May 7, 1929. J. D. REIFSNYDER 1,711,540

APPARATUS FOR CLOSING RECEPTACLES

Filed July 9, 1925 2 Sheets-Sheet 1

Fig. 2

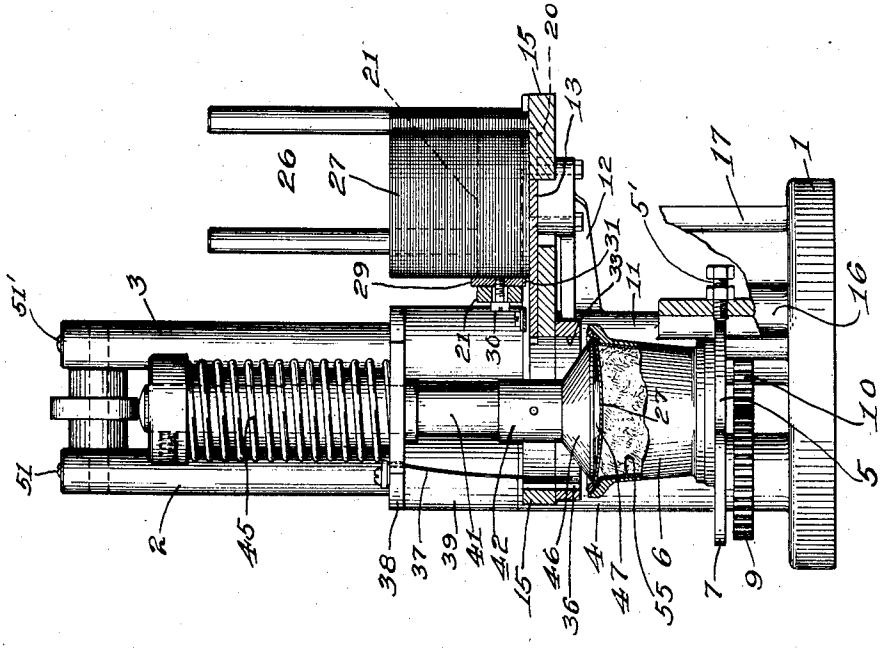
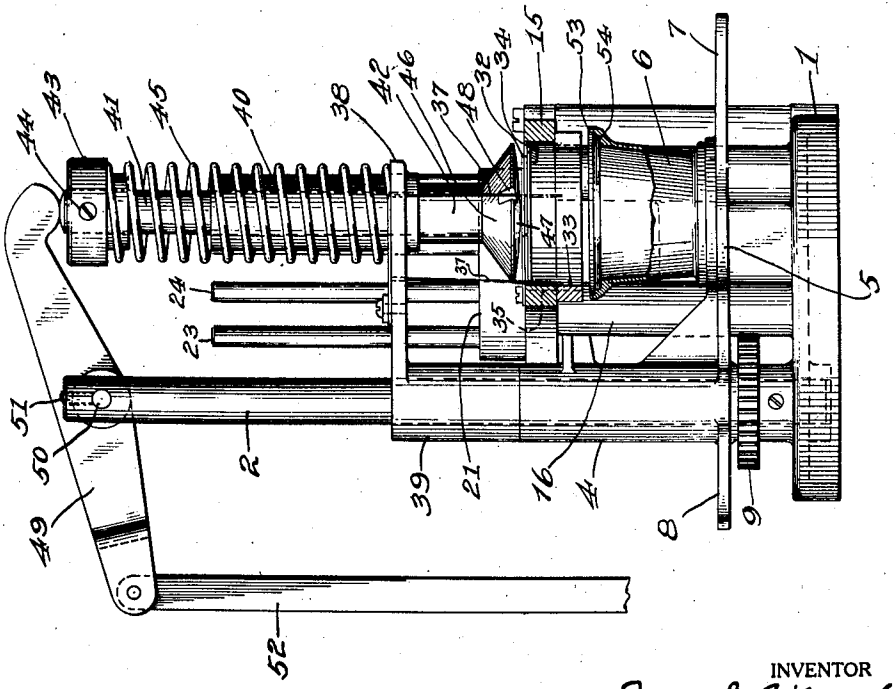


