

Nov. 4, 1924.

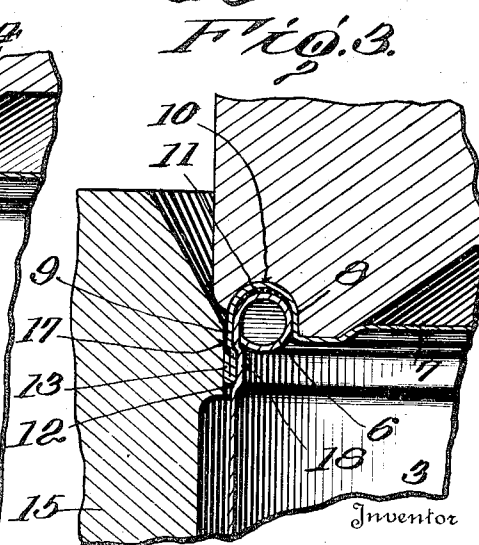
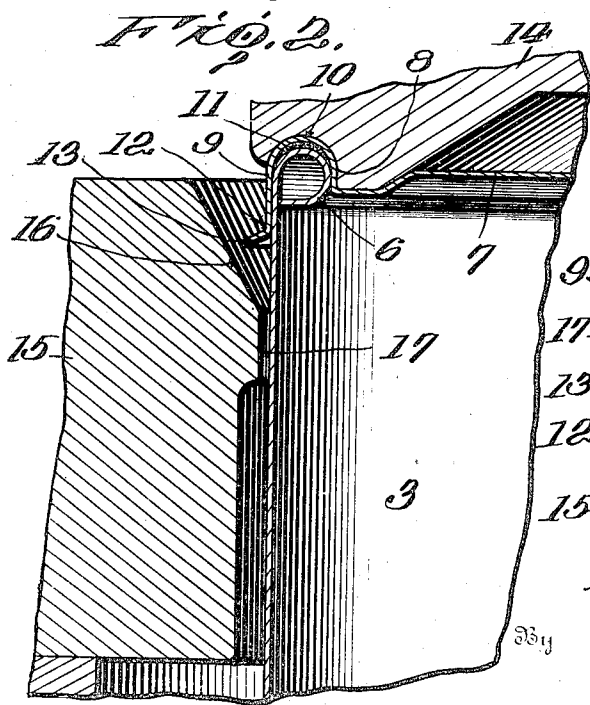
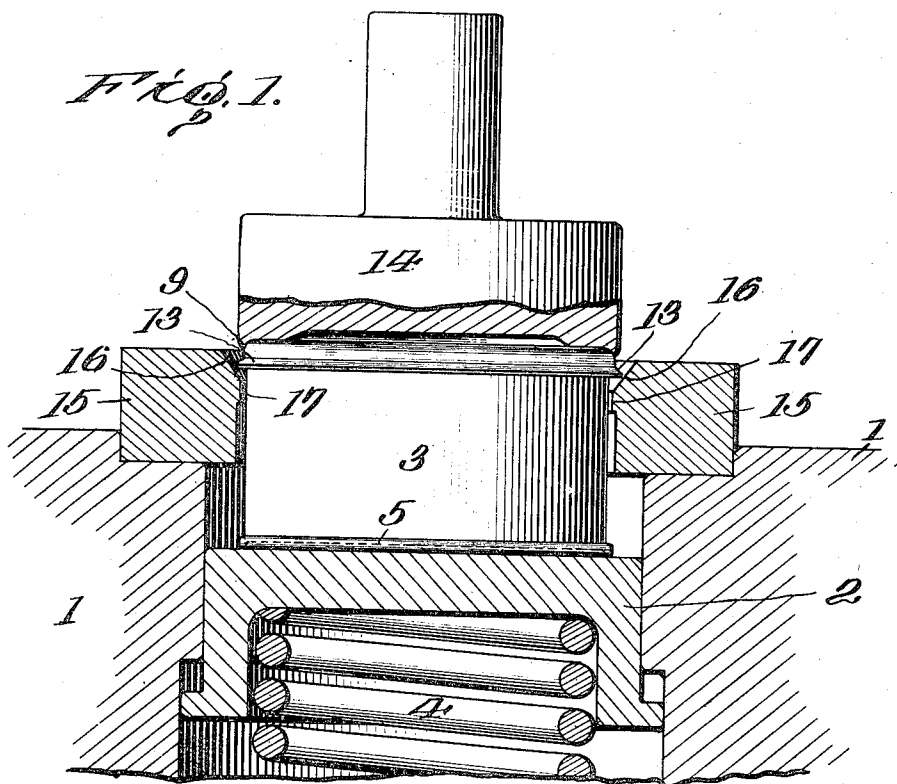
1,514,538

