Jan. 10, 1939. H. W. RUEGER 2,143,578

RECEPTACLE DISCHARGE CAP

Filed March 12, 1937 2 Sheets-Sheet 1

Fig. 1.

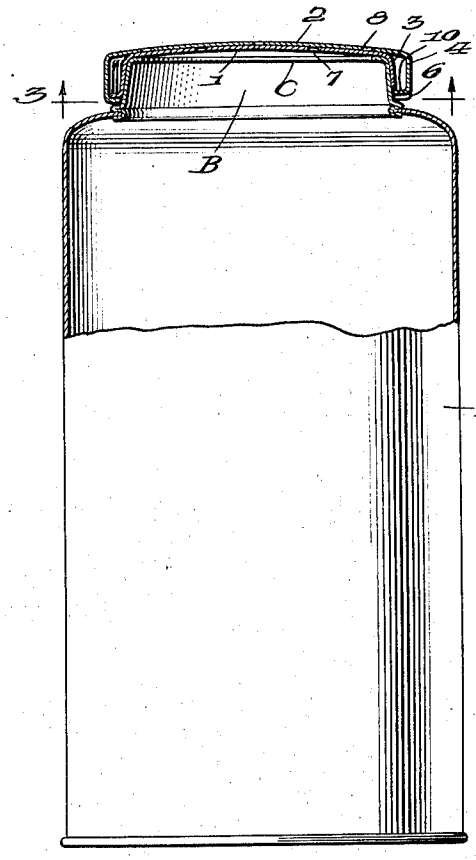


Fig. 2.

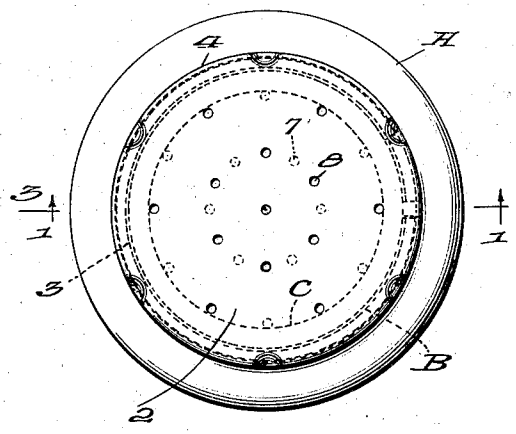


Fig. 3.

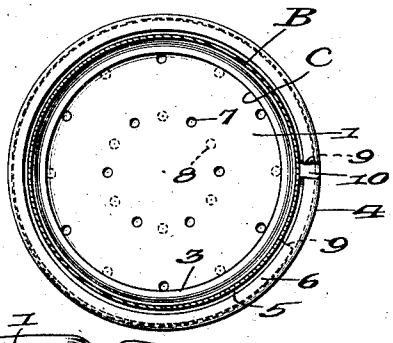
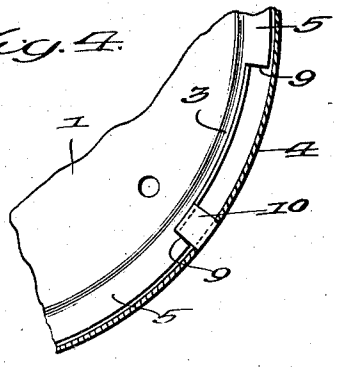


Fig. 4.



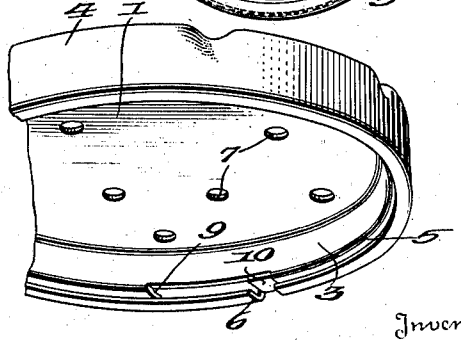


Fig. 5.

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Fig. 6.

