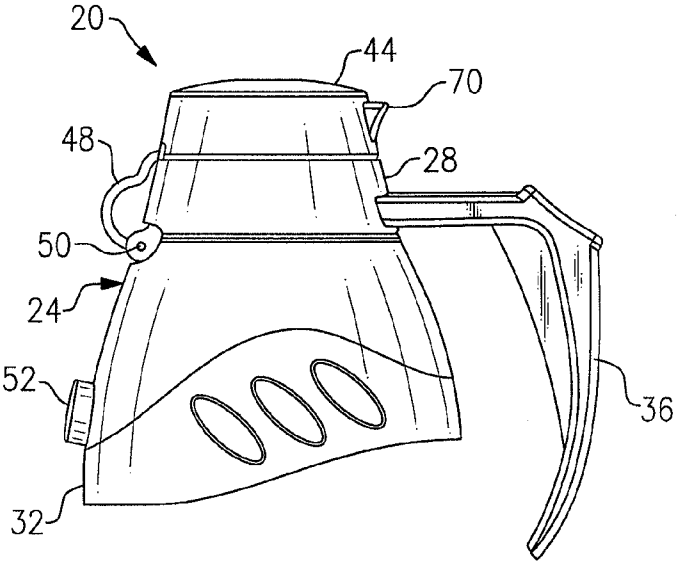


FIG.1

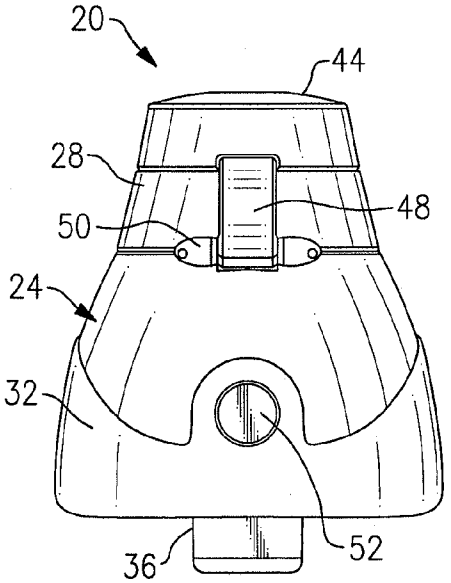


FIG.2

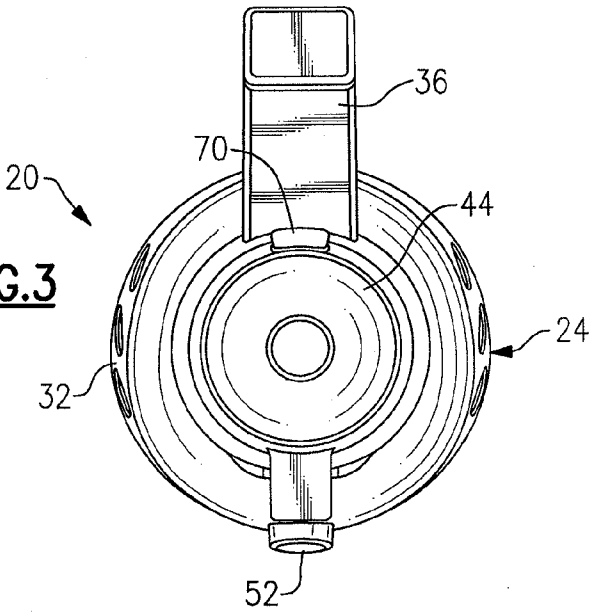


FIG.3

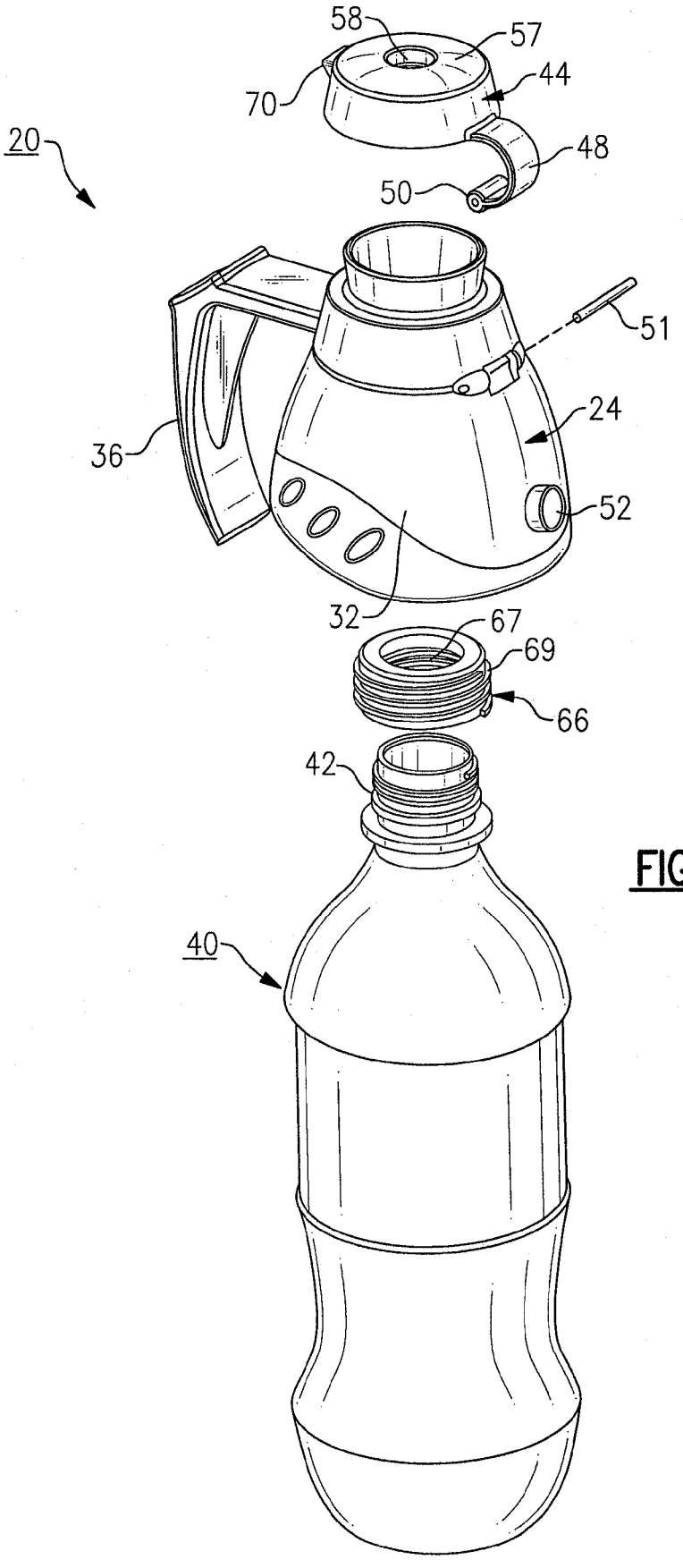


FIG.4

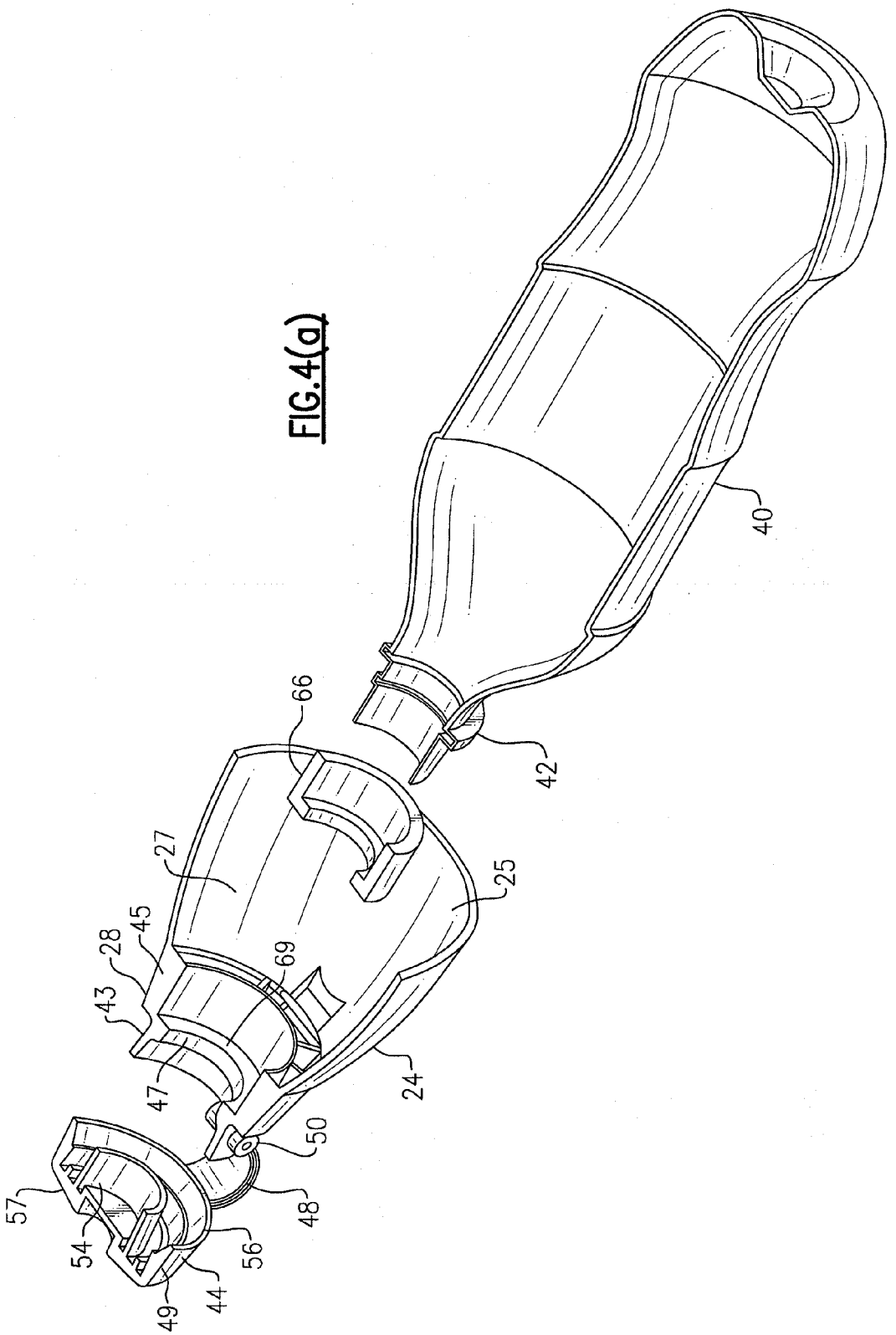


FIG.4(a)

