

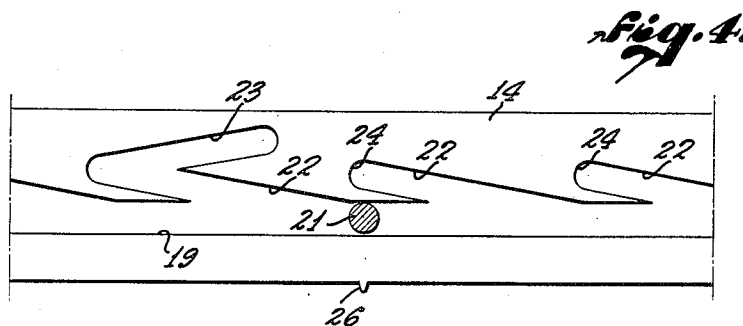
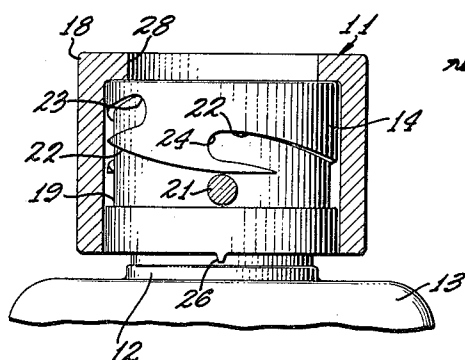
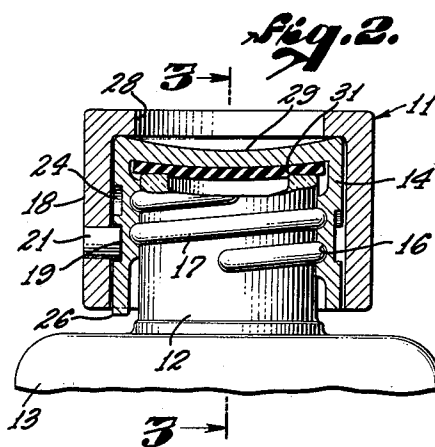
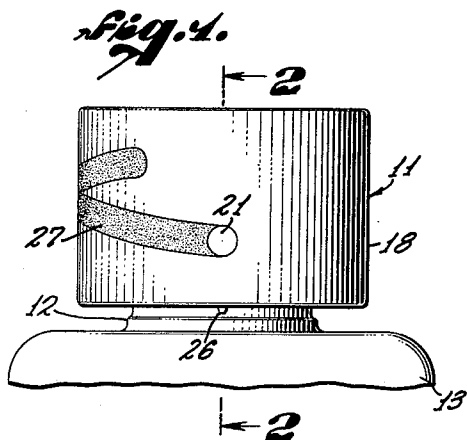
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B. ELKIND

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SAFETY CLOSURE

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BERTRAM ELKIND,
INVENTOR.

HUEBNER, BEEHLER, WORREL,
& HERZIG, ATTORNEYS.

BY

Warren T. Jessup

UNITED STATES PATENT OFFICE

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SAFETY CLOSURE

Bertram Elkind, Los Angeles, Calif.

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9 Claims. (Cl. 215—9)

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This invention relates to container closures and more particularly to a screw type container closure which may be removed from the container only by following special instructions concerning the unscrewing operation.

For many purposes, it is desirable that certain persons—notably small children—be hindered in their ability to open containers. This is especially true of containers containing poisonous or otherwise harmful contents which a child might swallow. It is accordingly an object of this invention to provide an improved closure for a container which may be operated only by persons having given instructions and skill.

It is another object of this invention to provide a closure which may be applied to the conventional screw type container neck thereby obviating the necessity for a special container and neck.

It is a further object of this invention to provide such a closure having means for discouraging unauthorized persons such as children in their idle attempts to open the container.

In accordance with these and other objects which will become apparent in the following specification, the instant invention will now be described with reference to the accompanying drawings wherein:

Figure 1 is a side view of the instant closure screwed onto a conventional container;

Figure 2 is a view taken along line 2—2 of Figure 1, the closure proper being in section;

Figure 3 is a view taken along line 3—3 of Figure 2, with the external cap being in section and the internal cap being unsectioned;

Figure 4 is a developed view of the external circumferential surface of the internal cap of the instant closure.