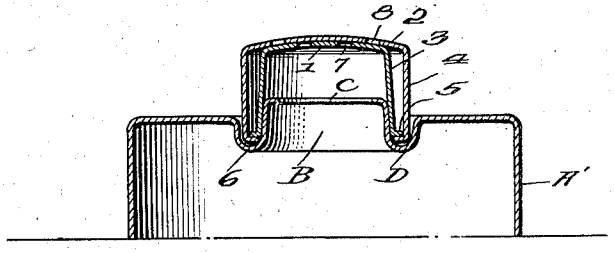


Fig. 7.

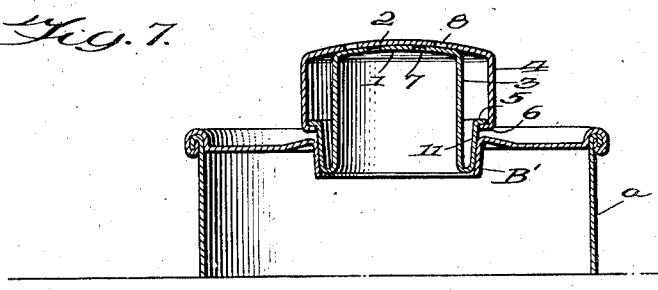


Fig. 9.

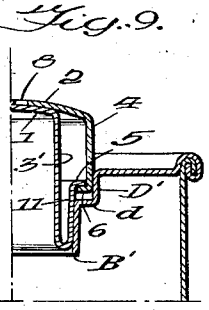
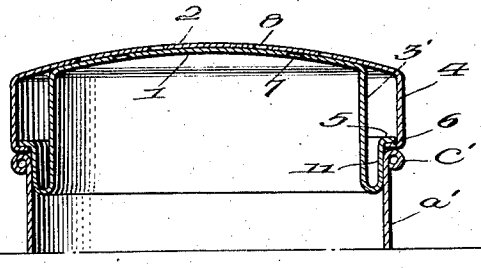


Fig. 8.



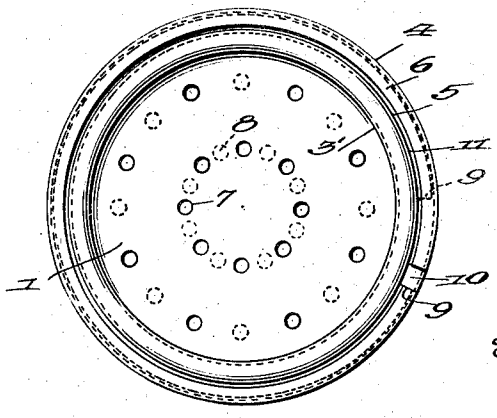


Fig. 10.

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Patented Jan. 10, 1939

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UNITED STATES PATENT OFFICE

2,143,578

RECEPTACLE DISCHARGE CAP

Herman W. Rueger, Lancaster, Pa., assignor to Liberty Can & Sign Company, Lancaster, Pa., a corporation of Pennsylvania

Application March 12, 1937, Serial No. 130,578

8 Claims. (Cl. 221—64)

This invention relates to sifter tops or dredger tops for cans or other receptacles and also to the combination of such a top with a can or other receptacle.

The primary objects of the invention are to provide a two part unitary cap or top which may be removably frictionally applied by hand to the neck, or in the discharge opening, of a can or receptable; to provide such a cap or top which may be removably applied by ordinary hand pressure and secure such frictional grip as will hold the inner element of the two part cap in fixed position relative to said neck or the wall of the discharge opening but permit the outer or upper member to turn relative to the inner member; to provide in such a two part unitary top an unobtrusive stop construction limiting the relative movement of the outer cap or element with relation to the inner element; to provide a relatively wide lower edge to the cap as a unit, whereby a knife blade or other pry instrument may be inserted or forced between the lower face of the edge of said unitary cap and the opposed adjacent face portion of the can to facilitate the prying of the cap from about the can neck so that the contents of the can may be removed by a spoon or may be dumped out in large quantity if desired, the construction and wide edge area of the cap being such as to protect it against injury by such prying operation so that it may again be applied to the can neck by simple hand pressure and thereafter the contents of the can may be discharged through the usual sifter openings; and to provide a cap or top having the above desirable attributes and at the same time of such construction that there will be no rough edges or raw edges or sharp corners such as might scratch or cut the hand of the user.

