

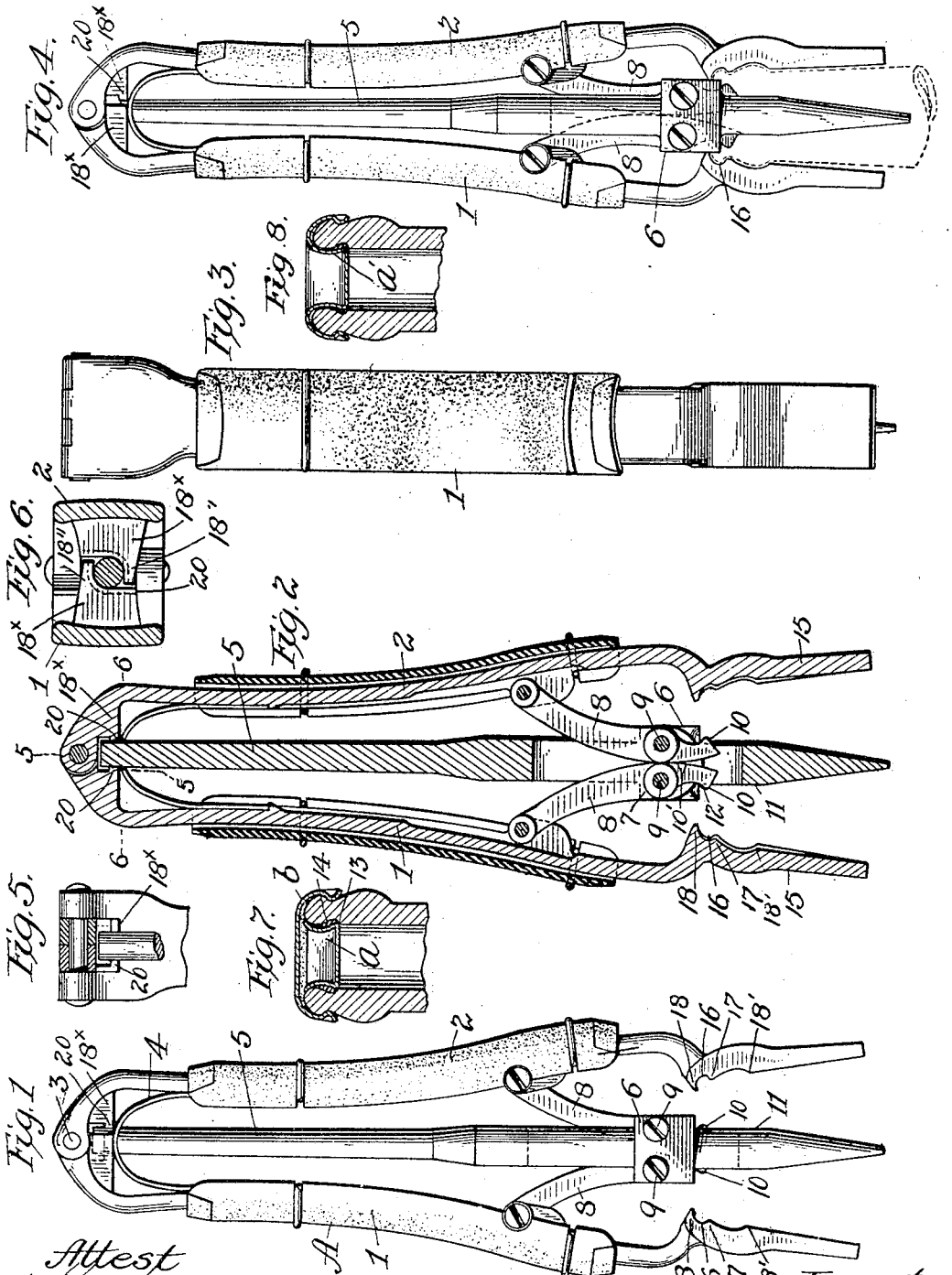
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H. COALE & L. S. GREENSFELDER.
BOTTLE FORMING IMPLEMENT.

