

Oct. 30, 1928.

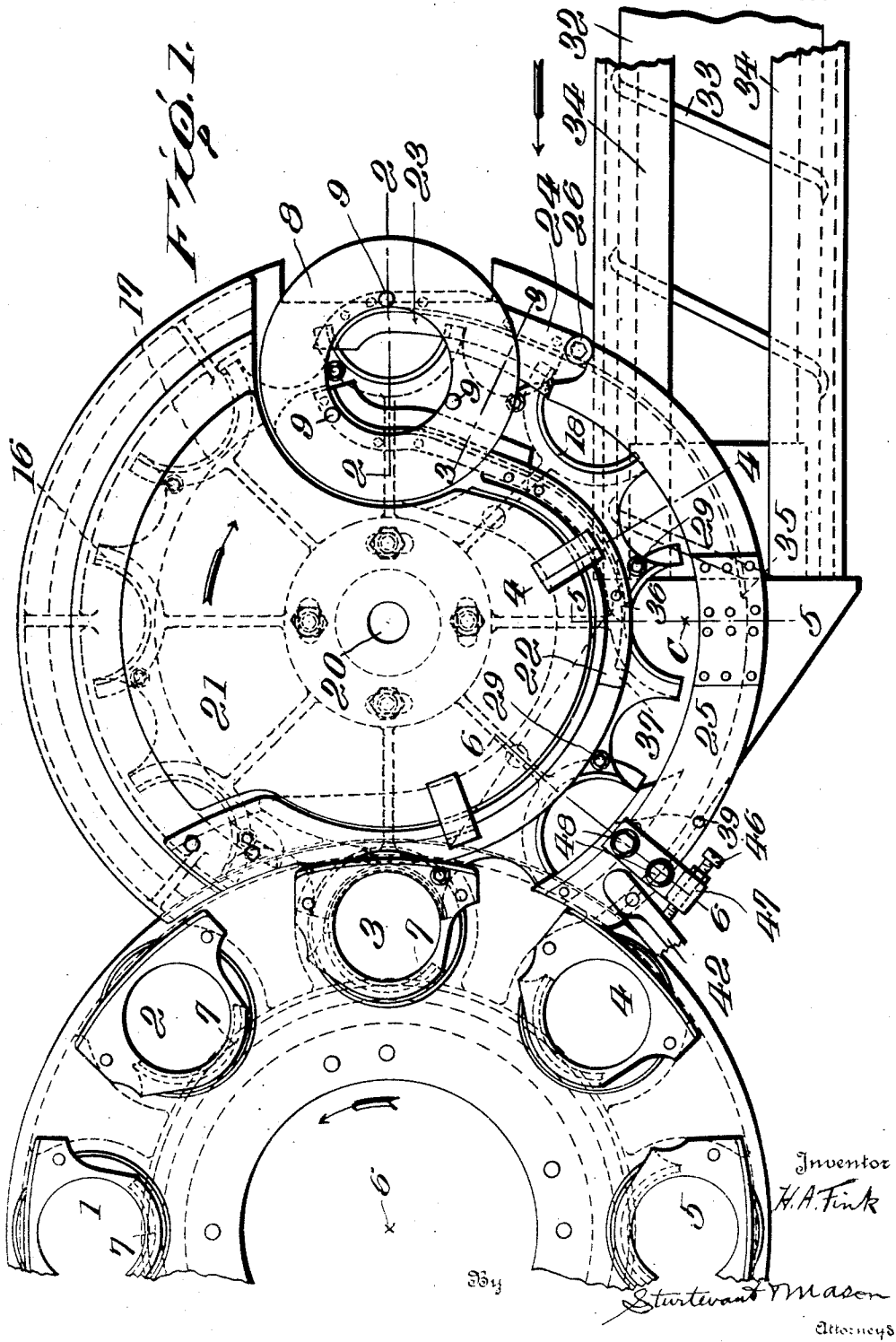
H. A. FINK

1,690,002

CAN END FEEDING MECHANISM FOR CLOSING MACHINES

Filed May 18, 1926

4 Sheets-Sheet 1



Oct. 30, 1928.

