

June 4, 1935.

S. O. PAULL

2,003,460

REMOVABLE CAP FOR CANS OR THE LIKE

Filed Nov. 14, 1933

Fig. 1.

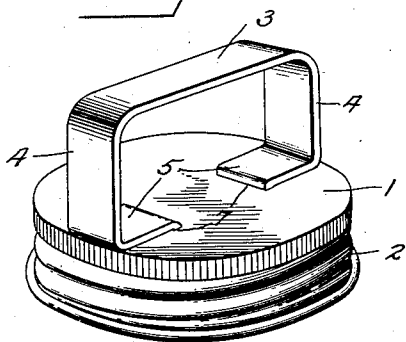


Fig. 2.

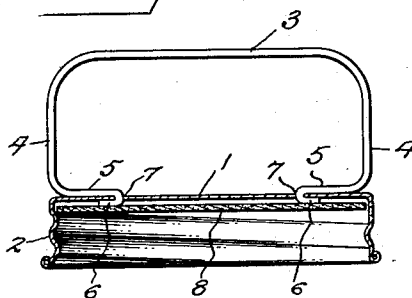


Fig. 3.

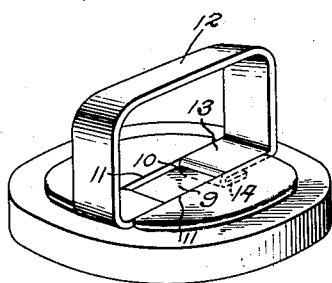
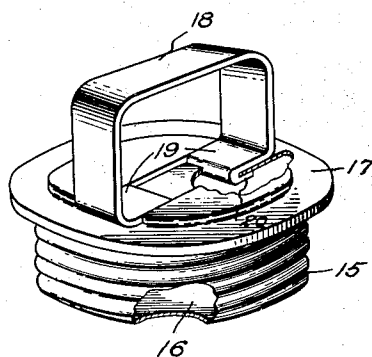


Fig. 4.



Inventor

S. O. Paull

By

J. J. Quirke

Attorney

UNITED STATES PATENT OFFICE

2,003,460

REMOVABLE CAP FOR CANS OR THE LIKE

Samuel O. Paull, Wellsburg, W. Va., assignor to
Eagle Manufacturing Company, Wellsburg,
W. Va., a corporation of West Virginia

Application November 14, 1933, Serial No. 697,974

10 Claims. (Cl. 220—94)

This invention is directed to an improvement in removable caps for cans or the like, and is more particularly concerned with the provision of a rigid handle for the cap which will serve as a means for removing and applying the cap and also as a definite means for lifting the receptacle in its transportation from place to place.

Handles of the open-grip type, i. e. one which will conveniently receive a proper hand grip for convenient lifting of the receptacle, while at the same time affording means for applying and removing the cap, are well known in the art, and while these handles form a highly desirable feature of the cap, they are not absolutely necessary to the use of the cap or to the use of the receptacle.

Under these circumstances, the provision of a handle of this character is an added expense in the production of the receptacle which, owing to the fact that the particular handle is not an indispensable necessity, tends to an increase in cost of the receptacle as a whole, which cannot as a rule be added to the selling price, particularly where it forms the sole distinction between the cans sold at different prices. Therefore, if a handle of this kind, recognized as a distinct and important improvement, can be manufactured and applied to the cap at a minimum of expense, the overall cost of production of the can as a whole is but slightly increased and the selling price of such can will compare favorably even with the selling prices of cans lacking this particular handle or its advantages.

The essential characteristic of a handle of this character is the necessity for an absolutely rigid connection with the cap. The handle must be inseparable from the cap in ordinary use and must be substantially rigid with the cap in order that the handle may be used for applying and removing the cap, and there must be sufficient strain-resisting connection between the handle and cap as to permit the handle, when the cap is applied, to be used as a means for lifting the container as a whole.

Therefore, the primary object of the present invention is the provision of a cap handle which is so formed and so designed for application to the cap that the construction as a whole is carried out at the minimum of expense, while at the same time insuring the capacity of complete rigidity between the cap and handle to thereby afford the advantages noted.

The invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a perspective view of the improved

handle and cap, the cap being in the preferred form.

Figure 2 is a transverse section of the same.

Figure 3 is a perspective view of the cap and handle showing a modified form of cap, the cap being broken out to show the handle connection.

Figure 4 is a perspective view of a modified form of the invention partly broken out to show the interior arrangement.

