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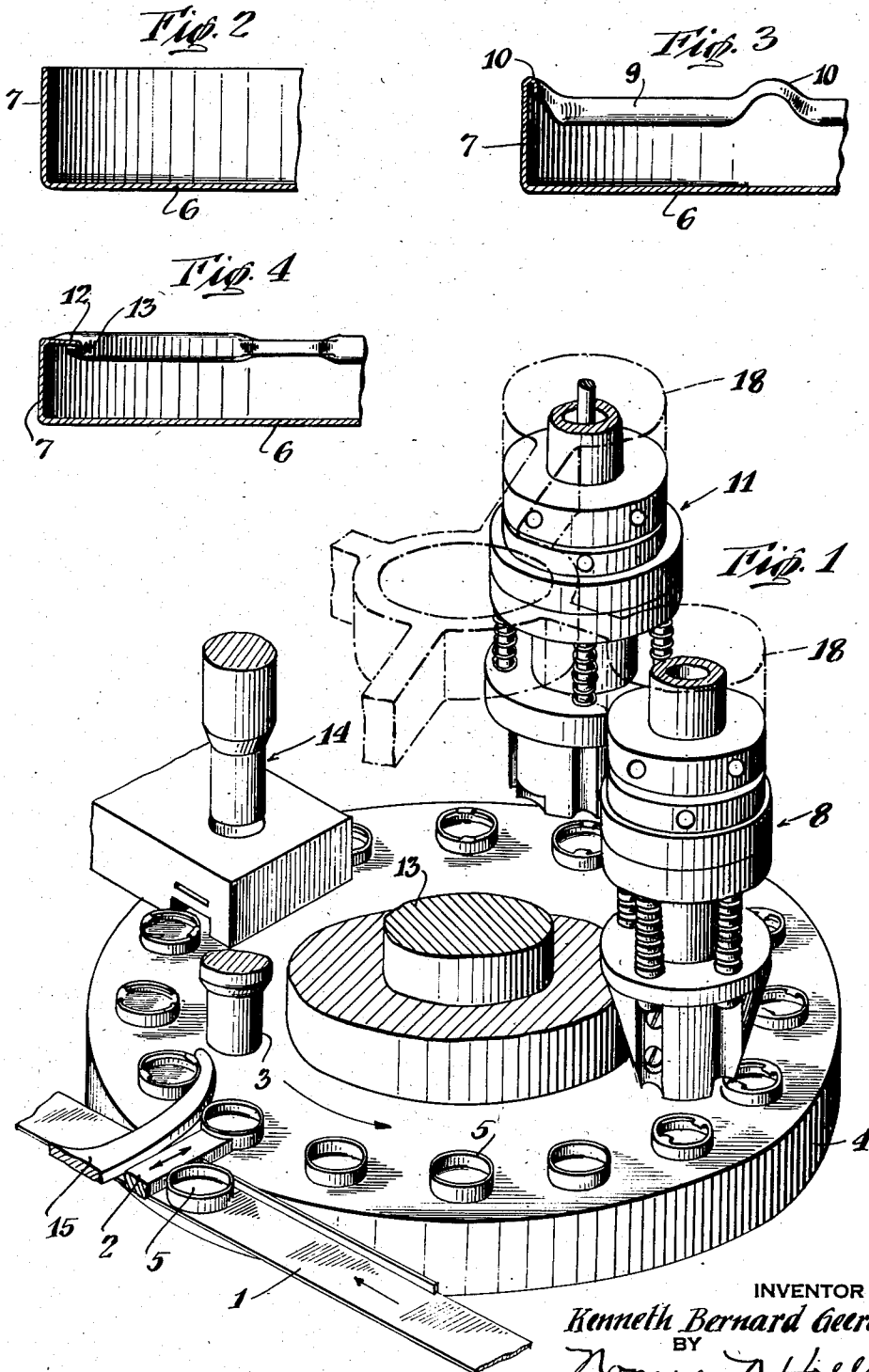
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2,348,464

