

June 6, 1939.

J. C. HOLLOWAY

2,160,865

CAN HOLDING AND PROTECTING MECHANISM

Filed Jan. 19, 1935

Fig. 2

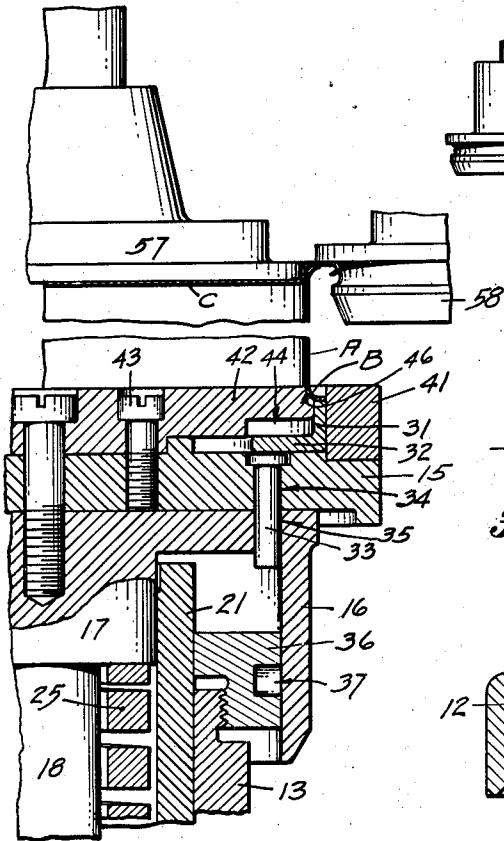


Fig. 1

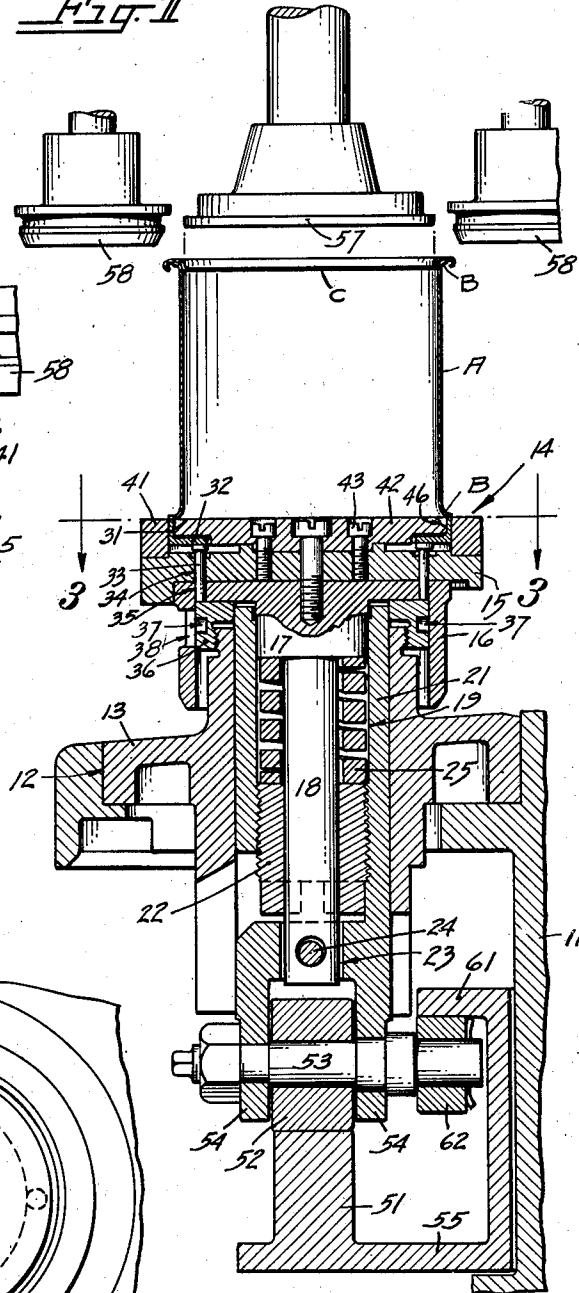
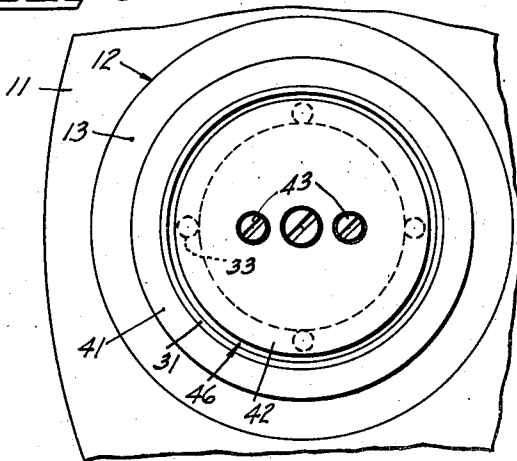