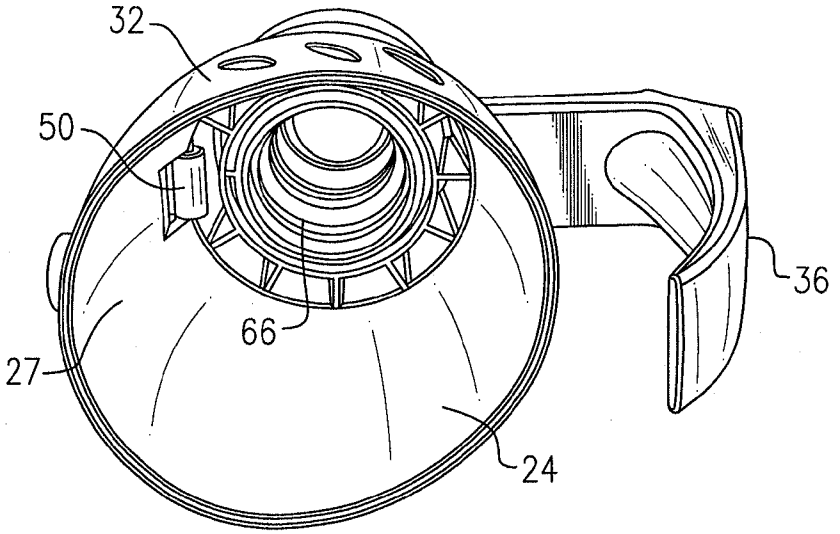


FIG.5

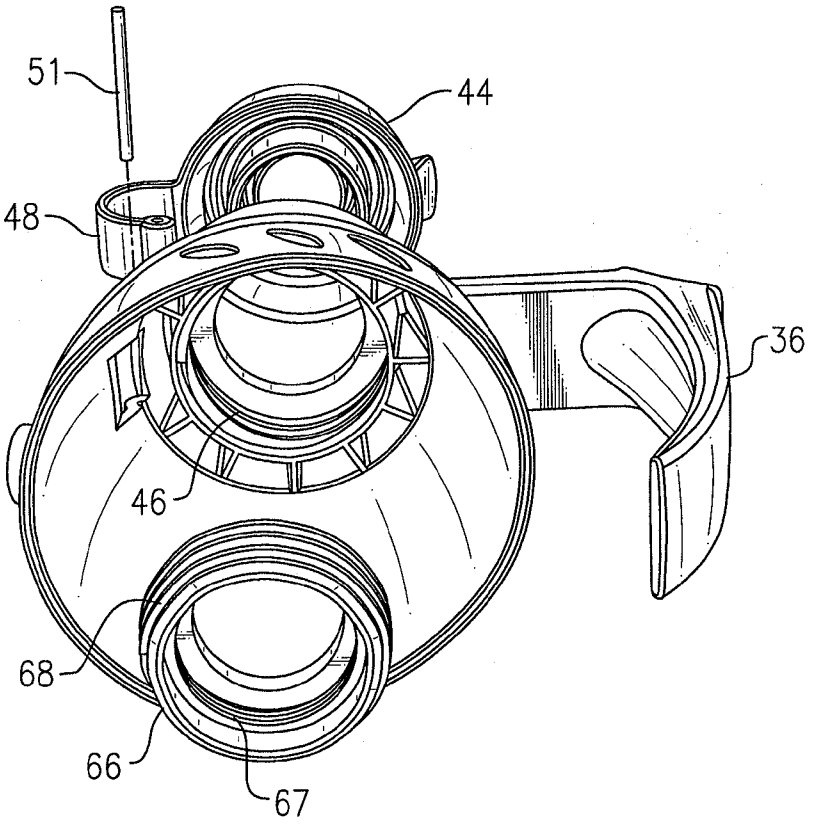


FIG.6

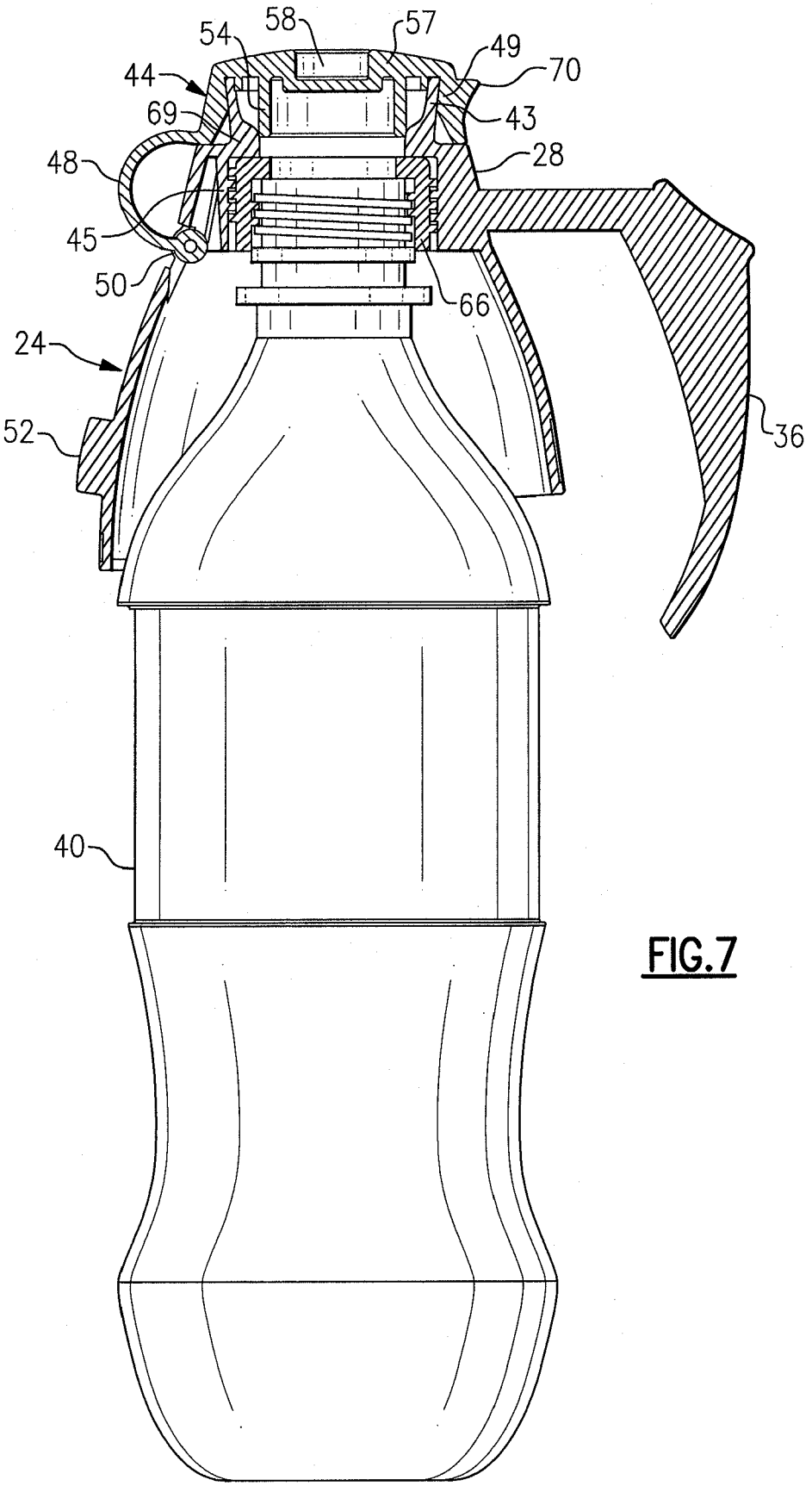


FIG.7

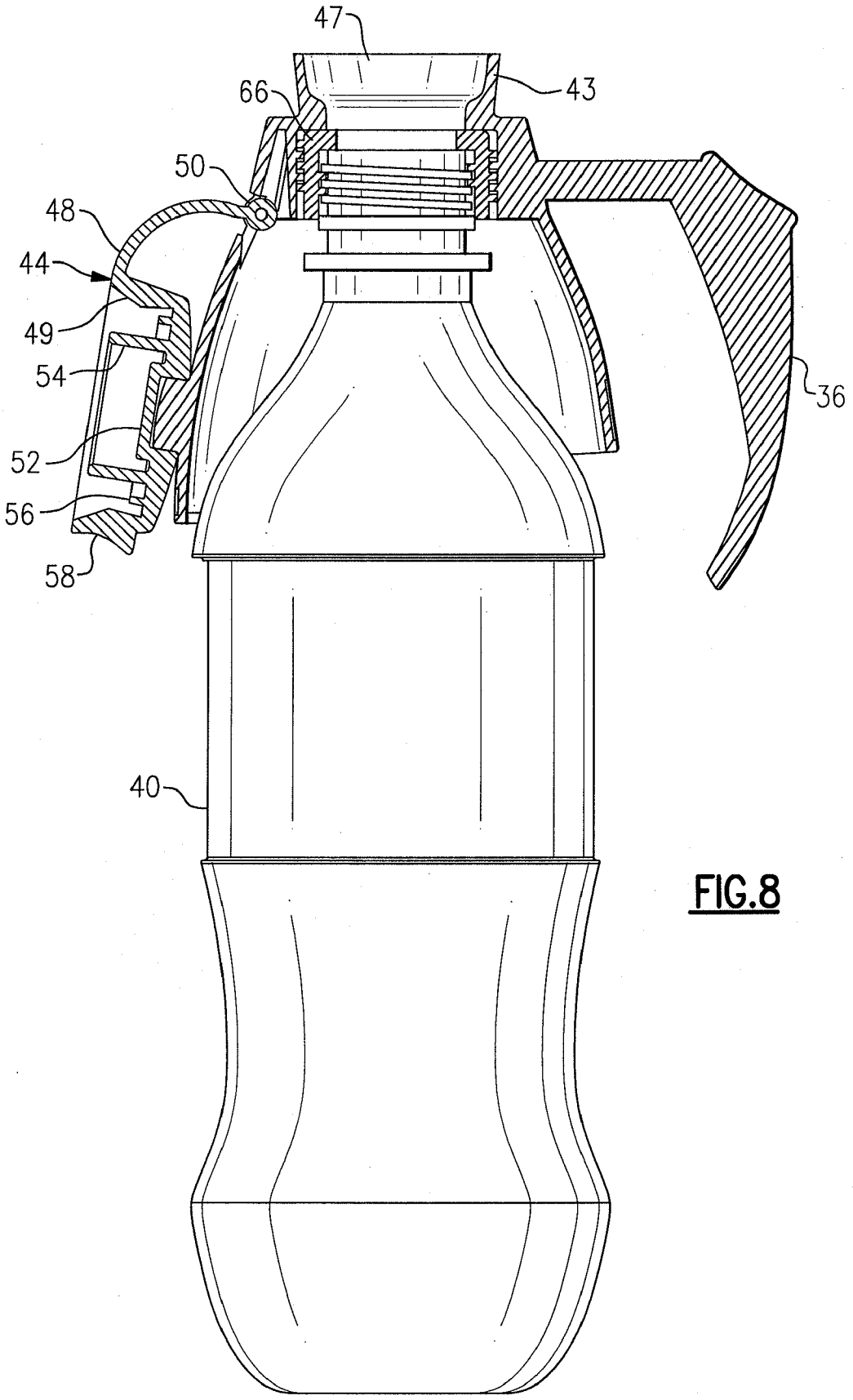


FIG.8

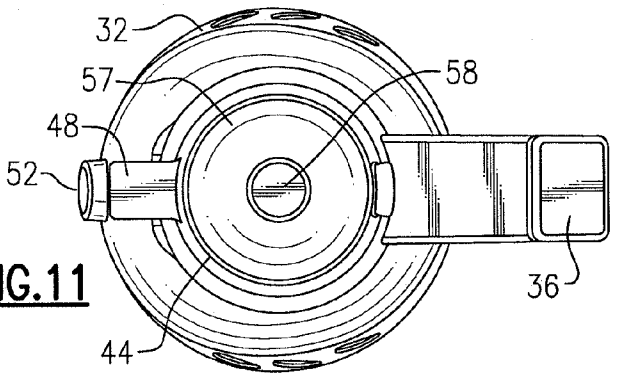


FIG.11

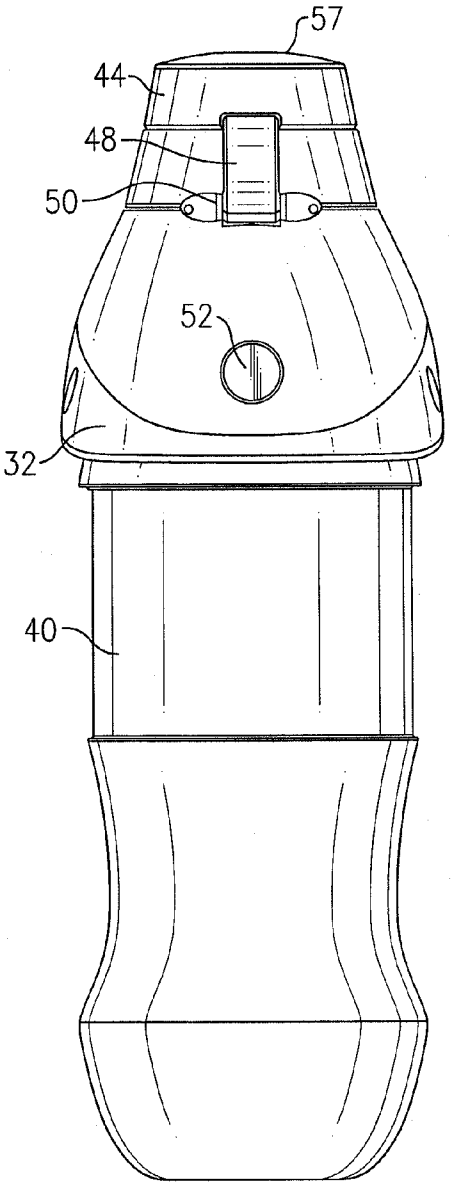


FIG.9

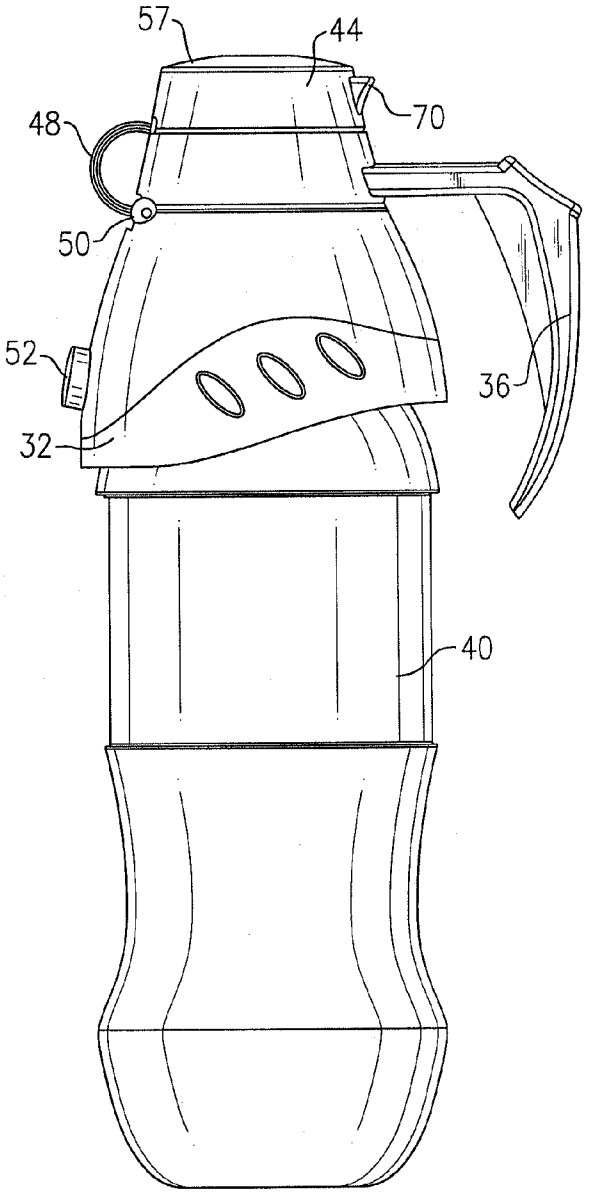


FIG.10

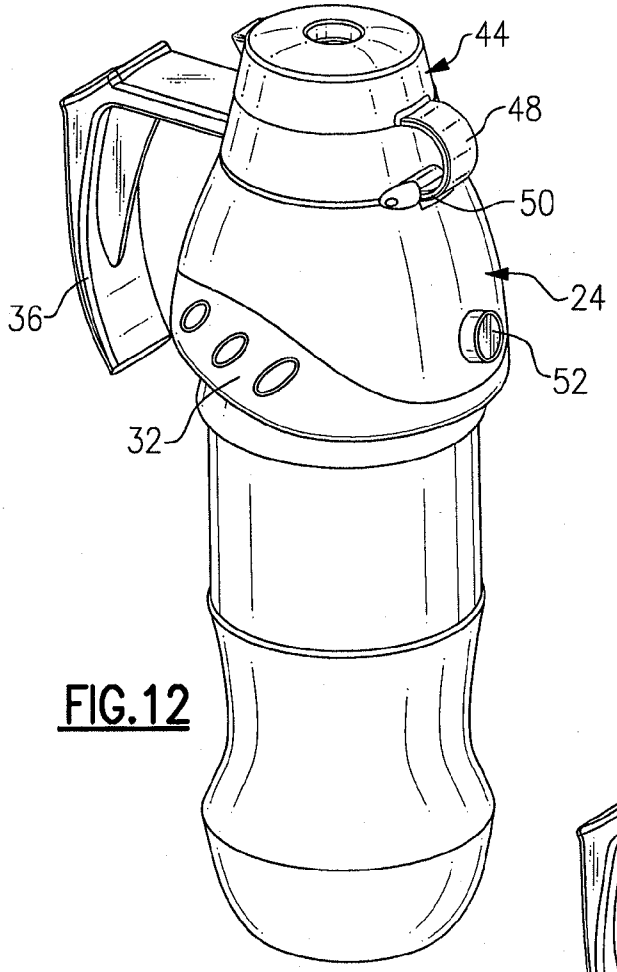


FIG.12

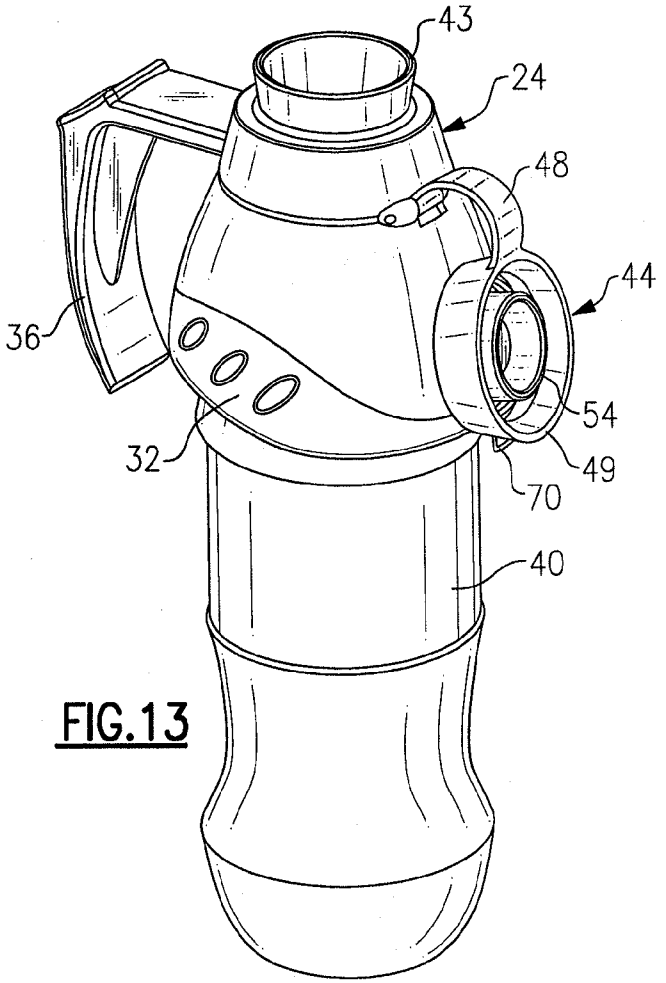


FIG.13

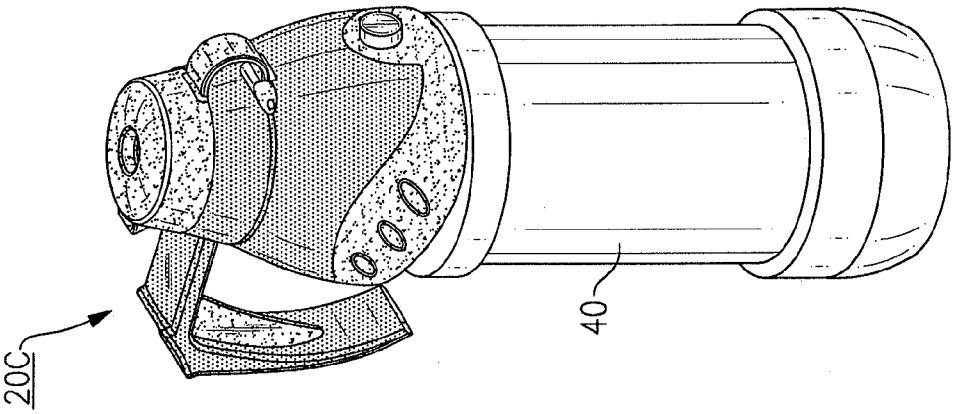


FIG.14(c)

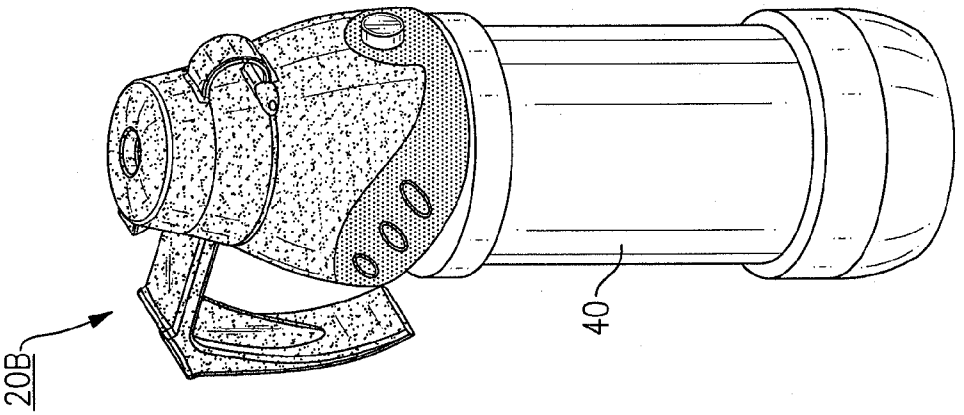


FIG.14(b)

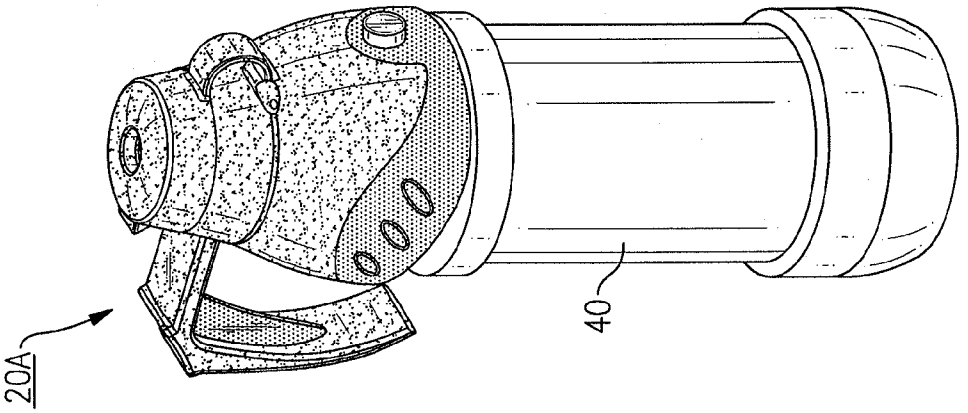


FIG.14(a)

REPLACEABLE BOTTLE CAP ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This patent application claims priority as to the following provisional patent applications entitled: REPLACEABLE BOTTLE CAP ASSEMBLY, U.S. Ser. No. 61/131,575, filed Jun. 10, 2008, and BEVERAGE BOTTLE REPLACEMENT CAP WITH HANDLE, DRINKING AND HOLDING DEVICE, U.S. Ser. No. 61/062,804, filed on Jan. 28, 2008, the entire contents of each being herein incorporated by reference.

