SECURITY CLOSURE FOR A CONTAINER

Inventors: Richard John Wagner, Prescott, AZ (US); Sandra Gurnard, Pollock Pines, CA (US)

Correspondence Address:
Kenneth Bower
314 Ironstone Lane
Elverson, PA 19520 (US)

Appl. No.: 12/134,570
Filed: Jun. 6, 2008

Related U.S. Application Data
Provisional application No. 60/929,037, filed on Jun. 8, 2007.

Publication Classification
Int. Cl. B65D 55/44 (2006.01)

ABSTRACT
The present invention is a security closure for enclosing an opening of a container includes a security lid having openings for lock tabs on the container. The lock tabs mate with openings on the combination lid by inserting and rotating the container. Lock dials are used to maintain the security lid and the container in a closed relationship.
SECURITY CLOSURE FOR A CONTAINER
CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of U.S. Provisional Application No. 60/929,037 filed on Jun. 8, 2007.

STATEMENT REGARDING FEDERA LLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT

[0003] Not Applicable

INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC

[0004] Not Applicable

BACKGROUND OF THE INVENTION

[0005] 1. Field of the Invention
[0006] This invention relates to a security closure for closing the top opening of a container to prevent unauthorized access to the contents of the container. The invention has particular utility when used to close a drinking glass, being utilized for example to prevent introduction of drugs or other harmful substances into a drink while the glass is unattended.

[0007] 2. Description of Related Art
[0008] It is known that drugs or other harmful substances have occasionally been added to drinks without the knowledge of the persons consuming the drinks. Some of these substances, including gamma-hydroxybutyric acid (GHB) and Rohypnol (roofies), known as “date rape” drugs, have been added to the drinks of women in public bars to reduce the woman’s ability to ward off sexual advances.

[0009] Various devices have been marketed to protect the contents of a container. Most often, these devices have been designed to protect against unauthorized removal of the container’s contents rather than protecting against introduction of foreign substances. Also, the design of the previously marketed devices lacks ease of use to make them serviceable in the applicable settings.

[0010] By way of example U.S. Pat. No. 190,292 to Deey provides a locking device for bottles. Deey includes a combination locking mechanism which is placed over a bottle stopper to prevent removal of the stopper. Deey does not provide lugs for sliding an automatic locking mechanism. Therefore, Deey requires multiple actions to fully protect the contents of the container.

[0011] U.S. Pat. No. 3,059,801 to Dragon provides a bottle top closure with a combination lock. The dial of the combination lock are on the same axis as the container, which limits usefulness for application to drinking glasses. In addition, Dragon does not provide means for automatically engaging the lock with normal movement of the closure relative to the container.

[0012] Similar to Dragon, U.S. Pat. No. 3,445,021 to Johnson provides a combination locking closure for containers. Johnson provides a locking mechanism to prevent access to potentially harmful substances, such as poisons. The dials are on the same axis as the container, which limits usefulness in the realm of drinking glasses. Moreover, Johnson does not provide for automatic lock actuation with rotation of the closure.

[0013] U.S. Pat. No. 3,684,117 to Leopoldi provides a dial-actuated safety cap. Leopoldi provides a lid for engaging a threaded container opening. Since the Leopoldi mechanism comprises large dials with multiple crevices, the device is susceptible to soiling by fluids such as alcoholic drinks or other beverages. The threads are also uncomfortable when they are pressed against a user’s lips.

[0014] U.S. Patent Application 2006/0207958 to Hamer provides a secured bottle cap for a medication bottle. Hamer provides a lid for engaging a threaded container opening, such as a medication bottle. The Hamer device provides many exposed moving parts—making it unlikely to function well as a beverage container since liquids will likely solidify freezing the lock in position and the hard to reach parts would be difficult to clean.

[0015] In addition, there are instances in the art in which the intention was to prevent the introduction of foreign substance into a drink. By way of example, U.S. Patent Application 2005/0097931 to Miller provides a drink locking mechanism, specifically designed to act on commercial containers, such as beer bottles and cans. The locking mechanism engages the interior of the container, making it difficult to apply to a drinking glass.