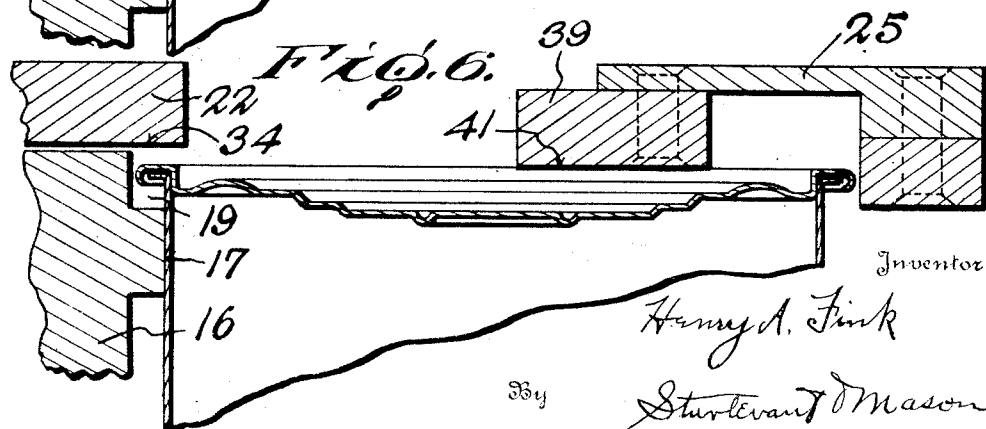
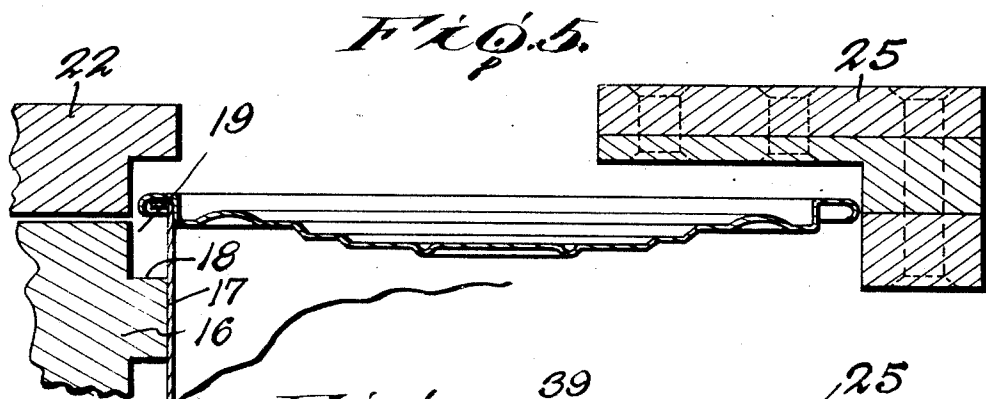
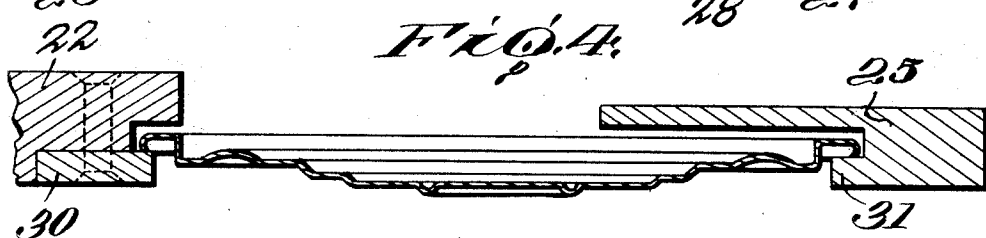
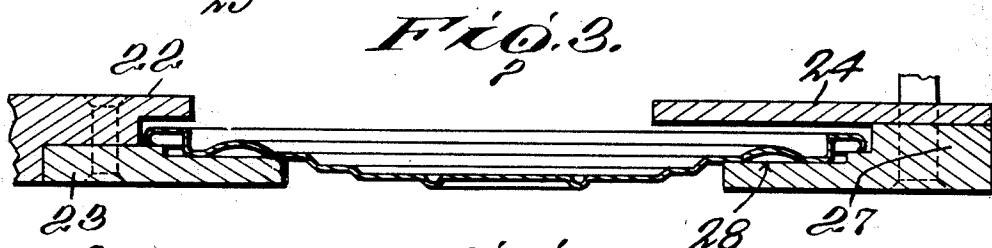
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4 Sheets-Sheet 2



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FIG. 8.

