Oct. 1, 1940. G. O. CONNER ET AL 2,216,433

CLOSURE FASTENING DEVICE

Filed Jan. 25, 1938

Fig. 1.

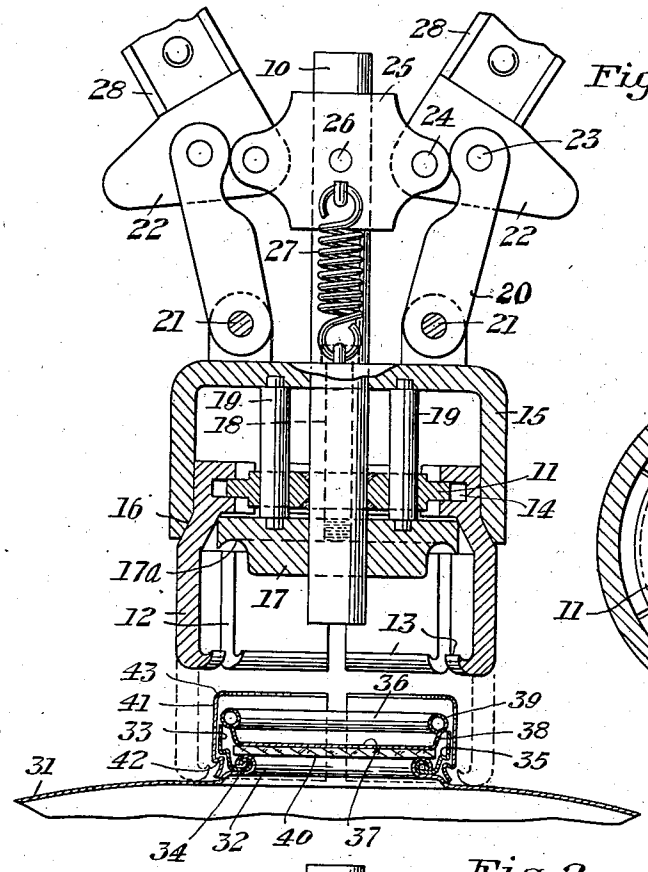


Fig. 3.

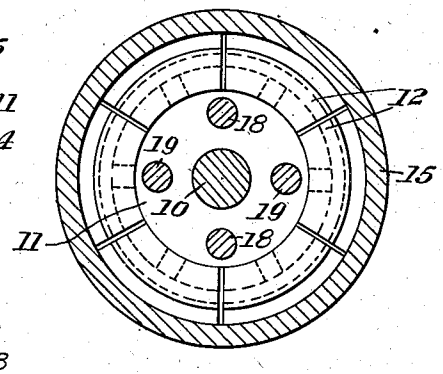
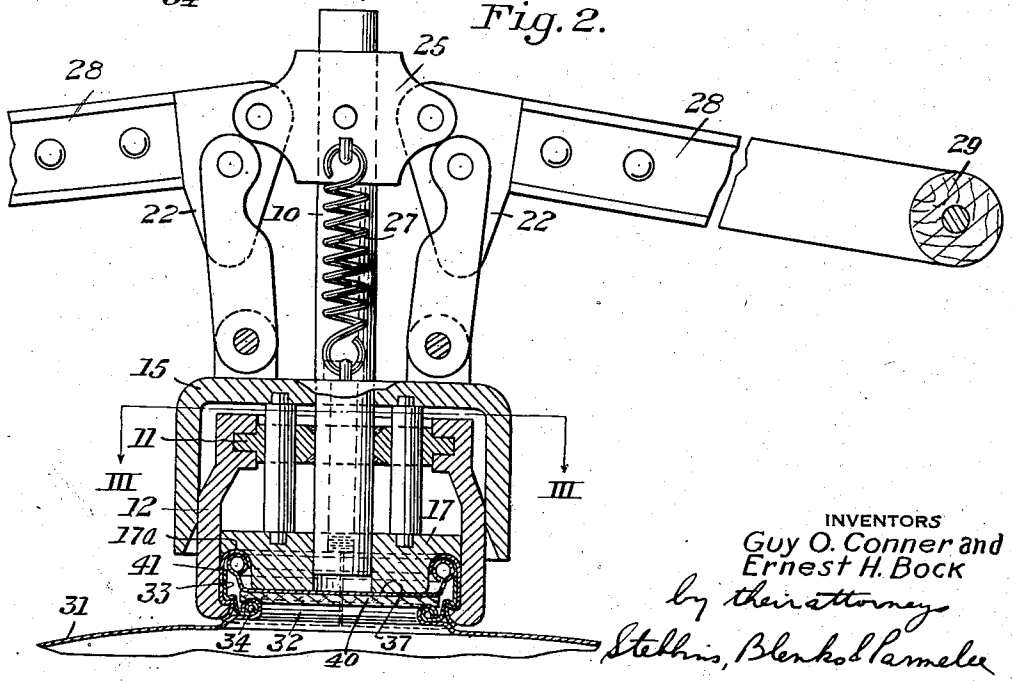