[0016] British patent GB2428238 to DeAmoko provides an anti spiking drinking vessel to prevent the spiking of a person’s drink. DeAmoko discloses a one-way vessel in which the contents can be pored out, but nothing can be added in the top. The vessel can be cleaned through a removable cap. However, the complexity of the design would make it difficult to clean. Moreover, no details are provided as to a lockable portion of the closure.

[0017] Finally, U.S. Pat. No. 6,786,346 to Gurnard provides a security closure for a container. Gurnard describes a closure with a plurality of flexible independently movable skirt portion segments. The Gurnard patent shows multiple parts which would be difficult to assemble and disassemble by a person in a bar or club. Moreover, the Gurnard design does not provide a locking latch which is activated by the relative rotation between the container and the closure making it difficult to use.

[0018] What is needed is a container and security closure that protects the user from harm, yet is simple to operate and clean.

BRIEF SUMMARY OF THE INVENTION

[0019] The preferred embodiment of the present invention is a security closure for a container which selectively encloses an opening of a container. The security closure includes a lock set that is integral with the security closure. The lock set has multiple dials with numbers, letters or other indicia imprinted on the outer periphery of each dial. Each dial has a hidden keyway which corresponds to one of the outer imprinted indicia. In operation, an owner that knows the combination to the security closure can rotate each dial until the correct permutation is reached. The owner can then attach or detach the security closure from the container while the lock set is unlocked. While attached to the container, the security closure is sealed such that a pressure differential can be maintained. When the owner removes the closure, he or she must rotate approximately ¼ turn, during which the seal is broken and the interior of the container can gradually vent.

[0020] There has thus been outlined the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter
of the claims appended hereto. In as much as the foregoing has outlined rather broadly the more pertinent and important features of the present invention in order that the detailed description of the invention that follows may be better understood so that the present contribution to the art can be more fully appreciated. Additional features of the invention will be described hereinafter which form the subject of the claims of the invention. It should be appreciated by those skilled in the art that the conception and the disclosed specific methods and structures may be readily utilized as a basis for modifying or designing other structures for carrying out the same purposes of the present invention. It should be realized that those skilled in the art that such equivalent methods and structures do not depart from the spirit and scope of the invention as set forth in the appended claims.

Therefore, it is an object of the present invention to provide a security closure for a container which prevents unauthorized access to the contents of the container.

Yet another object of the present invention is to provide a security closure for a container that is lightweight, durable and inexpensive to manufacture.

It is a further object of the present invention to provide a security closure for a container that is manufactured such that each security closure can be made with random unlocking combinations which will individually be known only to the purchaser or owner.

It is a further object of the invention to provide a security closure for a container that seals the container contents and can maintain a pressure differential between interior of the container the exterior atmosphere.

Still another object of the present invention to provide a security closure for a container that safely vents the interior of the container as the owner removes the security closure from the container.

Yet another object of the present invention is to provide a security closure for a container that must be visibly damaged in order to gain unauthorized access to the container contents.

It is a further object of the present invention to provide a security closure for a container that is easily locked and unlocked by the owner.

Yet another object of the present invention is to provide a security closure for a container that can be cleaned by conventional dish and glass washing methods.

**BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)**

Various other objects, features and attendant advantages of the present invention will become fully appreciated through consideration of the accompanying drawings and the detailed description following, in which like reference characters designate the same or similar parts throughout the several views, and wherein:

**FIG. 1** shows an exploded view of the security closure and the container.

**FIG. 2** shows a top perspective view of the security closure assembled to the container.

**FIG. 3a** shows the latch in the locked position with the dials rotated to allow the latch to move into the unlocked position.

**FIG. 3b** shows the latch in the unlocked position.

**FIG. 4a** shows section A-A from FIG. 2. In FIG. 4a, the security closure has just been placed on the container, and twisting has not yet begun.

**FIG. 4b** shows section A-A from FIG. 2. In FIG. 4b, the security closure has been placed on the container and fully twisted to engage and move the latch to the locked position.