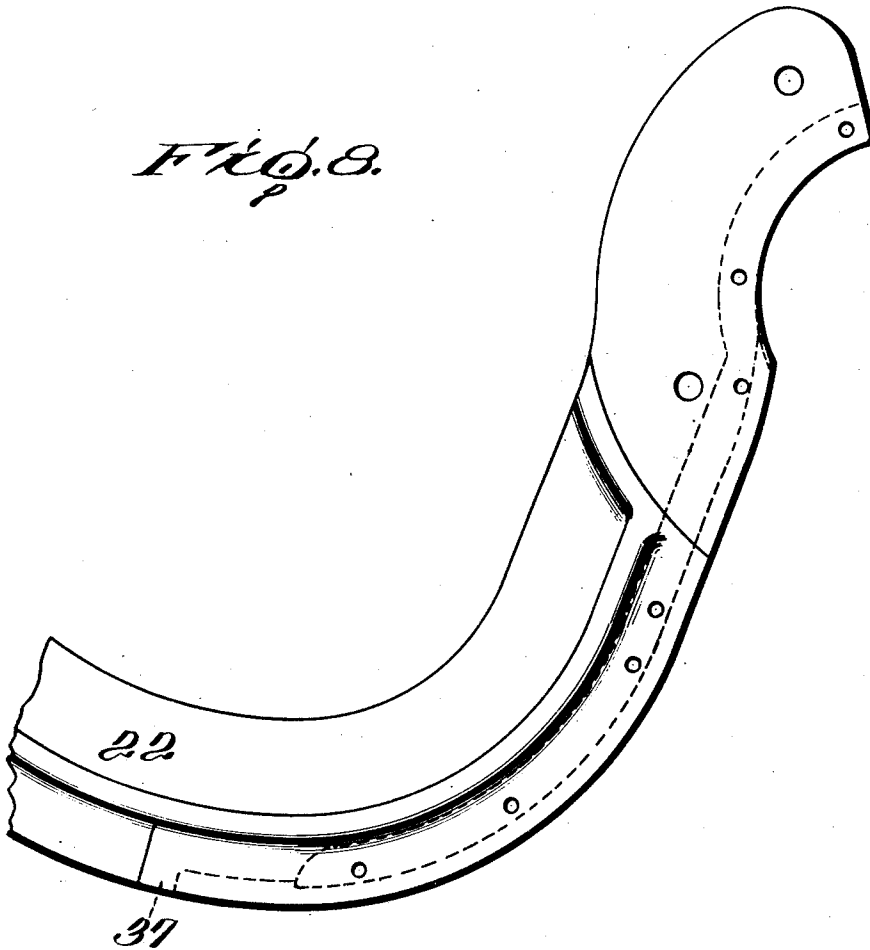
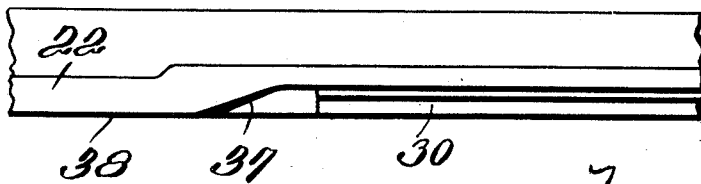


FIG. 9.



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Oct. 30, 1928.

