April 12, 1949. A. W. KONCHAN 2,467,087

LOCKING CAP FOR RECEPTACLES

Filed Sept. 20, 1945

Fig. 1.

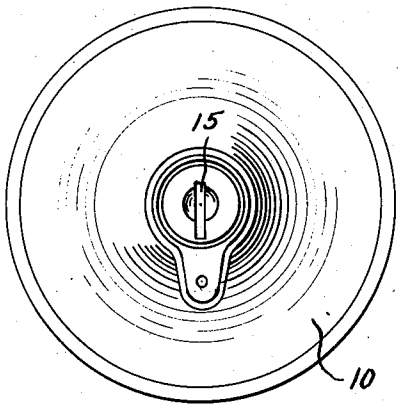


Fig. 2.

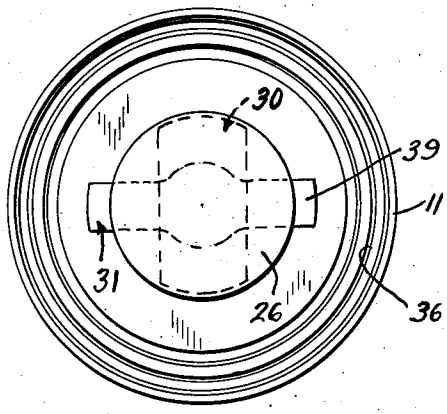


Fig. 3.

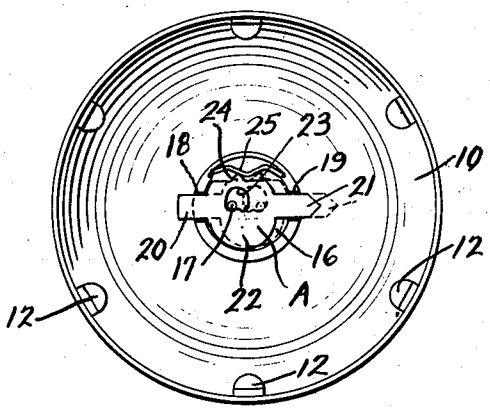


Fig. 4.

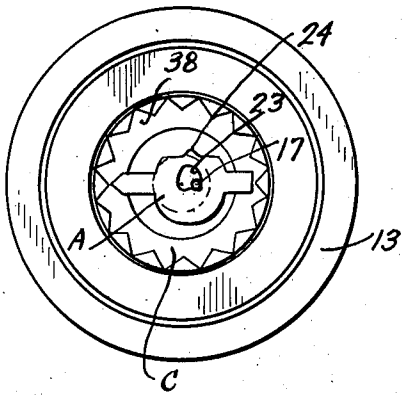
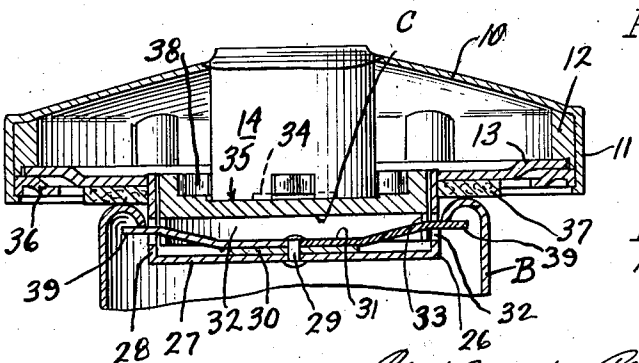


Fig. 5



Inventor
ANTON W. KONCHAN

by The Firm of Charles Hieken Attys.

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LOCKING CAP FOR RECEPTACLES

Anton W. Konchan, Berwyn, Ill.

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3 Claims. (Cl. 70—165)

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The present invention relates to locking cap for a receptacle and to one so designed that the various parts used in its manufacture and assembly may be economically made, and the assembly made easy, so that the finished product may be sold at a reasonable price.

The present invention is herein illustrated as a cap comprising two parts, permanently connected together, which parts are relatively rotatable. The cap has projecting lugs to engage beneath the lower margin of the inturned neck of a receptacle, the two parts being arranged to be locked together for application to and removal from a receptacle and unlocked, after application to a receptacle to prevent fraudulent removal.