Fig. 2.



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UNITED STATES PATENT OFFICE

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CLOSURE FASTENING DEVICE

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Application January 25, 1938, Serial No. 186,833

3 Claims. (Cl. 153—2)

This invention relates to a device for applying a closure to a container and sealing it thereto.

Closures of various types have been provided for metallic receptacles heretofore. None of these, however, so far as we are informed, is suitable for certain special applications. Metallic beer kegs, for example, require a closure having a tight seal yet it is desirable that closures for such receptacles be easily applied and removed by relatively unskilled labor.

We have invented a closure, together with means for applying it, which fully meets the requirements of this application and has other novel features, advantages and points of superiority over closures heretofore known which adapt it for a wide range of uses. The closure proper is more fully described and claimed in our copending application Serial No. 111,898.

In accordance with our invention, we provide an opening in a container, such as a beer keg, with a sleeve upstanding therefrom. The sleeve has an outwardly extending offset intermediate its ends and is adapted to receive a closure. If the container is designed to be used only once, the closure may be sealed by curling over the edge thereof the extreme end of the sleeve. If the container is designed to be used repeatedly, a split sealing collar is disposed around the sleeve and the end of the collar is curled over the edge of the closure.

For sealing closures in accordance with our invention, we provide a tool comprising a collapsible chuck made up of a plurality of segmental fingers adapted to engage under the shoulder or offset before mentioned. A cup is adapted to embrace and collapse the chuck, while a die carried on the cup moves axially of the chuck to curl the end of the sleeve. A manually operable toggle linkage facilitates operation of the parts in the manner described.

The details of our invention are illustrated on the accompanying drawing and will be described fully herebelow.

In the drawing:

Fig. 1 is a vertical sectional view through the sealing tool of our invention in normal position, parts being shown in elevation;

Fig. 2 is a view similar to Fig. 1 showing the parts in advanced position; and

Fig. 3 is a transverse sectional view along the line III—III of Fig. 2.

The sealing tool of our invention comprises a pin or shaft 10 having a disc or plate 11 secured thereto adjacent one end. A plurality of segmental fingers or jaws 12 have hooked lower ends 13 and socketed upper ends 14 whereby they are carried on pins projecting radially from the edge of the disc 11. A cup 15 is adapted to embrace the fingers or jaws 12 and has a conical lower end 16 adapted to cooperate with similarly shaped portions of the fingers 12 to close them when the cup is moved downwardly from the position shown in Fig. 1 to that shown in Fig. 2. The disc 11 and fingers 12 thus constitute a contractible collapsible chuck operable by advancement of the cup 15.

A curling die 17 is disposed within the jaws 12, being supported from the cup 15 by screws 18. Studs 19 engage the die 17 and cup 15 and are effective to transmit thrust from the latter to the former. The disc 11 is provided with holes for the screws 18 and the studs 19.

Toggle links 20 are pivoted at 21 to the cup 15. Toggle links 22 are pivoted to the links 20 at 23 and at 24 to a bearing 25 secured to the pin 10 as by the rivet 26. A spring 27 normally holds the parts in the position illustrated in Fig. 1. Levers 28 extend upwardly from the links 22 and terminate in yoke-shaped handles 29. By pressing outwardly and downwardly on the handles 29, the toggle linkages 20 and 22 are extended, as shown in Fig. 2, to pull up on the jaws or fingers 12 and push down on the cup 15 and die 17.