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PROCESS OF CLOSING RECEPTACLES

Filed Aug. 9, 1921

2 Sheets-Sheet 1



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FIG. 4.

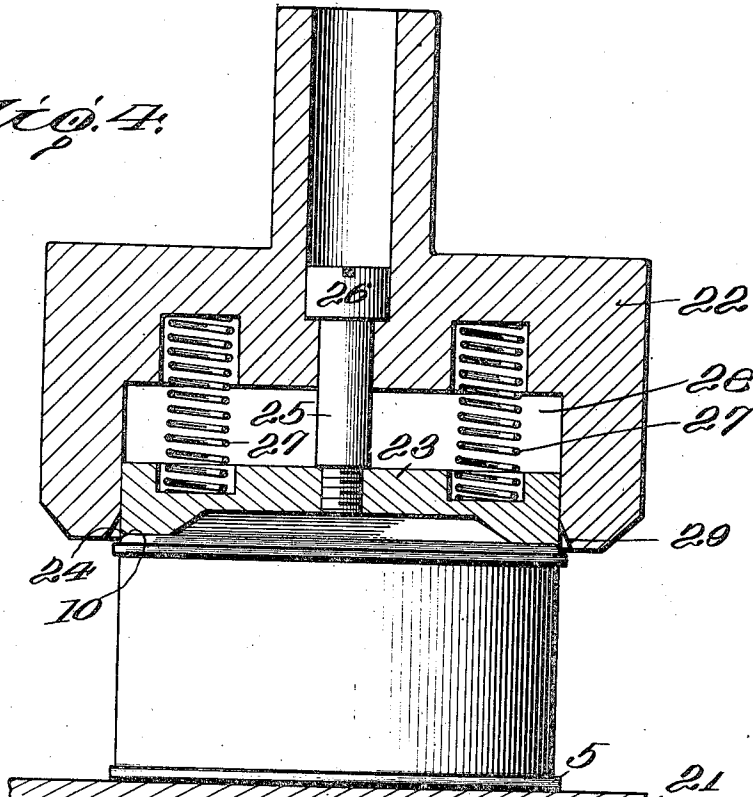


FIG. 5.

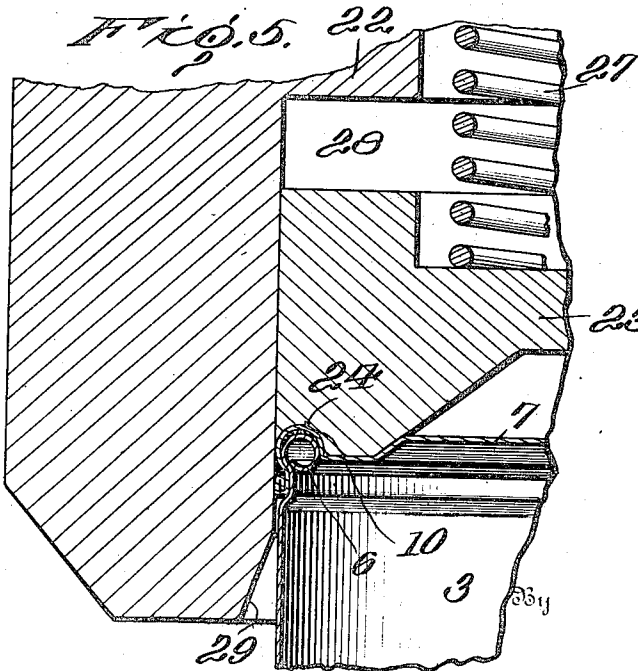


FIG. 6.