The cap illustrated in Figure 1 is of a conventional form having the top 1 and the threaded flange 2 which is arranged to cooperate exteriorly or interiorly, as preferred, with a complementary flange on the container. The handle includes a bail section 3, the down-turned portions 4 of which are intumed at their lower edges, i. e. projected toward each other for an appreciable distance to form clamping lips 5. The free terminals of these lips are turned downwardly, as at 6, the down-turned portions being substantially at right angles to the clamping lips.

The top 1 of the cap is perforated or slotted at 7, with the perforations having a length and width to more or less accurately receive the down-turned portion 6 of the handle.

In applying the handle, the portions 6 are passed through the slots 7, said portions being of a length to extend materially below the bottom surface of the top 1, in which position the lips 5 bear squarely upon the upper surface of the cover. The cap and handle as thus arranged are passed through a press and the portions 6 turned outwardly relative to each other and forced into clamping contact with the bottom of the cap, thus clamping the cap between the out-turned portion 6 and the lips 5.

The dimension of the portions 6 longitudinally of the handle is preferably somewhat less than that of the lips, though obviously they may be of any desired dimension in this direction permissible by the location of the slots 7 with respect to the flange 2 of the cap. The handle proper is constructed of sheet iron of sufficient gauge to provide a rigid structure, and under the clamping action referred to it is apparent that the handle is rigidly connected to the cap, and that in addition to the clamping action there is a rigid relation between the handle and cap relative to any possible turning through the connection of the portion 6 of the handle with the slot 7. These slots and the clamping cooperation secure the handle rigidly to the cap and permit complete manipulation of the cap with respect to the container through the handle alone, the handle also

permitting the transportation of the can by the use of the handle alone whenever desired.

Attention is called to the economical construction provided in this manner of securing the handle and cap, which tends to a minimum cost of production without sacrificing any of the real vital advantages essential in an article of this kind. The formation of the handle alone may be readily and conveniently carried out in a single operation. The formation of the slots in the top is necessarily a most economical step as compared with the usual welding or riveting. Clamping by the use of a simple press in which the entire clamping operation is carried out in a single movement is obviously readily, quickly and economically secured. Thus the whole construction is an economical one and increases the overall cost of the can but slightly as compared with handle applications requiring welding, particular top formation or particular handle formation, with the use of rings or other extraneous securing means. The operations required in carrying out the securing of the handle are so simple and require the simplest machinery and practically no loss of time and yet when in place and for all individual and necessary uses the handle and cap are secured as rigidly and fixedly as under any other construction so far as the ordinary uses of the handle are concerned.

Of course, in use with a cap for a container designed for receiving volatile or like fluids, means must be provided for sealing the slot 7 against the interior of the cap. A simple and preferred way of accomplishing this is to arrange a sealing disk 8 of appropriate material which fits snugly in the top of the cap underlying the laterally bent portion 6 of the handle. When the cap is screwed in place, the edges of the container opening into which the cap is fitted or the edge of the container flange on which the cap is externally threaded engage the edge of the gasket or sealing disk and completely seal the juncture against leakage.

If the cap is designed to be subjected to unusual strain in applying or removing, i. e. if the cap is designed for use with a container in which it is highly important that the cap be seated on the container with an unusual degree of tightness, the twisting strain between the handle and cap might, after repeated use, tend to some slight rupture of the edges of the slot 7 by the handle. Under these circumstances, it is preferred that the cap may be constructed in accordance with the form shown in Figure 3, which is designed particularly to avoid transmitting the entire twisting strain of the handle relative to the cap to the notches. In this form, the cap is formed with a transverse depression 9 in which slots 10 corresponding to the slots 7 of the preferred form are provided. The slots correspond in length to the distance between the side walls 11 of the depression 9, and as the handle of this form is identical with the handle in the preferred form, including the bail portion 12, the intumed lips 13 and the depending portions 14, and as this handle is applied exactly as described in connection with the preferred form, it will be seen that following application the side edges of the lips 13 fit between and bear against the side walls 11 of the depression 9 in the cap. Furthermore, it is preferred that the depth of this depression be such as to correspond with the thickness of the lips 13. As thus applied, any strain on the handle tending to relative turning with respect to the cap will be resisted by the side

walls 11 of the depression 9 and also, of course, by the material of the cap in the slots 10.

In Figure 4, there is shown a form of cap in which there is a permanent sealing of the slots in the cap top against the interior of the receptacle. In this form, the cap is in the shape of a plate of appropriate diameter to which the handle is attached, either as shown in Figures 1 and 2 or as shown in Figure 3. After attachment of the handle, there is secured to the cap a hollow flanged body closed at the bottom and open at the top, the side wall 15 of the body being threaded for cooperation with the threaded flange of the container, and the bottom 16 serving as a complete closure. This body is secured to the cap-like plate, here indicated at 17, by conventional flange clamping, soldering or other means of attachment, so that the body and cap plate form a permanent part of the cap. The handle has the bail-like portion, indicated at 18, the intumed lips at 19 and the laterally deflected projections on the lower surface of the cap plate at 20. Thus the handle in this form is similar to that shown in Figure 1, except that the cap during the application of the handle is in the form of a plate and that the hollow body secured to this plate for the purpose of completing the cap obviously serves as a complete seal for the slots in the cap plate against the interior of the can or container.

