

Sept. 7, 1943.

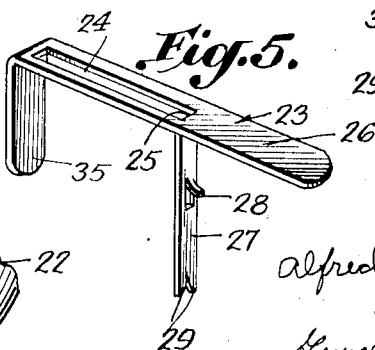
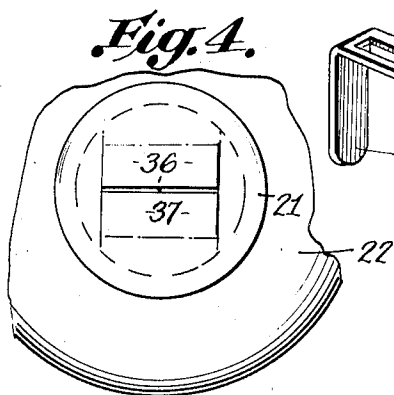
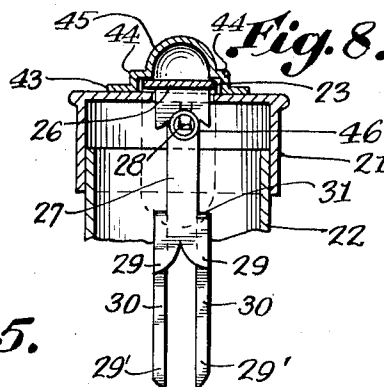
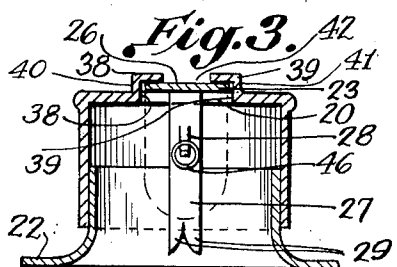
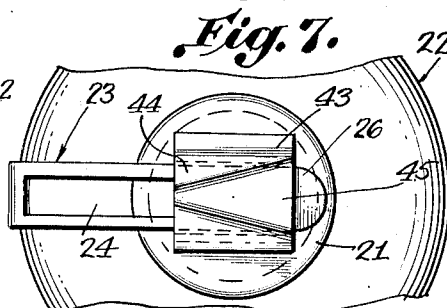
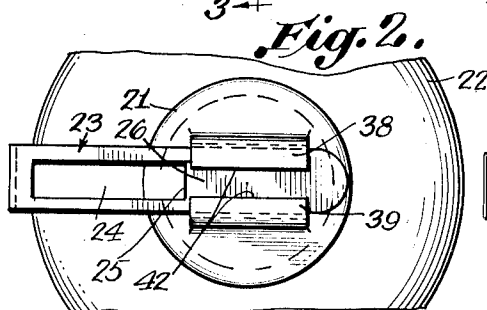
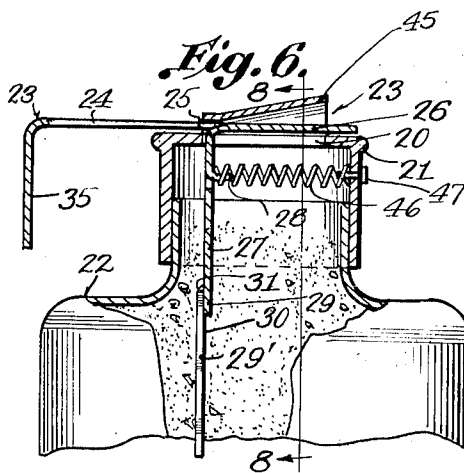
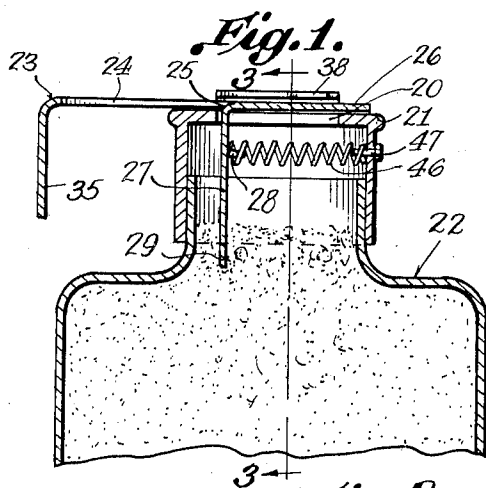
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2,328,564