METHOD AND MACHINE FOR MAKING CLOSURES

Filed July 6, 1940

3 Sheets-Sheet 1



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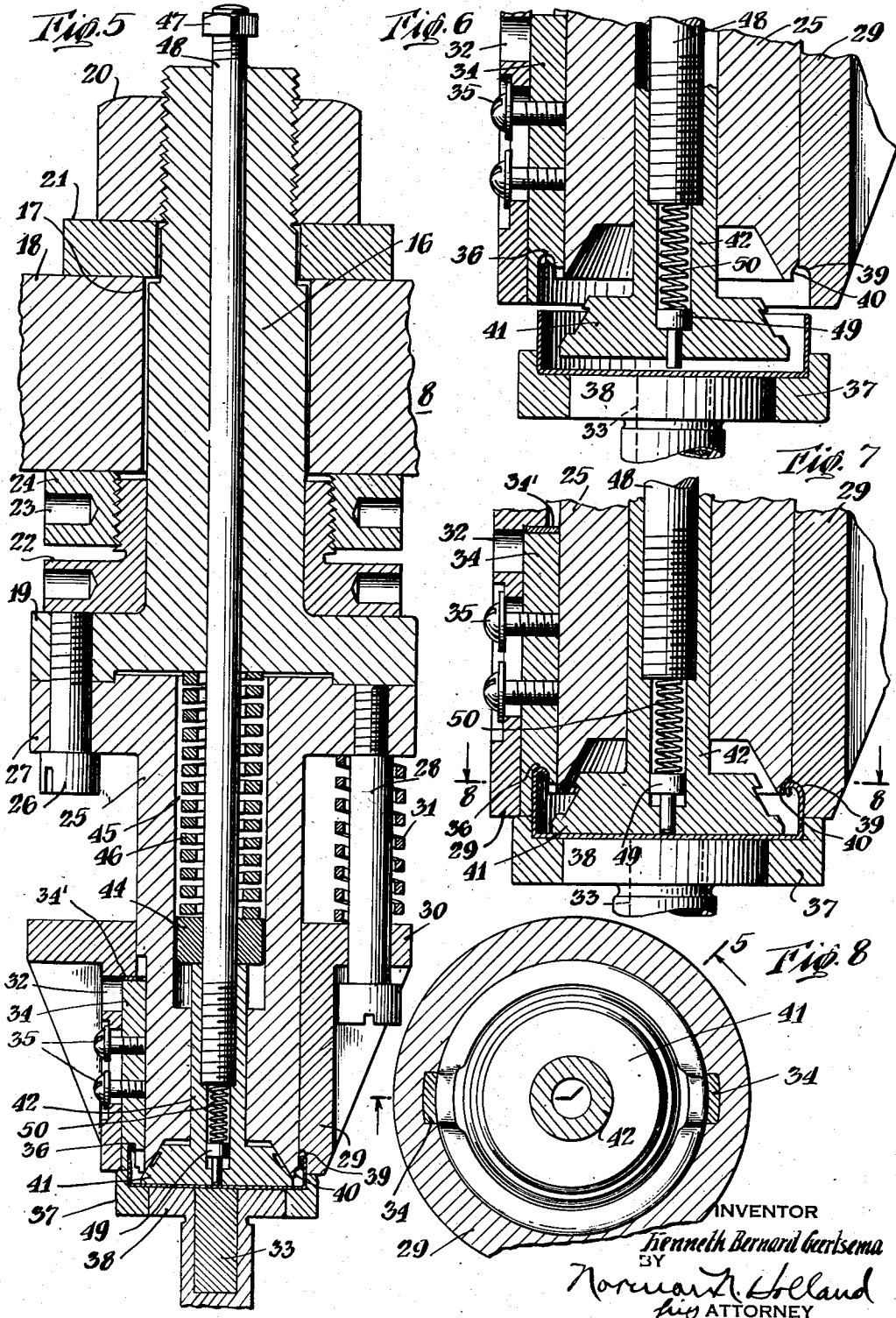
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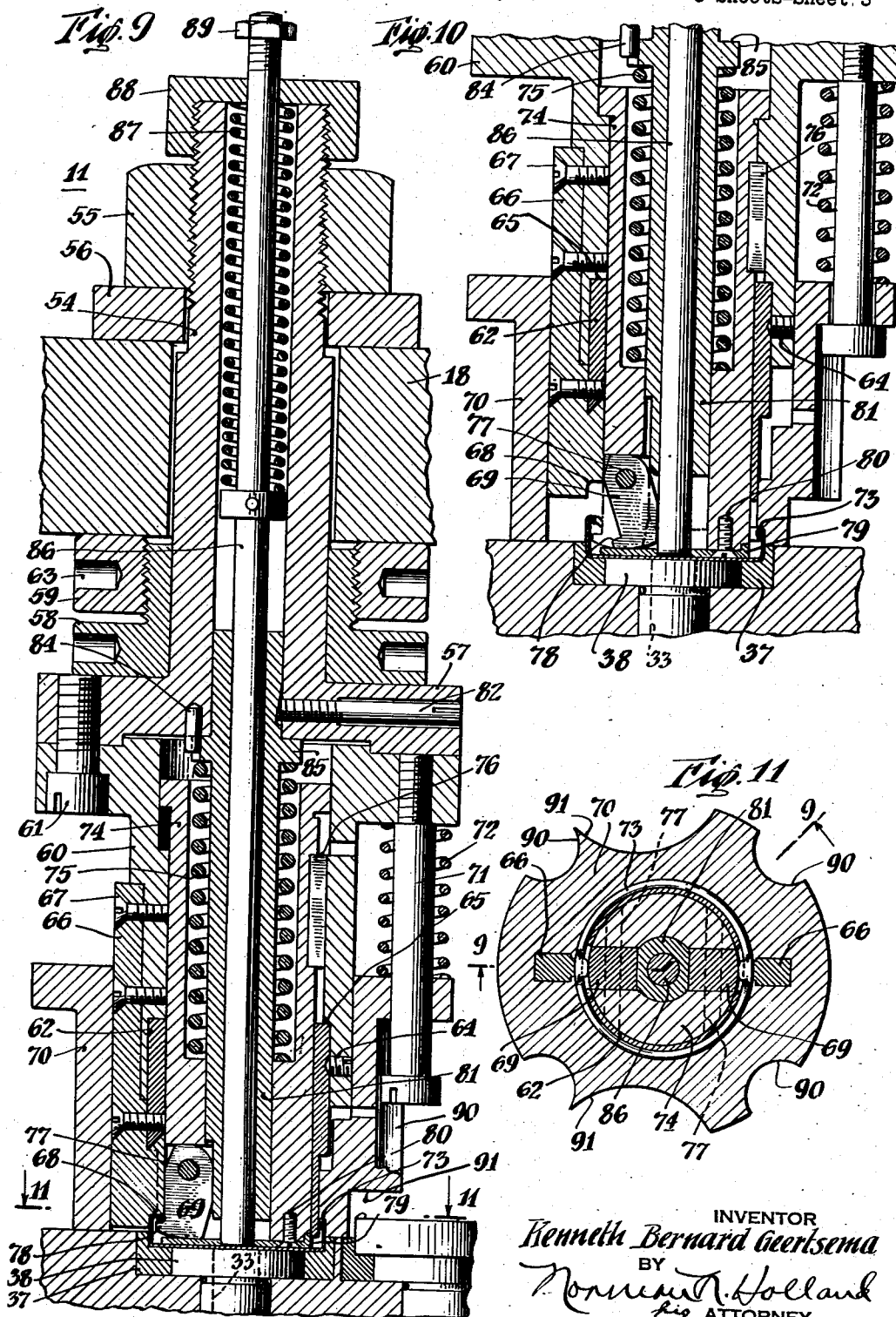
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## UNITED STATES PATENT OFFICE