Referring to the drawings, Figure 1 shows the closure 11 mounted on the neck 12 of a container 13. As best seen in Figure 2, closure 11 comprises an internal cap 14 having internal threads 16 engaging the threads 17 on the container neck 12. An external cap 18 is mounted coaxially circumjacent the internal cap 14 with sufficient clearance so that the cap 18 may be freely rotated around the cap 14. The two caps 14 and 18 are secured in engagement by a circumferential pin-and-groove connection consisting of an annular groove 19 in the exterior surface of the internal cap 14 and an engaging pin 21 secured in the cap 18 and projecting inwardly into the groove 19. The external cap 18 may be thus freely rotated around the internal cap 14, the pin-and-groove connection 21—19

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preventing axial movement and separation between the two caps.

On the external surface of the internal cap 14 are provided a plurality of grooves 22 communicating with the annular groove 19 and spaced around the cap 14. The grooves 22 are slanted away from the groove 19 as shown. While these grooves may slant either up toward the top of the closure or down toward the rim thereof, it is preferred to slant them as shown. It is also preferred to maintain a relatively small angle of slant between each groove 22 and the groove 19, preferably less than 10 degrees, for a purpose which will be pointed out hereinafter. One of the grooves 22 has an offset portion 23 at its upper end as best seen in Figure 4. This groove is thus somewhat in the form of a J-slot.

It will be noted that the grooves 22 are directed in such direction that should the pin 21 be moved into any of them it will, upon reaching the end of the groove, provide interlocking between the external cap 18 and the internal cap 14, of such nature that the closure 11 can only be screwed onto the neck 12 and can not be unscrewed from the neck. Any unscrewing action attempted by the user holding the external cap 18 simply causes the pin 21 to ride downwardly out of the groove 22 into which it was engaged and then to merely slide freely around and around in the groove 19.

Unscrewing (as opposed to screwing) engagement between the caps 18 and 14 is provided only through the medium of the offset portion 23 in which the pin 21 may be engaged only by unique and proper manipulation of the external cap 18. When such manipulation has been effected, the pin 21 abuts the remote end of the offset portion 23 and the caps 18 and 14 are then in unscrewing engagement so that the closure 11 may be unscrewed from the neck 12.

A small child upon picking up the container 13 with the cap 11 screwed thereon will idly turn the external cap 18 around and around one way or the other. Since there is no interlocking between the external cap 18 and the internal cap 14, the closure 11 is not unscrewed from the neck 12. The pin 21 simply rides freely in the groove 19. Should the child tire of turning the cap 18 idly, and should he begin to experiment by engaging the pin 21 in one of the grooves 22, he will upon striking the dead end 24 of one of the blind grooves 22, only interlock the caps in screwing engagement so that the closure is further tightened on the neck 12. This will further discourage his attempt to open the container, and should

he by chance engage the pin 21 in the proper groove 22 which has the offset portion 23, the probability is that he will, merely back the pin 21 out of the groove 22 and into the groove 19, as he did before with the grooves having the dead end 24.

Should a user engage the pin 21 in one of the dead end grooves 22, and then back the pin out (unscrew the external cap 18), and at the same time pull up on the cap 18, then there will be frictional engagement between the pin 21 and the upper surface of the slanted groove. Unless the slant angle is quite small, there is danger that the friction may be sufficient to apply enough torque to the internal cap 14 to unscrew the same from the neck 12. For that reason it is desirable to keep the slant angle between groove 19 and grooves 22 under 10 degrees.

To indicate to an adult how the container should be opened, the internal cap 14 is provided at its lower edge with an index in the form of a tab 26 extending below the rim of the external cap 18 so as to be visible with the closure 11 screwed onto the neck 12. The tab 26 is positioned immediately below the entrance or mouth of the proper groove 22 as best seen in Figure 4.

A second index is provided on the exterior of the external cap 18. This index assumes the form of the exterior surface of the pin 21 protruding to the surface of the cap 18 as seen in Figure 2.

To further instruct the adult user, there is indented, painted or otherwise marked on the exterior of the cap 18 a mark 27 in the form of a tipped J, corresponding in shape to the correct groove 22—23 which is the unscrewing, or opening, groove for the closure 11.

To unscrew the closure 11, the adult user turns the external cap 18 around the cap 14 until the head of the pin 21 is in registry immediately above the protruding tab 26 on the cap 14. He then turns the cap 18 up and around so as to cause the pin 21 to follow a path indicated by the index 27. This—although the user can not see it—causes the pin 21 to follow the proper groove 22 to its end and then back upwardly into the offset portion 23. Continued unscrewing motion brings the caps 18 and 14 into interlocking engagement so that the closure 11 may be unscrewed from the neck 12.

In replacing the cap it is merely necessary to screw it on in conventional fashion and then unscrew the cap 18 slightly with the pin 21 riding downwardly in the groove 22 into the annular groove 19. The cap is then in position free from danger of opening except by persons sufficiently skilled and informed to follow the correct opening instructions.