DISPENSER CAP FOR CONTAINERS

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2 Sheets-Sheet 1



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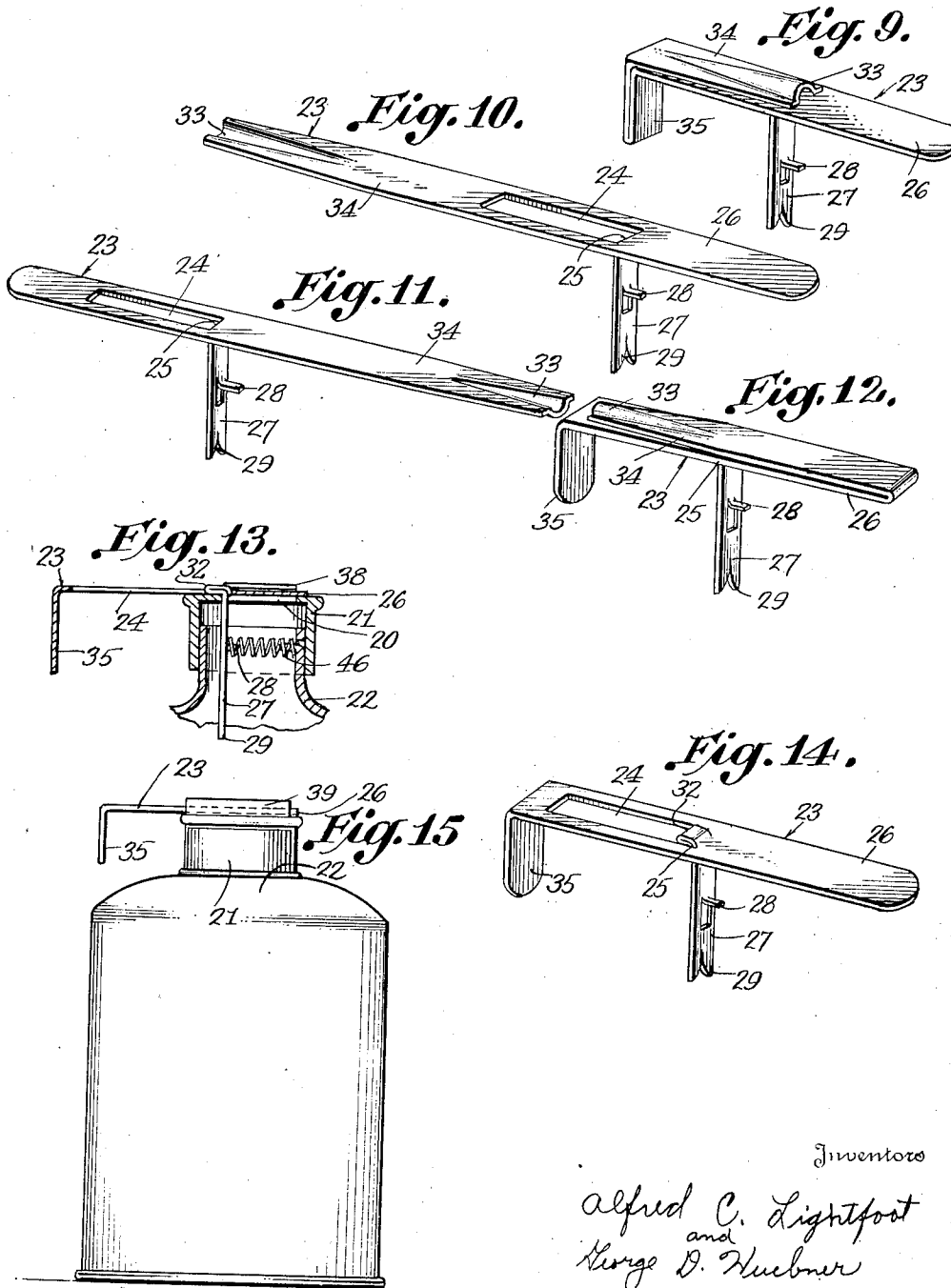
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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DISPENSER CAP FOR CONTAINERS

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Application September 30, 1940, Serial No. 359,142

2 Claims. (Cl. 221—62)

This invention relates to improvements in closure and dispenser devices constituting an attachment for containers of substances in a finely divided form, such as powder, granules, flakes, chips, grindings and the like. More specifically the invention pertains to the dispenser and ejector types of closures or caps having an agitator-provided slidable member normally closing an opening through which contents of an attached container may be poured, ejected, dispensed or sifted when the slidable member is manually operated to bring an opening therein into registration with the aforesaid opening.