A further object considering my invention more in detail in one of its embodiments is to provide a special combination between such a two-part unitary cap and a special form of can body or upper portion. In this special combination the cap, while applicable by hand pressure or by means of a press according as desired, has its lower portion shrouded or protected by, or received in a recess of said body so that its lower edge is inaccessible and protected against the use of a prying instrument, whereby the cap once applied becomes permanently associated with the can body or upper portion thereof and cannot be removed except by mutilation of the cap or body. This special combination results in a non-refillable type of container.

In the accompanying drawings:

Figure 1 is a view partly in section on the line 1—1 of Figure 2 and partially in elevation, of a can embodying my invention;

Figure 2, a top plan view of Figure 1;

Figure 3, a sectional view on line 3—3 of Figure 1 looking in the direction of the arrows;

Figure 4, an enlarged fragmentary perspective view of the two-party unitary cap, by itself;

Figure 5, a fragmentary detail sectional view showing the stop construction of the two part unitary cap;

Figure 6, a central sectional view through the upper portion of a specially formed can with an unitary two-part cap combined therewith to constitute a dispensing non-refillable receptacle;

Figure 7, a central sectional fragmentary view illustrating a modified plug form of the cap of my invention as applied in the opening of a conical frictional plug closed receptacle;

Figure 8, a view similar to Figure 7 of a further modified form as applied to a full opening can;

Figure 9, a fragmentary sectional view of a further modified form combining the plug form of dispensing cap or closure with the special recessed form of can or shrouding feature of the modification shown in Figure 6; and

Figure 10, a bottom plan view of the plug type dispensing cap such as shown in section in Figures 7, 8 and 9.

Referring now in detail to the drawings, A designates the body of the usual talcum powder or other can; B, the usual upwardly tapering conical or frustro-conical form neck seamed into the upper part of the can body A as usual and having a large discharge opening C defined by a narrow peripheral band extending inward from the upper portion of the neck B as usual.

The two-part unitary cap has an inner or lower preferably resilient sheet metal cupped member or element and an upper or outer preferably resilient sheet metal cupped element.

The inner member or element has a top portion 1 with a depending preferably integral skirt 3 and a preferably integral flange 5 extending radially outwardly from the lower portion of the skirt 3. The under face of said top portion 1 and the inner face of said skirt 3 together define a frustro-conical recess of such size and shape as to fit, and make a tight frictional grip, upon the opposed external face portion of the neck B.

While it is preferred that the relative vertical lengths of the neck B and of the inner member 3 for the type of container shown in Figure 1 shall be approximately as there shown, this is of no great importance and the neck B may be made

longer than there shown in proportion to the member 3 or the member 3 may be made longer in a vertical direction in proportion to the neck B than shown in Figure 1 according to individual preferences or the general style of the can or special considerations may dictate.

The top portion 1 of said inner member or element will preferably be formed with a plurality of sifter openings 7, which in the applied relation of the cap to the neck B will be disposed in line with the area defined by the opening C.

The outer element or member has a top portion 2 with a depending preferably integral skirt 4 and a preferably integral flange 6 extending radially inward from the lower portion of the skirt 4, the top portion 2 being formed with preferably a plurality of sifter openings 8.

The inner element or member will be nested in the outer member, the size, shape and relationship of said members preferably being such that the outer element or member is put under tension and the inner element or member is held under compression in the outer member with the upper face of the top portion 1 and the lower face of the radial flange 5 of the inner member respectively in rubbing yielding frictional contact with the opposed faces of the respective top portion 2 and the radial flange 6 of the outer member, with the opposed faces of the skirts 3 and 4 out of contact with, and preferably spaced from, each other.