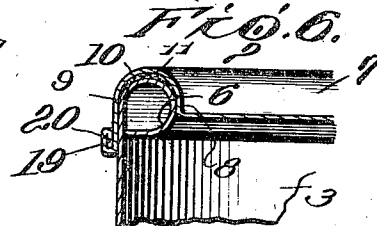
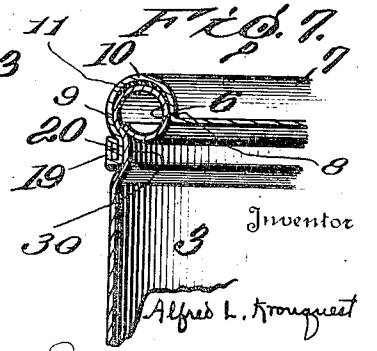


FIG. 7.



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UNITED STATES PATENT OFFICE.

ALFRED L. KRONQUEST, OF CHICAGO, ILLINOIS, ASSIGNOR TO CONTINENTAL CAN COMPANY, INC., OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

PROCESS OF CLOSING RECEPTACLES.

Application filed August 9, 1921. Serial No. 490,894.

To all whom it may concern:

Be it known that I, ALFRED L. KRONQUEST, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Process of Closing Receptacles, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

The invention relates to new and useful improvements in a process of closing receptacles, and more particularly to a process of closing open-top metal cans.

An object of the invention is to provide a process of closing cans wherein the extent of bending of the metal is very small and of such a character that a very simple machine or apparatus may be used for the closing of the cans.

A further object of the invention is to provide a process of closing cans, wherein the flange on the cover or closure, by a slight bending thereof, is caused to indent or contract the body portion of the can, whereby the cover is firmly secured thereto.

A further object of the invention is to provide a process of the above character wherein the cover or closure is pressed firmly against the body portion of the container as it is secured to the body portion of the can.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings which show by way of illustration, more or less diagrammatically, one form of apparatus for carrying out my process—

Figure 1 is a view partly in side elevation and partly in section thereof;

Fig. 2 is an enlarged view of a portion of the apparatus showing the cover seated preparatory to closing the same on to the body portion of the can;

Fig. 3 is a view similar to Fig. 2, but showing the cover as tightly secured to the can body;

Fig. 4 is a view in vertical section showing a modified form of structure of closure and process of closing the can;

Fig. 5 is a detail in section showing a portion of the apparatus of Fig. 4, and with the cover secured to the can body;

Fig. 6 is an enlarged section through a

portion of the can showing the cover as first applied, and

Fig. 7 is a similar view but showing the cover secured to the can body.

The invention is directed broadly to a closure for receptacles and more particularly a receptacle made of metal and having a cylindrical body portion. The upper end of said cylindrical body portion is open and the opening through which the contents is placed in the can is substantially the full diameter of the can body. The upper edge of the metal forming the side walls of the can body is bent in order to strengthen the same, and this is done preferably by rolling the upper edge inwardly to form a bead; or, what is often referred to, as a false wire. The cover or closure for the can body has its central portion depressed forming a vertical wall adapted to fit within the opening. Said cover is also provided with an outer substantially vertical flange. Between the vertical flange and the vertical wall of the central depressed portion, a U-shaped pocket is formed which is shaped to receive the bead on the can body. The inner wall of the flange and the outer wall of the central depressed portion frictionally engage the outer face of the bead and the inner face of the bead or inner wall of the can body, respectively. The wall of the can body immediately below the reinforced edge is preferably straight and vertical, so that the depending flange of the cover frictionally engages said vertical wall when the cover is placed on the can body. Sealing material is placed in the pocket and the bead comes in contact therewith. The extreme lower edge of the vertical flange, in the one form of the invention, is bent outwardly only slightly. After the cover is seated on the can body, the outwardly bent portion of the flange is turned up and this turned up part of the flange, together with that portion of the flange immediately above the bend therein is forced into the vertical wall of the can body so as to indent and contract the same along a line or at points below the strengthened upper end of the vertical wall of the can body, and thus the cover is drawn downwardly on to the can body and securely attached thereto.

