May 28, 1929. R. McKEE 1,715,169

CLOSURE FOR CANS AND LIKE RECEPTACLES

Filed May 23, 1927

Fig. 1.

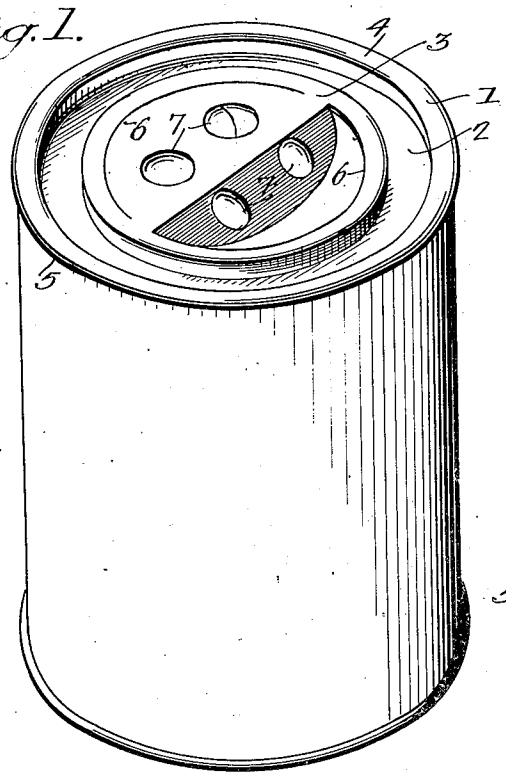


Fig. 2.

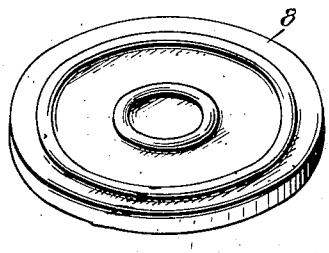


Fig. 4.

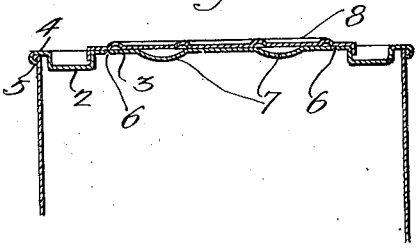
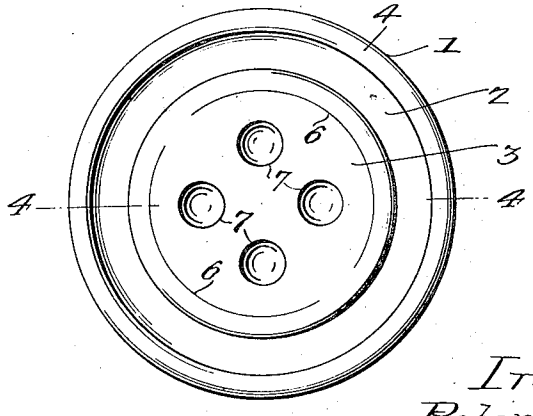


Fig. 3.



Inventor:
Robert McKee,
by his Attorneys,
Howson & Howson

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UNITED STATES PATENT OFFICE.

ROBERT McKEE, OF PHILADELPHIA, PENNSYLVANIA.

CLOSURE FOR CANS AND LIKE RECEPTACLES.

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This invention relates to improvements in closures for cans and like receptacles, and the principal object is to provide a closure having certain improving and desirable characteristics, as hereinafter fully set forth, which render it particularly desirable for use as a receptacle for certain characters of substance.

A more specific object of the invention is to provide a closure for a can or package having properly shaped and positioned scores or cuts providing for the punching out of predetermined sections to provide ports or openings through which the contents of the container may be emptied and in which the projections caused by cutting the metal through or partly through will lie entirely above the lower plane and below the top plane of the closure, this for a purpose hereinafter set forth.

Another object of the invention is to provide with economy a hermetically tight closure in which one or more small openings or one or more large openings may be easily made through which the contents of the container may be extracted in small or relatively large quantities as desired.

A still further object of the invention is to provide a closure having provision for easily forming one or more openings through which to extract the contents of the container to which the closure may be attached and of such a character as to be capable of withstanding severe shocks, such for example as is given by the automatic knock-off of the topping machine without rupturing the closure or causing it to leak.

