Aug. 20, 1935. H. SEBELL 2,011,778

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Filed April 25, 1933 2 Sheets-Sheet 1

Fig. 1.

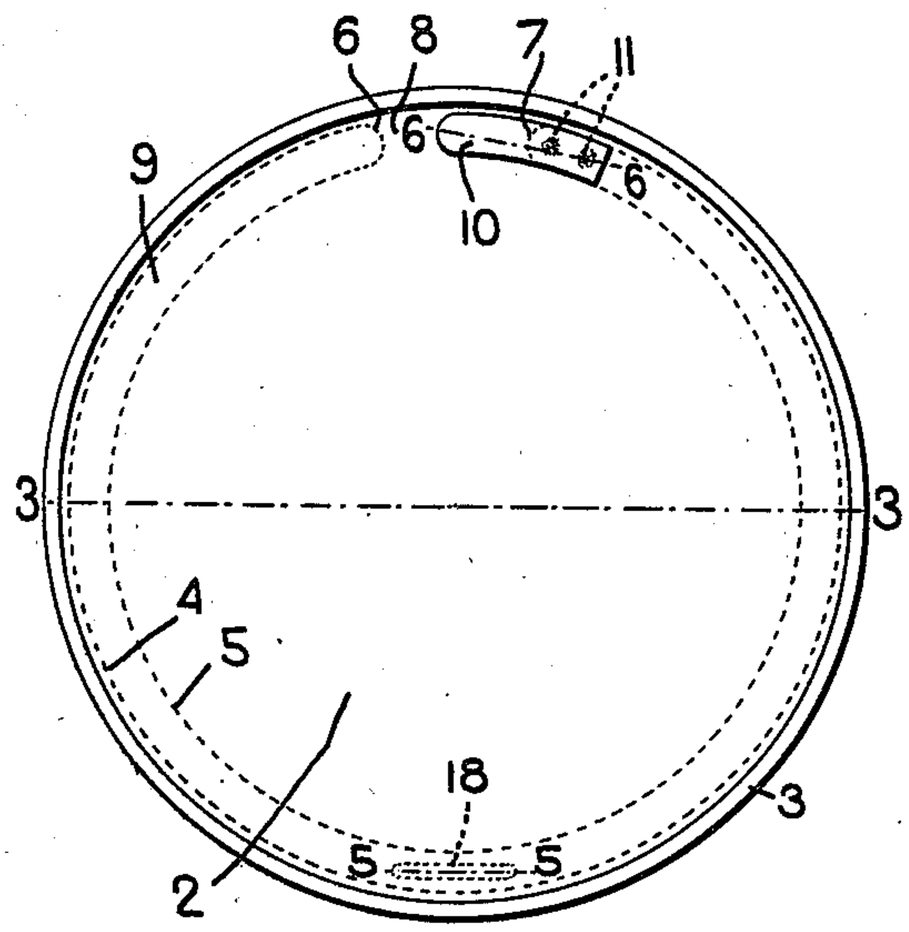

Fig. 2.