FIELD OF THE INVENTION

[0002] The invention relates to the field of beverage containers and in particular to a replaceable bottle cap assembly that can be used in conjunction with threaded beverage containers, such as water and soda bottles.

BACKGROUND OF THE INVENTION

[0003] Beverage containers, including those for bottled soda, bottled water, energy drinks and fruit juices, among others, have been commonly known to consumers for many years. Most of these containers include a threaded cap at the top or neck of a 12 ounce, 24 ounce or other appropriately sized bottle. In order to access the contents of the bottle for consumption, the threaded cap must first be twisted free and then removed. Typically, the entire contents of the bottle are not consumed all at once. Therefore, it later becomes necessary to reattach the cap to the bottle by twisting the cap back onto the threaded neck of the bottle in order to avoid spillage of the remaining fluid contents and avoid having the contents go flat as in the case of carbonated fluids, such as soda.

[0004] The foregoing arrangement is not always convenient. This two-hand requirement is exacerbated given that one hand of the consumer is required to hold the bottle for stability while the other hand is being used to actually twist open or replace the cap. When the consumer is traveling by vehicle (e.g., car, truck or boat), is operating equipment, or is otherwise conducting activities wherein the removal of a twist-off cap would be hazardous. Another relevant issue is that of having to locate or re-locate the cap once it has been removed from the bottle. In each instance, the consumer's attention is otherwise directed from the immediate task at hand and potential safety concerns are therefore created for the consumer and others. Therefore, it is a general desire in the field to provide an alternate, safer and more convenient means for accessing and extracting the fluid contents from threaded beverage containers.

SUMMARY OF THE INVENTION

[0005] According to one aspect, there is provided a replaceable bottle cap assembly, the assembly including a body shaped to substantially conform with the top of a beverage container, the body having a threaded portion that enables connection to a threaded bottle neck. A cap is hingably attached to the body, the cap being releasably attached and configured relative to the body in order to selectively access the contents of a bottle to which the cap is attached. The body can be made from a soft, durable and lightweight elastomeric material, wherein, for example, the body can be fabricated using a blow-molding process, at least in part, and in which the assembly is reusable and washable. According to at least one version, at least a portion of the body is formed from a soft, grippable elastomeric material to facilitate handling of the assembly.

[0006] In one version, the cap is tethered to the body or the cap can be integrally formed therewith. According to one embodiment, the cap is secured or otherwise attachable to the body for storage when the cap is in an open position. According to one embodiment, the body includes a retaining member enabling the cap to be releasably secured thereto while in the open position. The cap is snap-fitted to a spout, the spout extending to the interior of the bottle wherein an effective fluidic seal in combination with the threading action of the body to the bottle is achieved, when the cap is in the closed position.

[0007] The body of the replaceable cap assembly can be defined with an integral threaded section. Alternatively, other threaded sections can be employed and/or a separate adapter can be implemented, enabling attachment of the herein described cap assembly to a plurality of different types of bottles that have varying thread designs.

[0008] The replaceable cap assembly further includes a handle portion that is integral or otherwise attached to the body enabling both the assembly and attached bottle to be conveniently lifted by the user. A skirting portion provided on the body provides a counter balance for the handle portion and cap, such as when the bottle is nearly empty or empty.

[0009] According to another version, there is described a method for manufacturing a replaceable cap assembly for use with at least one bottle, said bottle including a threaded neck, said method comprising the steps of providing a body having a threaded portion that can releasably attached to the threaded neck of said bottle, and providing a releasable cap that can be selectively opened, thereby enabling the contents of a beverage container to be accessed for consumption.

[0010] In one version, the cap is hinged to the body. In another version, the cap can be integrally formed with the body.

[0011] According to yet another version, the body can include an integral threaded portion or alternatively the body can be defined by a first thread wherein at least one thread adapter can be added enabling the assembly to be attached to beverage containers having different thread designs. For example and according to one embodiment, a separate adapter is attached to the body and includes a thread that enables attachment to other beverage containers. In another embodiment, a separate adapter can include multiple threads; for example, an upper portion with a first thread and a lower portion with a second thread, each of the upper and lower portions being releasably attachable to said body.

[0012] One advantage provided by the herein described replaceable cap assembly is ease of use as opposed to the twist off cap of conventional threaded beverage bottles that require removal for each use. There is no longer a need to retain the original bottle cap and therefore having to be concerned about its whereabouts. The assembly provides an effective fluidic seal and therefore maintains all of the functionality provided by twist-off caps, but with considerably less effort. Another advantage is that the herein described assembly can be cleaned and is reusable. Yet another advantage is that the herein described cap assembly can be adaptively attached to any sized beverage container and to any thread design.

[0013] These and other features and advantages will be readily apparent from the following Detailed Description, which should be read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. **1** is a side view of a replaceable bottle cap assembly in accordance with an exemplary embodiment of the present invention;

[0015] FIG. **2** is a front view of the replaceable bottle cap assembly of FIG. **1**;

[0016] FIG. **3** is a top plan view of the replaceable bottle cap assembly of FIGS. **1** and **2**;

[0017] FIG. **4** is an exploded assembly view of the replaceable bottle cap assembly in conjunction with a beverage container;

[0018] FIG. **4**(*a*) is a side perspective view of the exploded releasable cap assembly of FIG. **4**, shown in section;

[0019] FIG. **5** is a bottom perspective view of the replaceable bottle cap assembly of FIGS. **1-3** with the cap in the closed position;

[0020] FIG. **6** is a bottom perspective view of the replaceable bottle cap assembly, shown as exploded;

[0021] FIG. **7** is a side elevational view of the replaceable bottle cap assembly of FIGS. **1-6** as attached to a beverage container, the view being taken in section and in which the cap is shown in a closed position;

[0022] FIG. **8** is the side elevational view of FIG. **7** taken in section, wherein the cap is shown in an opened position;

[0023] FIG. **9** is a front view taken in elevation of the replaceable bottle cap assembly as attached to a beverage container;

[0024] FIG. **10** is a side view taken in elevation of the replaceable bottle cap assembly as attached to a beverage container;

[0025] FIG. **11** is a top plan view of the assembly of FIGS. **9** and **10**;

[0026] FIG. **12** is a front perspective view of the assembly of FIGS. **9-11**;

[0027] FIG. **13** is the front perspective view of the assembly of FIGS. **9-11** with the cap in the opened position; and

[0028] FIGS. **14**(*a*)-**14**(*c*) depict perspective views of variations of the replaceable bottle cap assembly of FIG. **1-6** in an assembled condition relative to a beverage container.

DETAILED DESCRIPTION

[0029] The following description relates to preferred embodiments of a replaceable bottle cap assembly, shown independently as well as in conjunction with a threaded beverage container (e.g., a 16-20 ounce soda, water or other beverage bottle). Throughout the course of discussion, certain terms are used in order to provide a suitable frame of reference with the accompanying drawings such as "top", "front, "rear", "bottom", "upper", "lower", "inner", "outer", "above", below", and the like. These terms are not intended to be overly limiting, however, except where so specifically limited. Moreover, it will be appreciated that variations and modifications are possible within the intended scope of the present invention and that the herein described bottle cap assembly and beverage container are intended to be merely exemplary.

[0030] Referring to the figures and more specifically to FIGS. **1-3**, there is shown a replaceable bottle cap assembly, herein generally labeled with reference numeral **20**, which is defined by two interconnected components, namely a body **24** and a cap **44**. The body **24** according to this exemplary embodiment is made from a durable, lightweight elastomeric material, and can be manufactured using, for example, a blow-molding or injection molding process. A skirting portion **32** is provided at the lower end of the body **24**, which is further defined by a generally hemispherical shape, while an engagement portion **28** is provided at the upper end of the body. As shown in greater detail in FIGS. **4**, **4**(*a*), and FIGS. **5-8**, the body **24** is substantially hollow, with the exception of the engagement portion **28**, including an open lower opening **25** extending to an interior cavity **27** shaped to substantially conform with the curved top or upper end of a beverage container, herein shown as **40**. Due to the conforming curvature of the body **24**, the interior cavity **27** narrows in diameter away from the open lower opening **25**. Referring most particularly to FIGS. **4**(*a*), **6** and **7**, the engagement portion **28** is provided above the skirting section **32**, the engagement portion being defined by an upper engagement end or spout **43** that permits releasable engagement of the cap **44**, described in greater detail below, and a lower engagement end **45** that enables releasable attachment of the assembly **20** with the threaded neck **42** of the bottle **40**. The engagement portion **28** is further defined by a through opening **47** having a first diameter in the upper engagement end **43** and a narrower second diameter in the lower engagement end **45**. An annular flange **69** divides the upper and lower engagement ends **43**, **45**, wherein the through opening **47** is of reduced diameter than either the upper or lower engagement ends and forms a throat therebetween. According to the present embodiment, the engagement portion **28** is integrally formed with the remainder of the body **24**, such as through mold fabrication, although these components could also be separately manufactured and assembled.

[0031] Completing the description of the body **24** and referring again to FIGS. **1-3**, an integral handle portion **36** is attached to the exterior of the engagement portion **28** of the body **24**, the handle portion extending outwardly from a rear side of the assembly **20** according to this herein described embodiment. The handle portion **36** can be molded as part of the entire assembly or attached by conventional means to the remainder of the assembly **20**.

[0032] In brief and as shown in FIGS. **4-13**, the cap **44** is designed to be releasably attached to the upper engagement end or spout **43** of the engagement portion **28** of the body **24**. According to the present embodiment, the cap **44** is a separate component of the herein described assembly **20** and is also preferably made from a molded plastic material, although other materials could be utilized. The cap **44** is attached by means of a flexible plastic tether **48** to a hinge **50**, which according to this specific embodiment includes a hinge pin **51**, the hinge being connected by known means to the body **24**. The cap **44** according to this exemplary embodiment is defined by a circular configuration and includes a recessed portion formed on an interior surface **56** separating an outer and an inner peripheral ring **49**, **54**, respectively. The outer peripheral ring **49** is preferably inwardly beveled and is locally deformable, enabling the cap to be attached in snap-fitting relation to the spout **43**. The inner peripheral ring **54** is also flexible and is sized to fit within the through opening **47** defined by the annular flange **69** separating the spout **43** and lower engagement end **45**.

[0033] On an exterior facing surface **57** of the cap **44** at substantially the center thereof, a formed recess **58** is provided in. According to this embodiment, a plug **52** provided at the front of the body **24** upon the skirting portion **32** permits the cap **44** to be releasably secured thereto when the cap is in an open position, such as shown in FIGS. **8** and **13**. Alternatively and in lieu of the plug, a recess or cavity or at least one slot or other retention means can be provided on the front of the herein described assembly **20** or can be otherwise disposed thereupon in order to enable the cap **44** to be secured in a reliable manner while in the open position. Alternatively still, it should be realized that a plug could be provided on the cap for receipt in a cavity provided on the body **24** that would permit a similar snap fitting connection and permit the cap **44** to remain stored while in the open position. As noted, other attachment means can be utilized, such as slots or other means, and that those described are intended only to be exemplary.

[0034] The interior surface of the lower engagement end **45** can be defined, according to one version, with a generic thread **46**, FIG. **6**, the diameter of the lower engagement end being appropriately sized to enable the assembly **20** to be threadingly engaged and disengaged with the threaded neck **42** of the beverage container **40** according to one embodiment. In accordance with another embodiment, herein shown by way of the exploded assembly views depicted in FIGS. **4**, **4**(*a*), and **6**, an adapter **66** can be introduced for attachment to the engagement portion **28**, whether releasably or by means of a fixed attachment using glue, heat-staking or the like. The adapter **66** is a substantially cylindrical member that includes an internal thread **67**, FIGS. **4**, **6**, matching the thread of the neck **42** of the beverage container **40**. In this instance, the interior diameter **67** of the adapter **66** must be appropriately sized to engagingly mate with the neck **42** of the bottle **40** while the interior diameter of the lower engagement end **45** must be appropriately sized to accommodate the threaded exterior surface **69** of the adapter. According to one variation, the interior surface of the lower engagement end **45** includes a thread that mates with an external thread **69** of the adapter **66**, wherein the interior surface **67** of the adapter can include a different thread to enable versatility. An elastomeric O-ring (not shown) can further be included between the adapter **66** and the annular flange **69** to further provide additional leak-proofing. According to yet another variation, the adapter **66** can include two different internal threads, a first thread that is provided along an axial upper interior portion and a second thread provided along a lower interior portion. As such, the adapter **66** can be releasably attached by recognizing the appropriate thread of the bottle **40** and rotating either the upper or lower portions into engagement with the threaded neck, to provide additional versatility, the adapter thereby permitting the assembly **20** to accommodate and mate with additional bottle designs.

[0035] In use and referring to FIGS. **7-13**, the threaded cap (not shown) of a beverage container **40** is first twisted off and discarded. The body **24** of the herein described assembly **20** is then attached to the top of the beverage container **40** after the adapter **66** has first been attached to the lower engagement portion of the assembly **20** as shown in FIG. **5**, if needed, depending on the bottle. The body **24** is threaded by gripping the bottle **40** and rotating the bottle in a clockwise direction to tighten the assembly **20** in place and in which a lower surface of the annular flange **69** provides a mechanical stop against over rotation. In the assembled condition, the skirting portion **32** is placed into substantial and direct contact with the top of the bottle **40**.

[0036] In the closed position, the combination of the threaded engagement portion and the cap **44** provides a sufficient and comparable fluidic seal as would be provided by the twist-off cap, if provided alone. In order to access the contents of the bottle **40** and rather then having to untwist the body **24**, the cap **44** can be releasably removed from the top of the bottle **40** through its hinged connection by pushing against a front flange **70** of the cap, releasing the cap from the spout **43** of the body **24**. Upon opening, the cap **44** can be stored using the plug **52** as attached to the recess **58**, also in releasable snap-fitting engagement. In this position, shown in FIGS. **8** and **13**, the position of the cap **44** is no longer a concern and does not interfere with the assembly **20**. The fluid seal between the threaded neck **42** of the bottle **40** and the interior surfaces of the engagement portion **28** prevent spillage other than through the spout **43** through opening **69** wherein the handle portion **36** is used to lift the assembly **20** and attached beverage container **40**. The bottom of the container **40** remains unaffected by way of this attachment and therefore the bottle can be stored in a receptacle (not shown) sized to ordinarily fit the bottle, such as cup or bottle holders typically found in automobiles.