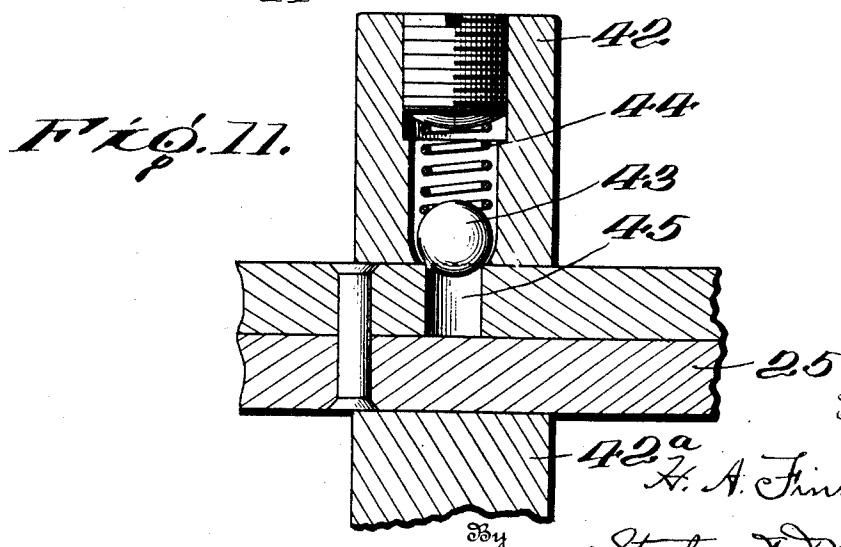
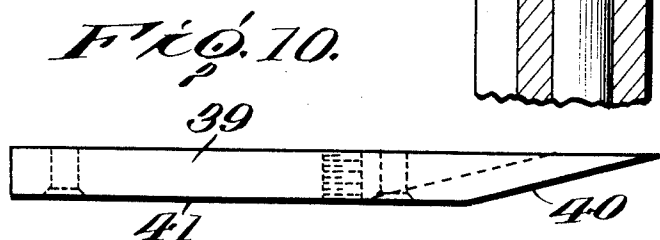
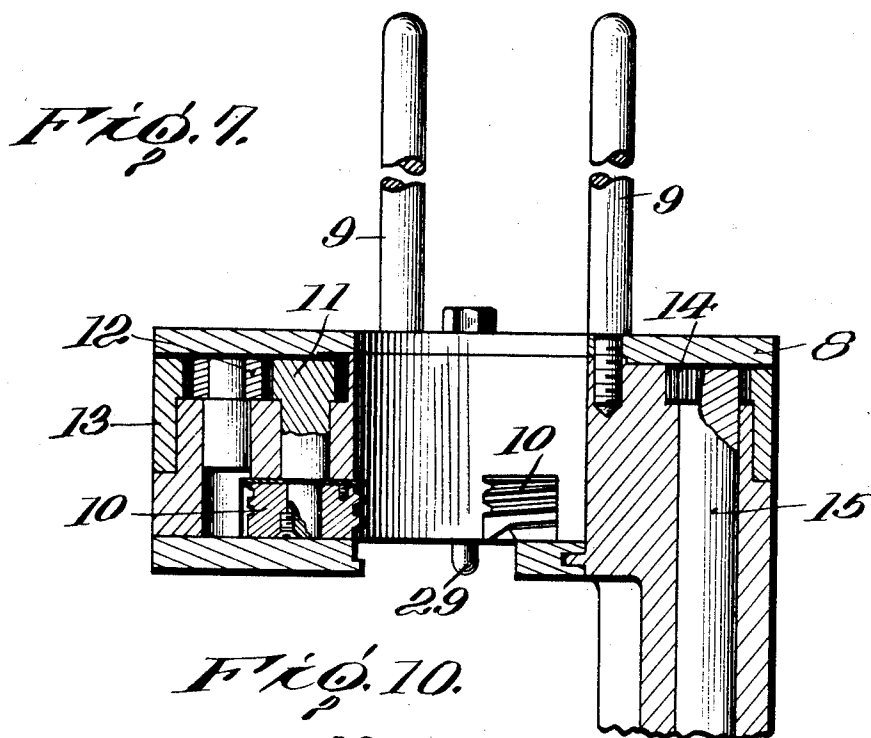
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CAN END FEEDING MECHANISM FOR CLOSING MACHINES

Filed May 18, 1926

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE.

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CAN-END-FEEDING MECHANISM FOR CLOSING MACHINES.

Application filed May 18, 1926. Serial No. 109,899.

The invention relates to new and useful improvements in a can end feeding mechanism for a closing machine, and more particularly to a can end feeding mechanism for a closing machine having a plurality of continuously traveling closing stations.

An object of the invention is to provide a can end feeding mechanism for conveying can ends from a stack and placing the can ends on the filled cans, wherein the can ends as they are transferred from the stack on to the filled cans, are supported solely at the outer edges thereof, so that the inside portion of the can end will not become contaminated through sliding contact with a part of the machine.

A further object of the invention is to provide a machine of the above type wherein the supporting ledges for the can end are cut away so as to permit the can end supported at the edge portions only to drop directly on to the filled can.

A further object of the invention is to provide a machine of the above type wherein the can end feeding mechanism includes a rotating turret having half molds for rounding up the filled can and for centering the can end over the filled can.

A still further object of the invention is to provide a machine of the above type wherein a can end is taken from beneath the stack by a lug or dog which is substantially flush with the inner wall of the half mold of the turret, so that said can end is positioned relative to the half mold as it leaves the stack for proper seating in the filled can when said filled can is delivered to the half mold of the can end feed turret.

A still further object of the invention is to provide means for positively forcing the can end down on to the filled can, provided it does not drop properly by gravity.

A still further object of the invention is to provide means for forcibly inserting the can end in the can body and holding the same therein until the filled can and can end seated therein are positioned in the half mold of the can end feed turret and the closing machine turret.