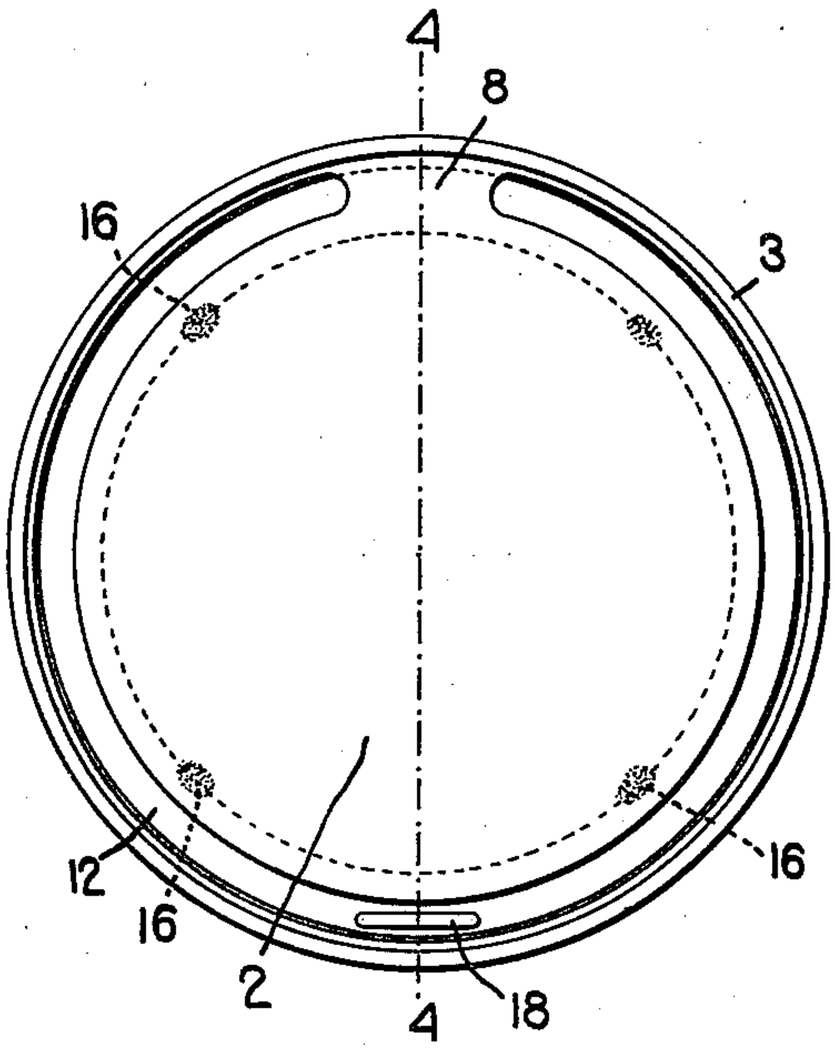

Fig. 3.

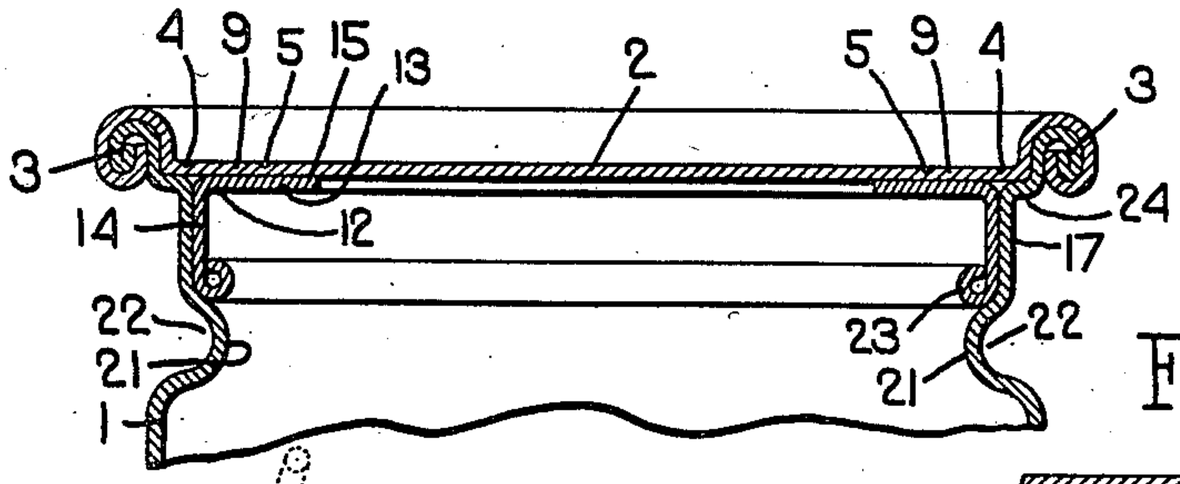

Fig. 4.