The sifter openings 8 of the outer member are adapted to be brought into registry with the correspondingly arranged sifter openings 7 of the inner member by the partial rotary movement of the outer member to one of its extreme positions about the inner member, and to be moved out of such registry by movement in the reverse direction of said outer member about the inner member.

A portion of the flange 5 and its adjacent wall is cut away to form two opposed abrupt metal stop faces 9 and a tongue 10 cut along two sides from the flange 6 and adjacent skirt 4 is depressed to lie between and in the horizontal plane of the two stop shoulders 9 so as to respectively engage and be stopped by the same in the respective extreme positions of the outer element or member, according as the same is moved in one direction for its extreme movement to bring the sifter openings 8 into registry with the sifter openings 7 of the inner element or member, or is moved in the reverse direction to its extreme position wherein the sifter openings 8 of the outer element or member will be at their extreme point out of registry with the discharge or sifter openings 7 of the inner member or element.

As thus constructed the unitary cap element or top may be forced by hand upon the neck B of the container or can A and in case it be desired temporarily to dispense with the sifter feature and dip the contents of the can out by a spoon or dump them out, the unitary cap may be pried from position with a knife or other instrument without in the least damaging the unitary cap which may be thereafter reapplied by hand to the neck B.

It will be seen that there are no rough edges or unprotected edges or other parts to injure the hands of the user.

Of course instead of the sifter openings 7 and 8 illustrated any other form or size of discharge opening or means may be provided in or on the elements or members.

Also it will be obvious that the two-part unitary cap may be so formed as to be removably applied to the discharge neck of a container in a manner other than by a tapering frictional fit, as for instance by forming screw threads in the inner wall of the skirt 3 of the inner member or by forming inwardly extending projections therein to engage cooperating elements on or in the neck of the container.

In the modification illustrated in Figure 6 the construction and operation are in all respects the same as in the preferred form, except that adjacent the neck B and preferably concentric therewith the material of the upper portion of the body A' of the can is bent downwardly as at D to form, in conjunction with the neck B a continuous depression preferably of substantially U-shape cross-section to receive preferably rather closely or snugly, the lower annular portion of the composite unitary two-part cap. This construction results in the lower edge portion of the dispensing two-part unitary cap being made inaccessible, so protecting the cap against being pried from position by an instrument inserted between the lower edge of the cap and the opposed face of the can body A. Preferably the outer face or skirt 4 will be made without any portions projecting radially beyond the normal or main outer peripheral face thereof and such as might afford an abrupt prying abutment. This modified form combined with the specially formed can body A or upper element thereof provides a very simple non-refillable type dispensing can or container.

In the modification illustrated in Figure 7, the construction and operation are the same as in the preferred form, except that it is made in plug form to fit in a preferably downwardly and inwardly tapering conical wall B', such as commonly provided in a well known type of frictional closures, of a can or container *a*, the skirt 3' being extended downward considerably below the skirt 4 of the outer member and then being reversely and radially outwardly folded or redrawn to form an axially extending conical plug portion 11, the upper portion of which is bent radially outwardly to form the radial flange 5 disposed substantially at right angles to the axis of the cap as a whole and engaged on its under face by the opposed upper face of the flange 6 of the skirt 4.

In the modification illustrated in Figure 8 the construction and operation are in all respects the same as in the form shown in Figure 7, except that a full opening can or receptacle *a'* preferably having a peripheral edge beading or curl C' is employed instead of a can *a* having a conical closure seat B' and the closure plug in this form is made of greater diameter relative to the diameter of the can body *a'* so as to properly fit within and close the full open end thereof.