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NO MODEL.



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UNITED STATES PATENT OFFICE.

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BOTTLE-FORMING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 775,206, dated November 15, 1904.

Application filed March 11, 1904. Serial No. 197,699. (No model.)

To all whom it may concern:

Be it known that we, HARVEY COALE and LEWIS S. GREENSFELDER, citizens of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Bottle-Forming Implements, of which the following is a specification.

Our invention relates to the manufacture of bottles adapted to be sealed by metallic caps; and it consists of a special form and construction of a tool designed to form on the head of the bottle at one operation an inner and outer configuration adapted to receive an inner and outer seal. In this method of sealing bottles generally used to hold liquids under pressure the metallic caps and plugs are held firmly in place by being bent under a shoulder on or in the neck of the bottle near the mouth. These shoulders are formed by making peripheral grooves in the glass, which grooves are made by a tool moved around or held while the bottle is turned and while the glass is in a plastic state.

Heretofore two kinds of seals have been used by us, one in which a metal cup-shaped plug has been inserted in the mouth of the bottle and expanded against interposed packing into the internal peripheral groove, in which it firmly remains, while with the other form of seal the bottle has an external shoulder, over which the flange of a cap containing packing is bent in locking engagement. Heretofore, also, a special bottle has been provided and used for each seal. We have conceived the idea of uniting these seals in one closure for the purpose of affording greater security and especially adapted to be used in bottles liable to great internal pressure—as, for example, when shipped to hot climates—and this requires a bottle having a peculiarly-shaped head capable of receiving the new closure.

To this end we have constructed a bottle-making instrument, as herein shown, adapted to form the bottle-head with both an internal and external shoulder so related to each other and so located in the bottle-head that our improved integral double closure may be used, or that form of double closure may be em-

ployed in which an inner seal and a separate outer cap are used jointly, or either the inner seal or the outer cap may be used alone and yet the strength of the bottle not materially impaired.

Our invention is illustrated in the accompanying drawings, in which—

Figure 1 shows the instrument in side elevation. Fig. 2 represents a central longitudinal section in a plane parallel with the sides. Fig. 3 shows an edge view of the instrument. Fig. 4 is a side view representing the working end or jaws of the instrument and in position to form the bottle. Fig. 5 is a detail view substantially on the line 5 5 looking from the left of Fig. 2. Fig. 6 is a sectional view on line 6 6 of Fig. 2. Figs. 7 and 8 represent different forms of closures for which the bottle formed by our invention is adapted.

The closures which may be employed on the bottle as a result of our invention are indicated in Figs. 7 and 8. In the former figure the closure comprises an inner seal *a*, expanded into the groove and beneath the interior shoulder, and a crown *b*, having its flange pressed into locking contact with the exterior shoulder on the bottle. In Fig. 8 the bottle as produced by our invention is also provided with interior and exterior grooves, furnishing shoulders into locking engagement with which the inner part *a'* of the closure is expanded, while the outer flange formed in one piece with the inner part is pressed into locking engagement with the exterior shoulder. It will also be obvious that the bottle as provided by our present invention, hereinafter described, may be used interchangeably with single closures, such as shown at *a*, Fig. 7, or with that shown at *b* in the same figure used separately.

Referring now to the apparatus embodying our invention, the drawings show two arms 1 and 2 hinged to each other at 3 and provided with a spring 4, tending to keep the arms asunder, but yielding under pressure of the hand grasping the instrument at A. In the central line is a spindle 5, fitting loosely through the spring and into a socket in the jointed ends. A block 6 on the spindle is