Fig. 3



INVENTOR
Joseph C. Holloway
 BY *Ivan D. Thombright*
Charles H. Craft
 ATTORNEYS

UNITED STATES PATENT OFFICE

2,160,865

CAN HOLDING AND PROTECTING
MECHANISM

Joseph C. Holloway, New Orleans, La., assignor
to American Can Company, New York, N. Y.,
a corporation of New Jersey

Application January 19, 1935, Serial No. 2,566

9 Claims. (Cl. 113—24)

The present invention relates to can making and closing machines and has particular reference to devices in such machines for holding and protecting a can flange formed on one end of a can body against distortion or "mushrooming" while an operation involving pressure is performed upon another part of the body.

An object of the invention is the provision of a mechanism in a machine for operating upon flanged can bodies or the like wherein the flange on one end of a can body is supported or positively backed up and confined to prevent spreading or distorting of the flange while operating pressure is being applied to the other end.

Another object is the provision of such a mechanism which permits sufficient pressure to be applied to one end of a flange can body without spreading or distorting the flange on the opposite end of changing its preformed contour while a forming or closing operation is performed upon the can body, such as, for example, the application of an end closure.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawing, discloses a preferred embodiment thereof.

It will be readily seen that the present invention has wide application to a number of can body or other article forming or closing machines. In the accompanying drawing it is preferably exemplified as incorporated in the lifter plate of a closing machine of the multiple spindle type.

Referring to the drawing:

Figure 1 is a fragmentary sectional view of a seaming machine showing in cross-section a lifter plate mechanism embodying the instant invention;

Fig. 2 is an enlarged fragmentary sectional view showing the lifter plate mechanism and seaming rolls of Fig. 1 in a progressed position; and

Fig. 3 is a top plan view as taken substantially along the line 3—3 in Fig. 1.

The preferred illustration of the drawing shows a tubular can body A having outwardly turned seaming flanges B at each end. One end of the body has an end or bottom C loosely applied in preparation for a seaming operation. The body is supported at its open end on a lifter plate mechanism with the lower flange B resting on a floating ring member, associated with said mechanism, which holds the flange suspended over an

annular holding seat formed around the top of the plate proper.

The lifter plate or support mechanism is raised by cam action to move the assembled can body and cover into engagement with a chuck of a seaming head disposed in alignment with the lifter plate. This lifting action causes the floating member to recede into a pocket in the lifter plate mechanism and so delivered the flange into the annular seat referred to. During the seaming operation the can body and cover are tightly clamped between the chuck, the lifter plate, the floating member and annular outer ring which action securely holds the flange against creeping or spreading and thereby prevents distortion of the flange.

At the completion of the seaming operation the lifter plate or support mechanism is lowered to its original position and simultaneously the floating member is raised thereby ejecting the flange B from its seat so that the can may be readily removed.

Describing in more detail the preferred application of the present invention, the drawing discloses a can closing machine rotating turret or frame 11 (Fig. 1) having a recess 12 in which an annular bearing block 13 is carried for supporting a lifter plate mechanism or can support 14. This mechanism is of the usual construction employed in a machine of this character, for applying bottoms or tops to cans, and comprises a base plate 15 which is bolted to the top of a plunger body 16. The body is formed with a central depending boss 17 and a stem 18 which are movable in a bore 19 of a plunger sleeve 21, with the boss slidably engaging the upper inside walls of the sleeve. The sleeve 21 is mounted in the bearing block 13 and carries all the moving parts of the lifter plate mechanism.