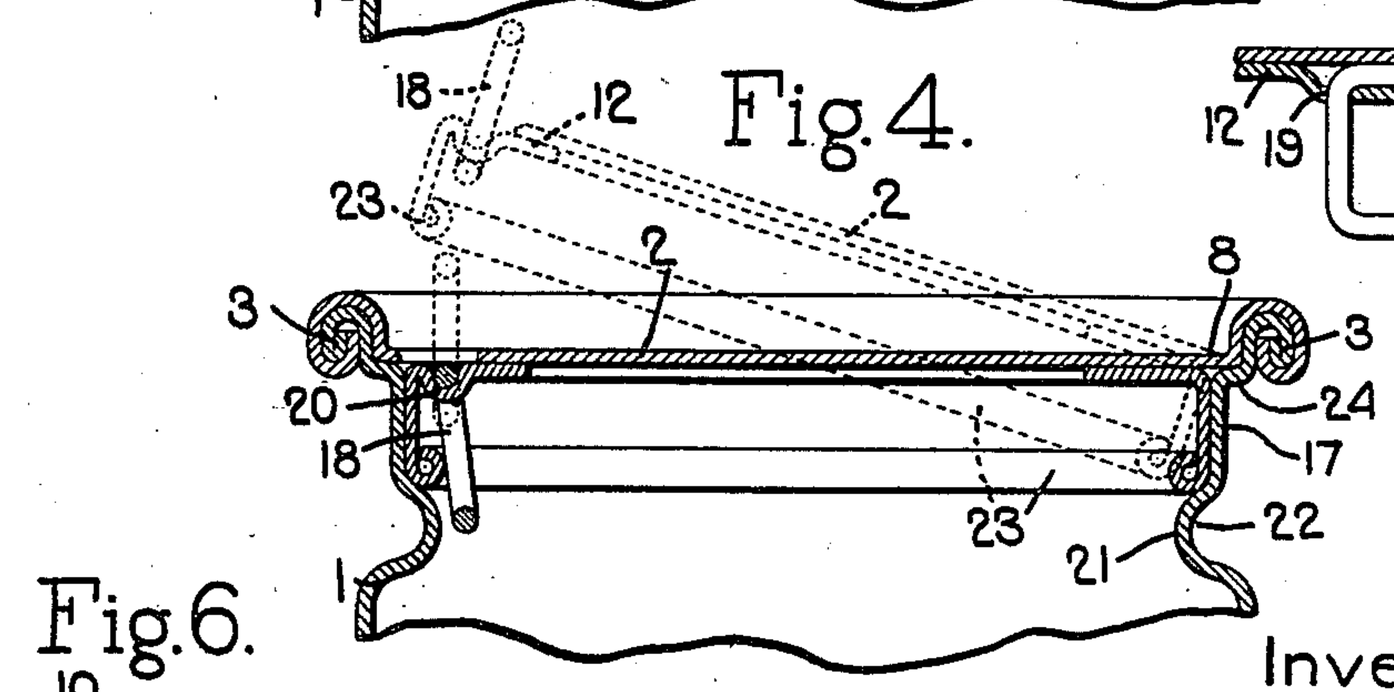

Fig. 5.

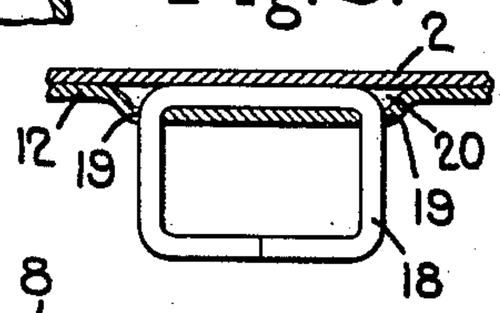

Fig. 6.

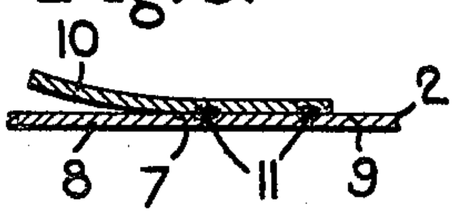

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Fig. 7.