2,348,464

## METHOD AND MACHINE FOR MAKING CLOSURES

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13 Claims. (Cl. 153—2)

The present invention relates to the manufacture of closure caps and more particularly to an improved method and machine for making lug closures of the screw type.

Lug closures have been used extensively due to certain advantages over closures of the continuous thread type. Generally the lugs on such closures are formed by turning the lower edge of a flanged blank outwardly into a beaded edge and thereafter striking the beaded edge inwardly to form lugs. Such closures may be made on rotary machines at a very rapid rate. A machine for such purposes is illustrated, for example, in the Charles Hammer Patent No. 1,671,990. More recently lug caps have been formed from flanged blanks which have their lower edges turned inwardly instead of outwardly to improve the appearance of the closures. Packers and bottlers prefer the latter type of closures, but difficulty has been encountered in getting the lugs to project inwardly sufficiently far to form a good grip on the threads or projections on the glass containers and also in getting simple machinery which would manufacture the closures at a rapid rate. Slow and expensive methods and machinery increase the price of such caps to a point where their price prevents their sale.

The present invention aims to provide an improved method and machine for manufacturing closure caps of the lug type with the edge of the flanged blank turned inwardly to improve the appearance of the closure. The improvement resides more particularly in the simplification of the devices and method, thereby reducing the cost of the devices and increasing the speed at which they may be operated and in novel elements and combination of parts. In addition, the devices are adapted to form a strong closure lug having a maximum inward extension which will firmly grip the threads or projections on the containers to hold the closure securely in position.

An object of the present invention is to provide an improved method and device for making closure caps.

Another object of the invention is to provide a simple device for turning inwardly the edges of flanged blanks and forming screw lugs therefrom.

Another object of the invention is to provide simple and inexpensive devices for making lug closures which may be attached with minimum changes to the present types of machines for inserting liners thereby simplifying the manufac-

ture of the closures and reducing the cost of the machinery therefor.

Another object of the invention is to provide a device and method for making lugs and in-turned edges on closures wherein the lugs have a greater inward extension than heretofore to give a firm grip on the container without increasing the amount of metal required therein.

A further object of the invention is to provide a method and machine for making improved lugs having greater strength and flexibility than heretofore.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings, forming a part of the specification, wherein

Fig. 1 is a fragmentary perspective view illustrating the devices of the present invention applied to a simple machine for inserting liners in closures;

Fig. 2 is a sectional view illustrating the flanged blank as it enters the machine;

Fig. 3 is a sectional view illustrating the blank as it leaves the first device;

Fig. 4 is a sectional view illustrating the finished closure as it leaves the second device;

Fig. 5 is a cross-sectional view of the curling tool on the line 5—5 of Fig. 8 with the parts illustrated at the completion of the first operation;

Fig. 6 is an enlarged fragmentary sectional view of the lower part of the tool shown in Fig. 5 with the parts in their position at the commencement of the operation;

Fig. 7 is an enlarged fragmentary view of the lower end of the curling device in an intermediate position;

Fig. 8 is a sectional view along the line 8—8 of Fig. 7;

Fig. 9 is a cross-sectional view of the lug forming device along the line 9—9 of Fig. 11;

Fig. 10 is an enlarged fragmentary sectional view of the lower end of the device shown in Fig. 9 as it is being applied to the closure; and

Fig. 11 is a sectional view along the line 11—11 of Fig. 9.

