May 20, 1947. H. K. DICKERMAN 2,420,738

PAPER POWDER CAN

Filed Feb. 10, 1944

Fig. 1.

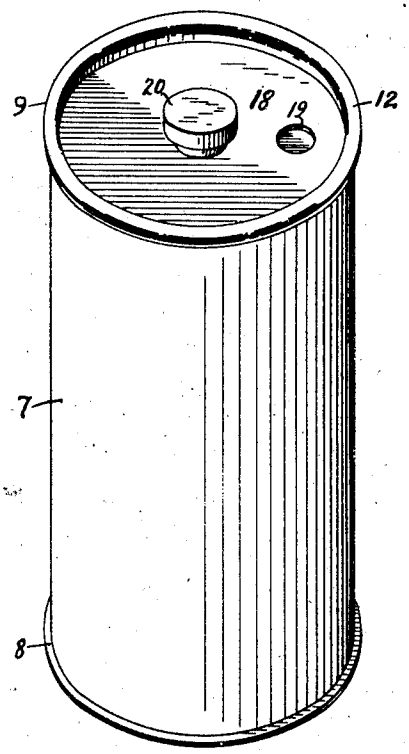


Fig. 4.

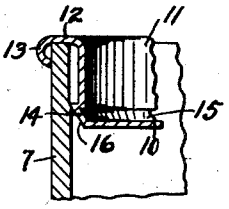


Fig. 2.

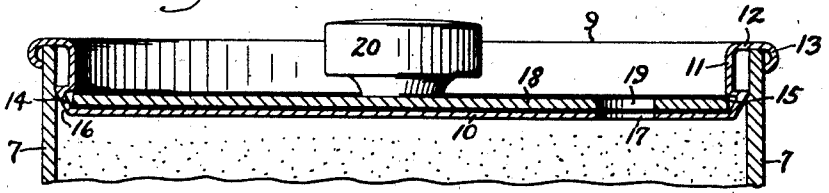


Fig. 3.

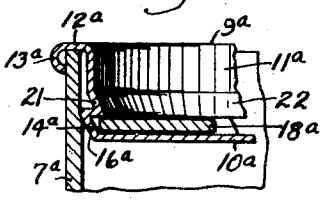
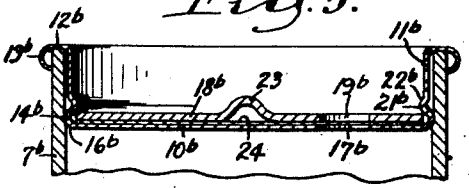


Fig. 5.



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PAPER POWDER CAN

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1 Claim. (Cl. 229—5.5)

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This invention relates to improvements in containers for powder or other comminuted materials, and more particularly to containers of this nature made of cardboard, paper, or similar fibrous materials, and having an improved cap or closure member that can be made of metal, any of the well known plastic materials, and the like.

It is a general object of the invention to provide a container of the class mentioned having an improved closure device for the container receiving opening that can be inserted in closing and sealing condition in the container merely by pressing or forcing it into its final position to form a tight substantially permanent closure, no crimping or bending of the closure over the adjacent edges of the container being necessary, and no machine or tool operations being required.

Another object of the invention is to provide an improved container for powder or similar materials, the main body of which can be efficiently constructed of non-metallic materials, thus conserving metals needed in the war effort.

Another object of the invention is to provide an improved closure member for containers of the class mentioned, having an improved construction to form a peripheral sealing bead, and that can be economically manufactured in large quantity production by factory methods merely by pressing or rolling the closure member to provide the sealing bead.

Still another object of the invention is to provide an improved closure member for containers of the class mentioned wherein the forming of the sealing bead provides a circumferential groove adapted for mounting a rotary closure disc for controlling the dispensing of the container contents.

According to another feature of improvement, the closure member is constructed to provide an exterior peripheral sealing bead, and also an adjacent interior peripheral bead or shoulder adapted to retain a rotary dispensing closure in operative position and having inclined guide walls over which the dispensing closure can be pressed or snapped into its final operative position and retained therein.

Other objects of the invention will be in part pointed out in the following detailed description of certain illustrative but preferred embodiments of the invention, and will be in part brought out in the following detailed disclosure.

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be

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exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claim.

For a more comprehensive disclosure of the nature, objects and advantages of the invention, reference is had to the following description of the illustrative embodiments, and to the accompanying drawings in which:

Fig. 1 is a perspective view of a powder can or container having a fibrous body and having end closure members embodying the invention;

Fig. 2 is a fragmentary enlarged central vertical section through the upper end of Fig. 1;

Fig. 3 is a fragmentary central vertical section similar to Fig. 2, but showing a modified structure;

Fig. 4 is a fragmentary section similar to that of Fig. 2, in which the dispensing structure is omitted; and

Fig. 5 is a fragmentary sectional view similar to that of Fig. 2, but showing a further modified structure.