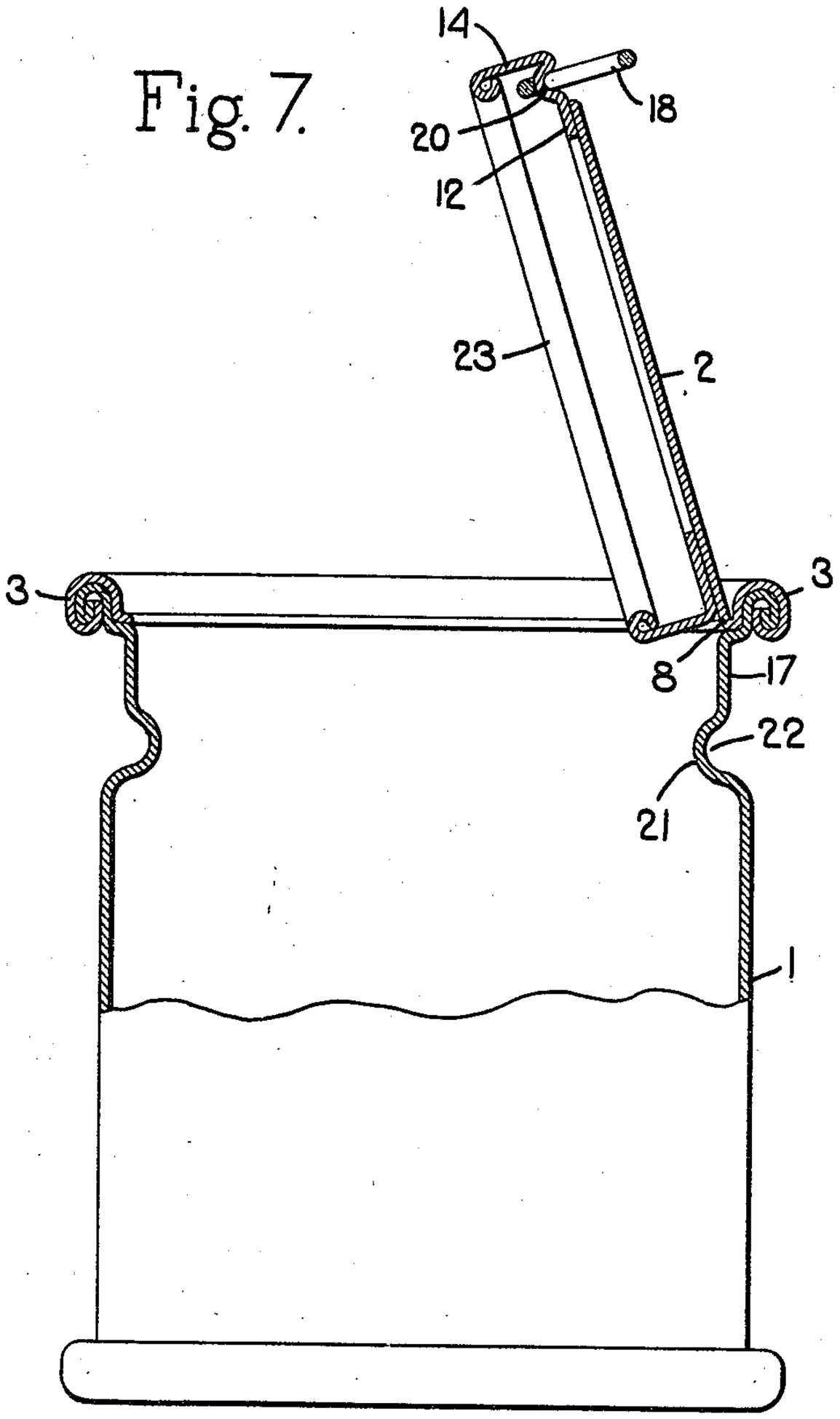


Fig. 8.

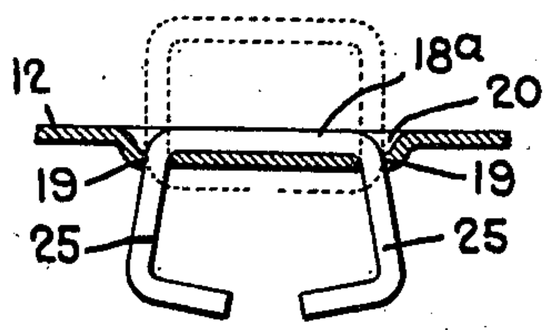
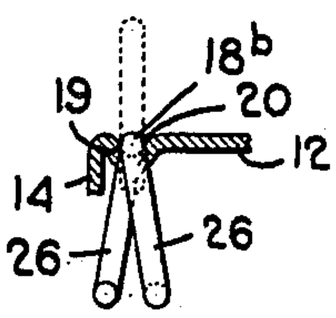


Fig. 9.