Fig. 1



INVENTOR
James D. Reifsnyder
BY
Ward Crosby & Smith
his ATTORNEYS

May 7, 1929. J. D. REIFSNYDER 1,711,540

APPARATUS FOR CLOSING RECEPTACLES

Filed July 9, 1925 2 Sheets-Sheet 2

Fig. 4

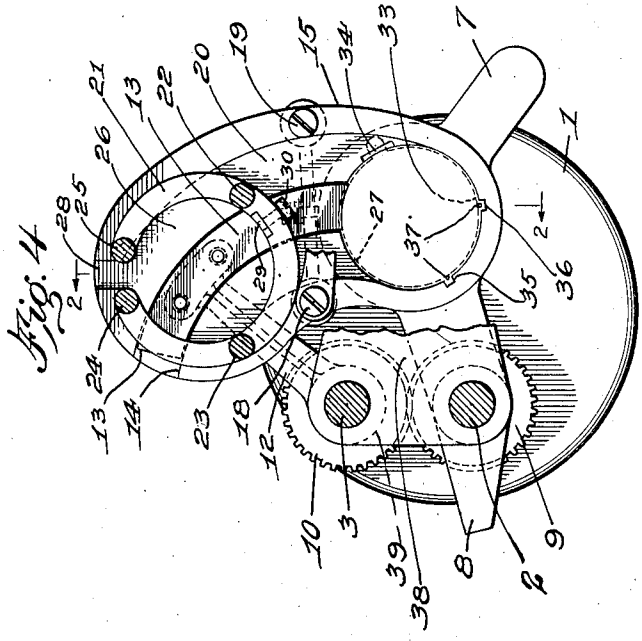


Fig. 6.

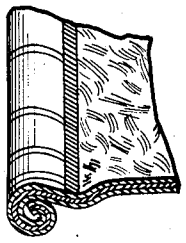


Fig. 5

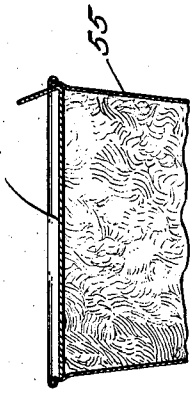
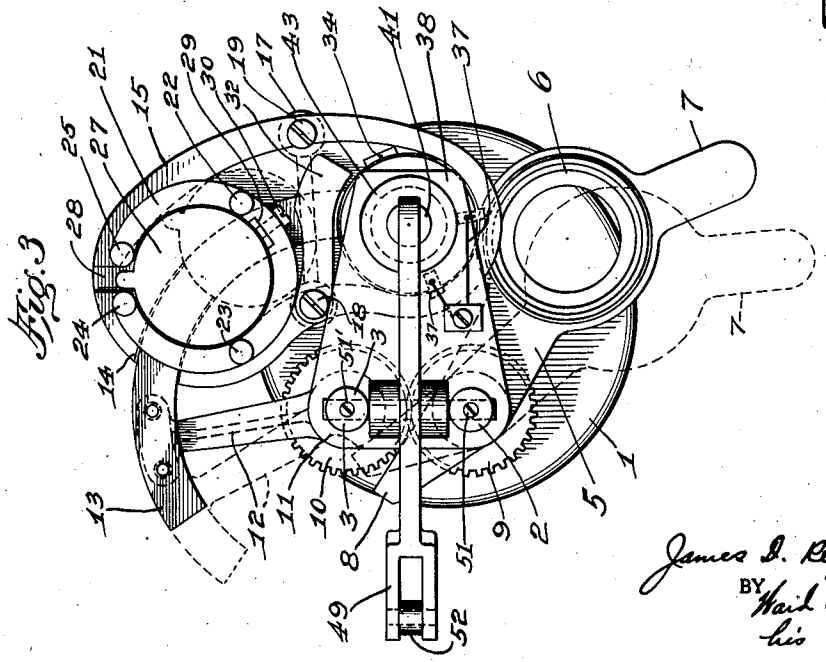


Fig. 3



INVENTOR
James D. Reifsnyder
BY Wall Crosby & Smith
his ATTORNEYS

Patented May 7, 1929. 1,711,540

UNITED STATES PATENT OFFICE.

