Dec. 14, 1937. D. HENDERSON 2,101,855

CONTAINER

Filed Aug. 17, 1936

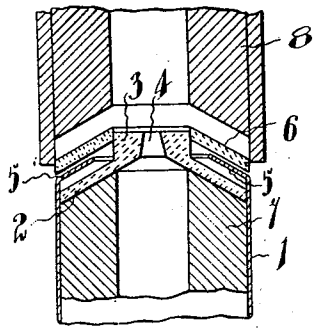


Fig. 1.

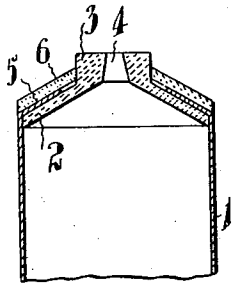


Fig. 2.

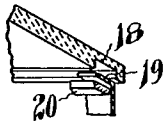


Fig. 4.



Fig. 5.

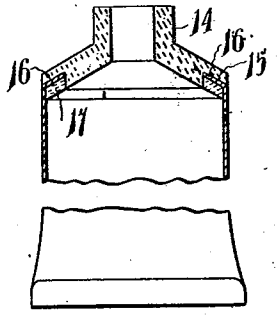


Fig. 3

Inventor
D. Henderson
By George P. Mackie atty

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CONTAINER

Douglas Henderson, Toronto, Ontario, Canada

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10 Claims. (Cl. 221—60)

This invention relates to metal containers and particularly to containers of the collapsible tube type. These containers are usually made of tin, aluminum, lead or other metal and the discharge end or top is usually integrally formed therewith. The body of the container is generally formed of quite thin material to permit it being compressed and rolled up to discharge the contents, and the necessary rigidity is obtained by making the discharge end or top quite thick. In actual practice the container is usually formed by placing a small piece of the metal between suitably shaped die members, the latter being forced together to shape the container. The outlet is formed in the stiff top and provided with suitable closure means.

I have found, however, that there are certain disadvantages in a container with an integral metal top or outlet end. One of these disadvantages is that a very considerable amount of comparatively expensive material is employed in forming the top. Another disadvantage is that the integral end does not lend itself readily to coloring, but a third or more important disadvantage lies in the fact, in the case of a collapsible tube with an automatic closure, that owing to the length of the integral body considerable difficulty is experienced in assembling the closure mechanism at the outlet.

My object therefore is to devise a container in which the head or outlet end of the body may be made separately from the main part of the body of another material capable of being readily mounted on and permanently secured to the body after the latter has been made and a perfect joint or seal between the body and head obtained without screw joints or the aid of cement or other adhesives, thus permitting any desired closure mechanism to be mounted on the head before the head and body are assembled together.

I attain my object by means of the constructions described and illustrated in the accompanying drawing in which

Fig. 1 is a vertical section showing one form container ready for assembly;

Fig. 2 a vertical section of the assembled container;

Fig. 3 a vertical section illustrating another form of connection between the body and head;

Fig. 4 a sectional detail showing another form of connection, the parts being ready for assembly;

Fig. 5 a similar view with the parts assembled.

In the drawing like numerals of reference indicate corresponding parts in the different figures.

Referring to Figs. 1 and 2, 1 indicates the body which will as usual be formed of tin, aluminum, lead, tinned iron, or other suitable metal. Instead of the head being formed of metal integral with the body it will be separately made, and will preferably be made of a nonmetallic substance, preferably an infusible condensation product or a synthetic resin, such as a formaldehyde-phenol resin, or similar material of the type known by such names as "Bakelite", phenol-resin, resinoid, redmanol, condensite, amberite, etc.

These materials may be clear or transparent, or may be readily colored as desired by the addition of suitable dyes.

In the form shown in Figs. 1 and 2, the head is formed of a main part provided with an inclined shoulder portion 2 and a central projection 3 through which latter the outlet 4 is formed. This main part is fitted within the end of the container as shown in Fig. 1, the outlet end of the container being formed with an annular flange or lip 5. Superimposed on the shoulder portion 2 is a clamping ring 6 of similar material, which frictionally engages the side of the projection 3.

The parts are squeezed together by means of die members 7 and 8 to bring them tightly together as shown in Fig. 2 to securely clamp the flange 5 between the parts 2 and 6. The clamping ring 6 will have a sufficiently tight engagement with the sides of the projection 3 to resist all ordinary pressures exerted on the tube 1 in emptying the contents.

The opening in the member 6 may be very slightly undersize at its upper end to cause it to require a slight springing to pass over the projection 3.

In cases where the main part of the head carries closure mechanism, the die member 7 may be tubular or recessed at its end to provide room for the inner end of the closure mechanism.