It is frequently contended that the movable elements which project from certain dispenser caps of the prior art into the attached container inherently possess the characteristics of an agitator to loosen the contents of the container although the primary objects and functions of those elements are otherwise. In practice, applicants have found such contentions to be popular misconceptions since by the intended action of such interiorly extending elements the contents of the container are compactly pushed into a packed state beneath the registering openings through which the contents are expected to pour.

It is an aim of the present invention to provide a container top which possesses advantages over the prior art and conventional types of dispenser caps in points of simplicity and efficiency, and which at the same time proves itself comparatively inexpensive in cost of manufacture.

A further aim of the present invention is to provide a dispenser cap which is attractive in appearance, easy of manipulation, powder-tight, and which is possessed of advantages in points of function to loosen the container contents, as distinguished from packing the same, whereby to insure the free flow thereof from the container.

Still other objects of the invention are to provide a container cap in conjunction and combination with a slidable closure member which may be operated to dispense predetermined quantities of the container contents; to provide means for directing the flow of the dispensed contents; and to provide means for the novel mounting of means for automatically closing the dispenser passageway of the cap after the manual opening thereof.

With the above and other objects in view, the invention resides in the novel features of construction, arrangement and combination of parts more fully described hereinafter and finally pointed out in the claims appended hereto. Certain embodiments having the characteristics of the invention, and by which the same may be

practiced, are illustrated by way of example in the accompanying drawings, in which—

Figure 1 is a section vertically through one embodiment of the invention as applied to a container;

Figure 2, a plan view of the Figure 1 embodiment;

Figure 3, a sectional view taken as at line 3—3 of the Figure 1 embodiment;

Figure 4, a plan view illustrating the initial cap formation of the Figures 1-3 embodiment;

Figure 5, a perspective view of one form of our improved agitator-provided slidable closure member;

Figure 6, a view similar to that of Figure 1, but illustrative of a somewhat modified embodiment of the invention;

Figure 7, a plan view of the Figure 6 embodiment;

Figure 8, a sectional view taken as at line 8—8 of the Figure 6 embodiment;

Figure 9, a perspective view of a modified agitator-provided slidable closure member;

Figure 10, a perspective view of an initial formation of the Figure 9 embodiment;

Figures 11 and 12, perspective views of an initial and completed form, respectively, of a closure member in which the shielding spout is reversed from that of Figure 9;

Figure 13, a vertical section of an applied agitator-provided slidable closure member of the modified construction illustrated in perspective in Figure 14;

Figure 14, a perspective view of a modified embodiment of the invention; and

Figure 15, an elevational view of an exemplary container illustrating the functionally efficient arrangement and neat appearance of an applied closure and dispenser device of the character of the invention.

With a view to producing improved slidable closure members for an orifice, port or opening, such as indicated by character reference 20, of a cap 21 for a container 22, applicants have conceived the idea of integrally forming various associated elements of their closure members 23 of single strap-like pieces of material, as will be readily understood from an inspection of the accompanying illustrations, particularly Figures 5, 8, and 9 through 14. First with respect to the Figure 5 embodiment, it will be seen that in the formation of the passageway 24 through the slide or closure member 23, a portion is cut free along the sides and one end but left integral at the other end and bent downward from a point on

or beneath the inner end 25 of the closure portion 26 of the slide 23 to provide a downwardly extending agitator 27, which is adapted, by the arrangement, to travel through the substance of the container in advance of the progressive opening or registration of the passageway 24 with respect to the opening 20 in the cap to which the slide is applied. The downwardly projecting agitator 27 may also be provided with an integral lug 28 punched or partially cut free and bent outwardly from the agitator to serve as means for the mounting of a spring, to be described hereinafter. The end of the agitator may be notched or grooved to provide forked prongs 29 to facilitate its raking effect to loosen the container contents as the agitator is moved there-through simultaneously with, but in advance of, the registration of the opening 24 of the slide with the opening 20 of the cap.

Extension prongs, as shown in Figures 6 and 8, may be also provided by cutting into the edges of the agitator and thence downwardly toward the pronged end of the agitator to form strips 30 left integral at their bases 31, at which points they may be bent downwardly to provide extended prongs 29'.