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Patented Aug. 20, 1935 2,011,778

UNITED STATES PATENT OFFICE

2,011,778

CAN

Harry Sebell, Boston, Mass., assignor of one-half to Arthur H. Parker, Lexington, Mass.

Application April 25, 1933, Serial No. 667,788

8 Claims. (Cl. 220—54)

This invention relates to an hermetically-sealed can of the type which is opened by tearing out a tear strip from the cover and one of the objects of the invention is to provide a can of this type in which the cover is constructed so that after the can has been opened by tearing out the tear strip said cover can be used again for closing the can, the cover thus constituting a replaceable cover.

A further object of the invention is to provide a can of this type in which the can end from which the tear strip is torn and which forms the replaceable cover, is provided with a skirt portion adapted to fit into the neck of the can when the cover is replaced thereby forming a relatively tight joint.

A still further object of the invention is to provide an improved can of this type in which after the tear strip is removed for opening the can the can end which constitutes the replaceable cover will still be connected to the can body by an untorn portion of the can end which constitutes a hinge section so that the can can be opened by swinging the can end or removable cover upwardly about said hinge portion and can be closed by swinging the cover downwardly about said hinge portion.

In order to give an understanding of the invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a top plan view of a can embodying my invention showing the can sealed;

Fig. 2 is a similar view illustrating the top of the can after the tear strip has been removed;

Fig. 3 is an enlarged section on the line 3—3, Fig. 1;

Fig. 4 is an enlarged section on the line 4—4, Fig. 2;

Fig. 5 is an enlarged section on the line 5—5, Fig. 1;

Fig. 6 is an enlarged section on the line 6—6, Fig. 1;

Fig. 7 is a view partly in section of a can embodying my invention showing the can open;

Fig. 8 is a view similar to Fig. 5 but showing a different embodiment of the invention;

Fig. 9 is a fragmentary sectional view showing a different form of a pull device from that shown in Fig. 8.

In the drawings 1 indicates a portion of a can body and 2 is the can end which is removed when the can is to be opened. This can end 2 is sealed to the can body to make an hermetically-sealed can and one familiar way of sealing a can end to a can body is by means of the double lock seam indicated at 3 in Figs. 3 and 4.

In making this double lock seam the upper edge of the can body is formed with a laterally-extending sealing flange and the can end 2 is made so that its peripheral or marginal portion constitutes a sealing flange mating that of the can body when the can end is applied to the can body. These two sealing flanges are then rolled into a double lock seam as indicated at 3 in Figs. 3 and 4 thereby providing an hermetic seal for the can without the necessity of using solder.

It will be understood that in the drawings the thickness of the tin or other sheet material of which the can is made is much exaggerated, this being done in order to more clearly illustrate the invention. This double lock seam method of sealing a can end to a can body is one which is more or less commonly used.

In my improved can the can end 2 is made with two spaced lines of weakness extending substantially around the can end and which forms between them a tearing strip which can be torn out of the cover when the can is to be opened. Such lines of weakness are indicated at 4 and 5, said lines of weakness being shown by dotted lines in Fig. 1. These lines of weakness can conveniently be formed by scoring the can end 2 as indicated by the indentations 4 and 5 in Fig. 3.

The lines of weakness 4 and 5 are situated adjacent the peripheral portion of the can end 2, the outer line of weakness 4 preferably being close to the double lock seam 3 and the inner line of weakness 5 being spaced slightly from the outer line of weakness 4.

In the preferred embodiment of my invention these lines of weakness do not extend entirely around the can end but terminate at the points 6 and 7 thereby leaving a portion 8 of the can end free from score lines. The two score lines 4 and 5 are connected at each end by a transversely-extending score line and in the construction shown such transversely-extending score lines are indicated at 6 and 7 and have a curved shape. These transversely-extending score lines also form lines of weakness. These lines of weakness 4 and 5 thus form between them a tear strip 9 which extends from the curved line 6 around the can to the curved line 7.