In another form of the invention, and possibly the preferred form, the flange of the cover is rolled or bent to strengthen and to

thicken the lower edge thereof and to conceal the raw edge of the metal before the cover is placed on the can body. The metal is preferably folded or rolled upwardly and
 5 turned in so as to conceal the raw edge thereof and then flattened, thus forming a strengthening bead of greater thickness than the thickness of the flange. This thickened and strengthened portion is crowded inwardly
 10 ly when on the body portion of the receptacle, and caused to indent and contract the vertical wall of the can body along a line below and parallel with the strengthened edge of the can body, and thus the cover is
 15 drawn downwardly on to the can body and securely attached thereto.

The process will possibly be better understood by a brief reference to the structure and apparatus shown in the drawings. In
 20 Figs. 1 to 3 of said drawings, I have shown an apparatus consisting of a suitable bed 1, which carries a support 2, on which the can, indicated at 3, is placed. Said support is preferably carried by a spring 4, so that it
 25 may yield. The can body is cylindrical and has a bottom end 5 attached thereto by suitable means, such as by double seaming, soldering or the like, but preferably by double seaming, as I prefer that as little solder as
 30 possible be used in the making of my improved closure.

The upper end of the cylindrical body portion is rolled inwardly to form a bead 6. Said bead may be hollow, or substantially
 35 tightly rolled, and is often referred to as a false wire. The essential feature, however, is the strengthening of the upper edge of the cylindrical body portion of the can body and this may be accomplished by the bending of
 40 the metal into various forms and shapes.

The wall of the can body immediately below the strengthening upper edge thereof is vertical. The cover or closure is indicated
 45 at 7 and is formed with a central depressed portion forming a vertical wall 8, and the cover also has a depending flange forming a vertical wall 9. Between these vertical walls 8 and 9 there is a U-shaped pocket 10, in
 50 which is placed a suitable sealing material 11. The depending flange 9 is bent at 12, so as to form an outwardly but downwardly extending portion 13. The filled can body is placed on the support 2 with the cover in
 55 place and frictionally engaging the can, after which a chuck engages the cover and forces the cover down on to the can body, holding the same tightly thereon during the closing operation. The sealing material is confined in the U-shaped pocket between the
 60 vertical walls 8 and 9 and the pressing of the cover down on to the can body is limited by the sealing material, so that a very tight seal is formed. While so held pressed on the can body, the can body and cover are moved
 65 downwardly, compressing the spring 4, and

thus the outwardly turned portion 13 of the flange on the cover is brought into engagement with a closing ring 15. Said closing ring 15 is provided with a flared or cam-shaped portion 16, which bends the portion
 70 13 upwardly as the can continues its downward movement. Said ring also has a vertical portion 17 which engages the flange 13 after it has been turned upwardly to vertical position, and crowds said upturned portion
 75 together with the immediate portion of the flange directly above the bend 12 inwardly, as shown in Fig. 3, thus indenting or contracting the side wall of the can body, as indicated at 18. This inward movement of
 80 the lower part of the flange which has been strengthened by the turning up of the lower portion thereof, while the cover is held pressed on the can body, tends to draw the cover down tightly on to the can body and
 85 the indenting or contracting of the side wall of the can body along the line substantially parallel with and below the strengthened upper edge thereof firmly secures the cover to the can body. The closing ring may readily
 90 back off of the closed can without disturbing the tight connection made between the cover and can body.

In Figures 4 to 7, inclusive, I have shown a slightly modified form of the cover, the
 95 can body being constructed as described above in detail. In this form of the invention, which is the preferred form of the invention, the cover 7 is provided with a depending flange 9 having an upwardly
 100 turned portion 19 which is intumed at 20 so as to conceal the raw edge of the metal and also form a strengthening bead which is of considerably greater thickness than the thickness of the flange 9. This bead is
 105 preferably flat, and is so disposed on the flange 9 as to have its upper edge substantially in line with the lower portion of the rolled edge 6 of the can body. This bead formed by the upwardly and inwardly bending
 110 of the metal, is preferably flattened slightly, although from certain aspects of the invention, it may be a circular bead, and of the nature of a false wire. The cover is placed on the can body after the same manner
 115 as above described in connection with the process illustrated in Figures 1 to 3. Said cover having a relatively long flange 9 will frictionally engage the can body and be held thereon by friction so as to prevent
 120 spilling of the contents during the handling of the filled can preparatory to the placing of the same in the machine for closing. After the cover has been inserted on the can body, the can body is placed on the support
 125 21 and the closing head 22 lowered on to the cover. Said closing head is provided with a chuck 23 which is adapted to engage the cover and said chuck has a curved recessed
 130 portion 24 which fits the outer curved por-