JAMES D. REIFSNYDER, OF BROOKLYN, NEW YORK, ASSIGNOR TO TULIP CUP CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

APPARATUS FOR CLOSING RECEPTACLES.

Application filed July 9, 1925. Serial No. 42,407.

This invention relates to the apparatus for inserting closure means in position in open mouth containers; and more particularly such containers as those of the general character described in U. S. Letters Patent 1,310,698.

One of the objects of the invention is to provide a durable, and inexpensive machine which is easy to operate and will not get out of order.

Further objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawings illustrating by way of example, the preferred embodiment of the apparatus.

The invention consists in the novel features, arrangements, construction and combination of the parts of the apparatus and means hereinafter described in accordance with certain preferred embodiments thereof, and the invention will be more particularly pointed out in the appended claims.

Referring to the drawings:—

Fig. 1 is a side elevation of the machine with certain parts broken away.

Fig. 2 is a front elevation of the machine with parts broken away, more or less along the line 2—2 of Fig. 4.

Fig. 3 is a plan view of the machine.

Fig. 4 is a plan view with certain parts removed and other parts in section.

Fig. 5 is a section showing a container with its cap in position, and

Fig. 6 is an enlarged section of a portion of Fig. 5.

Referring to the drawings, and more particularly to Figs. 1 and 2; secured to the base 1 are two upright rods 2 and 3 fixedly held in the base 1. A sleeve 4 is pivoted axially, on the rod 2 and adapted to be oscillated thereabout. An arm 5 is rigidly attached to the sleeve 4 and a container receptacle 6 is carried thereon; the tip 7 acting as a handle to oscillate the receptacle about the rod 2 as an axis. A stop 8 is rigidly attached to the sleeve 4 and extends in the opposite direction from the arm 5, and is adapted to limit the outward swing of the receptacle 6 by abutment with the sleeve 11, to be described following. An adjustable stop 5', carried by an upright extension of the base 1, is adapted to limit the inward swing of the arm 5. A spur gear 9 is attached to the lower end of the sleeve 4, adapted to oscillate therewith, and is in mesh with a cooperating spur gear 10. The spur gear 10 is attached to and adapted to rotate with the lower end of a sleeve 11 (see also Fig. 3) which is pivoted axially on the rod 3 and adapted to be oscillated thereabout. An arm 12 is rigidly attached to the sleeve 11 which carries attached to its outer end an arcuate feed shoe 13 slidably seated in an arcuate guide slot 14 formed in the table 15 which is supported from the base 1 by suitable means such, for example, as the legs 16 and 17 to which the table is attached by means of the machine screws 18 and 19.

The table 15 (Figs. 3 and 4) is provided with an arcuate recess 20, having semicircular ends, and is of a depth substantially equal to the thickness of a container cap. On one end a ring 21 is secured and vertical guide rods 22, 23, 24 and 25 are seated therein and form together with the ring 21 a magazine 26 adapted to contain a stack of caps (Fig. 2) such as 27. A portion is cut out of the ring as at 28 to accommodate the cap tab (Fig. 3). A vertically adjustable insert 29 is seated in a recess formed in the inner periphery of the ring 21, and is held in the desired position by means of a screw 30; and provides an adjustable means for limiting the space 31 between the insert 29 and the bottom of the recess 20 to the exact thickness of a cap. A flat spring plate 32 (Fig. 3) is provided to hold the caps down against the bottom of the recess 20 as they are successively fed from the magazine 26.

The other end of the recess 20 is provided with a hole 33 of a diameter slightly larger than the diameter of the cap used, and a recess 34 is formed adjacent the periphery of this hole to accommodate the cap tab (see Fig. 4). It will be noted from Figs. 3 and 4 that the recess 34 extends outwardly from and is contiguous with the hole 33, the outward extension of this recess from the hole 33 being greater than the thickness of the cap tab and less than the length or outward extension of the tab from the cap body. Two slots 35—36 are provided and extending therein are the ends of a spring wire 37, which is attached to the guide support 38 (Figs. 1

and 2) which is provided with a bearing portion 39 engaged by the rods 2 and 3 and suitably fastened thereto.