The invention also contemplates the provision of a closure provided with means whereby openings may be made without difficulty for extracting the contents of the container of which the enclosure is a part, and comprising also, means for sealing the container after the original openings are formed, effectively preventing leakage or deterioration of the contents.

In the attached drawings:—

Figure 1 is a view in perspective of a can having as a part thereof a closure made in accordance with my invention;

Fig. 2 is a view in perspective of the supplemental closure which constitutes a desirable part of the main closure;

Fig. 3 is a plan view of the main closure, and

Fig. 4 is a section on the line 4—4, Fig. 3, showing the supplemental closure in position thereon.

With reference to the drawings, the closure consists in a preferred form of a sheet metal disk 1 having pressed from one side thereof an annular channel section 2 preferably concentric with the disk and forming a central panel 3 the upper face of which may be level with the corresponding face of the peripheral flange 4. As shown in Fig. 4, the peripheral flange 4 is beaded over at the edge as indicated at 5 whereby the closure may be attached to a container in well known manner.

As shown in Figs. 3 and 5, I provide the panel 3 with a plurality of scores and a desirable form of these scores, shown in Fig. 3, consists of two substantially semi-circular lines 6, 6 arranged at opposite sides of the panel, and within the segment defined by each of the lines 6, 6 a pair of circular scores 7. As shown in Fig. 4, the scores are made on the inner or under side of the closure whereby the depression in the latter caused when forming the circular scores 7 extend inwardly from the outer surface and do not project as might otherwise be the case, beyond the plane of either face of the closure. Preferably the circular scores 7 are so formed that the impression is slightly deeper on one side of each of the circles, whereby when these circular portions are forced out by means of a sharp blow or pressure on the outside of the closure, the metal will break away only on the sides of the deeper impressions and the circular pieces will not be entirely separated but will be retained on the closure by a narrow tongue representing the relatively shallow portion of the score.

Attention is directed to the material advantages attaching to the use of completely circular scores for defining the parts to be pressed out to form the smaller discharge ports, as compared for example with the prior methods in which these parts were defined by scored or completely severed lines in segmental form or in which the metal around those parts to be forced out was weakened by indenting and thereby straining the metal. Whereas for example the prior methods are not readily adaptable for use where the thicker gage metals are involved, the present method is uniformly efficient with metals of any of the gages normally found in articles

of the type to which the invention relates. In my process, the scoring dies may be adjusted in accordance with the thickness of the metal to give a scoring of any desired depth whereby that portion of the lid comprehended by the circular score may be easily forced out to afford a port the area of which is substantially the same as the area comprehended by the scoring. Where on the other hand and as in the prior methods the scored lines represent only the segment of a circle, it is obvious that even where the top is made of the thinnest metal, the port formed by forcing out the scored part can never constitute a full circle, and where the metal of the top is thick, considerable difficulty will be experienced in bending the unscored and unweakened metal to form the port. This difficulty in bending also applies to the prior method in which the metal of the top is actually severed on a segmental line, since here again the metal must be forced in along a line which has not been weakened. Also this difficulty in forcing portions of the metal in to form apertures results in most cases in only a partial bending down of the metal tongues so that the openings formed are usually entirely inadequate and as a result considerable difficulty is experienced in sifting out the contents of the package, particularly where these contents are of granular form, as is frequently the case. Similarly, the prior method of weakening portions of the metal top by indentations is suited primarily for thin metals only, and even in that case is apt to result in inadequate discharge ports. In this instance, it is obvious that the thicker gages of metal cannot readily be weakened by indentation, and if not weakened sufficiently, considerable difficulty will be experienced in forcing out the indented portions. Even in the case of the thinner metals, it is difficult to weaken the metal by this method with sufficient uniformity in a circular line to insure the breaking away of the metal on the full circle, and inadequate ports frequently result. As set forth above, none of these disadvantages attaches to my method.

It will be understood that the scored lines provide simple and easy means whereby the closure may be ruptured to discharge the contents of the container. A slight blow or pressure applied on the outer face of the closure at the proper points will rupture the latter along the scored lines and will give the required opening. If a relatively large opening is required, the closure may be ruptured along either one or both of the lines 6. Or if a relatively small opening is required, either one or all of the circular portions may be forced in as described above.