An object of the present invention is to provide a locking cap or closure for a receptacle so designed that the parts may be manufactured and assembled on a low cost production basis.

Another object of this invention is to provide a locking cap so constructed that it may be readily assembled without holding the various parts to close tolerances.

Another object of the present invention is to provide a two-part locking cap with novel means for connecting the parts together in locked relation.

A still further object of the present invention is to provide a locking cap having a latch bar, for locking the parts together, continuously under tension to prevent accidental displacement from any position to which it may be moved.

A still further object of the present invention is to provide a two-part locking cap having novel keeper means to cooperate with a latch bar to hold the parts against relative rotation.

The invention has for a further object the provision of a locking cap for a receptacle in which the parts may be stamped, cast, machined, all in accordance with good manufacturing procedure, and readily assembled into an operative structure.

Another and further object of the present invention is to provide a two-part locking cap having a latch bar operable by a cylinder lock in one part for movement into and out of locking engagement with the other part.

A still further object of the present invention is to provide a locking cap having lugs for engaging underneath the neck of a receptacle, which lugs are bent to be tensioned when the cap is turned to move the lugs under the neck flange to thereby assure a tight fit with the neck flange despite any manufacturing variations there may be in the formation of the lugs.

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The invention has for a further object the provision of a locking cap with a latch bar movable in one direction to prevent rotation of the cap for removal from a receptacle and movable in the reverse direction to permit rotation of the cap for removal from the receptacle.

The above, other and further objects of the invention will be apparent from the following description and accompanying drawing.

One embodiment of the present invention is illustrated in the accompanying drawing, and the views thereof are as follows:

Figure 1 is a top plan view of a locking cap made in accordance with the present invention;

Figure 2 is a plan view of the end of the cap opposite to the outer cover of Figure 1;

Figure 3 is a plan view of the interior of the cover member showing in full line one position of the latch bar and in dotted lines another position of the bar;

Figure 4 is a plan view of the lower or cup part of the cap showing the novel keeper means of the present invention and showing the latch bar in its relation to the keeper means; and

Figure 5 is an axial sectional view through the locking cap showing the lugs of the lower or cup member engaged underneath the inturned margin of a receptacle neck, and relation of others of the parts.

As shown on the drawing:

For convenience in terminology, the upper part of the cap or closure, as viewed in Figure 5 will be referred to as the cover member and the lower part will be referred to as the cup or body member.

The cover member part has a shell 10 which may be stamped, spun, or otherwise fashioned. The margin of the shell has a circumferential wall 11 parallel to the axis of the shell. Attached as by welding, soldering, or the like, within the shell and against the interior of the flange 11 are circumferentially spaced protuberant portions or posts 12 which are notched, to serve as a seat for the flange 13 of the cup part when the two parts are assembled. The central portion of the cover is apertured and in the aperture is secured a barrel 14 which houses a cylinder lock operable by a key inserted in the key hole 15 which is available on the exterior of the cover.

The inner end of the cylinder lock has an end plate 16 carrying a pin 17 eccentrically disposed with respect to the axis of the cylinder. The inner end of the barrel 14 is formed with diametrically opposed slots 18 and 19 which receive and guide end pieces 20 and 21 of a latch bar designated generally as A. The latch bar A has an inter-

mediate portion 22 lying within the barrel, and which portion is provided with an aperture 23 whose width in the direction of the end pieces 20 and 21 is less than the diameter of the orbit of travel of the pin 17, as the cylinder lock is rotated by a key. The intermediate portion 22 of the latch bar A has an exterior triangular shaped projection 24. Disposed between the intermediate portion 22 of the latch bar and adjacent portion of the barrel, is a spring 25 of undulatory shape. The barrel is provided with a portion to receive the spring and prevent its endwise movement. The spring serves to tension the latch bar A in every position it occupies, while it rests and while moving. The purpose of the tension on the latch bar is to prevent its accidental displacement from engagement with the notches in the end of the barrel, should per chance some of the parts of the cap wear, excessively, or vary slightly in dimensions.

A portion of a neck B of a receptacle is illustrated in Figure 5 and shows the inturned end portion of the neck.