Referring again to the drawings illustrating a preferred embodiment of the invention and one

way of performing the method, there is shown in Fig. 1 a perspective diagrammatic view of the machine. The operations and the several steps are shown in Figs. 2, 3 and 4 where the shape of the blank at the termination of the respective steps is illustrated. The closures of these figures are of the four lug type to permit the showing of one of the lugs in elevation. However, any suitable number of lugs may be utilized. For example, the mechanism shown herein is for the manufacture of two lug closures as shown in Figs. 8 and 11.

Referring more particularly to Figs. 1 to 4, a conveyor belt 1 conveys closure blanks 5 to a reciprocating member 2 which feeds closures from the conveyor belt onto the rotating table 4 having a series of pockets (Fig. 5) thereon adapted to receive closures which are forced therein by a vertically reciprocating punch member 3. The blanks as they enter the machine, as shown in Fig. 2, have a cover portion 6 and a flange 7 formed from tinplate or similar sheet metal which is customarily decorated or coated at least on the outer side. The blanks fed to the table 4 are first forced into the pockets by the reciprocating member 3 and then pass under a device 8 which is illustrated in detail in Figs. 5 to 8 and which will be described hereinafter. The blank illustrated in Fig. 2 has its edge turned inwardly by said device, as shown at 9, with certain portions thereof bent inwardly as shown at 10 where the lugs will eventually be. Upon leaving the device 8, the blanks are passed under a device 11 wherein the portion 10 is turned inwardly to form the lugs 12 in the finished closure. The device 11 is illustrated in detail in Figs. 9 to 11 and will be described hereinafter. The closure shown in Fig. 4 by reason of the indentation at the lug permits maximum inward extension of the lug 12 with a minimum amount of metal. The folded inner edge 13 strengthens the lug and at the same time maintains sufficient flexibility to take up variations in the size and shape of the glass containers. In addition, the folded inner edge prevents sharp projections from engaging and scratching the glass, which would greatly weaken it. A scratch on the surface of the glass impairs its strength and may result in breakage which otherwise would not occur.

The closures leaving the device 11 pass under the device 14 which cuts a liner from a strip of material and inserts it into the closure caps in the usual well-known manner. The devices 3, 8, 11 and 14 may all be operated from a single press or source of power synchronized to operate in timed relation to the intermittent movement of the table. For example the central member 13 may be reciprocated vertically by a source of power (not shown) and operatively connected to the devices 3, 8, 11 and 14 by a series of arms 18 mounted on a central hub secured to the vertically reciprocating member 13. The members 18 are shown in dot-dash lines in Fig. 1 and broken away to simplify the drawings. The devices 8 and 11 may be attached to modern makes of liner inserting machines to form the lugs in the same machine in which the liners are inserted. In this way the present mechanisms may be applied to existing machines and do not require a new machine and further operations. This simplifies the cost of the machinery required and permits the devices to be operated at the usual rapid speed of liner inserting machines, thereby preventing the necessity for slowing up the usual manufacturing operations. The completed caps

are removed from the table by a guide 15 onto the belt 1 where they are delivered to a suitable packing carton.

As described above, the formation of the cap is in three steps, the first is the stamping of the flanged blanks shown in Fig. 2 with the usual stamping press (not shown). The second operation is by the tool 8 to reform the blank to substantially the shape shown in Fig. 3 and will now be described. Referring more particularly to Figs. 5 to 8, the device 8 comprises a shank 16 extending through an aperture or bore 17 in a press member 18. The lower end of the shank 16 is flanged outwardly into a disc 19 to which is bolted the other parts of the device. The shank 16 is held in position by means of a nut 20 threaded to its upper end against a washer 21 resting on the press member 18. Intermediate the press member 18 and the disc 19 of the shank, there is a shank adjusting screw 22 telescoped about the shank with an adjusting nut 24 threaded thereto. By rotating the nut 24 the effective length of the screw 22 can be changed at will so that the shank is firmly fixed on the press member and the lower disc part thereof is rigidly fixed with respect to the press. The recesses 23 in the nut and screw facilitate the use of tools in making adjustments.

A member 25 which for convenience will be termed the wire flattening member is bolted to the lower side of the shank disc 19 by bolts 26. The flattening member 25 has a disc 27 at its upper end corresponding to the disc 19 and has a series of bolts 28 threaded therein to support a slidable sleeve member 29 which for convenience will be called a curling member. The curling member has an outer flange 30 having apertures through which the bolts 28 extend and is held in its lowermost position by means of springs 31 fitting about the bolts 28.