The essential feature of the present invention is in the form of the handle and the means of applying it to the cap. No limitation is intended by any specific disclosure herein of any means for sealing the interior of the cap against the can or container, as any conventional or desired means may be employed to this end. Furthermore, no limitation is intended by any specific disclosure as to the particular form, size or shape of the cap, as it is quite obvious that the handle of this specific disclosure may be applied to a cap of any form, size or shape. Of course, any appropriate or desired materials may be employed, with the requisite, however, that the handle must have sufficient rigidity of itself to permit of the conventional applying and removing of the cap and the lifting of the can as a whole by the handle without yielding of such part under the strain.

I claim:—

1. A can cap formed with spaced slots, a handle including a bail portion, intumed lips at the bottom of the bail portion to overlie and rest upon the top of the cap, projections at the inner end of the lips to pass through the slots, said projections being designed to be bent to underlie the lips and clamp the material of the can between such portions and the lips.

2. A cap having a depressed channel providing edge walls, a handle having a bail portion, inwardly extending lips to lie snugly between said walls, and means carried by the lips to clamp against that portion of the cap opposite that engaged by the lips.

3. A cap having a top formed with a depression providing edge walls, slots in the top transverse the depression, a handle having a bail portion, intumed lips to rest on the top and bear against the respective edge walls of the depression, a portion at the end of the lips to be passed through the slots, and a portion beyond the slot-engaging portion to be clamped against the bottom of the cap beneath the lips.

4. A cap formed with a depression presenting edge walls, a handle with integral parts having clamping cooperation with the cap within the depression, the side edges of the clamping parts

of the handle bearing against the edge walls of the depression.

5 5. A cap formed with a depression presenting edge walls and having slots between said edge walls, a handle in part extending through the slots and having clamping cooperation with the cap within the depression, the side edges of the handle bearing against the edge walls of the depression, and a body secured to the cap and
10 sealing the slots from the interior of the cap.

6. A can cap formed with spaced slots, a handle including a bail portion, inturred lips at the bottom of the bail portion to overlie and rest upon the top of the cap, projections at the
15 inner end of the lips to pass through the slots, said projections being designed to be bent to underlie the lips and clamp the material of the can between such projections and the lips, and a sealing gasket arranged within the cap to
20 seal the slots from the interior of the cap.

7. In combination with a cap having a comparatively flat top and a threaded edge wall, of a handle including uprights rising from the top of the cap and a hand grip portion connecting the
25 uprights remote from the top of the cap, the lower ends of the uprights being bent toward each other to provide lips to overlie and bear upon the top surface of the cap, the free ends of the lips being passed through slots formed in the
30 top of the cap and bent toward the uprights into clamping cooperation with the bottom surface of the top of the cap.

8. A cap for containers having a comparatively flat top and a threaded edge wall, a handle
35 for the cap including uprights rising from the flat top of the cap, a hand grip portion connecting the ends of the uprights remote from the top

of the cap, the ends of the uprights adjacent the top of the cap being bent to provide lips projecting toward each other and overlying and bearing squarely upon the upper surface of the cap, and means cooperating with the relative-
5 ly inner ends of the lips and with the under surface of the cap to permanently fix said inner ends of the lips to the top of the cap.

9. A cap for containers having a comparatively flat top and a threaded edge wall, a handle
10 for the cap including uprights rising from the flat top of the cap, a hand grip portion connecting the ends of the uprights remote from the top of the cap, the ends of the uprights adjacent the top of the cap being bent to provide
15 lips projecting toward each other and overlying and bearing squarely upon the flat top of the cap, and means cooperating with the relatively inner ends of the lips and with the top of the cap to permanently fix said inner
20 ends of the lips to the top of the cap, said means being integral with the lips.

10. A cap for containers having a comparatively flat top and a threaded edge wall, a
25 handle for the cap including uprights rising from the flat top of the cap, a hand grip portion connecting the ends of the uprights remote from the top of the cap, the ends of the uprights adjacent the top of the cap being bent to provide lips projecting toward each
30 other and overlying and bearing squarely upon the flat top of the cap, and means integral and coextensive with the width of the lips for permanently securing the lips to the top of the cap.

SAMUEL O. PAULL. [L.S.] 35