In Fig. 3 a modification is formed in which the neck portion 14 of the top has an annular peripheral recess 15 on its under side to receive the lip 16 of the body, and an annular member 17 is forced into the recess to clamp the lip in place.

A further modification is shown in Figs. 4 and 5 in which the annular recess 18 is slightly spaced from the edge of the neck portion, and the annular ring 20 is pressed into the recess to engage the lip 19 on the body.

In each case there is a sufficiently tight engagement of the parts to create sufficient friction to resist separation under all conditions likely to

be encountered in the normal use of the container. This is accomplished by making the male part slightly oversize or the female part slightly undersize so that a slight springing of the non-metallic parts is required to fit them together, thus assisting in the creation of the required friction to secure the necessary bonding effect between the parts.

It will be understood that where moulding considerations do not prevent it the engaging surfaces, for example, the side edges of the rings 17 and 20 may be slightly bevelled or undercut to provide an edge to engage the other part to resist separation.

It will be quite apparent from the specification and drawing that the invention is concerned with the container proper and not with the means for closing of the outlet for the contents. which latter may be of anv form.

For example the outlet end may be provided with closure mechanism as shown in my copending application No. 85,847 filed June 18, 1936, or it may be provided with suitable threading for a screw cap of ordinary type.

It will be understood, of course, that while the invention is particularly applicable to collapsible tubes, it is also applicable to containers having comparatively rigid walls. It will also be understood that while I prefer to use material of the character of "bakelite" that other mouldable materials may be employed for the purpose.

What I claim as my invention is:—

1. In a container the combination of a body formed of metal tubing and having an annular inwardly directed flange at its outlet end; and a top of rigid non-metallic material for said outlet end, said top comprising a pair of members between which said flange is clamped, said members having a frictional engagement one with the other.

2. In a container the combination of a body formed of metal tubing and having an annular inwardly directed flange at its outlet end; and a top of rigid non-metallic material for said outlet end, said top consisting of a pair of members one of which comprises a neck portion with an annular outwardly directed shoulder extending within the body below the flange and an annular clamping member sleeved on the neck portion and frictionally engaging the latter to clamp the flange against the shoulder.

3. In a container the combination of a body formed of metal tubing and having an annular inwardly directed flange at its outlet end; and a top of rigid non-metallic material for said outlet end, said top comprising a pair of members between which said flange is clamped, said members having a frictional engagement one with the other; the said annular clamping member having the same outside diameter as the body.

4. In a container, the combination of a body formed of metal tubing and having an annular inwardly directed flange at its outlet end, and a top of rigid non-metallic material for said outlet end, said top consisting of a pair of members one of which comprises a neck portion with an annular outwardly directed shoulder against one side of which the flange engages; and an annular member engaging the opposite surface of the flange and frictionally mounted upon the first mentioned member.

5. In a container, the combination of a body formed of metal tubing and having an annular inwardly directed flange at its outlet end, and a top of rigid non-metallic material for said outlet end, said top consisting of a pair of members one of which comprises a neck portion with an annular outwardly directed shoulder, the under side of said shoulder having a recess to receive said flange; and an annular member clamping said flange against the bottom of the recess and frictionally mounted upon the first mentioned member.

6. In a container, the combination of a body formed of flexible tubing and having an annular inwardly directed flange at its outlet end; and a top of rigid material for said outlet end, said top comprising a pair of members between which said flange is clamped, said members having a direct frictional engagement one with the other.

7. In a container, the combination of a body formed of flexible tubing and having an inwardly directed flange at its outlet end; and a top of rigid material for said outlet end, said top consisting of a pair of members one of which comprises a neck portion with an annular outwardly directed shoulder extending within the body below the flange, and an annular clamping member sleeved on the neck portion and frictionally engaging the latter to clamp the flange against the shoulder.

8. In a container, the combination of a body formed of flexible tubing and having an annular inwardly directed flange at its outlet end; and a top of rigid material for said outlet end, said top comprising a pair of separate members movable relative to one another and between which the said flange is clamped.

9. In a container, the combination of a body formed of flexible tubing and having an inwardly directed flange at its outlet end; and a top of rigid material for said outlet end, said top consisting of a pair of members one of which comprises a neck portion with an annular outwardly directed shoulder extending within the body below the flange, and an annular clamping member sleeved on the neck portion to clamp the flange against the shoulder.

10. In a container the combination of a tubular body having an annular inwardly directed flange at its outlet end; and a top of rigid material for said outlet end, said top comprising a pair of separate members movable relative to one another and between which the said flange is clamped.

DOUGLAS HENDERSON.