[0037] Upon assembly, the skirting portion **32** besides providing an ergonomic advantage further provides a counterbalance to the handle portion **36** so as to prevent an empty or nearly depleted beverage container **40** from tipping while it remains free standing.

[0038] Referring to FIGS. **14**(*a*)-**14**(*c*), variations **20**(*a*), **20**(*b*) and **20**(*c*) of the herein described assembly are shown in which the skirting portion and body can be suitably configured and designed for aesthetic and detailing purposes in which varied color schemes of the assembly can be employed. It should be understood that other suitable variations can easily be contemplated.

Parts List for FIGS. **1-14**(*c*)

[0039] **20** replaceable bottle cap assembly
[0040] **24** body
[0041] **25** open lower opening
[0042] **27** interior cavity
[0043] **28** engagement section
[0044] **31** threaded portion
[0045] **32** skirting portion
[0046] **36** **36** handle portion
[0047] **40** beverage container (bottle)
[0048] **42** threaded neck
[0049] **43** upper engagement end or spout
[0050] **44** cap
[0051] **45** lower engagement end
[0052] **46** thread, lower engagement end
[0053] **47** through opening
[0054] **48** tether
[0055] **49** outer peripheral ring
[0056] **50** hinge
[0057] **51** hinge pin
[0058] **52** plug
[0059] **54** inner peripheral ring
[0060] **56** interior surface, cap
[0061] **57** exterior surface, cap
[0062] **58** recess
[0063] **66** adapter
[0064] **67** interior thread, adapter

[0065] **68** exterior thread, adapter

[0066] **69** annular flange

[0067] **70** front flange

[0068] It will be readily apparent that numerous variations and modifications are possible within the intended ambits of the invention as defined by the following claims.

1. A replaceable bottle cap assembly for use with a threaded beverage container, said assembly comprising:

a body shaped to substantially conform with the top of a beverage container, the body having a threaded portion that is configured to engage a threaded bottle neck; and

a snap-fitting cap attached to said body, the cap being releasably attachable relative to said threaded portion in order to selectively access the contents of a bottle to which the cap is attached.

2. The assembly as recited in claim **1**, wherein said body includes a skirting portion that is shaped to conform with the curved top of said beverage container.

3. The assembly as recited in claim **1**, including retaining means for retaining said cap when said cap is in an open position.

4. The assembly as recited in claim **3**, wherein said retaining member includes a recess provided in one of said cap and said body for engaging a plug provided in the other of said body and said cap.

5. The assembly as recited in claim **1**, including an adapter having at least one threaded portion, said adapter being interposed between said threaded portion and said neck.

6. The assembly as recited in claim **1**, wherein at least a portion of said body is made from a soft grippable material.

7. The assembly as recited in claim **2**, wherein at least a portion of said skirting portion is made from a soft grippable material.

8. The assembly as recited in claim **1**, including a handle portion.

9. The assembly as recited in claim **8**, wherein said handle portion is integral to said body.

10. The assembly as recited in claim **1**, wherein said body includes an engagement portion, said engagement portion including a lower engagement end that includes said threaded portion and an upper engagement end that receives said cap.

11. The assembly as recited in claim **10**, wherein said cap includes an outer peripheral ring that engages the upper engagement end and an inner peripheral ring that engages an opening of said lower engagement end to provide a fluidic seal when said cap is engaged with said body in a closed position.

12. The assembly as recited in claim **1**, wherein said cap is not integral to said body.

13. The assembly as recited in claim **1**, wherein said cap is hingably attached to said body.

14. A method for manufacturing a replaceable cap assembly for use with at least one bottle, said bottle including a threaded neck, said method comprising the steps of:

providing a body having a threaded portion that can be releasably attached to the threaded neck of said at least one bottle; and

providing a releasable snap-fitting cap for selectively covering said threaded portion, thereby enabling the contents of a beverage container to be accessed for consumption.

15. A method as recited in claim **14**, including the step of providing means for retaining said snap-fitting cap on said body when said cap is not covering said threaded portion.

16. A method as recited in claim **14**, including the step of providing a handle portion in relation to said body to enable said assembly and an attached bottle to be lifted.

* * * * *

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(19) **United States**

(12) **Patent Application Publication**

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(43) **Pub. Date: Dec. 5, 2013**

Lane

(54) **BEVERAGE BOTTLE AND LID WITH BACK BUTTON RELEASE AND BUTTON LOCK**

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(73) Assignee: **Thermos L.L.C.**, Schaumburg, IL (US)

(21) Appl. No.: **13/483,972**

(22) Filed: **May 30, 2012**

Publication Classification

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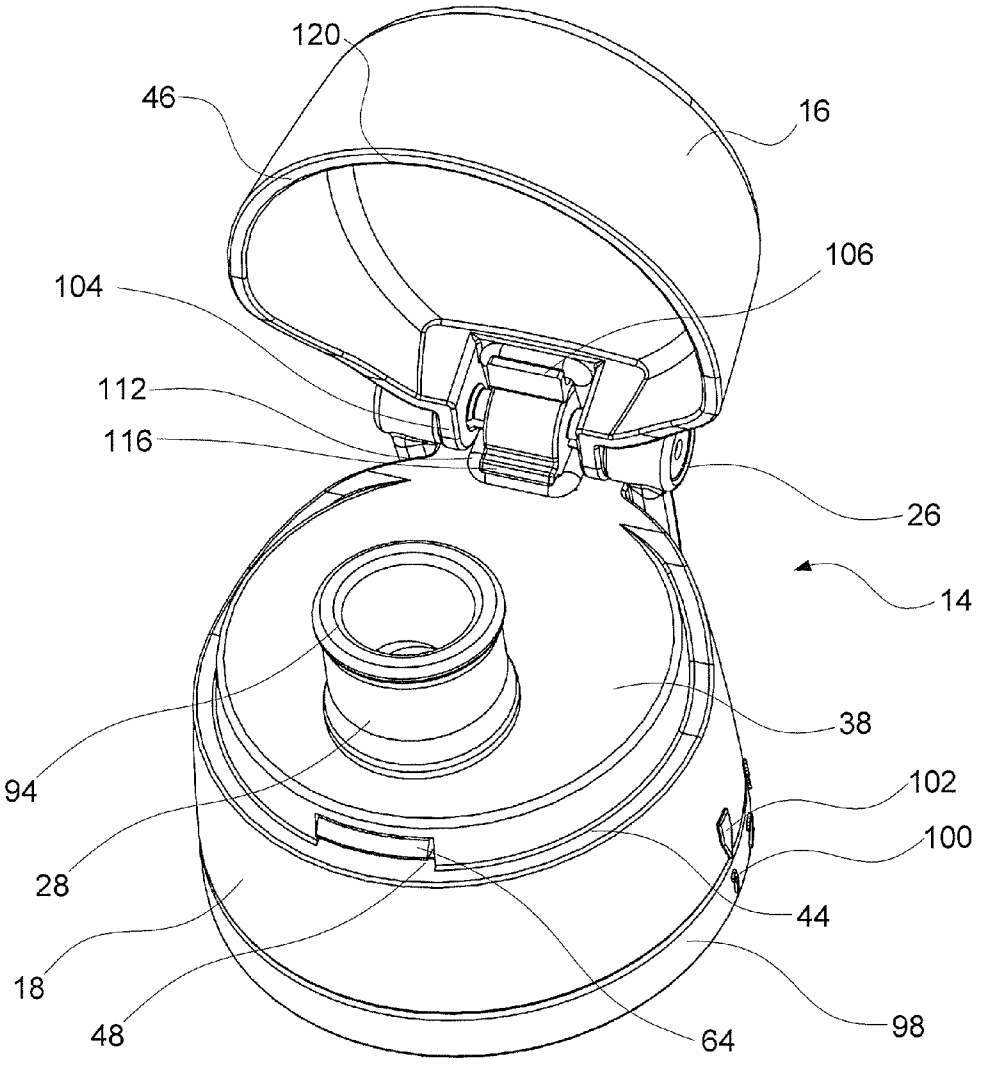
B65D 43/00 (2006.01)

(52) **U.S. Cl.**
USPC **215/237**

(57) **ABSTRACT**

A drink bottle with a removable lid includes an inner lid attached to the mouth of the bottle and an outer lid pivotably mounted to said inner lid. A drink spout extends from the inner lid. The outer lid may be latched into a closed position covering the drink spout. A push button can be selectively actuated to release the latched outer lid, permitting the outer lid to open to access the drink spout. The push button moves a lid slide containing a catch extension that engages a catch notch in the outer lid to latch the outer lid closed. Actuating the push button moves the catch extension out of engagement with the catch notch, thereby opening the outer lid. A push button lock selectively prevents the push button from being depressed and the lid slide from being actuated, thereby locking the outer lid in a latched and closed position.