**FIG. 5a** shows section B-B from FIG. 2 with only the security closure shown.

**FIG. 5b** shows section C-C from FIG. 2.

**FIG. 6** shows a second embodiment of the present invention wherein the lugs of the container are moved away from the rim of the container.

**DETAILED DESCRIPTION OF THE INVENTION**

**FIG. 1**. Referring to FIG. 1, a first embodiment of the security closure and the container are shown. A security closure has a disk 35 attached to the top of the security closure 1 via adhesive, sonic welding, snap fit, hook and loop, or any other known permanent or non-permanent attachment means. The disk 35 has a disk printing surface 36 which can be printed with advertisements, logos, or name of an owner. In addition, the security closure 1 has a concealed printed surface 4 which is covered by the disk 35. The concealed printed surface 4 can contain information necessary to retrieve vital information related to the security closure 1.

**FIG. 2**. The security closure 1 has an apron portion 8 and a lock housing 29 which contains a lock set 10, or the lock. The lock set 10 has a first dial 16, a second dial 17, a third dial 18, and a latch 11. (Hereinafter, the first dial 16, the second dial 17, and the third dial 18 can be collectively referred to as the dials.) The first dial 16, and the second dial 17, and the third dial 18 spin freely and independently inside the lock housing 29, when manually manipulated by the owner. The latch 11 moves freely in a radial path 7. The radial path 7 is around a container central axis 6, or vertical axis, and has tangents defined by the rotational axes of the first dial 16, the second dial 17, and the third dial 18.

**FIG. 3**. A container 2 has an inside surface 14, an outside surface 15, a base 24, and is shown resting on a support 25. As seen in the preferred embodiment the container 2 is shown with a first lug 21, a second lug 22, and a third lug 23 arranged about an upper rim 5, or lip, on the upper edge of the outside surface 15. (Hereinafter, the first lug 21, the second lug 22, and the third lug 23 can be collectively referred to as the lugs or the protrusions.) The width of the first lug 21 can be different from the width of the second lug 22, and the width of the second lug 22 can be different from the width of the third lug 23. In addition, the angle between the first lug 21 and the second lug 22 when measured from the container central axis 6 can be different from the angle between the second lug 22 and the third lug 23 when measured from the container central axis 6.

**FIG. 4**. A gasket 37 is provided to seal the contact interface between the security closure 1 and the upper rim 5 of the container 2. The gasket 37 is preferably attached to the security closure 1 by snap fitting, adhesive or other known permanent or non-permanent attachment means. The gasket 37 can be fashioned from rubber, elastomer, or other resilient material known creating liquid or gas pressure seals.

**FIG. 5**. Referring now to FIG. 2, the security closure 1 is shown fully assembled and attached to the container 2.

**FIG. 6**. Referring now to FIG. 3a-6, the lock set 10 is shown in the locked position in FIG. 3a, and in the unlocked position in FIG. 3b. Referring to FIG. 3a, the first dial 16 has a dial keyway 19 which extends through the first dial 16. In addition, the first dial 16 has multiple combination number 20 inscribed or printed on the outer cylinder of the first dial 16. The second dial 17 and the third dial 18 also have the dial keyway 19, however the dial keyway 19 can located differently in relation to the combination number 20 of the second dial 17 or the third dial 18. In this fashion, if each of the dials in the lock set 10 has ten combination number 20, then one
thousand different permutations are possible, while only one permutation will correspond with the unlocked position.

[0045] Still referring to FIG. 3a, the latch 11 has a latch dog 12 and a discontinuous elongated protrusion 13. As seen, the discontinuous elongated protrusion 13 is disengaged from the dial keyway 19 of the first dial 16, the second dial 17, and the third dial 18. Therefore, the dials can spin freely about their respective central axes.

[0046] Referring now to FIG. 3b, the latch 11 is slid through the dials, and the discontinuous elongated protrusion 13 engages the dial keyway 19. In the unlocked position shown in FIG. 3b, the first dial 16, the second dial 17, and the third dial 18 can spin freely about their respective rotational axes.