A suitable recess 32 is formed in both the flattening member 25 and the curling member 29 to receive a curling insert 34 which is held in position by screws 35. Preferably, the curling insert is rigidly fixed to and moves with the resiliently mounted sleeve 29 and is adapted to form a shorter fold or curl of metal where it engages the cap than is formed by the curling sleeve 29 and the flattening member 25. In the preferred embodiment the flange of the cap is longer at said portion as shown in Fig. 3 than elsewhere thereabout. The length of the skirt of the cap at the partially formed lugs is definitely fixed regardless of minor variation in the length of the skirt resulting from the cutting and drawing operations. This permits accurate formation of the lugs. It is to be understood that the parts may be adjusted to vary the shape of the lug portion, and the length of the skirt and the width of the fold at said portions. The position of the insert 34 may be changed by bolts 35 and by substituting for the shims 34' other shims of different thickness. The number of inserts 34 provided corresponds to the number of lugs desired in the finished cap. The bottom of the insert has a groove 36 therein shaped to form the desired fold at the lug portion of the closure.

The closure blanks are supported in suitable sockets 37 in the table having cap ejectors 38 therein for removing the finished caps. The ejectors 38 preferably have permanent magnets 33 embedded therein to hold loose fitting closure blanks in position. The bottom of the curling sleeve engages the table about the nests or sockets 37 which limits its downward movement dur-

ing the curling operation. The inner flattening sleeve 25 at its lower end has a groove 40 which in normal position is substantially flush with the groove 39 in the outer sleeve whereby the edge of the closure cap is turned inwardly as will be described hereinafter.

Interiorly of the flattening member 25 is a knockout member 41 having a shank 42 extending upwardly and fitting in the bore or barrel 45 of the flattening member 25. A separate member 44 rests on the end of the member 41 to serve as a seat for a spring 46. The coiled spring 46 retains the knockout member in its lowermost position which is limited by the nut 47 on the end of rod 78 which has its lower end threaded into the shank 42 of the knockout member. A supplemental ejector 49 is resiliently mounted by means of a spring 50 in the end of the knockout member 41.

In the operation of the curling device 8 the press member 18 is reciprocated vertically to bring the tool into and out of engagement with a closure blank seated in the nest or socket 37 of the table 4. The ejector pin 49 engages the cover of the nested blank. Thereafter the knockout member 41 engages the cover of the blank more forcefully. Both the knockout member 41 and the ejector pin 49 are resiliently mounted by springs 46 and 50 respectively, and hence as the press continues to move down these members continue to yield, as much as is necessary. Upon continued downward movement the outer curling sleeve 29 engages at its bottom the lower edge of the cap with its curling portion 39 and continues to move downwardly under the influence of the springs 31 to curl the edge of the cap inwardly. This curling operation continues until the lower end of the curling member 29 engages the table or the nest 37 whereupon further downward movement is prevented. During the initial downward movement of the curling member 29 the inner flattening member 25 is in the position shown in Fig. 6. In other words the groove 40 at the bottom of the flattening member is substantially flush with the curling groove 39 of the curling sleeve 29 so that a curl of a substantial radius can be formed on the edge of the cap thereby to simplify the curling operation. When the outer sleeve 29 is stopped by its lower end engaging with the table, the inner flattening member 25 being rigidly connected to the press member 18 continues to move down and in doing so forces inwardly the curled part of the cap outwardly against the flange of the cap to form substantially a flat or slightly rounded fold or bead as shown in Fig. 5. While the fold or bead is thus being formed, the inserts 34 which have a groove 36 in their lower portions move with the resiliently mounted outer flattening sleeve 29 to engage the edge of the closure, where the lugs are to be, to form a differently shaped fold or curl as shown in Fig. 3. The curl formed by the insert 34 turns up less metal than the fold of the rest of the cap whereby the flange of the closure is longer at the lug portions than elsewhere.

In the removal or upward stroke of the curling device 8 the parts operate in reverse of the operation described above. That is, the rigidly mounted inner flattening member 25 is first raised out of engagement with the closure. The outer sleeve 29 follows when the inner member reaches the position shown in Fig. 6. Thereafter the knockout member 41 leaves the closure when the nut 47 engages the upper end of the shank 75

18. Finally the ejector pin 49 disengages the cover of the closure when its enlarged upper end engages the bottom of the recess in which it is mounted.

From the device just described, the blank as shown in Fig. 3 is moved by the table 4 to the device 11, which is shown in its relation to the machine in Fig. 1 and is shown in detail in Figs. 9 to 11. The formation of the closure cap is completed by this device. Referring more particularly to Figs. 9 to 11, the preferred embodiment of the tool comprises a shank 54 mounted on the press member 18 in the same manner as described with respect to the device 8 for the second operation illustrated in Figs. 5 to 8. The shank 54 has a nut 55 threaded to its upper end to press a washer 56 against the press member 18 to secure the upper end of the shank in position. The lower end of the shank has a disc 57 for attachment of other parts with a screw 48 threaded to an adjusting nut 59 which may be rotated with respect to each other to completely fill the space between the bottom of the press member 18 and the top of the disc 47 at the lower end of the shank. Wrenches may be inserted in the recesses 63 for making adjustments.