By reference to Figures 13 and 14 it will be seen that the portion of the slide 23 which is cut free at one end and the sides thereof to provide the opening 24 and form the agitator 27, may be provided with a fold in advance of its downwardly extending portion to provide a lip 32 adapted to shieldingly cover a portion of the cap 21, when the slidable member 23 is in closed position, which would not otherwise be covered by a slide of the character shown in Figure 5. Further objects of such a shield or lip formation will be pointed out hereinafter.

Also within the scope of our invention, the slidable agitator-provided closure member 23 may be formed with an integral spout 33 surmounted shieldingly over the passageway 24 through the slidable member 23. By the utilization of a somewhat longer piece of strap-like material than is employed for the formation of the slides heretofore described, the integral spout may be formed, as shown in Figure 10 in an inverted position, on the extended end 34 of the slide, i. e., opposite the end constituting the closure portion 26 of the slide, and the extended end, having the spout formation, then bent to bring the spout in a position surmountingly over the opening 24, as shown in Figure 9, for receiving container contents which may be poured or ejected from the container through the openings 20 of the cap and 24 of the slide when brought into registration. The spout, aside from serving as means for directing the flow of the poured or ejected container contents, serves as a shield for the openings to prevent, for example, the entrance into the container of accidentally splashed water which may tend to cake the contents and prevent its free flow from the container. In the latter formation the spout 33 opens in the direction toward which the slide 23 is moved for opening. The spout may be reversed, however, as shown in Figure 12. The spout of the Figure 12 embodiment may be formed as an integral portion of the slide by extending the closure portion 26 of the slide; by forming the spout in the end of the extension, as shown in Figure 11; and then by bending the extending portion over the closure portion 26 to bring the spout formation surmountingly over the passageway 24.

An end portion of the slide 23, opposite the

closure end portion 26, may be bent downwardly to provide a thumb or finger engaging portion 35, as shown in Figures 1, 5, 9, 12, 13, 14 and 15, for the convenient manipulation of the slide.

It will thus be understood that the various slide formations, together with the various associated improved elements described, may be manufactured, without welding or other securing operations and means, integrally of single strap-like pieces of material by a single cutting or stamping operation and a minimum number of bending operations. Some of the bending operations may be performed simultaneously with the cutting operation. It will also be understood from the foregoing description that in the formation of the slides and their associated integral elements there need be no waste, scrap, nor severed portions.

To improve the cooperative functions of the slide, its associated elements, and the cap, it is also an aim of our invention to simplify and improve the cap and its associated means whereby the slide may be operatively combined with, or adapted to, the cap. An initial formation of an embodiment whereby our objects may be carried out is illustrated in Figure 4 of the drawings and from an inspection of which it will be seen that the passageway 20 through the top of the cap 21 is formed by cutting through the top of the cap in an M or I pattern and then bending the fin-like portions 36 and 37, formed by such cuts, upward into substantially parallel relation with each other at substantially right angles to the plane of the cap surface. The fin-like portions, bent upstandingly from the planar surface of the cap to form the passageway 20, are left integral with the cap and at a point thereon, upwardly from the surface of the cap a distance comparable with the thickness of the slide, the fin-like portions are again bent returningly toward each other to a plane substantially parallel with, but above, the top surface of the cap. The fin-like portions are thereby converted into guides for slidably mounting the slide 23 upon the cap and across the opening 20 thereof. In mounting the slide 23 upon the cap it is believed most expedient to place the slide across the top of the cap, with the agitator 27 projecting downwardly through the opening 20, before bending the upstanding fin-like portions 36 and 37 returningly toward each other. Should the agitator portion of the slide remain temporarily on a plane with the slide, the slide may be inserted beneath the guides 33 and 39, in the position shown in Figure 3 for example, and the agitator bent downwardly through the opening 20 if it is found more desirable to form the angle in the fin-like portions before applying the slide to the cap.

As illustrated in Figure 2, the fin-like portions are caused to be separated along their edges when formed into the guides 33 and 39 by the utilization of portions of the fin-like members in the upstanding portions 40 and 41 of the guides. This separation 42 between the edges of the guides provides an opening through which the container contents may be poured or ejected when the opening 24 of the slide is brought into registration with the cap opening 20.