tion 10 of the cover. Said cover may be firmly forced down on to the can body and the bead 6 will be brought into contact with the sealing material, the sealing material limiting the downward movement of the cover. Said chuck is provided with a bolt 25 which is formed with a head 26 which limits the downward movement of the chuck. Springs 27, 27 normally force the chuck downwardly to its extreme lower position. The chuck is placed in the circular recess 28 in the closing head 22. Said circular recess at the lower extremity thereof terminates in an inclined cam wall 29. As the head moves downwardly, this inclined cam wall 29 will engage the flattened bead at the lower end of the flange and force the same downwardly and inwardly. The chuck firmly holds the cover from being drawn from the center portion thereof outwardly, and the result is that the portion of the flange 9 above the bead will be drawn tightly around the hollow bead 6 on the can body and the vertical side wall of the can body indented and contracted as indicated at 30. This permits the can body to move up into the recess 28 above the inclined cam portion 29 and the closing of the can is thereby completed. The head may be raised and will be readily detached from the closed can without disturbing the connection of the cover thereto. It will be noted that in this form of the invention, the head moves down on to the cover for closing and not upwardly as is shown in Figs. 1 and 3. There is a great advantage in this downward movement of the head as it tends to draw the cover down on to the can body and causes the thickened portion of the flange of the cover to indent the vertical side wall and form its own locking seat while it is under this downward strain. This results in a very tight sealing of the can.

It will be understood of course, that the bending of the metal may be inwardly instead of outwardly to form this thickened strengthened edge at the lower portion of the flange.

From the above, it will be noted that in both processes of closing the can, the cover indents or bends the side wall of the can body forming its own locking groove in the can body and therefore, inasmuch as the cover is pressed tightly on to the can body, when this bending of the flange takes place, the locking groove or seat formed in the side wall of the can body will be so positioned relative to the gripping portion of the flange which holds the cover on the can body as to hold the cover tightly seated and tightly sealed on the can body.

It is to be understood that my improved

process is not limited to the apparatus shown, nor to the particular bending of the upper edge of the can body, to strengthen the same, nor to the particular bending of the flange of the cover to strengthen and thicken the same. The essential feature consists in the steps which result in a portion of the flange of the cover indenting or contracting the side wall of the can body to bring about a locking of the cover to the can body and a sealing of the cover on the can body.

Having thus described the invention, what I claim as new and desire to secure by Letters-Patent, is:—

1. The process of closing cans consisting of providing an open top cylindrical can body, rolling the upper edge thereof inwardly to form a strengthened bead therefor, said can body having a substantially vertical wall immediately below the bead before the attachment of the cover thereto forming a cover with a depressed central portion, and a depending flange, providing a U-shaped pocket adapted to receive the bead on the upper edge of the can body, placing the cover on the can body, pressing the same on the can body and while so pressed on the can body bending the flange of the cover so as to cause the same to indent or contract the can body along a line substantially parallel with and below the strengthened bead for drawing the cover on to the can body and holding the same firmly secured thereto.

2. The process of closing cans consisting in providing an open-top cylindrical can body, rolling the upper edge thereof inwardly to form a strengthened bead therefor, said can body having a substantially vertical wall immediately below the bead before attachment of the cover thereto, placing thereon a cover having a depressed central portion, and a depending flange providing a U-shaped pocket adapted to receive the bead on the upper edge of the can body, pressing the cover on the can body and while so pressed on the can body bending a portion of the flange of the cover below the strengthening bead upwardly until it lies against the outer face of the flange above the bend and forcing said upturned portion of the flange together with a portion of the flange immediately above the bend inwardly so as to contract the vertical wall of the can body below said bead, thus drawing the cover tightly on to the can body and securing the cover to said can body.

In testimony whereof, I affix my signature.

ALFRED L. KRONQUEST.