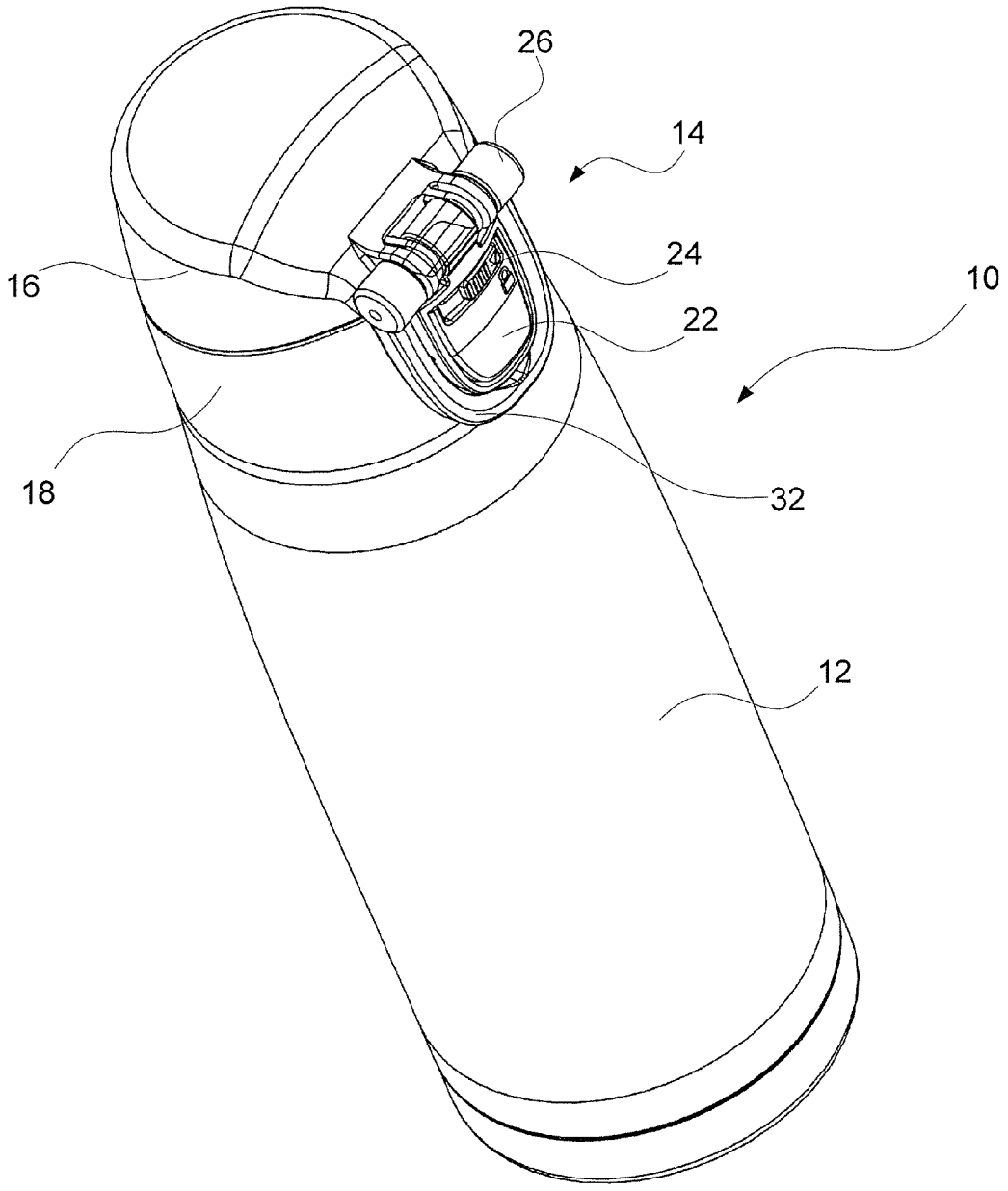


FIG. 1

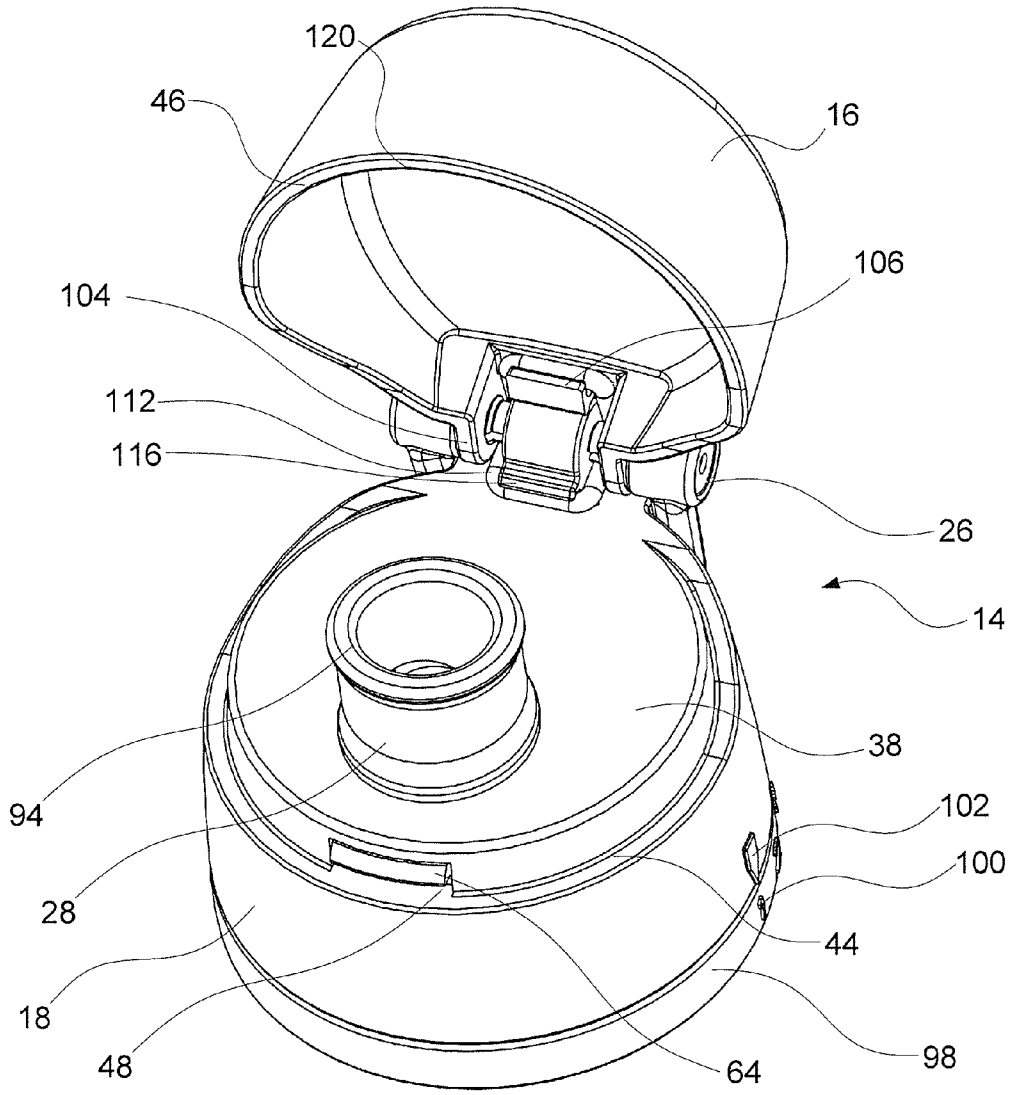


FIG. 2

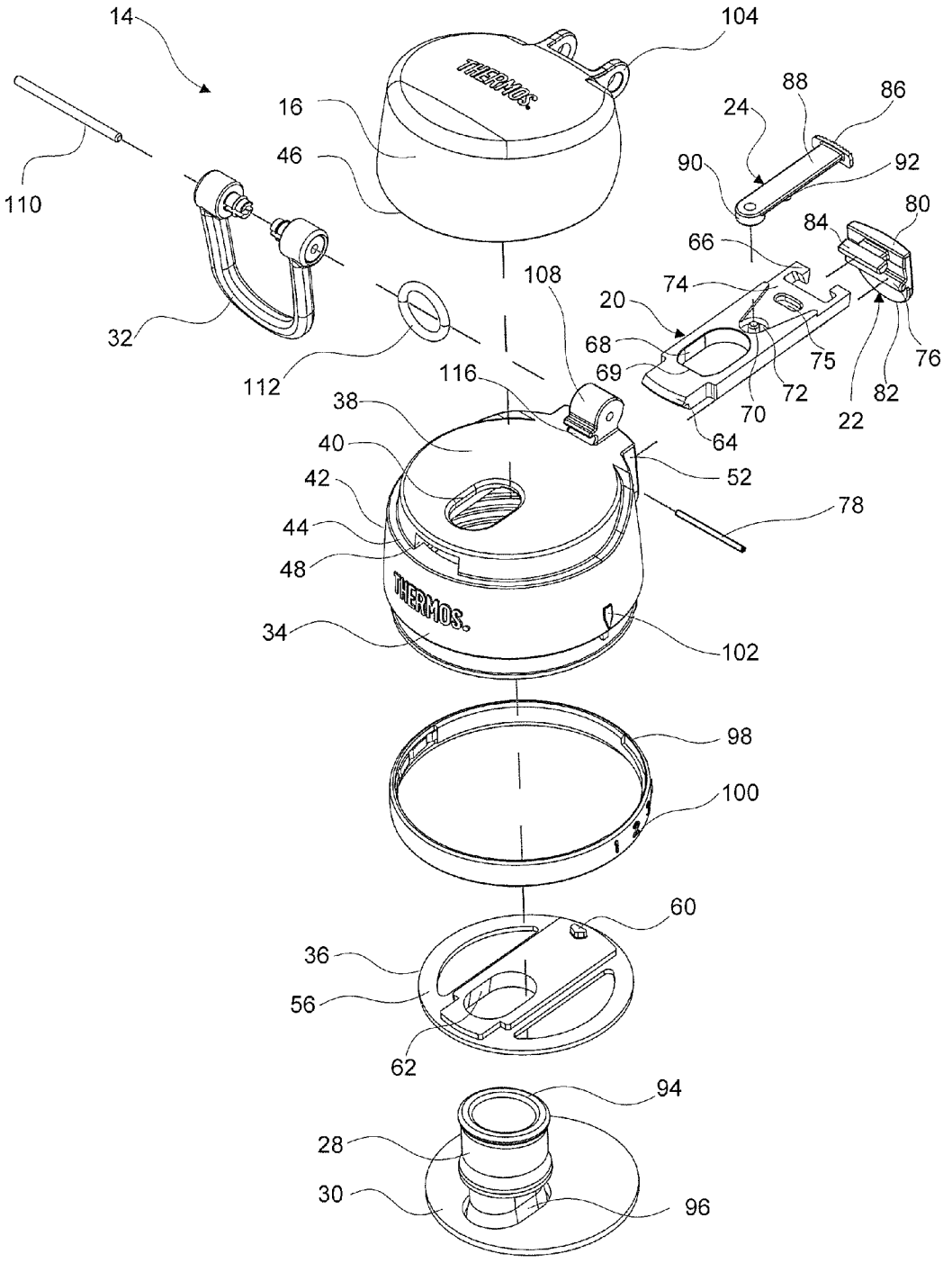

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FIG. 3

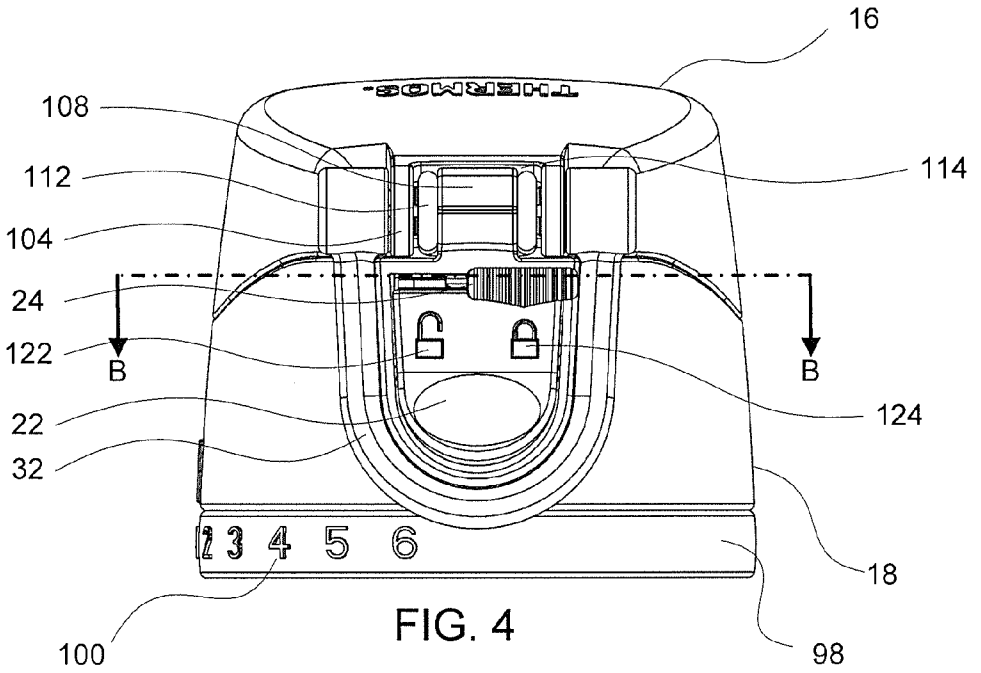
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FIG. 4

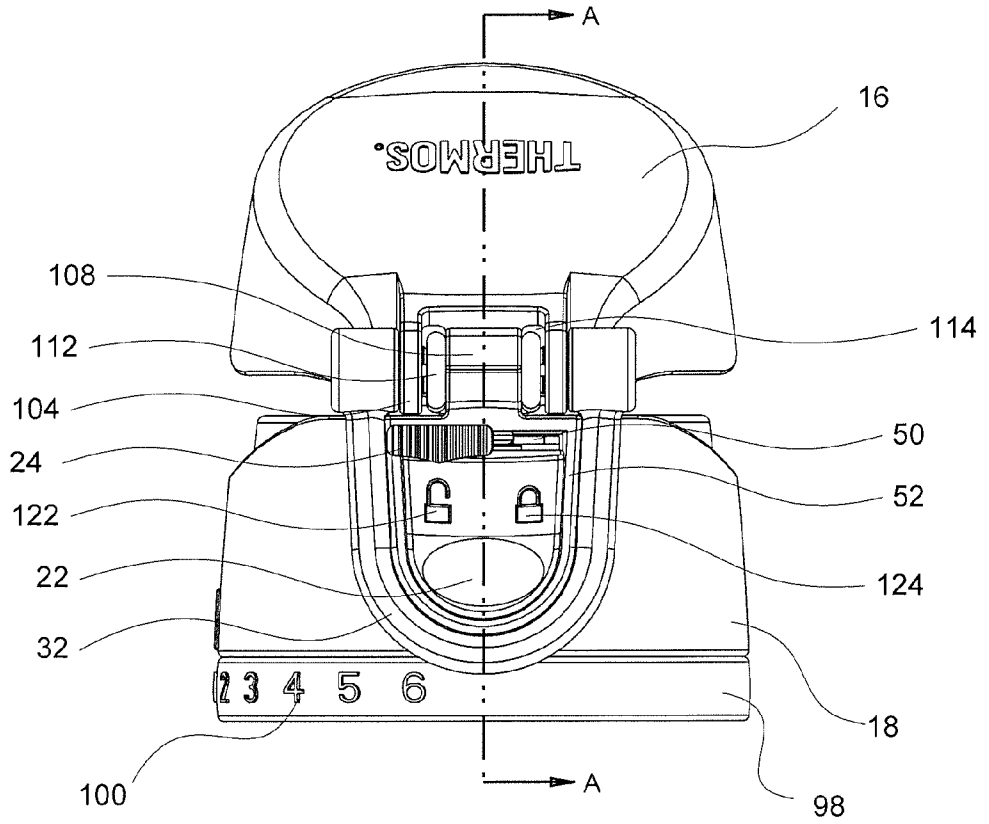
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FIG. 5

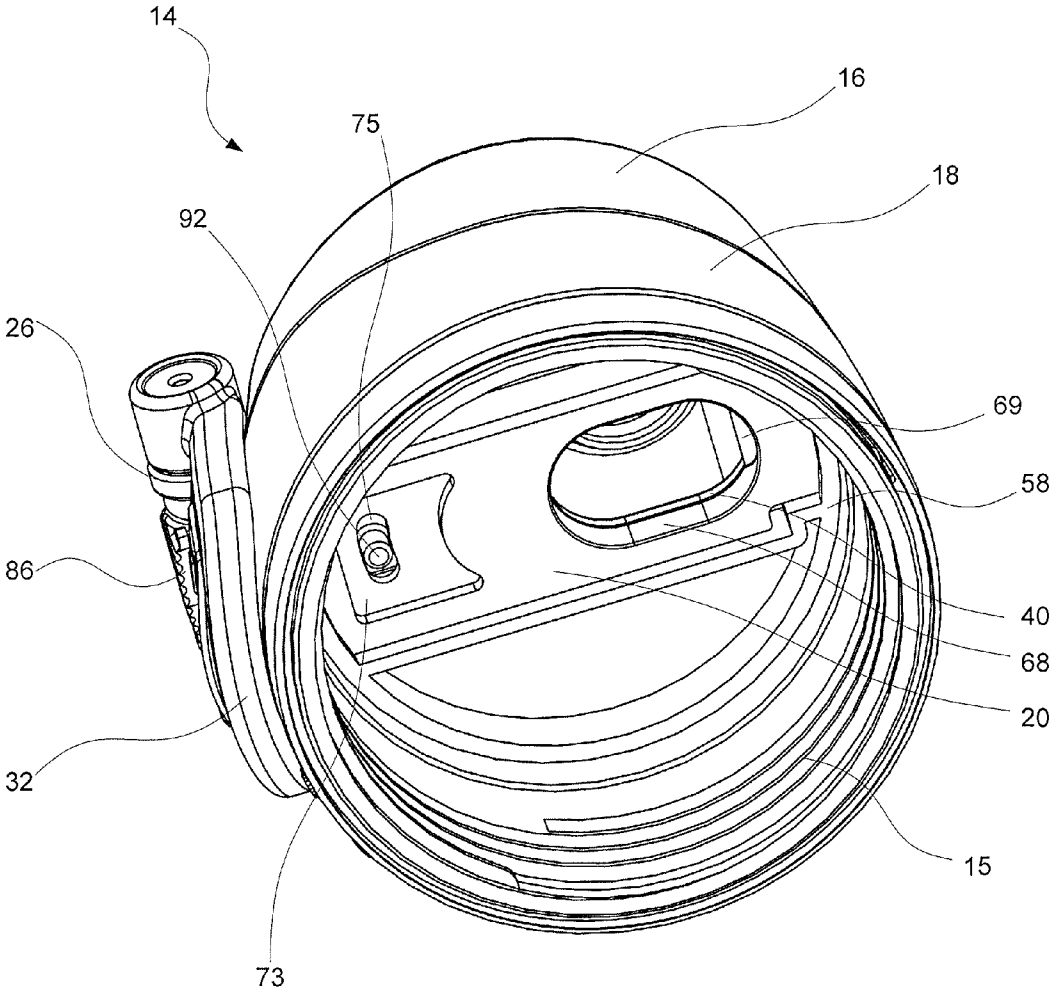
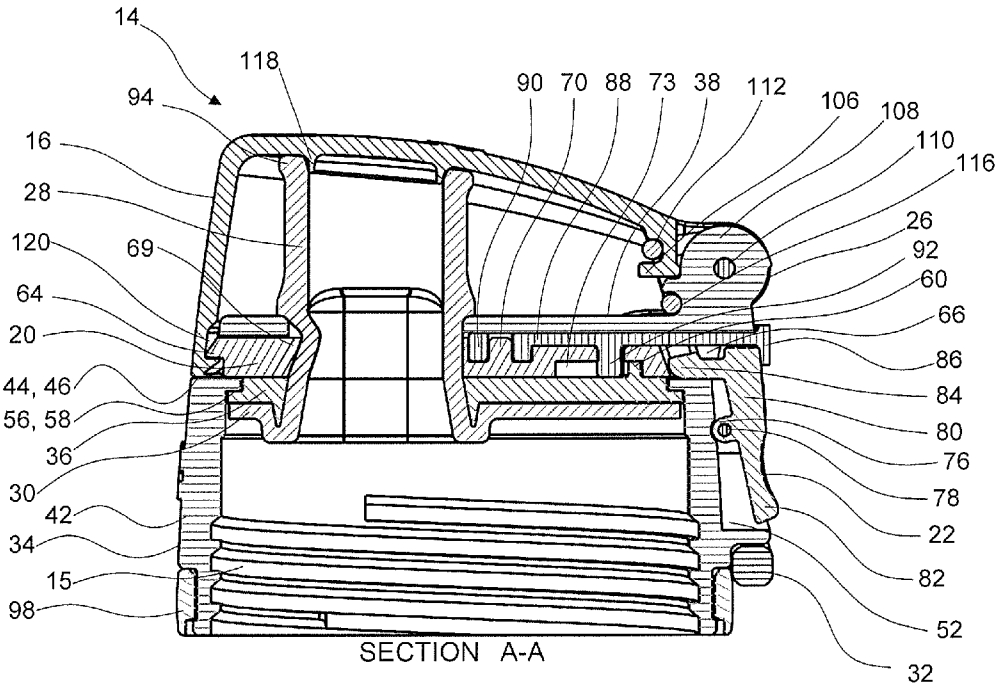


FIG. 6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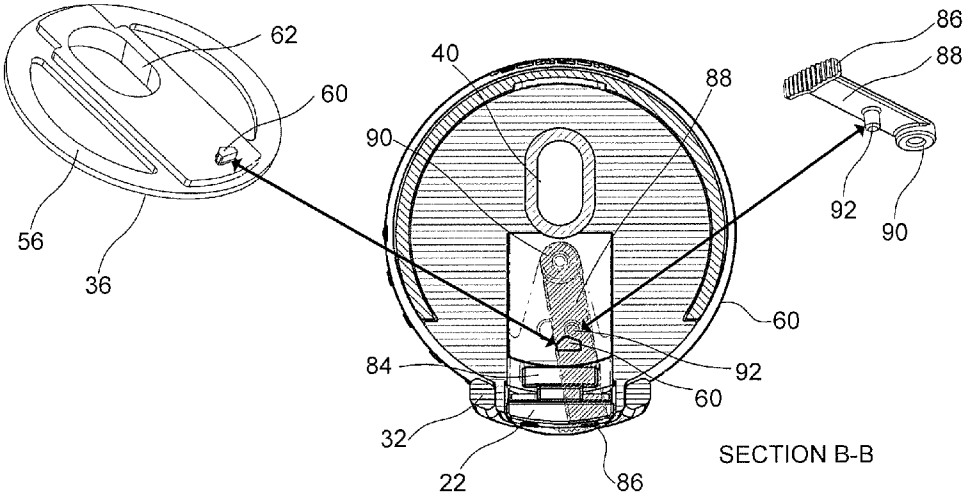
SECTION A-A