[0047] As seen in FIGS. 3a-b, the lock set 10 can be manipulated to the unlocked position by dialing seven-zero-three on the third dial 18, the second dial 17, and the first dial 16, respectively. It is to be understood that the dial keyway 19 could be relocated any of the dials to produce different unlocking combinations.

[0048] Referring now to FIGS. 4a-b, section A-A from FIG. 2 is shown for the first assembly step in FIG. 4a and the second assembly step in FIG. 4b. The first lug 21, the second lug 22, and the third lug 23 are attached to the container 2. The security closure 1 has a circular rim 30. The circular rim 30 has multiple lug openings which are called a first opening 26, a second opening 27, and a third opening 28.

[0049] In operation, the owner lowers the security closure 1 toward the container 2 with the first lug 21 aligned with the first opening 26, and the second lug 22 aligned with the second opening 27, and the third lug 23 aligned with the third opening 28. Once the security closure 1 contacts the container 2, the owner then turns the security closure 1 clockwise by between 10-170 degrees until the first lug 21, the second lug 22 and the third lug 23 contact one or more rim nut 31. Each of the rim nut 31 is attached to the circular rim 30 and provide for ramping of the security closure 1 toward the container 2 in order to compress the gasket 37 and seal the container 2 with the security closure 1. The owner continues to rotate the security closure 1 clockwise by approximately five degrees. During the clockwise rotation, the third lug 23 contacts the latch dog 12, which causes the latch 11 to move from the position shown in FIG. 3b to the position shown in FIG. 3a. In the position shown in FIG. 3a, the latch dog 12 occludes second opening 27 in the locked position, and thereby prevents the second lug 22, and, by association, the first lug 21 and the third lug 23, from registering with the respective openings. As a final step in assembly, the owner can then rotate the first dial 16, or the second dial 17, or the third dial 18 to lock the security closure 1 to the container 2.

[0050] To remove the container, the owner can dial the correct combination on the first dial 16, and the second dial 17, and the third dial 18. Next the owner can rotate the security closure 1 counter clockwise by approximately five degrees, which will remove contact between the first lug 21, the second lug 22, the third lug 23 and the respective rim nut 31, thereby breaking the seal between the security closure 1 and the container 2. Next, the owner will rotate the security closure 1 counter clockwise by between 10-170 degrees, during which time the gas pressure differential between the container inside and outside will be removed by slow venting. Finally, the second lug 22 will contact the latch dog 12, causing the latch 11 to be moved from the position shown in FIG. 3a to the position shown in FIG. 3b. The owner can then move the security closure 1 along the container central axis 6 to complete disengagement.

[0051] Assuring that the same combination will not permit access to all containers is taken care of during the manufacture of the security closure. The dials are identical in overall design. However the dials will each be manufactured with as many angularly positioned dial keyways as there are symbols on the periphery of the dials. A random combination for opening each lock is provided by randomly picking the dials for each lock. A lock with 10 symbols on its periphery and three such dials in each lock will produce 999 permutations of combinations to lock the locks.

[0052] Referring now to FIG. 5a-b, as seen the discontinuous elongated protrusion 13 engages the dial keyway 19 when the security closure 1 is unlocked. In addition, the rim nut 31, which is located on the circular rim 30, ramps the second lug 22 as the security closure 1 twists around the container central axis 6 of the container 2. The ramping effect causes the container 2 to move toward the security closure 1, which compresses the gasket 37 against the upper rim 5.

[0053] Referring now to FIG. 6a second embodiment of the present invention is shown. The second lug 22, and the first lug 21 (not shown) and the third lug 23 (not shown) are below the upper rim 5 to provide easier drinking from the container 2. Corresponding to the lowered lugs, the circular rim 30 of the security closure 1 is lowered to mate with the lowered lugs.

[0054] In addition to lowering the lugs down the container, the inventor also envisions placing the lugs inside the container, and moving the lock set to the top of the security closure. Moreover, although a conical shaped drinking container has been shown in the preferred embodiment, the inventor also envisions larger containers for holding items such as handguns, blueprints, or other items which should be locked away. For these types of applications, the container could have cubicle, cylindrical, pyramidal or other shapes that meet a circular upper rim. In addition, the container and security closure could be considerably larger. For example, the container could resemble a 25 gallon refuse container.