The lower or cup part of the cap has a cylindrical body 26 with a closed bottom 27 and a cylindrical wall 28. Surrounding the upper margin of the cylindrical wall 28 is an outstanding flange 13, the flange and the cup being soldered, welded, or otherwise permanently connected together. The cup, and the flange, may be made of stampings or otherwise, to reduce the cost of manufacture. Secured to the bottom 27 of the cup, by a rivet 29 are springs 30 and 31, arranged in superimposed and right angular relationship. The spring 30 has its central portion flat against the interior of the bottom 27 of the cup and its ends upturned away from said bottom.

The spring 31 is longer than the diameter of the cup 26 and is arranged with its ends projecting through slots 32 in diametrically opposite portions of the wall 28 of the cup. The ends of this spring are bent out of the plane of its central portion so as to be tensioned to bear tightly against the inner margin of the inturned neck of the receptacle to thereby assure tight engagement when a cap is inserted in place in a receptacle neck. The end portions of the spring 31, because of such flexure, constitute spring lugs for engagement with the receptacle neck.

The illustrated form of keeper, designated generally as C, is of generally cylindrical shape, formed on its upper side with an upper peripheral wall and with internal teeth 38 arranged with their side surfaces in planes at right angles to the axis of the cylinder. The lower part of the keeper cylinder C is formed as an annular flange or lower peripheral wall 32 having diametrically disposed slots 33 to straddle the spring member 31. The lower margin of the flange rests on the upturned end of the spring 30, the keeper therefore riding on this spring in floating manner the spring holding the keeper in operative position. The central portion of the upper surface of the keeper C is raised slightly, as at 34 to provide surface contact with the adjacent surface of the latch bar A, when the cover and cup parts are assembled. Surrounding this raised portion 34 and between it and the teeth 38 of the keeper is a shallow annular groove 35 in which is bottomed the end of the cylinder barrel 14 of the cover.

In the manufacture of the cover, its side wall 11 is truly cylindrical.

To assemble the two parts, the cup part is arranged within the cover part, the flange 13 of the cup part resting on the steps or notches of the

posts 12, as is illustrated in Figure 5. When the flange is thus seated on the posts, a ring 36 is applied against the undersurface of the flange 13 and then the lower end of the cylindrical wall 11 of the cover is spun over the ring to thereby permanently connect together the cover part and the cup part without interfering with the ability of these parts to rotate one with respect to the other.

In order to apply the cap to a receptacle, and turn it so that the lugs 39 may pass underneath the inturned margin of the neck, the cover part and the cup part must be locked together. This is accomplished by the operator inserting a key in the keyhole 15, and manipulating the cover and cup, as the key is turned to bring the pointed end of the piece 21 of the latch bar A into engagement between two teeth 38 of the keeper C. When the keeper C and the latch bar A have been so manipulated as to allow entry of the pointed end of the piece 21 into the space between two teeth, the cup part and cover part thus become locked together against relative rotational movement. The key is then withdrawn and the cap applied to the receptacle neck.

In order to allow entry of the lugs 39 into the interior of the neck, the inturned portion thereof is provided with diametrically opposed axially extending slots through which slots the lugs pass as the cap is applied to the neck. When the washer 37, which is about the cup 26, seats on the margin of the receptacle neck B, the cap is given a turn to move the lugs 39 underneath the inturned edge of the margin, thus locking the cap against withdrawal. The key is then manipulated to disengage the latching member A from the keeper C whereupon the cover member may be rotated relatively to the cup member without causing any rotative movement of the cup. This is the normal arrangement of the parts when a cap is inserted in a receptacle in locking arrangement.

Thus, anyone attempting to fraudulently remove the cap from the receptacle, would rotate the cover part but without success in moving the cup part as there is no driving or other engagement, than rotative, between them.

To remove the cap from the receptacle, the key is inserted in the keyhole 15 and the cover moved until the latch bar A engages between two of the teeth 38 of the keeper whereupon the cover part and cup part may be turned to bring the lugs 39 into register with the axial slots in the neck entrance and permit withdrawal of the cap.

It will be noted that the notches 33 in the lower flange of the keeper C straddle the spring 31. This engagement prevents rotative movement of the keeper in the cup. The fact that the keeper rests well on the upturned ends of the spring 30 means that the keeper is at all times slightly pressed against the end of the barrel 14 thus providing surface engagement for the latch bar A.