The described manner of forming the cap passageway 20 and the guides 33 and 39 eliminates the necessity of otherwise securing guides to the top of the cap, avoids scrap and waste, and simplifies manufacture by minimizing formation and mounting operations. In lieu of the integral

guides 38 and 39, however, separate angle brackets, not shown but of a character similar to the guides 38 and 39, may be secured to the top of the cap without sacrifice to the performance of the improved combination. An alternative form of means for slidably mounting the agitator-provided closure member is illustrated in Figures 6, 7 and 8 and comprises a plate-like member 43 secured along its edge portions, by any suitable means, to the top of the cap 21 in a manner bridging over the passageway 20 through the cap. A portion 44 of the plate-like member 43, between the secured edges, is elevated, above the surface of the cap, sufficiently to slidably receive or accommodate the slide 23 thereunder. The elevated portion 44, of the slide securing plate-like member 43, may be provided with an opening (not shown) through which the container contents may pass when the slide 24 is brought into registration with the cap opening 20, or in lieu thereof the elevated portion 44 may be provided with a still further elevated or spout-like formation along the middle portion thereof in order that the ejected container contents, after passing through the registering openings of the cap and slide, may pass between the slide and elevated portion 44 of the slide securing member. A suitable spout-like formation of this character is illustrated in Figures 6, 7 and 8 as a semi-conical formation 45, which may, if preferred, be of a tapering or gradually increasing inverted V-formation. Such spout formations are comparable in function with those previously described in connection with the slide formations illustrated in Figures 9 and 12.

In order that the mounted slide 23 may be normally held mechanically in a position whereby its portion 26 closes the opening 20 in the cap 21, a coil spring 46 is mounted over the lug 28 and extends between the agitator 27 and the inner wall of the cap. The wall of the cap may be provided with means, such as a pin 47 or other means, for retaining the other end of the spring in position against the wall of the cap. If preferred however, the spring may extend between the agitator 27 and the inner wall of the neck of the container as shown in Figure 13.

The spring 46 should normally be under compression whereby to hold the depending agitator in abutment with the wall of the end of the opening 20 through the cap. In this position, the closure portion 26 of the slide 23 closes the opening 20 except for the portion of the opening which is closed by that portion of the agitator which extends through the opening. This arrangement will provide a powder-tight seal for the opening 20. If desired however, a lip, such as 32 shown and described in connection with Figures 13 and 14, may be provided to extend over the portion of the opening 20 which is not otherwise covered by the closure portion 26 of the slide.

From the foregoing it will be readily understood that by pressing or pushing on the conveniently disposed member 35 of the slide, the spring will be compressed and the slide opening 24 brought progressively into registry with the cap opening 20 trailing of the advancing move-

ment of the agitator through the neck of the container and the contents therein. By this advancement of the agitator, a quantity of the container contents, which is directly beneath the cap opening, is loosened and made free to flow through the openings as they are brought into registry.

Aside from the foregoing functions of the agitator, the agitator also serves as means for limiting the movement of the slide 23 beyond predetermined limits. In other words, the agitator also serves as a stop, in cooperation with the end walls of the opening 20 in the cap, to prevent the spring from pushing the slide beyond a closed position and to prevent the manual movement of the slide beyond the open position.

Also from the foregoing, it will be apparent that our invention is not limited to the particular embodiments set forth to illustrate and describe the same, but that changes may be made without conflicting or departing from the spirit of the invention as defined by the appended claims.

We claim:

1. In a dispensing device for the outlet of a container, a cap for said outlet, a closure member having an opening therein, adjoining portions of said cap being cut and bent and providing a dispenser opening in said cap and further providing retaining guides of integral portions of said cap for mounting said closure member slidably across the opening of said cap, means normally maintaining the opening of said closure member out of registry with the opening of said cap, an agitator for extending into said container and actuated by the operation of said slidable closure member, said agitator being structurally in advance of the opening of said closure member whereby that portion of the container contents traversed by the agitator during the opening operation is made free to be dispensed through the registering openings of said cap and closure member.

2. In a dispensing device for the outlet of a container, a cap for said outlet, integral and adjoining cap portions extending upwardly at an angle to the plane of the cap surface and thence convergingly toward one another on a plane substantially parallel with and above the surface of said cap and forming guides on and a dispenser opening in said cap, a closure member slidable between the surface of said cap and said integral guides, said closure member having an integral portion cut free at its edges and one end and thence bent at an angle to said closure member to form an opening through said closure member and a depending member extending through said cap opening and for extending as an agitator into said container, means for normally holding said depending member against one edge of said cap opening and said openings out of registry and means for manually moving said slidable closure member to carry said depending member across said cap opening in constant angularity and to bring said openings progressively into registry rearwardly of the advanced depending member.

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