It is particularly to be noted that by forming the closure with the central panel 3 surrounded by the channel 2 and by forming the scores in the central panel so that the depressed portions of the material within the scored lines extend inwardly of the panel, a closure is formed in which no portion projects above the top nor below the lower plane or face, this being important where these closures are applied to the containers by machine, as will be readily understood by those familiar with this art.

It will further be noted that although I prefer in all instances to define the closure ports by means of scored lines which do not penetrate the cover, since this affords a hermetically sealed closure and one in which the seal is maintained against the blow or blows administered to the closure by the automatic knock-off device of the topping machines, my invention in certain aspects is not limited to the use of scored lines, and in some instances the ports in the closure may be defined by partial cut-outs or incisions which actually penetrate the closure. In all instances, however, it is desirable that the scores or incisions be such as to prevent the projection of any portion of the cover beyond the normal planes of the upper and lower faces thereof. Where, therefore, in the claims the term "score" or "scoring" is employed, it is to be understood, in the absence of specific statement to the contrary, to be inclusive of any cut either extending completely through the metal or merely superficial, and also any incision or marking of a character tending to weaken the metal along the predetermined lines.

In conjunction with the main closure described above, I prefer to employ a supplemental closure in the form of a slip cover 8 whose use is made possible by the inclusion in the main cover of the upstanding panel 3 and which is so formed as to be capable of being slipped over and frictionally secured to this main panel, as shown in Fig. 4. This supplemental cover as will be obvious provides for effectively sealing the container even after the discharge ports have been formed in the main closure, and it is particularly desirable where the contents of the container are of a character which will become spoiled by exposure to the air.

The container is particularly well adapted for holding lye. This material is dangerous to handle, being caustic in action, and deteriorates rapidly when exposed to air. In the present container, the elevated panel in which the openings are formed constitutes in effect a nozzle which greatly aids in pouring out and distributing the contents at the desired points without spilling and without permitting the lye to come in contact with the fingers or exterior of the container. The construction adds materially to the safety and convenience of the container.

Positioning the discharge ports in the elevated panel also answers another purpose, in that it permits the filling of the containers on

high speed filling machines without interfering in any way with the later pressing in of the scored or cut portions or tongues to uncover the ports. In filling by machine, the contents, and particularly lye, are packed extremely hard, and under other circumstances, difficulty might be experienced in forcing in the tongues which normally close the ports. With the present construction, an unfilled space is afforded under the panel into which the tongues are easily forced, regardless of the character of the contents.

The use of the circular panel or nozzle is also particularly desirable, by reason of the fact that it adapts itself to the use of an auxiliary closure retainable by friction to give an hermetic seal. This is essential in a container for lye, which deteriorates when exposed to the atmosphere. This particular type of auxiliary closure is also desirable in a lye container, by reason of the relative difficulty of removal. So firmly is it held on the nozzle that a suitable tool is required to pry it loose. This device effectively precludes possible accidental opening of the container or the opening thereof by children.

The container is also universally adaptable for trade both in the country and city. In city use, the contents, where the latter is lye, are usually used in small quantities such as may easily be sifted from the smaller apertures, whereas in country use, it is frequently desirable to pour out large quantities at one time. In the latter instance, the formation of the large tongues is such that substantially the entire top of the can may be opened to facilitate discharge of large amounts.

I claim:

1. A closure for containers comprising a substantially flat disk having a substantially U-shaped scoring defining a relatively large area of the disk adapted to be forced inwardly to form a discharge opening, and having within that portion of the disk embraced by said scoring an additional scoring defining a relatively small area also adapted to be forced inwardly to afford a relatively small discharge port.

2. A closure for containers comprising a substantially flat disk having substantially U-shaped scorings defining relatively large areas of the disk adapted to be forced inwardly to form discharge openings, said scorings together embracing the major portion of the disk area, and additional scorings defining relatively small areas within those areas embraced by the said scorings first named and defining relatively small areas also adapted to be forced inwardly to afford relatively small discharge ports.

3. A closure for containers consisting of a substantially flat disk having an elevated panel forming thereunder a pocket, a pair of substantially semi-circular scorings defining portions of said panel adapted to be forced inwardly to form discharge openings, said scorings together embracing substantially the entire area of the panel, and additional scorings defining relatively small areas also adapted to be forced inwardly to form relatively small discharge ports, said additional scorings being located within the areas embraced by said semi-circular scorings.

ROBERT McKEE.