A holder 60 having a flange or disc shaped upper end corresponding to the disc 57 on the shank is secured thereto by bolts 61 to move with the press member 18. A sleeve 62 is secured to the inner part of the holder 60 at the lower end thereof by screws 64 and abuts a shoulder 65 at its upper end. The lower end of the sleeve is reduced in size to fit within the closure cap. The sleeve is also recessed to permit the mounting of the lug forming bar 66 on the holder 60 by means of screws or bolts 67. The lower end of the lug forming bar 66 is shaped at 68 to engage the elongated portion 10 of the skirt of the cap as shown in Figs. 3, 9 and 10 to force said portion of the skirt upwardly toward the cover of the cap (downwardly in the device). In the preferred embodiment the lug forming bar forces the metal inward until the skirt at the lugs is substantially shorter than elsewhere to obtain extra metal for the formation of the lug. Likewise in the preferred embodiment the elongated partially formed lug portion, shown in detail in Fig. 3, is folded over to the position of the finished lug shown in Fig. 4. By thus folding the metal inward the inward extension of the lug and also the distance of the upper side thereof from the cover of the cap can be controlled with the necessary accuracy. It will be understood that the bar or the groove therein may be adjusted or changed to reduce or increase the amount of metal turned inwardly and the length of the skirt at the lugs. During this operation an expander 69 cooperates with the lug forming bar to limit the upward and inward movement of the lug as will be described hereinafter. A stripping sleeve 70 is mounted on the support 60 by bolts 71 threaded to the upper end of the holder and resiliently retained in its lower position by a spring 72. The stripping sleeve extends completely about the member and is adapted to engage the skirt of the cap throughout its circumference as shown at 73, except at the lugs, to support the outer part of the skirt during the formation of the lugs. Vertical grooves 90 are formed in the outer surface of the sleeve 70 to accommodate the ends of the bolts 71 and recesses 91 are formed at the lower end thereof to prevent interference with closures approaching and leaving the tool.

A sleeve ejector 74 is telescoped within the bore of the holder 60 and within the sleeve 62 and is resiliently mounted therein by means of a spring 75. The sleeve is keyed against rotary movement by means of a key 76 which permits longitudinal movement but prevents rotary movement. The key retains the sleeve in proper position so that the lug forming bar 66 is always in proper position to engage the elongated portion of the skirt of the cap where the lugs are to be formed. The lower end of the sleeve has slots therein in which the expanders 69 are pivotally mounted by means of pins 77. The position of the mounting pins 77 with respect to the projections 78 is such that pressure applied to the upper side of the projection swings the member 69 and the projection 78 out of the path of the closure lugs. Hence the removal of the closure automatically retracts the members 69. This prevents the cap from being caught on the projections 68. The projections 78 on lower ends of the expanders fit under the lugs of the closure and definitely limit the upward movement of the lugs toward the cover of the cap thereby maintaining at all times a uniform distance between the upper part of the lug and the cover of the cap so that a uniform fit on the threads of the glass containers will be obtained. The lower end of the ejector is covered by means of a plate 79 held in position by screws 80. A fixed sleeve 81 for operating the expanders 69 fits into the bore of the ejector 74, is secured in the bore of the shank 54 by means of a bolt 82, and retained against rotary movement therein by means of a pin 84. The flange 85 on the sleeve 81 prevents upward movement thereof. An ejector rod 86 extends through the bore of the expander sleeve 81 and through the bore of the shank 54 and is maintained in its lower position by means of a spring 87 held in the upper part of the bore of the shank 54 by means of a nut 88. A nut 89 threaded to the end of the rod 86 limits the lower movement of the ejector rod. The closure blank is supported in the nest 37 and ejected from the nest by means of an ejector 38.

In the operation of the lug forming device 11, the press member 18 moves downwardly a fixed distance with the device 11 adjustably fixed in position thereon. The ejector rod 86 engages the bottom of the cap first to hold it in position and is pressed upwardly against the spring 87. Thereafter the ejector sleeve 74 engages the cover of the cap over a much greater area holding it securely in position whereupon further movement of the tool downwardly causes the ejector sleeve to move upwardly in opposition to the spring 75. The ejector sleeve has the expanders 69 pivotally mounted thereon and as it is pressed upwardly, the expander sleeve 81 which is fixed in position engages the expander members 69 to force them into their outer position with the projections 78 thereon positioned under the lugs of the closure. On the exterior of the tool the stripper sleeve 76 is telescoped outwardly about the skirt of the cap except at the lugs thereof to support the exterior of the cap and, in addition, engages the bottom of the cap to strip it from the device when it is raised from the closure. The final operation of the tool is the telescoping of the sleeve 62 within the closure cap to support it on the interior and the engagement of the lug forming bar 66 at its lower portion 68 with the elongated portion of the closure to force it inwardly over the projections of the expanders 69 to form a lug. Thus the formation of lugs of the closure cap is complete.