If desired, the central portion of the external cap 18 may be cut away as shown at 28 since the actual closing of the container 13 is effected by the top of the internal cap 14.

Also, if desired, the top portion 29 of the internal cap 14 may be indented downwardly as shown in Figure 2 to provide a somewhat better seal at the internal edges 31 of the neck 12.

While the instant invention has been shown and described in what appears to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of this invention, which is therefore not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices.

The instant invention having been described, what is claimed is:

1. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck, an external cap coaxially circumjacent said internal cap and rotatable therearound; a circumferential pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap; said one cap also having a plurality of grooves communicating with said annular groove, spaced around said annular groove, and slanted toward the top of the closure at an angle of less than 10°, one of said slanted grooves having an offset portion at its end into which said pin may be moved to provide interlocking between said caps; a first index on said internal cap; and a second index on the exterior of said external cap corresponding in shape to said one of said slanted grooves, registration of said indexes indicating that said pin is opposite said one slanted groove.

2. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck; an external cap coaxially circumjacent said internal cap and rotatable therearound; a circumferential pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap; said one cap also having a plurality of grooves communicating with said annular groove, spaced around said annular groove, and slanted with respect thereto; one of said slanted grooves having an offset portion into which said pin may be moved to provide interlocking between said caps; a first index on said internal cap; and a second index on the exterior of said external cap corresponding in shape to said one of said slanted grooves, registration of said indexes indicating that said pin is opposite said one slanted groove.

3. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck; an external cap coaxially circumjacent said internal cap and rotatable therearound; and a circumferential pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap; said one cap also having a plurality of grooves communicating with said annular groove, spaced around said annular groove, and slanted with respect thereto at an angle of less than 10°; one of said slanted grooves having an offset portion into which said pin may be moved to provide interlocking between said caps.

4. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck; an external cap coaxially circumjacent said internal cap and rotatable therearound; and a circumferential pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap; said one cap also having a plurality of grooves communicating with said annular groove, spaced around said annular groove, and slanted with respect thereto; one of said slanted grooves having an offset portion into which said pin may be moved to provide interlocking between said caps.

5. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck, an external cap coaxially circumjacent said internal cap and rotatable therearound, a circumferen-

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tial pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap, said one cap also having a second groove communicating at one end with said annular groove and slanted toward the top of the closure at an angle of less than 10°, said second groove having an offset portion into which said pin may be moved to provide interlocking between said caps, a first index on said internal cap, and a second index on the exterior of said external cap corresponding in shape to said second groove, registration of said indexes indicating that said pin is opposite said one end of said second groove.

6. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck, an external cap coaxially circumjacent said internal cap and rotatable therearound, a circumferential pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap, said one cap also having a second groove communicating at one end with said annular groove and slanted with respect thereto at an angle of less than 10°, said second groove having an offset portion into which said pin may be moved to provide interlocking between said caps, a first index on said internal cap, and a second index on the exterior of said external cap corresponding in shape to said second groove, registration of said indexes indicating that said pin is opposite said one end of said second groove.

7. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck, an external cap coaxially circumjacent said internal cap and rotatable therearound, a circumferential pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap, said one cap also having a second groove communicating at one end with said annular groove and slanted with respect thereto, said second groove having an offset portion at the other end into which said pin may be moved to provide inter-

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locking between said caps, a first index on said internal cap, and a second index on the exterior of said external cap corresponding in shape to said second groove, registration of said indexes indicating that said pin is opposite said one end of said second groove.

8. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck, an external cap coaxially circumjacent said internal cap and rotatable therearound, and a circumferential pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap, said one cap also having a second groove communicating at one end with said annular groove and slanted with respect thereto at an angle of less than 10°, said second groove having an offset portion into which said pin may be moved to provide interlocking between said caps.

9. A closure comprising, in combination, an internal cap having internal threads adapted to engage the threads of a container neck, an external cap coaxially circumjacent said internal cap and rotatable therearound, and a circumferential pin-and-groove connection between said caps consisting of an annular groove in one cap and an engaging pin secured in the other cap, said one cap also having a second groove communicating at one end with said annular groove and slanted with respect thereto, said second groove having an offset portion into which said pin may be moved to provide interlocking between said caps.

BERTRAM ELKIND.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,089,887	Waye	Mar. 10, 1914
1,358,352	Wheelock	Nov. 9, 1920
2,061,214	Sentman	Nov. 17, 1936
2,226,390	Rosevear	Dec. 24, 1940