divided by a slot 7, extending through a part of said spindle from side to side, and in this slot is a pair of levers 8 8, pivoted on lugs on the arms 1 and 2. The levers are pivoted in the block on screws 9 9 and have ends 10 10 projecting beyond the pivots. The arrangement of these parts is such that when the arms are compressed the ends 10 10 are thrown out beyond the periphery of the end 11 of the spindle and when the arms are open the inner faces of these levers at 10' are in contact and limit the outward movement of the arms. The lever ends 10 10 on their outer faces are shaped as shown at 12 and constitute formers for the shaping of the interior peripheral groove, their withdrawal permitting entrance of the tapering point into the mouth of the bottle and their projection beyond the periphery of the spindle causing them when the tool or bottle is turned to form the groove. They are so shaped as to form a ledge 13 and inclined shoulder 14 in the mouth of the bottle all around the interior.

In order to form the outer shoulder in the bottle-head, the inner faces of the jaws 15 of the arms 1 and 2 are provided each with a transverse groove 16. These grooves are bounded by the edges 17 and 18, and each groove lies within a larger transverse groove or cavity bounded by the edges 18 18', extending transversely across the inner face of the arm. This larger or main groove serves to provide the enlargement on the exterior of the bottle forming the head. The edge 17 of the supplemental groove 16 lies approximately opposite the crest of the former 12, and the edges 17 and 18 of this groove form an outer bead on the bottle-head at the same time that the enlargement is produced, and the formers 12 press into the glass to form the groove and shoulder on the interior of the bottle-neck at the same time the end of the spindle in the turning of the bottle or instrument finishes the throat of the bottle. A single application of the tool to the material completes the bottle and fits it to receive all the different forms of closures above mentioned.

In order to hold the spindle 5 firmly in central position and prevent side play, we have provided special means at or near the hinge-joint by which a socket will be furnished nicely fitted to the spindle. For this purpose each of the arms 1 2 near the hinge-pin is provided with a lug or boss 18^x, having a lateral extension 18^y at one side extending substantially at right angles to the main part of the lug and reaching alongside of the spindle Fig. 6, so that the inner faces of the lugs and the extensions inclose the spindle. Each lug at or near its lower face is provided with

a flange or rib 20 to bear on the periphery of the spindle to furnish the means whereby the socket may be accurately fitted to the spindle. This flange projects from the lug and its extension in a direction substantially at right angles to the axis of the spindle to bear with its edge against the side of the spindle. The arms are preferably formed by casting them with the lugs, and any inaccuracies in the fit of the socket to the spindle may be removed by simply filing away the edge of the flange or rib to secure a perfect fit.

As stated above, the crest 17 is substantially opposite the former ends 12, and we mean by this that the said parts are so located as to form the shoulders in the positions indicated in Figs. 7 and 8 or any equivalent relation.

We claim—

1. An instrument of the class described comprising, in combination, arms carrying jaws, each having a transverse main groove or cavity bounded by the edges 18, 18' within which lies a supplemental curved groove 16 bounded by the intermediate edge 17 and the said upper edge 18 which bounds the main groove, said structure forming an overhanging shoulder on the bottle and a terminus to the rounded surface of the bottle-lip, formers between the arms having ends 12 arranged substantially opposite the edges 17 of the supplemental grooves, and means for operating the formers.

2. In combination, in an instrument of the class described, a pair of hinged arms, a spindle having its end adapted to enter the bottle-mouth, and a socket for the end of the said spindle at or near the hinge connection comprising the lugs 18 having the flanges 20 to bear on the spindle, said flanges projecting from the lugs in a direction substantially at right angles to the axis of the spindle to bear with their edges against the side of the spindle substantially as described.

3. In an instrument of the class described, having hinged arms and a centrally-disposed spindle, each arm having near the hinge a lug with a lateral extension lying substantially at right angles to the main part of the lug and extending alongside of the spindle, said lugs with their lateral extensions forming a socket receiving the end of the spindle, and each lug with its extension having a flange projecting inwardly therefrom and bearing against the side of the spindle, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

HARVEY COALE.
LEWIS S. GREENSFELDER.

Witnesses:

HOWARD D. ADAMS,
JOHN BLACK.