[0055] It is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the preceding description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and a carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of the description and should not be regarded as limiting.

1. A security closure system for preventing unauthorized access to a contents of a container comprising:
   - the container having a surface made up of an outside surface and an inside surface for holding the contents and a base, wherein:
   - the container rests on the base when setting on a support, a lip surrounding an upper edge of the container, one or more protrusions extend outward from the surface of the container, a security closure that rests against the lip of the container, an apron portion of the closure that extends downward adjacent to the outside surface of the container, a lock that cooperates with the one or more protrusions to prevent the unauthorized access to the contents of the container.

2. The security closure system of claim 1 wherein:
   - the lock is a combination lock having one or more dials and a latch.

3. The security closure system of claim 2 wherein:
   - the rotational axes of the one or more dials of the combination lock are orthogonal and non-intersecting with a vertical axis of the container.
4. The security closure system of claim 2 wherein: the combination lock is secured by contact of the latch with one of the one or more protrusions.

5. The security closure system of claim 3 wherein: the latch of the combination lock is set in the locked position by contact with one of the one or more protrusions.

6. The security closure system of claim 2 wherein: the security closure is moveable to release pressure without unlocking the security closure.

7. The security closure system of claim 1 wherein: the one or more protrusions are located half an inch or more below the lip such that the one or more protrusions would not interfere with drinking from an entire periphery of the lip.

8. The security closure system of claim 1 wherein: the security closure is adapted for attachment of a disk for carrying indicia.

9. The security closure system of claim 1 wherein: the security closure is adapted to disengage the one or more protrusions by a relative twisting action between the security closure and the container, wherein the one or more protrusions of the security closure have cooperating one or more openings in the apron portion

10. The security closure system of claim 1 wherein: the lock is located on the apron portion of the security closure.

11. A method of operation of a security closure system comprising the steps:

registering one or more protrusions on a lip of a container with one or more openings on an apron portion of a security closure.

moving the security closure and the gasket toward the lip of the container until the gasket contacts the lip and the security closure

twisting the security closure with respect to the container until one of the one or more protrusions contacts a latch of a lock,

twisting the security closure in the same direction until twisting motion is stopped wherein the twisting motion will slide the latch of the lock to a locked position, wherein the locked position of the latch occludes access of one of the one or more protrusions of the container with one of the one or more openings on the apron portion of the security closure.

turning one or more dials of lock, wherein the turning of the one or more dials blocks the latch of the lock from sliding.

12. A security closure system for preventing unauthorized access to a contents of a container comprising:

the container having a surface made up of an outside surface and an inside surface for holding the contents and a base, wherein:

the container rests on the base when setting on a support, a lip surrounding an upper edge of the container, one or more protrusions extend outward from the surface of the container, a security closure that rests against the lip of the container, an apron portion of the closure that extends downward adjacent to the outside surface of the container, a lock that cooperates with the one or more protrusions to prevent the unauthorized access to the contents of the container.

13. The security closure system of claim 1 wherein: the lock is a lock having a latch.

14. The security closure system of claim 2 wherein: the axis of the latch is orthogonal and non-intersecting with a vertical axis of the container.

15. The security closure system of claim 2 wherein: the lock is secured by contact of the latch with one of the one or more protrusions.

16. The security closure system of claim 3 wherein: the latch is set in the locked position by contact with one of the one or more protrusions.

17. The security closure system of claim 2 wherein: the security closure is moveable to release pressure without unlocking the security closure.

18. The security closure system of claim 1 wherein: the one or more protrusions are located half an inch or more below the lip such that the one or more protrusions would not interfere with drinking from an entire periphery of the lip.

19. The security closure system of claim 1 wherein: the security closure is adapted to disengage the one or more protrusions by a relative twisting action between the security closure and the container, wherein the one or more protrusions of the security closure have cooperating one or more openings in the apron portion

20. The security closure system of claim 1 wherein: the lock is located on the apron portion of the security closure.

* * * * *