FIG. 7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SECTION B-B

FIG. 8

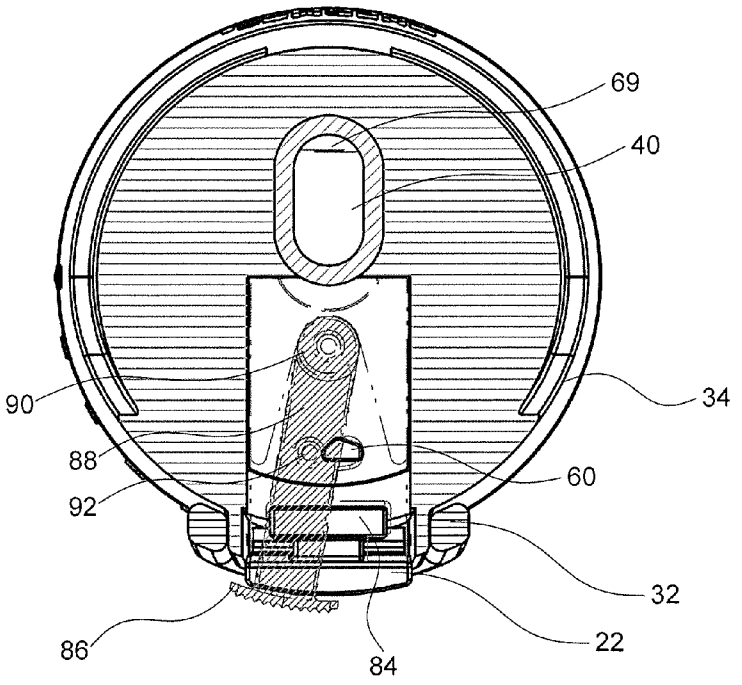
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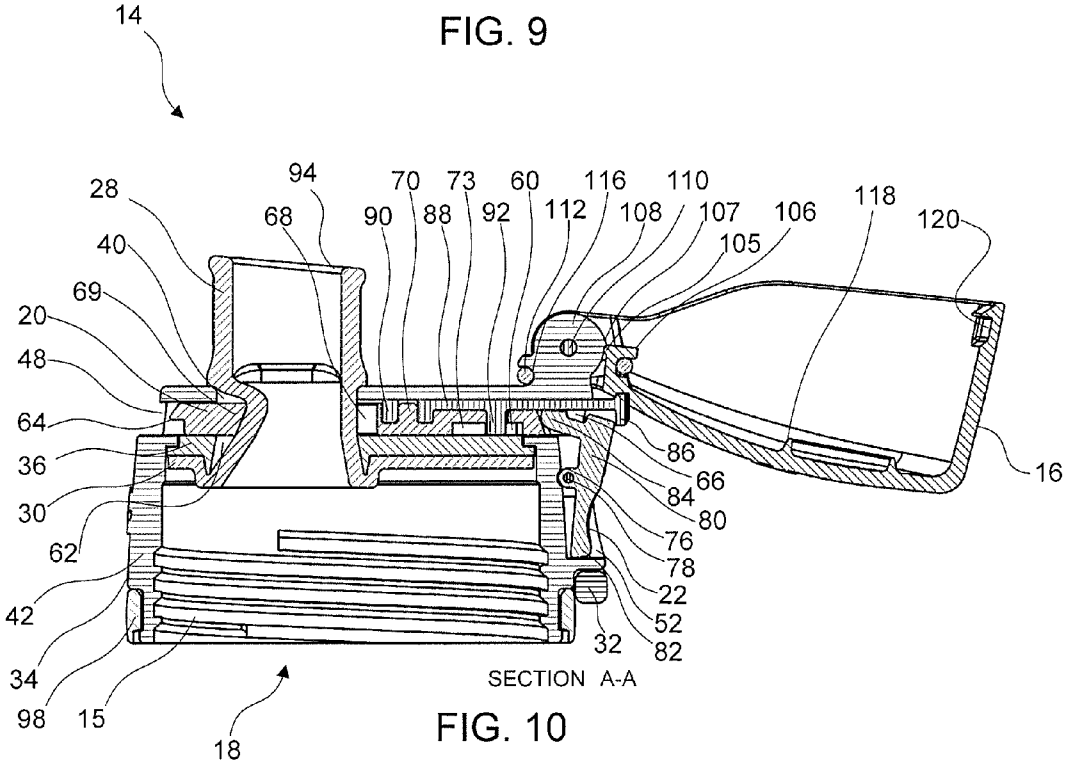
FIG. 9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SECTION A-A

FIG. 10

BEVERAGE BOTTLE AND LID WITH BACK BUTTON RELEASE AND BUTTON LOCK

FIELD

[0001] The present disclosure is directed to a drink bottle having an outer lid attached to an inner lid by a hinge, the outer lid held closed by a moveable extension engaging with a notch in the outer lid and openable by actuating a push button that moves the extension out of engagement with the notch, the push button having a push button lock to prevent actuation of either the push button or moveable extension.

BACKGROUND

[0002] Personal beverage bottles are becoming ever more popular and have moved beyond the common beverage bottle packed with a school lunch or in a lunch box. Gyms are filled with members exercising, and many members bring their own beverage bottles for hydration. Hikers, bikers, walkers, commuters, tourists and many others carry beverage bottles as they go on their way. An increasingly common feature of the beverage bottles is a drink nozzle or spout that offers the ability to drink from the bottle without complete removal of the lid from the bottle. Another feature of some drink bottles is a cover for the drink spout or nozzle to keep the spout or nozzle clean between drinking.

SUMMARY

[0003] The present invention provides a beverage bottle with a removable lid wherein the lid has an inner lid with a drink spout and an outer lid or cover that is hinged to selectively cover and seal the drink spout. The outer lid may be latched to the inner lid when in the closed positioned. A push button on the inner lid can be operated, when in an unlocked condition (as will be described in further detail below), to release the latched outer lid, permitting the outer lid to open so as to permit drinking from the drink spout. The push button is mounted on a pivot structure and connected on one side to one end of a lid slide. The other end of the lid slide extends to a portion on the inner lid opposite to the hinge and forms a catch extension that engages with a catch notch in the outer lid to hold or latch the outer lid closed. On pressing on one end of the push button towards the radial center of the bottle, the other end of the push button moves away from the radial center of the bottle and pulls the lid slide with it. The catch extension at the end of the lid slide opposite the push button moves out of engagement from the catch notch in the outer lid, thereby permitting the outer lid to open. A push button lock is mated to the lid slide and is configured to selectively lock the lid slide in place, which inhibits the operation of the push button release by removing the user's ability to depress the push button, actuate the lid slide, and/or move the catch extension out of engagement with the catch notch in the outer lid.

[0004] In one embodiment, a lid biasing element causes the outer lid to be moved toward the fully open position. The biasing element may be made of a flexible, resilient material that, after being deformed, moves back into its original shape.

[0005] In another embodiment of the invention, the lid slide is biased toward a latching position by a deformable portion of the spout that functions as a biasing element so that the catch extension that holds the outer lid in the closed position protrudes into its engagement position except when a release force is exerted on the push button.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The present invention is described in detail below with reference to the attached drawing figures, wherein:

[0007] FIG. **1** is a top, rear isometric view showing an embodiment of a drink bottle and lid of the present disclosure;

[0008] FIG. **2** is a top, front isometric view of an embodiment of a removable lid of the present disclosure;

[0009] FIG. **3** is an exploded isometric view of an embodiment of a removable lid of the present disclosure including a separate view of an O-ring spring;

[0010] FIG. **4** is a back elevation view of an embodiment of a removable lid of the present disclosure, showing a handle, push button, a push button lock in a locked position, and an outer lid in a closed position;

[0011] FIG. **5** is a back elevation view of an embodiment of a removable lid as shown in FIG. **4**, showing the push button lock in an unlocked position and the outer lid in an unlatched and partially open position, including section line A-A along which the cross sections of FIGS. **6** and **9** are taken;

[0012] FIG. **6** is a bottom, left side isometric view of an embodiment of a removable lid of the present disclosure, having the lower cover and the combined gasket and drink spout removed;

[0013] FIG. **7** is a right side cross-sectional view of the removable lid of FIG. **4** having the outer lid in the closed position;

[0014] FIG. **8** is a top cross-sectional view of the removable lid of FIG. **4** in the closed position with the push button lock in a locked position including separate views of the locking elements;

[0015] FIG. **9** is a top cross-sectional view of the removable lid of FIG. **4** in the closed position with the push button lock in an unlocked position;

[0016] FIG. **10** is a right side cross-sectional view of the removable lid of FIG. **4** having the outer lid in the fully open position with the push button in a depressed position, the lid slide actuated, and the catch extension retracted.

DETAILED DESCRIPTION

[0017] Various embodiments now will be described more fully hereinafter with reference to the accompanying drawings, which form a part hereof, and which show, by way of illustration, specific embodiments. However, this invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. The following detailed description is not to be taken in a limiting sense.

[0018] Throughout the specification and claims, the following terms take the meanings explicitly associated herein, unless the context clearly dictates otherwise. The phrase "in one embodiment" does not necessarily refer to the same embodiment, although it may. Furthermore, the phrase "in another embodiment" does not necessarily refer to a different embodiment, although it may. Thus, as described below, various embodiments of the invention may be readily combined without departing from the scope or spirit of the invention.

[0019] In addition, as used herein, the term "or" is an inclusive "or" operator, and is equivalent to the term "and/or," unless the context clearly dictates otherwise. The term "based on" is not exclusive and allows for being based on additional factors not described, unless the context clearly dictates oth-

erwise. In addition, throughout the specification, the meaning of "a," "an," and "the" include plural references. The meaning of "in" includes "in" and "on."

[0020] Referring first to FIG. **1**, a beverage bottle **10** includes a bottle body **12** to which is attached a removable lid **14**. The bottle body **12** may be of any suitable material, including metal, plastic, glass, rubber and combinations thereof and may be insulated or un-insulated. In the illustrated embodiment, the bottle body **12** is formed from a plastic or other polymer material, which produces a flexible and/or squeezable bottle body **12**. In an alternate embodiment, the bottle body **12** may be formed of an insulated stainless steel body part on the bottom of which is fastened a plastic or rubber base (not shown). In yet another embodiment, the bottle body **12** may be of a double-walled construction, between which is an evacuated space, forming a so-called vacuum bottle. The removable lid **14** of the present invention may be used on a flexible bottle, as illustrated, or on a rigid bottle. The flexible bottle permits the user to squeeze the bottle to force the beverage from the bottle, while the rigid bottle requires the user to draw the liquid out of the bottle through suction or by pouring the liquid from the bottle. As disclosed above, the bottle body **12** may include a base that provides protection for the bottom of the bottle body **12** as well as providing a relatively wide surface on which the beverage bottle **10** is rested when standing. The base may be constructed of a plastic material, such as polypropylene, although other materials are of course possible. The bottle body **12** may have a smooth or contoured surface that may be provided with patterns, such as by printing, painting, embossing or otherwise.

[0021] The removable lid **14** may be secured to a mouth (not shown) of the bottle body **12** by a threaded connection, as disclosed in the illustrated embodiment shown in FIGS. **1**, **6** and **9**. Threads are formed about the mouth (not shown) of the bottle body **12** and complimentary threads **15** are formed within the removable lid **14** so that the lid **14** may be threadably attached to and detached from the bottle body **12**. The bottle body **12** may be a narrow-mouth bottle or a wide-mouth bottle. The removable lid **14** depicted in the drawing figures is configured to be used on a wide-mouth bottle. While the above embodiment discloses threaded structures used to attach the lid **14** to the bottle body **12**, it should not be read to limit the manner in which the lid **14** may be attached to the bottle body **12**. Accordingly, in alternate embodiments, the lid **14** may be attached to the bottle body **12** by alternate attaching or fastening structures, such as a snap-on lid that fits onto a rim on the bottle, a bayonet attachment, or other lid attachment structures.

[0022] Referring to FIGS. **2** and **3**, in one embodiment, the removable lid **14** includes: an outer lid **16**; an inner lid **18**; a lid slide **20** disposed within the inner lid **18**; a push button **22** connected to the lid slide **20** for selectively actuating the lid slide **20**; a push button lock **24** connected to the lid slide **20** for selectively locking the push button **22** to prevent it from being depressed and to prevent the lid slide **20** from being actuated; and a hinge **26** that connects the outer lid **16** to the inner lid **18**. The removable lid **14** further includes a flexible drink spout **28** that has a gasket **30** disposed at a lower end thereof, the drink spout **28** extending through the inner lid **18** such that the gasket **30** is located internal to the inner lid **18**. A handle **32** may be attached to the inner lid **18** and/or the outer lid **16** to provide a convenient method of carrying the bottle **10** or attaching the bottle **10** to a backpack, gym bag or the like. In one embodiment, the handle **32** is attached about the outer ends of the hinge **26**, thus permitting the handle **32** to be a hinged handle. The handle **32** and outer lid **16** share the hinge **26** so that only one hinge pin need be provided for both elements.

[0023] Referring further to FIGS. **2** and **3**, the inner lid **18** may be comprised of an upper cover **34** and a lower cover **36**. The upper cover **34** may take many different configurations. In one embodiment, the upper cover **34** is primarily shaped as an upside down cup, having a substantially closed top surface **38**, except for a spout opening **40** disposed therein, and a cylindrical sidewall **42** extending downward from an outer perimeter thereof. The top surface **38** of the upper cover **34** has a decreased diameter, such that a recessed outer peripheral edge **44** is formed around all, or part, of the outer circumference of the top surface **38**.

[0024] A catch extension opening **48** is formed in an upper portion of the cylindrical side wall **42** that is perpendicular and adjacent to the recessed outer edge **44** of the upper cover **38**. Also disposed in the cylindrical sidewall **42**, located radially opposite to the catch extension opening **48**, is a push button opening **50** (see FIG. **5**), which is surrounded at its perimeter by a push button frame **52**. The push button frame **52** serves to aid in properly seating and containing the push button **22** when the removable lid **14** is assembled and protects the button, for example if the bottle is dropped or bumped against an object.

[0025] Referring to FIGS. **3**, **6**, and **7**, the lower cover **36** of inner lid **18** is located internal to the upper cover **34**, such that a perimeter of an upper surface **56** of the lower cover **36** (see FIG. **3**) is seated against and/or mated to the internal bottom surface **58** of the recessed edge **44** (see FIGS. **6** and **7**), which acts as a stand-off, so as to form a lid slide compartment between the upper cover **34** and the lower cover **36**. This lid slide compartment has the catch extension opening **48** disposed in the sidewall **42** at one side of the compartment and the push button opening **50** (see FIG. **5**) disposed in the sidewall **42** at the opposite side. The lower cover **36** includes a lower cover protrusion **60** that extends upward from the upper surface **56** of the lower cover **36** and resides inside the compartment between the upper cover **34** and the lower cover **36**. The lower cover **36** also includes a lower cover spout opening **62** that is aligned with the spout opening **40** in the upper cover **34**.

[0026] The lid slide **20** is a slider mechanism that is responsible for keeping the outer lid **16** latched closed when the lid is placed in the closed position. The lid slide **20** is located within the lid slide compartment formed between the mated upper and lower covers **34** and **36**, and slidably engages with both the push button opening **50** (see FIG. **5**) and the catch extension opening **48** disposed in the upper cover **34**. One end of the lid slide **20** contains a catch extension **64** that slidably engages with the catch extension opening **48**. The opposite end of the lid slide **20** contains a push button engagement extension **66** that slidably engages with the push button opening **50**. Further disposed in the lid slide **20** is a lid slide spout opening **68**, that is generally aligned with the spout openings **40** and **62** in both the upper and lower covers **34** and **36**, and includes a biasing edge **69** protruding inward into the spout opening **68**. The lid slide **20** further includes a bottom recess **73** (see FIGS. **6** and **7**) disposed in a bottom surface of the lid slide **20** that provides clearance for, and covers, the lower cover protrusion **60** that, when assembled, extends upward from the upper surface **56** of the lower cover **36** and into the

lid slide compartment. The lid slide's bottom recess **73** allows the lid slide **20** to slide over the lower cover protrusion **60** within the slide compartment without making contact with the lower cover protrusion **60**. The lid slide **20** further includes a lock hinge pin **70** disposed in a cylindrical recess **72** located in an upper surface of the lid slide **20**. The lock hinge pin **70** permits the lid slide **20** to hingeably mate with the push button lock **24**. The lid slide also includes a top recess **74** disposed in a top surface of the lid slide **20**, into which the push button lock **24** will be seated when mated thereto, such that the top surface of the push button lock **24** does not protrude much higher, if at all, above the top surface of the lid slide **20**. This will help to ensure that the lid slide **20** and mated push button lock **24** will have a consistently smooth sliding action within the lid slide compartment. The lid slide further includes a lock protrusion opening **75** that creates a passage between the bottom recess **73** and the top recess **74** of the lid slide **20**.

[0027] The push button **22** is a button that is used to actuate the lid slide **20** to open the outer lid **16**. The push button **22** includes a pivot connection **76** that holds the push button **22** within the push button frame **52** by a pivot pin **78** that is slidably engaged through complimentary holes located in both the frame and pivot connection **76**. Pivot connection **76** and mated pivot pin **78** divide the push button **22** into an upper end **80** and a lower end **82** thereby allowing a rotational rocking movement of the push button **22** around the pivot connection **76**. In this manner, the push button **22** acts as a lever. A slide engagement extension **84** extends from the upper end **80** of the push button **22** and engages with the push button engagement extension **66** located at the end of the lid slide **20**. With the slide engagement extension **84** mated with the push button engagement extension **66** of the lid slide **20**, the push button **22** can pivot about the pivot connection **76** to pull on the push button engagement extension **66** of the lid slide **20**, thereby slidably actuating the lid slide **20**, as well as the extension and retraction of the catch extension **64** from within the catch extension opening **48** located at the opposite end of the lid slide **20**.