In the modification illustrated in Figure 9, the construction and operation are in all respects the same as in the form shown in Figure 7, except that the top of the can body *a* is formed with an axial wall or flange D' spaced from and preferably concentric with the conical wall or closure seat B' and having its lower portion connected with the upper portion of said seat B' by a web *d* preferably substantially horizontal or perpendicular to the axis of the can body *a* the flange D' being of such internal diameter or dimensions and of such depth as to snugly receive and shroud the lower portion of the skirt 4, while leaving the same free for its normal operative partial rotation about the inner element of the two-part cap. The construction shown provides a very

efficient plug closure form non-refillable type dispensing can or receptacle.

I claim:

1. A two part unitary discharge cap for removable frictional application to, and use with, a tapering open-ended discharge neck of a container, said cap comprising a resilient sheet metal cupped inner member having a perforated top portion with an integral skirt portion depending from said top portion and an integral flange extending radially outwardly from the lower portion of said skirt, said skirt being adapted to make a removable hand driven frictional fit on the neck of the container, and said flange having a segment notched out to leave two peripherally opposed spaced abrupt edge faces constituting stop shoulders, in combination with a resilient sheet metal cupped outer member having a perforated top portion with an integral skirt portion depending from said top portion and an integral flange extending radially inward from the lower portion of the latter skirt, and a stop tongue integrally connected with the skirt of said outer member and lying between and in the path of said stop shoulders and having abrupt peripherally presented edge faces to engage the respective opposed faces of said stop shoulders to limit the partial relative rotary movement between said members in both directions, said members being of such size and shape that the outer member is put under tension and the inner member is put under compression holding the opposed faces of said top portions and of said radial flanges in tight yielding rubbing contact, the radially innermost portion of the flange of the outer member being disposed at all points radially outside of the radially outermost portion of the inner face of the skirt of the inner member.

2. A two part unitary discharge cap for removable frictional application to, and use with, an open ended discharge neck of a container, said cap comprising a resilient sheet metal cupped inner member having a perforated top portion with an integral skirt portion depending from said top portion and an integral flange extending radially outwardly from the lower portion of said skirt, said flange having a segment notched out to leave two peripherally opposed spaced abrupt edge faces constituting stop shoulders, in combination with a resilient sheet metal cupped outer member having a perforated top portion with an integral skirt portion depending from said top portion and an integral flange extending radially inward from the lower portion of the latter skirt, and a stop tongue connected with the skirt of said outer member and lying between and in the path of said stop shoulders and having peripherally presented faces to engage the respective opposed faces of said stop shoulders to limit the partial relative rotary movement between said members in both directions, said members being of such size and shape that the outer member is put under tension and the inner member is put under compression holding the opposed faces of said top portions and of said radial flanges in tight yielding rubbing contact, the radially innermost portion of the flange of the outer member being disposed at all points radially outside of the radially outermost portion of the inner face of the skirt of the inner member.

3. A two part unitary discharge cap for removable frictional application to, and use with, an open-ended discharge neck of a container, said cap comprising a cupped inner member having a perforated top portion with a skirt portion depending from said top portion and a flange extending radially outwardly from the lower portion of said skirt, said flange being provided with two peripherally opposed spaced stops, in combination with a resilient sheet metal cupped outer member having a perforated top portion with a skirt portion depending from said top portion and a flange extending radially inward from the lower portion of the latter skirt, and a stop tongue connected with the skirt of said outer member and lying between and in the path of said stops to engage the respective stops to limit the partial relative rotary movement between said members in both directions, said members being of such size and shape that the outer member is put under tension holding the opposed faces of said top portions and of said radial flanges in tight yielding rubbing contact, the radially innermost portion of the flange of the outer member being disposed at all points radially outside of the radially outermost portion of the inner face of the skirt of the inner member.