These lines of weakness 4, 5, 6, 7 which bound the tear strip 9 are formed throughout their entire extent without puncturing the can end so that the can end is imperforate. The can is

opened by tearing the tear strip 9 free from the can end and to initiate such tearing action I have provided the tear strip, preferably at one end thereof, with a tear-initiating or pulling member which is permanently secured to the tear strip and which is accessible on the outside of the can end. This member may have various shapes but it is permanently secured to the tear strip and is constructed so that when a sufficient pulling strain is applied thereto the end of the tear strip to which said pulling member is attached will be torn loose from the can end.

In the embodiment of the invention illustrated said pulling member is in the form of a tab 10 which is permanently attached to the outside of the tear strip adjacent one end in any suitable way, such for instance as being spot welded thereto.

The tab is secured at one end to the tear strip so that the other end is free to be grasped for tearing the tear strip loose from the can end.

One way of securing the tab to the tear strip would be by spot welding it thereto as indicated at 11. The portion of the tab 10 which projects beyond the tear strip is free from the can end and although it normally lies flat against the can end yet it can be separated from the can end sufficiently to enable a key or other implement to be applied thereto.

By rolling the tab up on the key or applying a pulling strain on the tab the tear strip will be severed from the can end first along the curved line 7 and then along the score lines or lines of weakness 4, 5 and 6. When this tear strip 9 is thus removed from the can end 2 the central portion of said can end will remain still attached to the can body at 8, said portion 8 constituting a hinge portion as will be presently described.

In order that the can end 2 may serve as a replaceable cover for the can I have provided the central portion of the can end 2, or that portion within the tearing strip, with a depending flange or skirt which is designed to fit into the neck of the can body whereby the central portion of the can end with this skirt serves to close the can and forms the replaceable can cover.

The can end 2 has secured to the under side thereof a ring 12 which is formed with a lateral flange portion 13 and a cylindrical or depending flange portion 14. The lateral flange 13 not only underlies the tear strip 9 but the inner edge 15 thereof extends inwardly beyond the inner score line 5 as best seen in Figs. 3 and 4. This inner edge 15 is attached to the can end by solder or any other suitable means and it will be sufficient if this edge portion 15 is soldered to the under side of the can end at spaced intervals as indicated at 16.

The can body 1 is formed with a neck portion 17 in which the skirt or flange 14 fits and this neck portion 17 is somewhat reduced in diameter over that of the double lock seam 3, said body being provided with the annular offset portion 24 by which the double lock seam is placed outside of the neck portion 17. With this construction the outer score line 4 may be placed in line with or just outside of the outer face of the skirt 14.

When the tear strip 9 has been removed as shown in Figs. 2 and 4 the can may be opened to discharge its contents by lifting the central portion of the can end which was embraced by the tear strip together with the attached ring 12 as shown in Fig. 7 and by dotted lines in Fig. 4 and since such central portion of the can end is connected with the can body through the unscored portion 8 the latter serves as a hinge about which the can end may be raised.

In order to facilitate the opening of the can I have provided a finger loop 18 which is carried by the ring 12 and is located beneath the tear strip so that when the tear strip is removed this finger piece 18 is accessible. This finger piece is in the form of a wire loop, the opposite sides of which extend through openings 19 formed in the ring 12. Said ring 12 is shown as deformed to present a depression 20 in which the upper side of the loop 18 is received when the can is sealed as shown by full lines in Fig. 4. When the tear strip has been removed then the loop 18 can be lifted into the dotted line position Fig. 4 where it may be readily grasped in the fingers and by applying pulling strain on the loop the can end will be swung upwardly into the position shown in Fig. 7, thereby opening the can so that some or all of the contents may be discharged. When the desired amount has been poured from the can the can end may be replaced by swinging it downwardly into the full line position Fig. 4 thereby again closing the can.

The skirt or flange 13 of the ring 12 fits the neck portion 17 of the can so as to provide a reasonably tight closure. The can is thus formed with a replaceable cover which is also in the nature of a hinged cover.

In order to prevent the cover from being pushed too far into the can when it is replaced I may, if desired, make the can body with an inwardly-directed shoulder or rib 21 beneath the neck 17. This shoulder or rib may be formed by making a groove 22 in the exterior of the can which will upset the side wall of the can to form the interior rib 21.