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 one embodiment of the invention—

Figure 1 is a plan view showing more or less diagrammatically a portion of the machine embodying the improvements;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1, the turret being omitted;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1, the turret being omitted;

Fig. 4 is a sectional view on the line 4—4 of Fig. 1, the turret being omitted;

Fig. 5 is a sectional view on the line 5—5 of Fig. 1, also showing a portion of the rotating turret;

Fig. 6 is a sectional view on the line 6—6 of Fig. 1, with the turret and the bracket for the stop screw limiting the movement of the front guide roller omitted;

Fig. 7 is a detail in section through the cover stack showing the cover feed screws and the position of the lug or dog carried by the turret which engages the can ends for moving the same forward;

Fig. 8 is a plan view on an enlarged scale of a portion of the inner guide rail, and

Fig. 9 is a side view of a portion of this inner guide rail.

Fig. 10 is a detail in side view showing the section carried by the outer rail which engages the can end and holds the same seated in the can body.

Fig. 11 is a sectional view through the yielding latch means for holding the guide rail in operative position.

The invention is directed to a can end feed for a multiple spindle closing machine. In the patent granted to J. C. Taliaferro and A. L. Kronquest, May 4, 1926, No. 1,583,627, there is shown a multiple spindle closing machine which includes eight stations traveling in a continuous path which operate in succession to form a double seam between the can end and the can body. There is also shown a can end feed turret and a stack for the can ends. There is also shown in this patent a feed drum for feeding the filled cans and placing said filled cans in the half molds of the can end feed, which in turn moves the filled can into the closing machine. The present machine is directed to a machine of the type shown in said patent. The improvement in the present application is directed entirely to the can end feed, or rather to the means for

taking the can end as it is dropped from the stack and placing the can end on the filled can body. The can ends are released from the stack by rotating screws, and as they are released, they drop on to supporting ledges directly beneath the stack. There is a ledge at each side of the stack with a wide space between the ledges. The rotating turret with the half molds therein for receiving the filled cans and for holding the can ends centered over the filled cans, travels beneath this stack. Adjacent each half mold which is to receive a filled can, there is a lug or post which passes between the ledges and engages the can end which drops on to the ledges. These ledges only extend for a short distance beneath the stack, but are in line with two spaced supporting and guiding rails on to which the can end is moved by the lug traveling with the turret. These rails are provided with relatively small ledges which extend underneath the can end for supporting the same, so that the can end is only supported by the flanged portion of the end. In other words, the under side of the can end does not in any way make contact with these supporting ledges of the guide rails. The drum feed and the guides associated therewith are arranged tangentially to the rotating can end feeding turret, and are so disposed that a filled can is delivered to the half mold of the turret and properly nested in the half mold while it is still on its straight line path of travel. Just as the filled can is seated in the half mold of the turret, the can end drops on to the filled can. This is accomplished by cutting away the ledges which support the can and letting the end fall by gravity. The guide rails extend beyond the point where the can end is released, and are provided with means for forcibly moving the can end down on to and seating the same in the filled can body, provided said can end does not drop by gravity. The invention broadly may, therefore, be said to consist in the supporting and handling of the can end by devices which engage the flange of the can end only as it is moved from beneath the stack to a point where it may be placed on the filled can body, then the releasing of the can end so that it will drop by gravity on to the filled can body while the filled can is still on its straight line of travel, and the positive forcing of the can end into the filled can and the holding of the can end seated as the filled can passes along its curved path of travel into the closing machine.

Referring more in detail to the drawings, the invention is shown as applied to a can end feeding mechanism for a multiple spindle machine, which is provided with a series of closing units indicated at 1, 2, 3, 4 and 5 in Fig. 1 of the drawings. It is understood that there are three more units in this clos-

ing machine. The closing machine rotates about a center indicated at 6. In connection with each closing units, there is a half mold which is indicated in dotted lines at 7 in Fig. 1. This closing machine is of the type shown more in detail in the patent granted to A. L. Kronquest and J. C. Taliaferro, August 3, 1920, No. 1,348,650, and further detail description thereof is not thought necessary. Associated with this closing machine is a can end feeding mechanism which includes a stack holder 8 provided with a series of posts 9 in which the stacked ends are placed. The can ends pass down into the base portion of the stack holder, and rest on feed screws 10. Each feed screw carries a gear 11 which meshes with a gear 12, and the gears 12 in turn mesh with an internally geared ring 13. This internally geared ring 13 is rotated by a gear 14 carried by a shaft 15. The shaft 15 is connected to the main driving shaft through devices which include a clutch member, and this clutch member is controlled by the filled cans as they pass into the machine. Whenever a can passes along the supporting guides therefor, it will operate the clutch so as to set into motion the gears and the feed screws for releasing the can end. If there is no filled can to be closed, then the clutch is not operated and no can end is released. This feeding mechanism for releasing the can ends from the stack, whenever there is a filled can to be closed, forms no part of my invention, but is shown, described and claimed in an application filed by A. L. Kronquest, July 5, 1923, Serial No. 649,519 and patented December 15, 1926, No. 1,610,862.