As the press member 18 and the tool are raised, the operations of the parts are in their reverse order. The supporting member 60, the sleeve 62, the lug forming bar 66 and the expander sleeve 81 are first raised out of position since they are directly connected to the press member 18. Thereafter the ejector member 74 and the stripping sleeve 70 are raised when they reach the extremity of their lower movement and after they have ejected the cap from the device. Finally the ejector rod 86 leaves the cap when the nut 89 engages the nut 88 which serves as a stop.

The operation of the machine will be clear from the above description and from the description of the operation of the devices 8 and 11 given with the explanation of the parts thereof.

It will be seen that the present invention provides a simple machine and method for making a closure caps wherein the edge of the cap is turned inwardly and a strong accurately formed lug is provided. The inner edge of the lug is folded to prevent scratching of the glass and to increase strength of the lug without increasing the rigidity thereof to a point where it would tend to break the glass. The machine is simple and the operating devices may be mounted on existing machinery without requiring additional labor costs in the manufacturing operations or the purchase of substantial equipment. The amount of metal required in the closures is minimized by utilizing part of the skirt of the cap for the formation of the lugs. The machine is rugged in construction, simple to manufacture, easy to repair and fully capable of withstanding the rough usage to which it may be subjected.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. In a device for making lug closures, the combination of a support for a closure blank, an inner sleeve adapted to be telescoped into the blank to provide an inner radial support therefor and to prevent the portions intermediate the lugs from being distorted inwardly by the formation of the lugs, an outer sleeve operatively secured to and slidable with respect to the inner sleeve and adapted to extend about the flange of the blank to support it exteriorly, means for withdrawing the sleeves from the closure consecutively, an expandible member adapted to fit under a portion of the blank, and a lug forming member adapted to strike inwardly a part of the blank against said expandible member.

2. In a device for making lug caps, the combination of an inner sleeve adapted to be telescoped into a flanged blank to provide an inner radial support therefor and to prevent the portions intermediate the lugs from being distorted by the formation of the lugs, an expandible member adapted to fit under a portion of the blank, a rod movable relative to said expandible member adapted to engage the inner side of the expandible member to force the expandible member into its outer effective position and to rigidly retain it in said position to assure maximum accuracy in forming the lug, a lug forming member adapted to strike inwardly a part of the blank against said expandible member, and an outer sleeve operatively secured to and slidable with respect

to the inner sleeve and adapted to fit about the exterior of the flange to support it exteriorly.

3. In a device for making lug caps, the combination of an inner sleeve adapted to be telescoped into a flanged blank to provide an inner radial support therefor and to prevent distortion of the flange adjacent the lug in the formation of the lug, an expandible member adapted to fit under a portion of the blank to form a support, a lug forming member adapted to strike inwardly a part of the blank against said expandible member, an outer sleeve extending about said flange to support it exteriorly, and means for resiliently mounting one of said sleeves on the other to permit said sleeves to be removed from the closure consecutively.

4. In a device of the class described, the combination of a shank having a flange at its lower end and threaded at its upper end, a threaded sleeve extending about the shank and resting on said flange, an adjustment nut on said threaded sleeve for changing the effective position of said shank with respect to an operating mechanism, an operating mechanism having a recess adapted to receive said shank, a nut threaded to the upper end of said shank for securing the shank to the operating mechanism, a punch member having a flange at its upper end bolted to said shank flange, and a slidable sleeve resiliently secured to the flange of said punch member and adapted to extend about and support the outer part of a closure blank and having means for reforming the edge of the closure blank, the length of the flange after the reformation of the edge of the blank being greater at certain portions than at other portions, said punch member having a part adapted to be telescoped within the closure blank.

5. In a device of the class described, the combination of a shank having a flange at its lower end and threaded at its upper end, a threaded sleeve extending about the shank and resting on said flange, an adjustment nut on said threaded sleeve for changing the effective position of said shank with respect to an operating mechanism, an operating mechanism having a recess adapted to receive said shank, a nut threaded to the upper end of said shank for securing the shank to the operating mechanism, a punch member having a flange at its upper end bolted to said shank flange, a rod extending centrally through said shank, resilient means effective upon said rod to cause it to eject the blanks from said punch member, a slidable sleeve resiliently mounted on said punch member and adapted to extend about and support the outer part of a closure blank and having means for reforming the edge of the closure blank, the length of the flange after the reformation of the edge of the blank being greater at certain portions than at other portions, said punch member having a part adapted to be telescoped within the closure blank.

6. The method of making closure caps with screw lugs therein which comprises forming a blank having a cover part and a peripheral flange of substantially uniform length terminating in an edge, folding in the edge of the flange into a substantially U-shaped fold about the entire periphery thereof with inturned folded parts relatively short in a vertical direction at the portions to be formed into lugs and with inturned folded parts, substantially longer in a vertical direction than said relatively short parts, intermediate the portions to be formed into lugs whereby the flange after the edge is folded is substantially

longer in a vertical direction at the portions to be formed into lugs than at the intermediate portions and turning inwardly and upwardly, the folded edge of said elongated flange portions to provide screw lugs.