The stem 18 extends down through the center of the sleeve 21, being guided near its lower end in a bushing 22, which threadedly engages the sleeve in the bore 19. The bottom end of the sleeve is enlarged inwardly and has a perforation 23 into which the lowermost end of the stem 18 is loosely held by a transverse pin 24. This looseness of fit is taken up by a spring 25 confined between the boss 17 and the bushing 22, surrounding the stem 18 and providing a yieldable backing for the plunger body.

The can body A with its loosely applied end C is carried on top of this lifter plate mechanism with the outer edge of its bottom flange B resting on top of one leg 31 of an L-shaped floating ring member. The other leg 32 of the ring is supported

above the base plate 15 in spaced relation thereto and rests on the top ends of a plurality of vertical headed pins 33 slidably mounted in aligned bores 34, 35 formed respectively in the base plate 15 and plunger body 16. The lower ends of the pins rest on the top of an adjustable annular L-shaped collar 36 which threadedly engages the upper end of the bearing block 13. The collar is provided with holes 37 which may be engaged, through a slot 38 formed in the plunger body 16, by the end of a suitable tool for threadedly raising or lowering the collar as desired.

The leg 31 of the floating ring is of the same outside diameter as that of the outer edge of the can flange B and the ring is disposed inside of an annular flange control collar 41 secured to the top of the base plate 15. The collar has an upwardly and downwardly extending inner surface and the top surface of this collar is flush with that of the leg 31 of the floating ring so that the can body may be readily moved or slid into position over the floating ring. It is for the purpose of keeping these surfaces on an even plane that the collar 36 is adjustable.

Inward of the floating ring the lifter plate proper 42 is disposed and is secured to the top of the base plate 15 by screws 43. The bottom of the plate 42 is cut away in an annular recess or pocket 44 to receive the leg 32 of the floating ring. The top of the lifter plate proper is flush with the ring and collar members 31, 41 and has its outer edge, adjacent the ring member 31 cut away to form an annular curved flange seat 46, having a contour to fit the contour of the flange B. The leg 31 of the floating ring supports the flange B directly above this seat 46 when a can body is first positioned on the lifter plate mechanism.

When in this position, the lifter plate mechanism and the can body and cover are raised by cam action. This action is effected by a peripheral cam 51 engaged by a cam roller 52 mounted on a shaft 53 carried in lugs 54 formed in the bottom of the plunger sleeve 21. The cam is formed on a stationary frame 55 and it is so shaped as to raise and permit lowering the sleeve and its associated parts as the lifter plate mechanism as a whole is carried around with the rotating turret 11.

As the sleeve rises it moves the plunger body 16 and parts carried thereon, away from the collar 36, permitting the pins 33 to slide down in the bores 34, 35 and hang supported by their heads as shown in Fig. 2. This leaves the floating ring 31 unsupported and it slides down within the collar 41 and carries the flange B down into the annular seat 46.

The sleeve 21 continues to rise and finally moves the can body and its cover C into engagement with an aligned chuck 57, which may form part of a suitably revolving seaming head, having seaming rollers 58 for interfolding and uniting the flanges of the can body and cover into a seam. The can body and its cover are thus tightly clamped between the chuck and the lifter plate mechanism by pressure exerted by the cam 51 and the yielding spring 25.

This application of pressure holds the can body and cover in position during the seaming operation and fully seats the lower flange B in its seat 46 with its peripheral edge in engagement with the inside of the collar 41, as shown in Fig. 2. In this position the flange B is fully supported or backed up by parts corresponding to its shape and thus held against creeping and protected against distortion.