Associated with the stack holder and closing machine is a rotating turret 16. This rotating turret 16 is provided with a series of half molds 17. There are eight half molds in the can end feeding turret, one for each seaming unit in the closing machine. Each half mold is semi-circular in cross section, and is provided with a radially projecting ledge 18. It is this ledge which engages the can body for the centering of the can body and the rounding up of the same in the closing machine. The turret above the ledge 18 is cut away, as indicated at 19 in Figures 5 and 6. This ledge 18 is not for the purpose of supporting the can end, but is for the purpose of positioning the filled can body and the rounding up of the filled can body in cooperation with the half molds in the closing machine as has been noted above. The turret 16 is mounted so as to rotate about a center 20. Above the rotating turret there is a fixed plate 21. Bolted to this fixed plate 21 is an inner guide rail 22 which is shown more in detail in Figures 8 and 9 of the drawings. The stack holder 8 is screwed to this inner guide rail, and the inner guide rail is in turn bolted to the fixed plate 21. Secured to this inner guide rail 22 is an inner supporting

member 23 which forms a supporting ledge for the can ends when they are released from the stack. Mounted on the frame which supports the rotating turret 16 is an outer guide rail 24. This outer guide rail 24 is provided with a hinged extension 25. Said extension is hinged at 26 to the main portion 24 of this outer guide rail. Attached to the portion 24 of the outer guide rail is a member 27 which provides a supporting ledge 28. The supporting ledge 28 is spaced from the supporting ledge 23, and the can ends as they are released from the stack by the feed screws drop on to these supporting ledges. Mounted on the turret adjacent each half mold is a lug or dog 29. This lug is so positioned on the turret as to pass between the ledges 23 and 28. The lug is of such height as shown in Fig. 7, so that the upper end of the lug while passing beneath the base of the stack holder extends above the lower portions of the feed screws which releases the can ends, and permits the same to drop on to the supporting ledges 23 and 28. This insures the can end being moved along said ledges, and prevents it from riding up over the lug or dog 29. The ledges 23 and 28 terminate just beyond the extreme edge of the base of the stack holder. Mounted on the inner guide rail 22 is a supporting bar 30. This supporting bar 30 is in line with the supporting ledge 23 so that the can end as it moves along the ledge will pass from the ledge on to this supporting rail 30. The hinge member 25 is provided with a supporting lip 31. The can end will pass off from the ledge 28 on to this supporting lip 31.

The lug or dog 29 is set so that its forward surface is substantially in line with the surface of the half molds so that the can end bearing against said lug or dog, and pushed along these supporting guides, is held directly above the half mold. The portion of the supporting rail 30 and the portion of the lip 31 which holds the can end, and along which the can end is slid by the dog 29, are both very narrow, and extend only a slight distance underneath the can end, so that the can end is substantially supported by the flange of the can end.

Prior to this invention, can ends have been released from a stack and slid along the support therefor, which support engaged the under side of the can end. The support was likely to get covered with grease or other foreign matter, and as the end was slid along the same, it would take up this foreign matter and thus contaminate the contents of the can which was closed by the end. In the present can end feed, however, the end is so supported that the under surface of the can end does not slide along any metal part substantially after it leaves the stack holder, and thus it is that the under surface of the can end is kept free from foreign matter which