Referring to the drawing for a detailed description of the invention, and first to the embodiment thereof shown in Figs. 1, 2, and 4, a container of conventional form is shown having walls 7 which may be constructed of any of the known non-metallic materials above referred to. While the container is shown as being cylindrical, it may assume any other well known form. The body of the container formed by the wall 7 as shown, has openings at its opposite ends, the lower end opening being closed by a cap or closure member 8, while the upper end opening is closed by a similar cap or closure member 9. These two closure members are ordinarily similar in structure except that for some purposes the closure member 9 is provided with structure for dispensing the container contents. The direction from the top to the bottom of the container as viewed in Fig. 1 may be regarded as the longitudinal dimension of the container and the end closure members, the distance from right to left in this figure may be regarded as the breadth or diameter.

As best shown in detail in Figs. 2 and 4, the closure member 9, ordinarily constructed of metal, plastic materials, and the like, embodies a closure plate 10 and an angularly disposed peripheral wall 11 ordinarily formed integrally with the closure plate 10 and adapted to telescopically engage with the ends of the walls 7 of the container. Substantially at its upper extremity the peripheral wall 11 is formed with an integral outturned flange 12 and an outer downturned flange or bead

13. The flange or bead 13 may be curved or rolled as shown and is positioned for engagement at the outer side of the adjacent edge of the wall 7, thus forming a reinforcing and finishing structure. The peripheral wall 11 and the flanges 12 and 13 all extend entirely and continuously throughout the entire periphery of the closure member.

Adjacent to its lower edge the peripheral wall 11 is deflected or offset outwardly to form a retaining aid sealing bead 14. This offsetting of the wall 11 as shown, is preferably continuous and extends for the entire periphery of the closure member, thus providing a substantially sift-proof joint between the closure member and the container wall 7. This offsetting or deflecting of the wall 11 can be very readily accomplished by means of automatic machinery by rolling or pressing operations. This offsetting of the peripheral wall not only forms the sealing and retaining bead 14, but at the same time provides the inner peripheral groove 15. This structure not only stiffens and reinforces the closure member, but the groove 15 serves to rotatably mount a dispensing controlling member or disc, as described below.

At the lower side of the sealing and retaining bead 14 an inwardly and downwardly inclined guiding surface 16 is formed to extend continuously with the bead. This inclined guiding surface is adapted to engage with the adjacent surface of the wall 7 when the closure member is inserted into its assembled position on the container. As the closure member is initially entered in the container opening, this inclined or inwardly tapered guiding surface 16 will engage the upper end of the container wall, and as the closure member is pressed or forced into final position the sealing bead 14 is forced tightly against the adjacent container wall, thus making a tight sealing joint and functioning to retain the closure in its completely assembled relation. As shown in Figs. 2 and 4, this sealing bead is preferably formed with an abrupt crest or apex substantially at the upper or longitudinally outer extremity of the inclined guiding surface 16. Thus, when the closure member is forced into final position, this apex will bite into the wall surface or will be imbedded to some extent therein, thus promoting the sealing and retaining functions.

It will be noted from the above disclosure that the outer flanges 12 and 13 of the closure member will engage with the edge of the container wall as the closure member is forced into its final position, thus preventing the wall 7 from being deflected or flared outwardly during insertion of the closure member. This arrangement not only provides means cooperating with the sealing bead 14 to form a tight sealing joint, but it also provides a reinforcement and finishing structure for the upper edge of the container wall. The diameters of the closure member and sealing bead 14 are such that the bead fits tightly against the adjacent container walls with a pressure fit whereby the apex or crest of the bead will engage tightly against the wall and by virtue of pressure against the wall be imbedded therein to some extent, thus permanently retaining the parts in assembled relation. With this structure it will be seen that it is unnecessary to provide any circumferential groove or seat or like alteration of the container wall 7 to receive the bead 14, the inner surface of the container wall being left in its original continuous or uninterrupted state.

This is of particular advantage from the standpoint of low production costs, since it avoids deforming the container walls as will be readily understood by those skilled in the art. It will be noted that the peripheral wall 11 which is above or outside of the sealing bead 14 is radially spaced inwardly slightly from the adjacent surface of the wall 7, thus enabling the upper edge of the container wall to be deflected inwardly slightly during engagement therewith of the downwardly extending curved flange 13. This inward spacing of wall 11 may vary in practice and is shown somewhat exaggerated in Fig. 2.

In some instances it is desirable to provide a dispensing structure for the upper closure member 9, while such dispensing structure is, of course, not required for the lower closure member 8. For this purpose, the closure plate 10 is formed with a dispensing opening 17 and a plurality of such dispensing openings may be provided, if desired, to form a sifter structure. Also, a dispensing closure 18 shown in the form of a disc and provided with a dispensing opening 19 is mounted at the upper side of the plate 10 and provided with an operating handle or knob 20. In the embodiment shown, this dispensing closure 18 is a substantially circular disc and is of a diameter only slightly larger than the diametrical distance between the inner surfaces of the wall 11 immediately above the groove 15. Thus, when the disc is inserted into its final position as shown in Fig. 2, it is retained therein by engagement of its peripheral edges with the overlying or overhanging parts of the wall 11. The disc is thus rotatably mounted and retained in the groove 15 so that it can be rotated into positions to open and close the dispensing opening 17.