[0028] Referring to FIGS. **3-9**, in one embodiment, the push button lock **24** is a locking lever that serves to place the push button **22** and the lid slide **20** in either a locked or unlocked condition. The locked condition prevents the push button **22** from being depressed and the catch extension **64** at the end of the lid slide **20** from retracting back into the catch extension opening **48** in the upper cover. The unlocked condition permits a user to depress the push button **22**, thereby actuating the lid slide **20**, and retracting the catch extension **64** back into the catch extension opening **48**. Referring to FIG. **3**, the push button lock **24** has a knurled thumb switch **86**, a lever arm **88** connected at one end to the thumb switch, a lock hinge cylinder **90** connected to the opposite second end of the lever arm **88**, and a push button lock protrusion **92** disposed on the lever arm between the thumb switch and hinge cylinder and extending downward from the lever arm **88**. The push button lock **24** is mated to the lid slide **20** by the insertion of the lock hinge cylinder **90** over the lock hinge pin **70** disposed on the lid slide **20**, and the insertion of the lock protrusion **92** into the lock protrusion opening **75** in the lid slide **20** (see FIGS. **3** and **6-10**).

[0029] Referring to FIGS. **2**, **3**, **7**, and **10**, the flexible drink spout **28** is the spout through which a user accesses and removes fluids held in the assembled beverage bottle **10**. The spout **28** is formed from a pliable material, such as a food-grade silicon rubber that flexes and bends readily. The flexible drink spout **28** may be comprised of a short drinking tube that extends from an open top end, or mouth **94**, which mouth is located external to the inner lid **18**, through the spout openings **40**, **62**, and **68** in each of the upper cover **34**, lid slide **20**, and lower cover **36**, and is connected at a bottom open end **96** to the gasket **30**. The gasket **30** is thus located internal to the inner lid **18** and is seated against a bottom surface the lower cover **36**. The diameter of the gasket **30** is approximately the same as that of the lower cover **36** and is otherwise configured to be large enough to cover the mouth of the bottle body **12** to which the removable lid **14** will be attached. The drink spout **28** provides user access to the fluid or beverage held within the interior of body bottle **12**, when the bottle **10** is fully assembled

[0030] As disclosed previously, the inner lid may further include threads **15** formed within or on the lower interior surface of the sidewall **42**, as shown in FIGS. **6** and **7**, for mating with complimentary threads (not shown) disposed about the mouth of the bottle body **12**. In one embodiment, referring to FIGS. **2-7**, the removable lid **14** may also optionally include a drink counter that is comprised of a rotating dial **98** disposed on the exterior surface of the open bottom end of the sidewall **42** of the inner lid **18**. The dial **98** includes a plurality of sequential numbers, beginning with the number "1", disposed thereon. Adjacent to the rotating dial **98** and disposed on or in the outer surface of the sidewall **42** is a dial indicator **102**, such as a raised or recessed dot, hash mark, or arrow. In alternate embodiments, the dial indicator **102** can also be a marking made with ink, paint, or other applied markings, or any combination of raised protrusions, recesses, or markings. The rotating dial can be rotated such that each number will sequentially align with the dial indicator. The dial is intended to allow users of the bottle **10** to keep track of the number of bottles of fluid they have drank in a given time period, such as the number of bottles of water a user has drank during a given day. However, it is to be understood that alternate configurations of the drink dial are contemplated as being within the scope of this disclosure, such as a drink dial containing markings permitting a user to track the total number of ounces, or other fluid volume measurements, consumed. Further still, in additional alternate embodiments of the inner lid **18** a rotating dial and complimentary indicator, as disclosed above, is not present. Rather, in alternate embodiments the inner lid **18** does not include any drink counter of any type.

[0031] Referring to FIGS. **3-5**, **7** and **10**, the outer lid **16**, similar to the inner lid **18**, is generally cup-shaped and has a closed top end and generally cylindrical sidewall(s) extending downward therefrom, ending in the substantially open circumferential lower edge **46** that mates with the recessed edge **44** of the inner lid **18**, when the lid is in a closed position. The outer lid **16** further includes a pair of outer lid hinge tabs **104** disposed on the outer surface of the outer lid **16** and a lid biasing element retention hook **106** extending from an inner surface of the outer lid **16**. Complimentary to the lid hinge tabs **104** is an inner lid hinge barrel **108** that is integrally connected to the top surface **38** of the inner lid **18**. The lid hinge tabs **104** are positioned on either side of hinge barrel **108** and a hinge pin **110** is disposed through a center pin hole in the hinge tabs **104** and the mated hinge barrel **108** to form the lid hinge **26**. In one embodiment, a "U" shaped handle **32** having handle hinge barrels disposed at each end of the "U" shape is positioned such that the handle hinge barrels are

generally located on the outsides of the lid hinge tabs **104**. A hinge pin **110** is inserted through the handle hinge barrels, the lid hinge tabs **104**, and the hinge barrel **108**, so as to form the hinge **26** for the lid, as well as a hinged handle.

[0032] Referring to FIG. **7**, the outer lid further includes a spout seal **118** for sealing the open mouth **94** of the spout **28** when the outer lid **16** is in a closed position. The shape of the spout seal **118** is complimentary to the shape of the mouth **94** of the spout **30**, such that when the outer lid **16** is closed, the spout seal **118** mates with the mouth **94** of the spout **28**. In one embodiment, the mouth **94** of the spout **28** is circular in shape and the spout seal **118** is in the form of a complimentary-shaped raised circular ring that extends or protrudes from the inner top surface of the outer lid **16** and has an outer side wall that is tapered from the base of the protruding ring toward the center of the ring. The taper permits the protruding end of the spout seal **118** to be guided inside of the mouth of the spout **28** when the outer lid **16** is closed, while the tapered sides of the spout seal **118** apply a force sufficient to provide a liquid tight seal against the internal edges of mouth **94** of the spout **28**, when the spout seal **118** is fully seated upon closing of the outer lid **16**. The compression forces applied to the lid by the spout may cause the lid to open when the latch is released. In addition, the outer lid **16** includes a catch notch **120** that is disposed on the interior surface of the circumferential lower edge **46** near the bottom of the outer lid **16**. Lastly, the outer lid **16** may also include structures (not shown) to help guide the spout **28** such that it will be properly seated against or around the spout seal **118** when closing the outer lid **16**.

[0033] Referring to FIGS. **2-5**, the removable lid **14** further includes a lid biasing element **112** that is disposed around the biasing element retention hook **106** on the interior of the outer lid **16**, passes through a pair of outer lid slots **114** disposed in the outer lid **16** between the hinge tabs **104**, passes between each end of the hinge pin **110** and the top surface **38** of the inner lid **18**, and is retained in a biasing element retention slot **116** disposed at the base of the hinge barrel **108** on the inner lid **18**. In its free state, lid biasing element **112** takes the shape of an O-ring and is made of a flexible material that is resilient, such as rubber or silicone, and biases the outer lid **16** toward the fully open position by exerting tension forces on both the retention hook **106** from the outer lid **16** and the retention slot **116** from the inner lid **18**. When the outer lid **16** is in the closed position, the lid biasing element **112** is stretched and bent almost 180-degrees back on itself as it extends from the biasing element retention slot **116** and around the ends of the hinge pin **110** to connect with biasing element retention hook **106**. Since lid biasing element **112** is stretched, it exerts tension forces that cause the outer lid **16** to move toward the open position and to be retained there when the outer lid **16** is unlatched and free to move about the hinge **26**. In alternate embodiments, the lid biasing element **112** may be made of other suitable materials and have other configurations that provide similar functionality. The biasing element **112** may provide the primary force for moving the outer lid **16** to the fully open position, or the outer lid **16** may be moved toward the fully open position by the user and retained there by the biasing element **112**. The force of the biasing element **112** on the outer lid **16** may be easily overcome by the user in order to move the outer lid **16** to the closed position.

[0034] Referring to FIGS. **3**, **6**, and **7**, to assemble the removable lid **14** the push button lock **24** is mated with the lid slide **20** by inserting the lock protrusion **92** on push button lock **24** into the lock protrusion opening **75** in the lid slide **20**, and mating the lock hinge cylinder **90** of the push button lock **24** with the lock hinge pin **70** on the lid slide **20**. When these two components are mated, the lock protrusion **92** protrudes downward through the protrusion opening **75** in the lid slide **20** and into the bottom recess **73** of the lid slide **20**. Next, the push button **22** is mated with the lid slide **20** by engaging the slide engagement extension **84** on the push button **22** with the push button engagement extension **66** at the end of the lid slide **20**. The assembled lid slide **20**, push button lock **24**, and push button **22** are then assembled into the upper cover **34**, by inserting the end of the lid slide **20** with the catch extension **64** into the push button opening in the sidewall **42** of the upper cover **34** until the catch extension protrudes through the catch extension opening **48** and the push button is fully seated into the push button frame **52**. The pivot pin **78** is then inserted through the push button frame **52** in the upper cover **34** and the push button **22** to hingeably connect them together and prevent the removal of the push button **22**, lid slide **20**, and push button lock **24**. In this condition, the spout openings **40** and **68** in both the lid slide **20** and the upper cover **34** are aligned.

[0035] Referring Further to FIGS. **3** and **7**, the lower cover **36** is next inserted into the upper cover **34** from the open bottom end of the upper over 34 such that (1) the lower cover spout opening **62** is aligned with the spout openings **68** and **40** in both the lid slide **20** and the upper cover **34**, and (2) the lower cover protrusion **60** is directed upward and protrudes into the bottom recess **73** of the lid slide **20**. Accordingly, both the lower cover protrusion **60** and the push button lock protrusion **92** now reside in the space defined by the bottom recess **73** in the lid slide **20**. Depending on the positioning of the push button lock **24**, the lower cover protrusion **60** may selectively interfere with the free linear movement of the push button lock protrusion **92** when attempting to depress the push button to slidably actuate the lid slide **20**. The lower cover **36** is further seated in place such that a perimeter of the upper surface **56** of the lower cover **36** is seated against and/or mated to the internal bottom surface **58** of the recessed edge **44** of the upper cover **34**. The properly seated lower cover **36** may be permanently affixed to the upper cover **34** by, for example, sonic welding the lower cover **36** to the upper cover **34**, or other such known techniques. Various seals may also be used to prevent liquids from passing between the various components that form the inner lid **18**. In alternate embodiments, the lower cover **36**, gasket **30**, and spout **28** may be manufactured so as to form a single-piece lower cover **36**. The spout can be installed now or later as described hereinafter.

[0036] Referring to FIGS. **3-5** and **7**, the handle **32** may be optionally mated to the outer lid **16** so that integral guide pins at the ends of the "U" shaped handle are seated inside the hinge tabs **104** of the outer lid **16**. The outer lid hinge tabs **104** are next aligned with each end of the inner lid hinge barrel **108**. The lid biasing element **112** is inserted into the biasing element retention slot **116** at the base of the inner lid hinge barrel **108** of the inner lid **18**, through the outer lid slots **114**, and stretched over the biasing element retention hook **106** in the outer lid **16**. The lid hinge pin **110** is then inserted into the aligned hinge components, such that the biasing element **112** passes between the hinge pin **110** and the top surface **38** of the inner lid **18**. The rotating dial is also snapped in place at the bottom of the inner lid **18**.

[0037] Lastly, the combined spout **28** and gasket **30** are installed in one of two ways. In a first way, the disk-shaped gasket **30** is folded or rolled and is stuffed from above through

the spout openings **40**, **68**, and **62** in the upper cover, lid slide, and lower cover respectively. Once the gasket **30** is through the spout openings, it is pulled to seat the spout **28** in place and the gasket **30** is flattened within the inner lid so that it is seated against the lower cover **36** to form a seal over the mouth of the bottle. In a second way, the spout **28** is inserted from the open bottom end of the inner lid **18** upwards through the spout openings **62**, **68**, and **40** of each of the lower cover **36**, the lid slide **20**, and the upper cover **34**, until the gasket **30** is properly seated against the bottom surface of the lower cover **36** and the spout **28** fully extends through the spout opening **40** in the upper cover **34**. With the removable lid fully assembled, a user may proceed to use the bottle **10**. While the above disclosure provides for various steps to assemble the removable lid **14** and bottle **10**, it should be understood the various assembly steps may be performed in a different order than those disclosed above, or fewer or additional assembly steps may be performed, depending on the specific configuration of the removable lid and bottle.

[0038] In operation, the bottle functions as follows. In one embodiment, with the removable lid **14** in a closed position, the user removes the removable lid **14** from the bottle body **12**, for example, by unscrewing the threads **15** on the inner surface of the sidewall **42** of the lid **14** from the threads disposed on the outer surface of the bottle neck (not shown). After the user fills the bottle with the chosen beverage, the lid **14** is re-attached to the bottle body **12**. When the removable lid **14** is attached to the bottle body **12**, the gasket **52** covers the mouth of the bottle body **12** and is sandwiched between the top surface of the mouth of the bottle and the bottom surface of the lower cover **36** of the removable lid **14** with sufficient force to provide a liquid tight seal between the mouth of the bottle and the gasket **30**. This liquid tight seal prevents fluid from leaking out of the assembled beverage bottle **10** at the mating surfaces of the bottle body **12** and removable lid **14**, and only permits fluid to exit the assembled bottle **10** through the spout **28** when the outer lid **16** is in an open position.

[0039] Referring to FIG. **7**, when the outer lid **16** is in a closed position, a circumferential lower edge **46** of the outer lid **16** mates with the recessed edge **44** on the upper cover **34** of the inner lid **18** so as to shield the top surface **38** of the inner lid **18** from dirt and contamination and to enclose the spout **28** within the interior of the outer lid **16**. Furthermore, in the closed position the outer lid **16** seals the mouth **94** of the spout **28** by mating the spout seal **118** into and against the open mouth **94** of the spout **28**. When the spout seal **118** and mouth **94** of the spout are mated, the inner surface of the mouth **94** of the spout **30** is stretched slightly around the tapered outer surface of the mated spout seal **118**. This ensures that when the outer lid **16** is closed, there is sufficient force between the tapered outer surface of the spout seal **118** and the inner surface of the mouth **94** of the spout **28** to form a liquid tight seal with the mouth **94** of the spout **28**, thus preventing any liquid from escaping from within the bottle **10** while the outer lid **16** is closed. The outer lid is kept in the closed position over the inner lid **18** by the engagement of the catch extension **64**, which is located at the end of the lid slide **20** and generally protrudes from the catch extension opening **48** in the inner lid **18**, with the catch notch **120** disposed in the outer lid **16**. While the illustrated embodiments show a notch in the outer lid and an extension on the end of the lid slide, in alternative embodiments, alternative structures may be utilized for maintaining the lid in a closed position, such as reversing the locations of the notch and extension, or use of other mechanical or magnetic locking mechanisms and features.

[0040] Referring to FIGS. **4**, **5**, and **7-9**, to open the removable lid **14** and gain access to the beverage contained in the bottle **10**, the push button lock **24** must first be placed into an unlocked position, which in one embodiment corresponds to the thumb switch **86** being rotated to the left side of the push button **22** above the icon depicting an unlocked padlock **122** (see FIG. **5**). This in turn rotates the lever arm **88** of the push button lock **24** clockwise (when viewed from in a top-down view) and moves the attached push button lock protrusion **92** out of alignment with the lower cover protrusion **60**, so that when the lid slide is actuated, the push button lock protrusion will slide with the lid slide **20** without making contact with the lower cover protrusion **60** (see FIG. **9**) that remains stationary. With the push button lock **24** in the unlocked position, the user is able to push on the lower end **82** of the push button **22** towards the radial center of the removable lid **14**. Pushing on the button **22** rotates the push button **22** about the pivot connection **76** and causes the upper end **80** of the push button **22**, as well as the slide engagement extension **84** extending from the upper end **80** of the push button **22**, to move radially outward. The slide engagement extension **84** on the push button **22** thus pulls on the mated push button engagement extension **84** at the end of the lid slide **20** in the same direction. This motion in turn actuates the lid slide **20**, causing the catch extension **64** disposed at the opposite end of the lid slide **20** (1) to slidably be retracted into the inner lid **18** through the catch extension opening **48**, and (2) to disengage from the catch notch **120** in the outer lid **16**, which releases the outer lid **16** from the closed and latched position so that it may move to the open position. The removable lid is shown in cross section in FIG. **10** depicting the push button **22** in a depressed condition, the connected lid slide **20** in the slidably actuated and retracted position, and the outer lid **16** shown in the open position.