might contaminate the contents of the filled can. The can end feed turret rotates in the direction of the arrow in Fig. 1, and the multiple spindle closing machine also rotates in the direction of the arrow. The filled cans are fed into the machine by the feed drum 32 having a spiral thread 33 formed thereon. The cans are slid along supporting rails 34, 34 and the thread 33 projects a sufficient distance above these rails in order to engage and move the cans along the supporting rails in the direction of the arrow in Fig. 1. This is a straight line of travel. When the filled can reaches the point indicated at C (Fig. 1), it has been placed in the half mold of the can end feeding turret. At this point, the can end is released, so as to drop on to the filled can. This is accomplished by cutting away the lip 31 at the point 35, and also ending the supporting ledge formed on the rail 30, which terminates at the point 36 in Fig. 1. At this point, the support for the can end ceases, so that it will drop by gravity. It will be understood, of course, that only a very small portion of the arc of the flange rests on the rail, and when this rail is cut away, the end can drop. The upper portion of the half mold has proper clearance so as to permit the can end to drop freely, and to be properly centered over the filled can which is nested in the half mold of the can end feed turret. It sometimes happens that the can ends do not drop by gravity as they should, and in order to force the can end down, if for any reason it does not drop, the guide rail 22 is provided with an inclined portion 37 (see Fig. 9). This will engage the can end and force it downwardly. This inclined portion 37 extends into a horizontal portion 38 which extends throughout the remainder of the length of the guide rail 22. This horizontal portion 38 is above the can end which rests on the filled can body. To insure that the can end will be forced into the can body, the outer rail 25 is provided with a section 39 which is shown in detail in Fig. 10. This section has a tapered portion 40 leading to a horizontal portion 41. This section 39 carried by the outer rail 25 is shown in Fig. 6 of the drawings. It will be noted that this section engages the can end and forcibly holds the can end seated in the filled can body as shown in Fig. 6. Thus it is that the can end is held seated in the can body until the half mold of the can end feed turret and the half mold of the closing machine receive the filled can.

From the above it will be apparent that the can ends are released one at a time from the stack whenever there is a filled can to be closed, and that these can ends are positively carried along the supporting ledges which engage the can end only for a short distance beneath the outer edges. It will also be apparent that when the can end is prop-

erly positioned over the filled can body, that said can end will be released so that it may drop on to the can body, and means is provided for positively forcing it down, if for any reason it does not fall by gravity. It will also be apparent that means is provided for forcibly seating the can end in the filled can body. Of course, a suitable guide rail is provided for the filled can body so as to hold it nested in the half mold of the can end turret.

As above noted, the outer guide rail 25 is hinged at 26 so that it may swing about a vertical axis, if for any reason the machine clogs and it becomes necessary to remove the filled cans or can ends from the can end feed turret. The free end of this guide rail 25 swings beneath the bracket arms 42, and may be held in closed position by a suitable yielding latch, such as shown in Fig. 11 of the drawings. The latch in this figure, is shown as consisting of a ball 43 which is spring pressed downwardly by means of a spring 44. This causes the ball to seat in an opening 45 in the guide rail 25. The bracket 42 has a portion 42^a extending beneath the arm so as to prevent the same from being sprung downwardly. Mounted on the guide rail 25 is a stop screw 46. This stop screw 46 is carried by a bracket 47 attached to the guide rail 25, by bolts 48, 48. The stop screw 46 engages the bracket 42, and this limits the inward movement of the outer guide rail, and provides for a slight adjustment of the same so as to prevent any possible positioning of the outer guide rail so as to interfere with the free sliding movement of the can end.

It is obvious that minor changes in the details of construction may be made without departing from the spirit of the invention as set forth in the appended claims.

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

1. A filled can closing machine comprising a seaming unit, means for delivering the filled cans to the seaming unit, a stack holder for the can ends, guides extending from the base of said stack holder over the path of travel of the filled can, said guides having ledges extending underneath the can end and supporting said can end by the edge portions only thereof, means for moving the can end along said supporting ledges, said supporting ledges being cut away at a point directly over the path of travel of the filled can whereby the can end sliding along said edges will drop on to the filled can.

2. A filled can closing machine comprising a seaming unit, means for delivering the filled cans to the seaming unit, a stack holder for the can ends, guides extending from the base of said stack holder over the path of travel of the filled can, said guides having ledges

extending underneath the can end and supporting said can end by the edge portions only thereof, means for moving the can end along said supporting ledges, said supporting ledges being cut away at a point directly over the path of travel of the filled can whereby the can end sliding along said edges will drop on to the filled can, and means for assuring that the can end will be moved down on to the filled can.

3. A filled can closing machine comprising a seaming unit, means for delivering the filled cans to the seaming unit, a stack holder for the can ends, guides extending from the base of said stack holder over the path of travel of the filled can, said guides having ledges extending underneath the can end and supporting said can end by the edge portions only thereof, means for moving the can end along said supporting ledges, said supporting ledges being cut away at a point directly over the path of travel of the filled can whereby the can end sliding along said edges will drop on to the filled can, means for assuring that the can end will be moved down on to the filled can, and means for engaging the can end and seating the same in the filled can after it is released from said supporting ledges and for holding said can end seated until the filled can and seated can end are delivered to the seaming station.