7. The method of making closure caps with screw lugs therein, which comprises forming a blank having a cover part and a peripheral flange of substantially uniform length terminating in an edge, turning in the edge of the flange into a substantially U-shaped fold about the entire periphery thereof with inturned folded parts relatively short in a vertical direction at the portions to be formed into lugs and with inturned folded parts, substantially longer in a vertical direction than said relatively short parts, intermediate the portions to be formed into lugs, whereby the flange, after the edge is turned in, is substantially longer in a vertical direction at the portions to be formed into lugs than at the intermediate portions, flattening said inturned intermediate portions outwardly toward the flange and turning the folded edge inwardly and upwardly toward the cover of the closure at the elongated portions of the flange to form screw lugs.

8. In a device for forming closure caps from flanged blanks, the combination of a member having a recess therein, a slidable sleeve extending about said member, means for resiliently mounting said sleeve on said member, said slidable sleeve being adapted to extend about and support the outer part of a closure blank, a second sleeve, means for mounting said second sleeve within the recess in said member, said second sleeve being adapted to be telescoped within the closure blank to form an inner radial support for the flange of the blank, a third sleeve mounted in the recess of said member, expandible members mounted on the end of said third sleeve, means for expanding said members outwardly toward the flange of the closure and lug forming means operated by said member to force the edge of the cap inwardly against the expandible members to form screw lugs therein.

9. In a device for forming closure caps from flanged blanks, the combination of a member having a recess therein, a slidable sleeve extending about said member, means for resiliently mounting said sleeve on said member, said slidable sleeve being adapted to extend about and support the outer part of a closure blank, a second sleeve having recesses adapted to receive lug forming members, means for mounting said second sleeve within the recess in said member, said second sleeve being adapted to be telescoped within the closure blank to form an inner radial support for the flange of the blank, lug forming members secured to said first mentioned member to extend into the recesses in said second sleeve and adapted to engage and form lugs on the flange of said blank, means mounted on said recessed member having expandible members thereon, and means for forcing said expandible members outwardly to form supports for the lugs during the formation thereof.

10. In a device for forming closure caps from flanged blanks, the combination of a member having a recess therein, a slidable sleeve extending about said member, means for resiliently mounting said slidable sleeve on said member, a second adapted to be telescoped within the closure blank to restrict the inward movement of the flange of the blank sleeve, means for mounting said second sleeve within said member, a third sleeve, means for resiliently mounting said

third sleeve within said member, expandible members at the lower end of said third sleeve, means for forcing said expansible members outwardly to form lug supports, and a plurality of bars mounted on said first-mentioned member for forcing inwardly the flange of the cap against said expandible members to form lugs.

11. In a device for forming closure caps from flanged blanks, the combination of a member having a recess therein, a slidable sleeve extending about said member, means for resiliently mounting said slidable sleeve on said member, a second sleeve adapted to be telescoped within the closure blank to restrict the inward movement of the flange of the blank, means for mounting said second sleeve within said member, a third sleeve, means for resiliently mounting said third sleeve within said member, expandible members at the lower end of said third sleeve, a member adapted to pass between said expandible members when said third sleeve moves within said first-mentioned member in opposition to the resilient mounting means for forcing said expandible members outwardly to form lug supports and a plurality of bars mounted on said first-mentioned member for forcing inwardly the flange of the cap against said expandible members to form lugs.

12. In a device for forming closure caps from flanged blanks, the combination of a member having an inner recess, a sleeve rigidly secured to said member adapted to be telescoped within the blank to restrict the inward movement of the flange of the blank, a slidable sleeve adapted

to telescope about the blank to restrict the outward movement thereof, means for resiliently mounting said outer sleeve on said member, a third sleeve having expandible members at the lower end thereof adapted to fit within the closure, means for forcing said expandible members outwardly to serve as supports for the closure lugs during the formation thereof, means for resiliently mounting said third sleeve within the recess of said member, and a plurality of bars secured to said member for forcing inwardly the flange of the blank against said expandible members to form lugs therein.

13. In a device for forming closure caps from flanged blanks, the combination of a member having an inner recess, a sleeve rigidly secured to said member adapted to be telescoped within the blank to restrict the inward movement of the flange of the blank, a slidable sleeve adapted to telescope about the blank to restrict the outward movement thereof, means for resiliently mounting said outer sleeve on said member, a third sleeve having expandible members at the lower end thereof adapted to fit within the closure, means for resiliently mounting said third sleeve within the recess of said member, an expander fixed with respect to said first-mentioned member for passing between said expandible members to force them into their expanded position, and a plurality of bars secured to said member for forcing inwardly the flange of the blank against said expandible members to form lugs therein.

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