The tool described above is particularly adapted for the sealing of a closure such as shown in Figs. 1 and 2. As there shown, a container 31, such as a beer keg, has an opening 32 in the wall thereof. A sleeve 33 extends upwardly from the opening, the edge of the opening being curled around a bead formed on the inner end of the sleeve, as shown at 34. An outwardly extending offset or shoulder 35 is formed in the sleeve intermediate its ends. A closure 36 comprises a disc 37 having a peripheral flange 38 terminating in a bead 39. The closure is adapted to be placed over the opening 32 with a gasket 40 below it, the gasket and closure seating on the curled edge 34 of the opening 32.

A split sealing collar 41 is disposed over the sleeve 33, being expanded at the split to permit such disposition thereof. The collar 41 has an inwardly extending shoulder 42 adapted to engage under the shoulder 35 of the sleeve 33. The outer end of the collar, furthermore, is curved inwardly to a slight extent, as shown at 43.

When the closure 36 and the collar 41 have been disposed as shown in Fig. 1, the sealing tool is disposed therearound as shown in dotted lines in Fig. 1. Outward and downward pressure on the handles 29 forces the cup 15 and die 17

downward. Downward movement of the cup 15 closes the jaws 12, whereupon they engage under the shoulder 42 as shown in Fig. 2. As before stated, the shoulder 42 of the collar 41 engages under the shoulder 35 of the sleeve 33. When the jaws 12 have obtained a firm grip under the shoulder 42, and collapsed the collar 41 into snug peripheral engagement with the sleeve 33, the peripheral groove 17a of the die 17 engages the inwardly curved end 43 of the collar 41 and deforms it to the condition shown in Fig. 2, in which the end of the collar is fully curled inwardly and over the bead 39 on the closure 36, the grip of the jaws 12 under the shoulder 42 furnishing the reaction necessary for the deforming operation. The gasket 40 is compressed as shown in Fig. 2 by the downward pressure on the die 17 and a very tight seal is thus effected. The spring 27 restores the parts to the position shown in Fig. 1 when the pressure on the handles 29 is relieved. The jaws 12 being thereby expanded, the tool may easily be removed from the sealed closure.

When the container has been delivered to the user of the contents thereof, the closure may readily be released for removal by the aid of a tool capable of bending up the inturned edge of the collar 41 at intervals therearound.

It will be apparent from the foregoing description that the invention provides a simple yet effective means for closing filling openings in containers. The closing tool is particularly advantageous since no particular skill is required for its operation. It produces a tight effective seal, nevertheless, which at the same time is easily removable.

Although we have illustrated and described but one preferred form of tool, it will be apparent that the details shown may be varied without departing from the spirit of the invention or the scope of the appended claims.

We claim:

1. A tool for crimping a sealing collar on a sleeve, said sleeve and collar having an offset shoulder, said tool comprising a vertical shaft, a disc secured thereto, segmental jaws mounted on said disc and movable radially thereof, said jaws being adapted to engage under said shoulder, a cup embracing said jaws and slidable downwardly on said shaft, said cup and jaws having cooperating surfaces effective on downward movement of the cup to close the jaws, a curling die movable on said shaft within the jaws, and studs extending through said disc and spacing said cup and die, whereby downward movement of said cup effects similar movement of said die.

2. A tool for crimping a sealing collar on a sleeve, said sleeve and collar having an offset shoulder, said tool comprising a vertical shaft, a disc secured thereto, segmental jaws mounted on said disc and movable radially thereof, said jaws being adapted to engage under said shoulder, a cup embracing said jaws and slidable downwardly on said shaft, said cup and jaws having cooperating surfaces effective on downward movement of the cup to close the jaws, a curling die movable on said shaft within the jaws, and means extending through said disc connecting said cup to said die whereby the die moves with the cup along said shaft.

3. A tool for crimping a sealing collar on a sleeve, said sleeve and collar having an offset shoulder, said tool comprising a vertical shaft, a disc secured thereto, segmental jaws mounted on said disc and movable radially thereof, said jaws having a pin and socket connection to said disc and being adapted to engage under said shoulder, a cup embracing said jaws and slidable downwardly on said shaft, said cup and jaws having cooperating surfaces effective on downward movement of the cup to close the jaws, a curling die movable on said shaft within the jaws, and studs extending through said disc and spacing said cup and die, whereby downward movement of said cup effects similar movement of said die.

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