4. A filled can closing machine comprising a plurality of bodily traveling seaming units, a half mold associated with each seaming unit for engaging the can body, a rotating turret having a series of half molds adapted to cooperate with the half molds of the seaming units in the rounding up of the can bodies, said half molds having means for maintaining the can end centered on the can body, means for delivering the filled cans to the half molds in the rotating turret, a stack holder for the can ends associated with said rotating turret, and beneath which the rotating turret passes, stationary guides extending from said stack holder around over the path of travel of said filled can, said guides being curved about the center of the rotating turret, each guide having a supporting ledge for the can end which extends underneath the can end and supports the same by the edge portions only, and means carried by the rotating turret for moving the can end along said stationary guides, said ledges being cut away directly over the path of travel of the can whereby said can end drops by gravity on to the filled can.

5. A filled can closing machine comprising a plurality of bodily traveling seaming units, a half mold associated with each seaming unit for engaging the can body, a rotating turret having a series of half molds adapted to cooperate with the half molds of the seaming units in the rounding up of the can bodies, said half molds having means for maintaining the can end centered on the can

body, means for delivering the filled cans to the half molds in the rotating turret, a stack holder for the can ends associated with said rotating turret, and beneath which the rotating turret passes, stationary guides extending from said stack holder around over the path of travel of said filled can, said guides being curved about the center of the rotating turret, each guide having a supporting ledge for the can end which extends underneath the can end and supports the same by the edge portions only, means carried by the rotating turret for moving the can end along said stationary guides, said ledges being cut away directly over the path of travel of the can whereby said can end drops by gravity on to the filled can, means for engaging the can end after it is placed on the filled can for seating the can end in the filled can, and for maintaining the can end seated until the filled can is delivered by the half mold of the rotating turret to the half mold of the seaming unit which is to close the can.

6. A filled can closing machine comprising a plurality of bodily traveling seaming units, each being provided with a half mold, a rotating turret provided with half molds adapted to cooperate with the half molds of the seaming units, a feed drum having a thread thereon for delivering the filled can to a half mold on the rotating turret, cooperating guides for directing the filled can in a straight line of travel until it is received by the rotating turret, and for then directing said filled can in a curved path of travel into the closing machine, a stack holder for the can ends, stationary guides associated with the stack holder and curved to conform to the path of travel of the turret and extending to a position over the path of travel of the filled can, said guides having supporting ledges for the can ends which engage and support the can ends at the edge portions only, a lug on the rotating turret adjacent each half mold, said lug being adapted to engage a can end and move the same along said supporting ledges, said supporting ledges being cut away at a point over the path of travel of the filled can whereby the can end drops by gravity on to the filled can while said filled can is on its straight line of travel.

7. A filled can closing machine comprising

a plurality of bodily traveling seaming units, each being provided with a half mold, a rotating turret provided with half molds adapted to cooperate with the half molds of the seaming units, a feed drum having a thread thereon for delivering the filled can to a half mold on the rotating turret, cooperating guides for directing the filled can in a straight line of travel until it is received by the rotating turret, and for then directing said filled can in a curved path of travel into the closing machine, a stack holder for the can ends, stationary guides associated with the stack holder and curved to conform to the path of travel of the turret and extending to a position over the path of travel of the filled can, said guides having supporting ledges for the can ends which engage and support the can ends at the edge portions only, a lug on the rotating turret adjacent each half mold, said lug being adapted to engage a supporting ledge being cut away at a point over the path of travel of the filled can whereby the can end drops by gravity on to the filled can while said filled can is on its straight line of travel, and means for engaging the can end and seating the same in the filled can body and holding the can end seated during its travel in a curved path into the closing machine.

8. A filled can closing machine including a can end feed comprising a stack holder for the can ends, means for releasing the can ends one at a time when there is a filled can to be closed, a rotating turret having half molds adapted to pass underneath said stack holder, stationary guides associated with the stack holder and curved to conform to the path of travel of the half molds on the rotating turret, said guides being spaced from each other and having supporting ledges which engage the can end at the edge portions only, a lug associated with each half mold on the traveling turret, said lug extending upwardly between the guides for the can end to a point above the lower portion of the can end releasing devices, so that the can end will be engaged by the lug and be moved forward on said supporting ledges.

In testimony whereof, I affix my signature.

HENRY A. FINK.