In Fig. 8, I have shown a form of finger loop which is constructed so that after it has been raised into the dotted line position Fig. 8, or into the full line position Fig. 7, it will retain such position and thus always be conveniently situated to be grasped. In Fig. 8 the finger loop is indicated at 18*a* and it has the same general construction as that shown in Fig. 5 except that the arms 25 are normally spread slightly so that when the finger loop is raised into the dotted line position Fig. 8 the resiliency of the arms 25 will cause them to bind against the walls of the openings 19 through which the arms extend so that the frictional engagement between the arms and the openings will serve to retain the finger loop in the elevated position.

In Fig. 9 a slightly different form of finger loop is shown which is indicated generally at 18*b*. In this form the two legs or arms 26 are offset from each other slightly and as a result when the finger loop is raised into the dotted line position there will be sufficient frictional engagement between the legs and the walls of the openings 19 to retain the finger loop in its raised position.

I claim:

1. A can having a can body, a can end hermetically sealed thereto, said can end having spaced lines of weakness forming between them a tear strip which may be removed for opening the can, and a flange depending from the portion of the can end within the tear strip, which flange fits into the neck of the can body, whereby the removable portion of the can end constitutes a replaceable cover for the can after the latter has been opened.

2. A can comprising a can body, a can end hermetically sealed thereto, said can end having

two spaced lines of weakness forming between them a tear strip which may be torn out of the can end to open the can the portion of the can end enclosed by the tear strip being permanently connected to the can body through a hinge portion, and said portion of the can end having a depending flange which fits within the neck of the can body.

3. A can comprising a can body, a can end having its peripheral edge hermetically sealed to the can body, said can end having two spaced lines of weakness forming between them a tear strip which when torn out disconnects the central portion of the can end from said sealed marginal portion, and a ring secured to the portion of the can end within the tear strip and provided with a depending flange fitting the neck of the can body, said ring being permanently attached to said central portion of the can end.

4. A can comprising a can body, a can end having its peripheral edge hermetically sealed to the can body, said can end having two spaced lines of weakness forming between them a tear strip which when torn out disconnects the central portion of the can end from the sealed marginal portion, and a ring secured to the portion of the can end within the tear strip and extending underneath the latter substantially to the outer line of weakness, whereby said ring closes the opening made when the tear strip is removed.

5. A can comprising a can body, a can end having its peripheral edge hermetically sealed to the can body, said can end having two spaced lines of weakness forming between them a tear strip which when torn out disconnects the central portion of the can end from the sealed marginal portion, and a ring secured to the portion of the can end within the tear strip and extending underneath the latter substantially to the outer line of weakness, said ring having a depending flange fitting within the can body, whereby when the tear strip is torn out to open the can the portion of the can end within the tear strip with its attached ring forms a cover for the open can.

6. A can having a can body, a can end hermetically sealed thereto, said can end having spaced lines of weakness forming between them a tear strip which may be removed for opening the can, and a flange depending from the portion of the can end within the tear strip, which flange fits into the neck of the can body, whereby the removable portion of the can end constitutes a replaceable cover for the can after the latter has been opened, said can body having an interior shoulder co-operating with said flange to limit the closing movement of the can end.

7. A can comprising a can body, a can end having two spaced lines of weakness adjacent its peripheral edge and forming between them a tear strip which may be torn out of the can end to open the can, the portion of the can end enclosed by the tear strip being permanently connected to the can body through a hinge portion, a ring permanently secured to the portion of the can end within the tear strip, said ring underlying the tear strip before it is removed, and thus closing the opening formed by the removal of the tear strip, and a finger loop carried by said ring opposite the hinge portion and by which the can end may be swung into open position.

8. A can comprising a can body, a can end having two spaced lines of weakness adjacent its peripheral edge and forming between them a tear strip which may be torn out of the can end to open the can, the portion of the can end enclosed by the tear strip being permanently connected to the can body through a hinge portion, a ring permanently secured to the portion of the can end within the tear strip, said ring underlying the tear strip before it is removed and thus closing the opening formed by the removal of the tear strip, and a finger loop having its legs extending through openings in the said ring, and being capable of being raised from the ring to provide a handle, the friction of the legs with the walls of the openings serving to hold the loop in its raised position.

HARRY SEBELL.