After the seam between the can and cover flanges has been completed the lifter plate is positively lowered to its original position by a cam 61, which is formed in an extension of the stationary frame 55 inside and above the cam 51. The cam 61 is engaged by a roller 62 which is mounted on the shaft 53. As the lifter plate is lowered the pins 33 again engage the top of the collar 36 which pushes them up against the leg 32 of the floating ring, lifting the latter to its original elevated position, thereby ejecting the flange B from its seat and raising it flush with the top of the collar 41 and the plate 42 where it may be readily discharged or removed by hand or automatic feeding device.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. In a machine for operating upon flanged articles the combination of, a support for a flanged article, means for applying a pressure on one end of said article while on said support as an incident to performing an operation on the article, means for confining the flange at the other end of said article to protect it against distortion while said pressure is being applied, and receding means included in said support for permitting said flange to move into engagement with said flange confining means and for ejecting said flange from said confining means.

2. In a can closing machine the combination of, a support for a can body having an outstanding edge and a cover, means for applying a pressure upon said body and cover while on said support to secure said cover to said body, means extending around the outstanding edge of the can body for confining the other end of said body to hold it against distortion while said pressure is being applied, and reciprocating means included in said support for moving said end into and out of confined position.

3. In a can closing machine the combination of, a support mechanism for a flanged can body, means for applying a pressure on one end of said body while in said mechanism as an incident to securing an end closure thereto, means in said mechanism for engaging outside of the outstanding edge of the flange on the other end of said body to hold it against spreading while said pressure is applied, means in said mechanism for backing up the contour of said flange against distortion, and a floating member in said mechanism for moving said can flange into engagement with said flange edge engaging means and said flange contour backing up means.

4. In a can closing machine for a can having end flanges, the combination of a can body lifter mechanism, including a supporting plate, a floating member in said mechanism for supporting the flange of a can body flush with the top of said plate and for lowering said flange below said top, means for applying pressure on the other end of said body, and means in said plate for engaging outside of and supporting said lowered flange against spreading and distortion while pressure is applied at the opposite end of said body.

5. In a cam closing machine the combination of a seaming mechanism for securing an end clo-

sure to one end of a flanged can body, a lifter mechanism including a lifter plate for supporting the other flanged end of the can body and for clamping body and end between it and said seaming mechanism, a flange receiving seat in said plate conforming to the contour of said body flange, a member in said lifter mechanism having a surface extending upward and downward for confining the outside edge of said body flange and a movable member between said plate and said confining member for moving said body flange into and out of said seat, said seat and said confining member cooperating to prevent distortion of said body flange during the seaming operation.

6. In a flanged article supporting mechanism, in combination, a central supporting plate having a recess conforming to the contour of the flange of the article to be supported, an outer annular member spaced from said central plate and having an upwardly and downwardly extending surface for confining the edge of said flange and a reciprocating annular member between said plate and said outer member for moving said flange into and out of said recess, said recess and outer member cooperating to back up and confine said flange to protect it against distortion when an operating pressure is applied against article.

7. The combination of a lifter plate having a vertically movable floating ring for supporting the lower edge of a can body which is open at the bottom, a collar around said ring and within which the ring is slightly depressible, said collar acting to confine the outwardly directed edge of a can body which has depressed said ring, and a seaming mechanism arranged to operate on the upper end of such can body.

8. In a machine for applying covers upon flanged can bodies, the combination of mechanism for supporting a flanged can body; means for securing a cover on the unsupported end of the supported body and for simultaneously applying pressure on that end; said mechanism including means for backing up the preformed contour of the flange on the supported end of said body while leaving free the top of said flange, said mechanism further including means for protecting the edge surface of the flange against mushrooming while said pressure is applied, said support mechanism further including receding means for permitting said flange to be moved by said pressure into engagement with said backing-up means.

9. In a machine for applying covers upon flanged can bodies the combination of seaming mechanism for applying and securing can ends to said bodies, a support mechanism for the opposite open end of said flanged can body, and means included in said seaming mechanism for applying pressure longitudinally of said body while on said support mechanism, said support mechanism including an outer wall which surrounds and engages the extreme outer peripheral edge of the flange on the supported end of said body, and an inner wall seat shaped to conform to the shape of said flange, whereby to preserve the preformed contour of said flange and to prevent outward movement and distortion thereof while said pressure is applied.

JOSEPH C. HOLLOWAY. 35