[0041] Referring to FIGS. **7** and **10**, generally, the catch extension **64** disposed at an end of the lid slide **20** extends through and protrudes from the catch extension opening **48**, except when the push button **22** is depressed and causes the catch extension **64** to be pulled into catch opening **48**. When the push button **22** is released, the catch extension **64** is automatically biased back into its previous state/position and again protrudes from within the catch extension opening **48**. To achieve the automatic return of the catch extension to its protruding position, the flexible spout **28** that passes through the spout openings **62**, **68**, and **40** in each of the lower cover **36**, the lid slide **20**, and the upper cover **34** acts as a biasing element on the lid slide, forcing the catch extension on the lid slide to protrude from the catch extension opening in the upper cover. The biasing is achieved as a result of the reactionary force from the side wall of the drink spout **28**, after the sidewall of the spout **28** is depressed slightly inward toward a center of the spout **28** by the biasing edge **69** of the lid slide spout opening **68**. At all times, the biasing edge **69**, which is disposed in the lid slide spout opening **68** nearest the catch extension **64**, applies a slight force against the sidewall of the flexible drink spout **28** passing there through, causing the sidewall to indent inward toward the center of the drink spout at the location of the biasing edge **69**. This in turn causes the sidewall of the spout **28** to apply a force in the opposite direction, back against the biasing edge **69** of the lid slide **20** and toward the catch extension **64** on the lid slide **20** and catch extension opening **48** in the upper cover **34**. Accordingly, in

this manner, the spout **28** also acts as a biasing mechanism for the outer lid latching mechanism to keep the catch extension **64** biased to protrude from the catch extension opening **48** without requiring an additional biasing element. Thus, catch extension **64** can be moved out of engagement with the catch notch **120**, but is biased back into its original position by the spout **28** applying a force on the lid slide **20**.

[0042] Referring to FIGS. **2**, **4**, and **7**, when the outer lid is in a closed position, the lid biasing element **112** is stretched around the hinge pin **110** and is at all times under tension, which is in turned transferred to the biasing element retention slot **116** of the inner lid **18** and the biasing element retention hook **106** of the outer lid **16**. When the push button is depressed and the catch extension is disengaged from the catch notch in the outer lid, the tension in the lid biasing element **112**, as applied to both the biasing element retention slot **116** of the inner lid **18** and the biasing element retention hook **106** of the outer lid **16**, causes the outer lid **116** to automatically rotate on its own into an open position, where some of the tension in the lid biasing element **112** is relieved. The outer lid **16** may be held in this open position by the remaining tension in the lid biasing element **112**.

[0043] Referring to FIG. **10**, when the outer lid **16** is in the fully open position, a projection **105** extending from the back of the biasing element retention hook **106** on the outer lid **16** bears against the inner lid hinge barrel **108** and catches on a ridge **107** on the hinge barrel **108** to retain the outer lid **16** in the open position.

[0044] With the outer lid in the open position, the spout seal **118** in the outer lid **16** is rotated away from the mouth **94** of the drink spout **28** and the drink spout **28** is open and accessible to the user. The user may drink from the bottle **10** by tipping the top of the bottle, and accordingly, the mouth **94** of the spout **28** toward him, like a drinking glass or typical soda bottle, and sipping the beverage from the mouth **94** of the spout **28** as it exits through the spout **28**. In the case of flexible bottle bodies **12**, the user may drink from the bottle **10** by squeezing the bottle body **12** and forcing the beverage out through the spout **28** into the user's mouth, or by a combination of both aforementioned techniques. When the user drinks through the drink spout **28**, the liquid passes from within the bottle body **12** over the fluid tight gasket **30**, into the bottom end **96** of the spout **28** that is connected to the gasket **30**, and out the mouth **94** of the spout **28**. If the present lid is to be used on a flexible squeeze bottle body **12** in which the user squeezes the bottle to force the beverage from the drink spout **28**, as disclosed above, no venting holes are needed. In addition, if the present lid is to be used with rigid bottle configurations, because of the larger diameter of the drink spout **28** and the ability to sip on one side or edge of the spout **28**, leaving an air gap between the user's upper lip and the opposite side of the spout, no separate venting hole is needed.

[0045] However, in still alternate embodiments (not depicted), the removal of liquid from the bottle **10** may cause a negative air pressure within the bottle **10**, especially for rigid bottle configurations in which the spout may be completely covered by the mouth of a user. In such embodiments, it is contemplated that a vent hole may be optionally provided through the inner lid, through which air may flow into the bottle to prevent the buildup of such negative pressure, thereby making drinking from the bottle easier. Such a vent hole would be sealed off upon closing of the outer lid **16** to prevent fluid from leaking there through when the outer lid **16** is in the closed position. In such an embodiment, sealing the vent hole when the outer lid **16** is closed helps prevent leaking of the liquid from the drink bottle **10**, for example when the bottle is stored on its side such as when placed into a school locker or gym bag. When the outer lid **16** is opened, the vent hole is unsealed, permitting the flow of air into the interior of the bottle **10** when a user drinks from the spout **28**.

[0046] Referring to FIGS. **4-5** and **7-10**, to close the outer lid **16**, the user rotates the lid about hinge **26** until the catch notch **120** in the outer lid **16** re-engages with the catch extension **64** protruding through the catch extension opening **48** in the inner lid **18**. If the user wants to ensure that the push button **22** won't be accidentally depressed at an inopportune time, say for example when the bottle is laying on its side while inside a backpack or other bag, he can rotate the push button lock **24** to a locked position, which in one embodiment corresponds to the thumb switch **86** being slidably rotated to the right side of the push button **22** above the icon depicting a locked padlock **124** (see FIG. **4**). This in turn rotates the lever arm **88** of the push button lock **24** counterclockwise (when viewed from in a top-down view) and forces the attached push button lock protrusion **92** to slip behind the lower cover protrusion **60**, such that the push button lock protrusion **92** is placed in direct contact with, and in radial alignment with, the stationary lower cover protrusion **60** (see FIG. **8**). With the two protrusions **92** and **60** in direct contact and alignment with each other, relative to the sliding direction of the lid slide **20**, when the user attempts to depress the push button to actuate the lid slide **20**, the lower cover protrusion **60** interferes with the sliding movement of the push button lock protrusion **92** that would otherwise move with the lid slide **20**, thus preventing any movement or actuation of the lid slide **20**, and accordingly, any movement of the push button **22**. Thus, when the push button lock **24** is in the locked position, it is not possible to either depress the push button **22** or actuate the lid slide **20**, and therefore, the catch extension **64** cannot disengage from the catch notch **120** and the outer lid **16** will remain in the closed and latched position.

[0047] The outer lid **16** and inner lid **18** are of polypropylene in one embodiment, but may be made of any number of plastics such as PET, HDPE, LDPE or other polyesters. The release button **22** may be of polypropylene or another material. As noted above, the drink spout **28** is made of silicone rubber. Other materials are of course possible and are encompassed within the scope of the present invention.

[0048] Thus, there has been shown and described a drink bottle having a removable lid that has a drinking spout and a lockable cover or outer lid over the drinking spout. Although other modifications and changes may be suggested by those skilled in the art, it is the intention of the inventor to embody within the patent warranted hereon all changes and modifications as reasonably and properly come within the scope of his contribution to the art.

What is claimed is:

1. A drink bottle and lid, comprising:

a bottle having a mouth with a lid engaging structure;

a removable lid having a cooperating engaging structure for selective engagement with the lid engaging structure of the bottle;

the removable lid including an inner lid and an outer lid, the inner lid including the cooperating engaging structure, the inner lid defining a spout opening, the inner lid including a first hinge portion;

the outer lid including a catch notch and a second hinge portion for pivoting engagement with said first hinge

portion so that said outer lid is pivotable relative to said inner lid between an open position and a closed position;

a push button having a pivot such that actuating one end of the push button radially inward towards a center line of the bottle causes a second end of the push button to move radially away from the center line of the bottle;

a lid slide moveable between an outer lid-latching position and an outer lid-releasing position, the lid slide having a first end and a second end, the first end of the lid slide coupled to the second end of the push button through a push button opening, and the second end of the lid slide having a catch extension for engagement with the catch notch of the outer lid;

a push button lock connected to said lid slide and moveable between a locked position and an unlocked position, the push button lock preventing the movement of said lid slide from the lid-latching position to the lid-releasing position when in the locked position, and the push button lock permitting movement of said lid slide from the lid-latching position to the lid-releasing position when in the unlocked position;

a drink spout mounted in said spout opening of said inner lid, said drink spout extending from said inner lid at a position to permit a user to drink fluid contained within the bottle from said drink spout when said outer lid is in the open position, said outer lid covering said drink spout when said outer lid is in said closed position, said drink spout configured to bias the lid slide into the lid-latching position, wherein actuating the push button causes the lid slide to move to the lid-releasing position in opposition to a biasing action of said drink spout; and

a lid biasing element coupled between the inner lid and the outer lid to bias the outer lid into the open position.

2. A drink bottle and lid as claimed in claim **1**, wherein said lid biasing element is an O-ring.

3. A drink bottle and lid as claimed in claim **1**, wherein the drink spout is a tube having a central axis, an open top end, an open bottom end, and a flexible tubular sidewall disposed between the top end and the bottom end, the top end defining a mouth of the drink spout, the bottom end connected to a gasket extending outwardly therefrom, said drink spout mounted within said spout opening of said inner lid such that said bottom end of the drink spout and said connected gasket are both located in an interior of said inner lid, and said mouth of said drink spout is exterior to and extends from said inner lid;

4. A drink bottle and lid as claimed in claim **3**, wherein the lid slide is configured to force said tubular sidewall of said drinking spout to deflect inward toward the central axis of the spout and away from the catch extension when the lid slide is in the lid-latching position, said lid slide being biased into the lid-latching position by the application of a force by the deflected tubular sidewall against said lid slide, in the direction of the catch extension and away from said central axis.

5. A drink bottle and lid as claimed in claim **1**, wherein the drink spout passes through a lid slide spout opening disposed in the lid slide

6. A drink bottle and lid as claimed in claim **1**, further comprising:

a handle coupled to the inner lid.

7. A drink bottle and lid as claimed in claim **1**, further comprising:

a spout seal disposed on an interior surface of the outer lid, wherein when the outer lid is in the closed position a mouth of the drink spout that is disposed at a top end of said drink spout is substantially sealed by the spout seal.

8. A drink bottle and lid as claimed in claim **1**, further comprising:

a rotating dial disposed about an outer surface of said inner lid and containing numerical markings thereon; and

a dial indicator adjacent said rotating dial for marking the position of the rotating dial.

9. A drink bottle and lid, comprising:

a bottle with a mouth;

a removable lid attached to the bottle over the mouth, the removable lid having,

an outer lid with a catch notch on a circumferential edge,

an inner lid with an upper cover and a lower cover, with the inner lid being pivotally coupled to the outer lid at a location opposite the catch notch,

a push button pivotally connected to the inner lid between an upper end and lower end of the push button,

a lid slide coupled to the upper end of the push button and located between the upper and lower covers, the lid slide extending substantially across the diameter of the upper and lower covers and terminating in a catch extension such that when the outer lid is closed over the inner lid the catch extension engages the catch notch to keep the outer lid closed over the inner lid,

a drinking spout passing through the upper and lower covers of the inner lid, the drink spout being configured to bias the lid slide outwardly in the direction of the catch extension, wherein actuating the lower end of the push button causes the upper end of the push button to move the lid slide in opposition to the biasing direction of the drink spout and disengage the catch extension from the catch notch;

a push button lock configured to prevent disengagement of the catch extension of said lid slide from the catch notch in said outer lid when the push button lock is in a locked position, and permit disengagement of the catch extension of said lid slide from the catch notch in said outer lid when the push button lock is in an unlocked position.

10. A drink bottle and lid as claimed in claim **9**, further comprising:

a lid biasing element extending between the outer lid and inner lid at a location proximate to the ends of the pivotal couple between the outer and inner lids to bias the outer lid into the open position.

11. A drink bottle and lid as claimed in claim **10**, wherein said lid biasing element is an O-ring.

12. A drink bottle and lid as claimed in claim **9**, wherein the drink spout passes through a lid slide spout opening disposed in the lid slide.

13. A drink bottle and lid as claimed in claim **9**, further comprising:

a handle coupled to the inner lid.

14. A drink bottle and lid as claimed in claim **9**, further comprising:

a spout seal disposed on an interior surface of the outer lid, wherein when the outer lid is in the closed position, a mouth of the drink spout, disposed at a top end of said drink spout, is substantially sealed by the spout seal.

15. A drink bottle and lid as claimed in claim **9**, wherein the drink spout is a tube having a central axis, an open top end, an open bottom end, and a flexible tubular sidewall disposed

between the top end and the bottom end, the top end defining a mouth of the drink spout, the bottom end connected to a gasket extending outwardly therefrom, said drink spout mounted within said spout opening of said inner lid such that said bottom end of the drink spout and said connected gasket are both located in an interior of said inner lid, and said mouth of said drink spout is exterior to and extends from said inner lid.

16. A drink bottle and lid as claimed in claim **15**, wherein the lid slide is configured to force said tubular sidewall of said drinking spout to deflect inward toward the central axis of the spout and away from the catch extension when the catch extension is engaged with the catch notch of the outer lid, said lid slide being biased in the direction of the catch notch by the application of a force by the deflected tubular sidewall against said lid slide in the direction of the catch extension.

17. A drink bottle and lid as claimed in claim **9**, further comprising:

a rotating dial disposed about an outer surface of said inner lid and containing markings thereon; and

a dial indicator adjacent said rotating dial for marking the position of the rotating dial.

18. A drink bottle and lid, comprising:

a bottle having a mouth with a lid engaging structure;

a removable lid having a cooperating engaging structure for selective engagement with the lid engaging structure of said bottle;

said removable lid including an inner lid and an outer lid, said inner lid including said cooperating engaging structure for engagement with said bottle, said inner lid and said outer lid being selectively securable to one another in a closed position, said inner lid defining a spout opening, said inner lid including an upper cover and a lower cover;

a drink spout mounted in said spout opening of said inner lid, said drink spout extending from said inner lid at a position to permit a user to drink fluid contained within the bottle from said drink spout when said outer lid is in an open position, said outer lid covering said drink spout when said outer lid is in said closed position;

said inner lid including a first hinge portion, said outer lid including a second hinge portion for pivoting engagement with said first hinge portion so that said outer lid is pivotable relative to said inner lid between said open position and said closed position; and

a retractable outer lid latching mechanism located within said upper cover and said lower cover of said inner lid;

the retractable outer lid latching mechanism including a lid slide with a latching feature located on a distal end of the lid slide, the locking feature being biased by a sidewall of said drink spout in a direction towards the distal end of the lid slide;

a push button coupled to a proximal end of said lid slide to actuate release of the latching mechanism; and

a push button lock coupled to the outer lid latching mechanism to prevent actuation of the latching mechanism when the push button lock is moved into a locked position;

wherein in a latched position, the latching feature engages a mating latching feature in the upper lid to keep the outer lid closed, and the lid slide being actuable by the push button to move the lid slide towards the proximal end of the lid slide against the biasing of the sidewall of said drink spout to disengage the latching feature from the mating latching feature.

19. A drink bottle and lid as claimed in claim **18**, further comprising:

a lid biasing element coupled between the inner lid and the outer lid and each side of a pin that couples the first and second hinge portions, where the lid biasing element biases the outer lid into the open position.

20. A drink bottle and lid as claimed in claim **18**, wherein the lid slide is configured to force the sidewall of the drinking spout to deflect inward toward the central axis of the spout and away from the catch extension when the lid slide is in the lid-latching position, the lid slide being biased into the lid-latching position by the application of a force by the deflected sidewall against the lid slide in the direction of the catch extension and away from the central axis of the spout.

21. A drink bottle and lid as claimed in claim **18**, wherein the drink spout passes through a spout opening in the lid slide.

22. A drink bottle and lid as claimed in claim **18**, further comprising:

a handle coupled to the inner lid.

23. A drink bottle and lid as claimed in claim **18**, further comprising:

a spout seal disposed on an interior surface of the outer lid, wherein when the outer lid is in the closed position a mouth of the drink spout that is disposed at a top end of said drink spout is substantially sealed by the spout seal.

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