An important side of the invention has to do with the operation of a latch bar by a cylinder lock carried in a barrel on the interior of the cover member which is moved into latching engagement with a mating part by movement in one direction and moved into unlatching engagement by movement in the reverse direction.

The invention has been described herein more or less precisely as to details, yet it is to be understood that the invention is not to be limited thereby, as changes may be made in the arrangement of parts, and equivalents may be substituted,

without departing from the spirit and scope of the invention.

The invention is claimed as follows:

1. A locking cap for a receptacle comprising a cover member and a cup member permanently connected together and capable of relative rotative movement, said cover member having a central barrel, a cylinder lock in said barrel, said lock having an end plate with a pin on it eccentrically arranged with respect to the lock axis, a latch bar guided in said barrel end for straight line reciprocable movement transversely of the barrel, said bar having an enlarged intermediate portion within the barrel and with said portion provided with an aperture about said pin, said intermediate portion having an external wedge-shaped projection, a spring within said barrel engaging said projection and having a hump to contact either side of the projection to hold the bar against displacement when at either end of its path of reciprocable movement, said cup member being secured to said cover member in opposition to said barrel, a flat spring member fastened to the center of the cup bottom with its ends extending through slots in the cup wall, said spring member having a set in its length to cause its ends to extend slantingly up from said cup bottom, a second spring member within said cup having its ends within the cup and above the cup bottom, a keeper within said cup having a lower flange apertured to straddle and clear said first spring member and rest on the ends of said second spring member, the upper face of said keeper having teeth formed as internal teeth with the side faces thereof in planes at right angles to the keeper axis, the said teeth being in the plane of said latch bar, the central portion of said upper face of said keeper contacting the end of said barrel when the parts are assembled, the said second spring being tensioned when the said keeper is against said barrel to maintain the keeper teeth in the plane of the latch bar, said latch bar having one end shaped to enter the space between two adjacent teeth to lock the cover member to the cup member for unitary rotative movement when the latch bar is at one end of movement in one direction of reciprocation, and said one end of the latch bar being free of engagement with the teeth of the keeper when the bar is at the end of movement in the reverse direction.

2. A locking closure construction comprising a cupped cover member, a body member in the form of a flanged cup permanently connected to said cover member in relative rotatable relation and with its cupped portion in opposition to the cover member, locking means including a barrel carried by and rotatable with the cover member, said locking means including a slide bar movable transversely of the axis of said barrel into and out of position for connecting said cover member and said body member in unitary rotatable relation, a latch spring secured at its mid length to the bottom of said body member and with its ends projecting through

slots in the body member wall, a keeper loosely supported within said body member and having an upper peripheral wall provided with internal teeth and a lower peripheral wall notched to straddle said spring, a second spring within said body member disposed with its ends against the margin of the lower peripheral wall of said keeper to normally urge said keeper away from the bottom of said body member to maintain the keeper teeth in alignment with said slide bar and a central portion of the keeper against the adjacent end of the barrel, the engagement of the notches in the lower peripheral wall of said keeper with said first spring constituting the sole means for rotating the body member with the cover member when the slide bar is in position to engage with teeth of said keeper, and means for actuating said slide bar into and out of locking engagement with teeth of the keeper.

3. A locking construction comprising a cover member, a body member in the form of a cup connected to said cover member in relative rotatable relation thereto and with its cupped portion extending away from the cover member, locking means including a barrel carried by and rotatable with the cover member, said locking means also including a slide bar movable transversely of the axis of said barrel into and out of position for connecting said cover member and said body member in unitary rotatable relation, a latch spring secured to the body member and with at least one end projecting through an opening in the body member wall, a keeper supported within said body member having abutment means engageable by said bar, and additional spring means within said body member disposed against said keeper to normally urge the keeper away from the bottom of said body member and said abutment means in alignment with said slide bar as well as a central portion of the keeper against said barrel, the engagement of said keeper with said additional spring means constituting means for rotating the body member with the cover member when said slide bar is in position to engage said abutment means of said keeper, said locking means including means for actuating said slide bar into and out of locking engagement with the abutment means of the keeper.

ANTON W. KONCHAN.

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