4. A two part unitary discharge cap for removable frictional application to, and use with, an open ended discharge neck of a container, said cap comprising a cupped inner member having a perforated top portion with a skirt portion depending from said top portion and a flange extending radially outwardly from the lower portion of said skirt, said flange being provided with two peripherally opposed spaced stops, in combination with a cupped outer member having a perforated top portion with a skirt portion depending from said top portion and a flange extending radially inward from the lower portion of the latter skirt, and a stop tongue connected with the skirt of said outer member and lying between and in the path of said stops to engage the respective stops, the radially innermost portion of the flange of the outer member being disposed at all points radially outside of the radially outermost portion of the inner face of the skirt of the inner member.

5. A two part unitary discharge plug for removable frictional application in, and use with, the wall of a discharge opening in a container, said plug comprising a cupped inner member having a perforated top portion and formed with a portion having a downwardly tapering radially outer face and provided with a flange extending radially outwardly beyond said outer face at a point above the same, said flange being provided with two peripherally opposed spaced stops, in combination with a cupped outer member having a perforated top portion with a skirt depending from said top portion and a flange extending radially inward from the lower portion of the latter skirt and slidably engaging with its upper face the opposed lower face of the flange of the inner member, and a stop connected with the skirt of the outer member and lying between and in the path of said opposed stops to selectively engage the same.

6. A can element having an outwardly tapering open-ended discharge neck and formed with a continuous shrouding recess located closely about the base of said neck, in combination with a two part unitary discharge cap for frictional application to said neck, and having its lower edge portion received in said recess so as to be inaccessible, said cap comprising an inner member held stationary on said neck by frictional engagement therewith and an outer member permanently associated with said inner member for partial rotary movement relative thereto, said inner mem-

ber comprising a perforated top portion with a skirt depending therefrom and a flange extending radially outwardly from the lower portion of said skirt, said flange being provided with two peripherally opposed spaced stop shoulders, and said outer members comprising a perforated top portion with a skirt portion depending therefrom and a flange extending radially inwardly from the lower portion thereof with its upper face in sliding engagement with the lower face of the flange of the inner member, and a stop connected with the skirt of the outer member and lying between and in the path of said stop shoulders to selectively engage the same to limit the partial rotary movement of said outer member relative to said inner member in both peripheral directions.

7. A can element comprising a downwardly and inwardly tapering wall defining a seat for a friction plug closure, a web extending radially outward from and connected with the upper portion of said seat, and a continuous wall concentric with and radially spaced from and outside of said seat and extending axially of said seat and having its portion adjacent said web connected therewith, said seat and said wall extending in opposite directions with relation to the plane of said web, in combination with a two part unitary dispensing friction plug for frictional application in said seat and having the lower portion of its outer member snugly received in the space defined by said concentric wall so as to be inaccessible, said plug comprising an inner member held stationary by frictional engagement in said seat and an outer member permanently associated with said inner member for partial rotary movement relative thereto, said inner member comprising a perforated top portion and having a downwardly inwardly tapering radially outer face engaging said seat and provided with a flange extending radially outwardly beyond said outer face at a point above the same, said flange being formed with two peripherally opposed spaced stop shoulders, and said outer member comprising a perforated top portion with a skirt portion depending therefrom, and a flange extending radially inward from the lower portion thereof with its upper face in sliding engagement with the lower face of the lower flange of the inner member, and a stop connected with the skirt of the outer member and lying between and in the path of said stop shoulders to selectively engage the same to limit the partial rotary movement of said outer member relative to said inner member in both peripheral directions.

8. A two-part unitary discharge cap for removable frictional application to, and use with, an endless wall defining the discharge opening of a container, said cap comprising a cupped inner member having a perforated top portion with a skirt depending from said top portion and formed with a continuous face to frictionally engage said wall and having a flange extending radially outwardly from said skirt, said flange being provided with two peripherally opposed spaced stops, in combination with a cupped outer member having a perforated top portion with a skirt portion depending from said top portion and a flange extending radially inward from the lower portion of the latter skirt, and a stop tongue connected with the skirt of said outer member and lying between and in the path of said stops to engage the respective stops, the radially innermost portion of the flange of the outer member being disposed at all points radially outside of the area defined by said frictionally engaging face of the skirt of the inner member.

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