During assembly the dispensing closure disc 18 can be quickly and easily inserted into its operative position by exerting pressure on the upper surface thereof, thus deflecting or warping it slightly so as to slightly contract its diameter, thus permitting it to slide over the inner surface of the wall 11. When it reaches its final position, it resumes its original shape due to its inherent resiliency and is thus retained in its operative position. The closure disc is ordinarily constructed of cardboard, fiberboard, plastics or similar material.

In the embodiment of the invention shown in Fig. 3 the general structure and arrangement are the same as those above set forth, and corresponding parts are designated by the same reference numerals with the addition of the index *a*. However, in this modified structure an inner bead 21 is formed on the peripheral wall 11*a* adjacent to and substantially merging with the outer sealing and retaining bead 14*a*. This inner bead 21 is also preferably formed as shown by offsetting or deflecting the wall 11*a* along a line adjacent to and substantially parallel to the offsetting of the wall to form the bead 14*a*. Also, an inner guiding surface 22 is formed adjacent to the bead 21 and inclines inwardly and downwardly substantially to the apex or crest of the bead. This inclined surface thus provides a guide adapted to engage with the peripheral edge of the dispensing closure disc 18*a* so as to guide the disc during insertion thereof into its final operative position. The dispensing closure disc can be inserted into its final position substantially as described above for the disc 18, but this structure for some purposes is more effective and the

assembling operation can be more quickly and easily effected.

In the further embodiment of the invention particularly shown in Fig. 5, the general structure and arrangement are the same as already described for the other embodiments, and corresponding parts are designated by the same reference numerals with the addition of the index *b*. In this embodiment, however, the apices or crests of the outer sealing and retaining bead **14***b* and the inner retaining bead **21***b* are less abrupt than disclosed in connection with the other embodiments. However, the sealing and retaining bead **14***b* has a crest sufficiently abrupt so as to engage or be imbedded slightly in the adjacent surface of the wall **7***b*, thus providing an effective sealing and retaining structure. Also in this embodiment a dispensing closure disc **18***b* is similar to the discs **18** and **18***a* and is similarly mounted in rotary operative position, but is provided with an operating elongated rib or handle **23** formed by offsetting the body of the disc for some distance substantially on a diameter thereof.

Also, in this Fig. 5 embodiment there is a sealing membrane **24** of paper or similar frangible material interposed between the plate **10***b* and the disc **18***b*. As shown, this frangible membrane extends entirely over the dispensing opening **17***b* in the plate **10***b* so as to provide a temporary seal for preventing accidental escape or sifting of the container contents during delivery, shipment, etc. This sealing membrane is shown in the form of a disc and may be adhesively or otherwise secured in position to prevent displacement thereof. When it is desired to use the container for dispensing the contents the membrane can be easily broken by bringing the dispensing openings **17***b* and **19***b* into alignment and then breaking the sealing member by means of a pointed implement.

The closure structure of the embodiment of Fig. 5 functions substantially the same as described above in connection with the other embodiments. Also, the assembly of the dispensing closure disc is effected in the same manner as described in connection with the embodiment of Fig. 3, and the closure member is assembled in its final position on the container as described above in connection with the other embodiments.

Since certain changes may be made in the article herein described and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

The invention having thus been fully described, the following is claimed:

In a container, in combination, said container having walls and an opening to its interior, a closure member for the container opening having a peripheral wall for telescoping engagement within the container wall, a peripheral sealing and retaining bead on the outside of said peripheral wall and having an abrupt crest projecting therefrom so as to engage the inner surface of the container walls to retain the closure member in closing position, the inner surface of the container wall engaged by said bead being continuous and uninterrupted, said peripheral wall being offset or deflected continuously for the entire periphery of the closure member to form said bead which is thus continuous to provide substantially a sift-proof seal, said offset part of said peripheral wall forming a peripheral groove opening at the inner side of said peripheral wall, said bead and said peripheral groove being positioned substantially at the inner extremity of said closure member and the bead having its outer surface inclined inwardly longitudinally of the container to form an inwardly tapered peripheral guiding surface positioned substantially at the inner extremity of the closure member and cooperating with the container walls to guide and position the closure member during assembly thereof in the container, said crest of said sealing and retaining bead being of slightly greater outside diameter than the inside diameter of the container walls whereby the closure member when inserted in closing position fits tightly within said container walls with a pressure fit exerting outward pressure against said inner surface of the container wall which is initially continuous and uninterrupted thus causing said abrupt crest of said sealing and retaining bead to bite into and to be imbedded in said uninterrupted surface of the container walls, thus to provide a substantially tight anti-sift joint and to form a permanent attachment for holding the closure member in operative assembled position.

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