A bearing sleeve 40 is formed rigid with the support 38. (Fig. 1.) Slidably mounted therein is a plunger stem 41 provided with a spacing collar 42 situated beneath the support 38 and adapted to abuttingly engage the lower end of the bearing sleeve 40 to thereby limit the upward movement of the plunger; and a collar 43 is attached to the upper end of the plunger stem 41 by means of a set screw 44. A helical compression spring 45 is positioned between the support 38 and the collar 43 and surrounds the sleeve 40 thereby normally holding the plunger in a raised position. A plunger head 46 is formed on the lower end of 42 and is provided with a convex lower face 47; and is also provided with slots 48 formed in its periphery to accommodate the ends of the wire 37. A pin or key (not shown) is provided for preventing the rotation of the plunger in its bearings, as it is well understood in the art.

A lever 49 (Figs. 1 and 2) is pivoted, intermediate its ends, to a spindle pin 50 which is supported in suitable slots in the upper ends of the rods 2 and 3 and is held in position by suitable fastening means such as the screws 51—51′. One end of the lever arm 49 lies over the upper end of the plunger stem 41, and the other end is pivotally connected to the pitman 52 which may be attached to a foot treadle or other suitable control means.

The receptacle 6 is provided with an internal annular groove 53 (Figs. 1 and 2) adapted to receive the rim of a container. Adjacent to and below this groove 53 a second internal annular groove 54 is provided. The groove 54 is preferably undercut from the lower marginal portion of the groove 53 and its diameter is less than that of the groove 53 but of substantially greater diameter than the wall of the receptacle immediately adjacent thereto. It will therefore be seen that a container placed in the receptacle (Fig. 2) will be supported peripherally by the upwardly extending walls of the receptacle 6, and will be supported vertically by the internal annular groove 53.

Operation.

A stack of caps 27, which are preferably formed as smooth flat discs, is placed in the magazine 26 (Figs. 3 and 4). The handle 7 is grasped and the arm 5 is pulled outwardly thereby swinging the receptacle 6 outwardly as shown in the dotted position in Fig. 3. This movement of the handle 7 and arm 5 imparts a rotary motion to the gear 9 which in turn moves the gear 10 and arm 12 to thereby swing the feed shoe 13 outwardly. A container body such as 55 (Fig. 5) formed of flexible material, is now inserted in the receptacle 6 with the rim of the container resting in the interior annular groove 53 and the container wall supported peripherally by the receptacle wall. The handle 7 and arm 5 are now swung inwardly; thereby simultaneously moving the container into vertical alignment beneath the hole 33, and moving the feed shoe 13 to thereby feed the lowermost cap 27 forward along the arcuate recess 20 and against the ends of the spring wire 37 which acts to resiliently hold the cap over the hole 33 (Fig. 4). The plunger is now depressed, against the action of the spring 45 (Fig. 2), by raising the treadle rod 52. As the convex face 47 of the head 46 moves downwardly it pushes the cap through the hole 33. The periphery of the cap then comes into contact with the rim of the container and as the head 46 continues to move downwardly the cap is slightly "dished"—which, together with the yield of the container rim, allows the cap to pass down until the annular marginal portion between the grooves 53 and 54 is reached; here the cap is further "dished"—as shown in Fig. 2, thereby decreasing the diameter. The plunger continues to force it down until that portion of the flexible wall of the container lying over the groove 54 is forced outwardly into the groove and the lower shoulder of the groove 54 is reached, at which instant the plunger head 46 is raised.

The receptacle 6 is now swung outwardly and the container removed. It will be seen that the cap 27 is now seated in an annular groove which has been formed just below the container rim; and the disc has practically returned to its normal shape in so doing thereby seating itself more firmly in the groove beneath the container rim.

Having thus described my invention with particularity with reference to the preferred method of carrying out the same and in connection with the preferred apparatus for carrying out the same, it will be obvious to those skilled in the art, after understanding my invention, that other changes and modifications may be made therein without departing from the spirit and scope of my invention, and I aim in the appended claims to cover such changes and modifications as are within the scope of the invention.

What I claim is:

1. In a capping machine, the combination of a table provided with a hole through which a plunger is adapted to pass and a portion adapted to hold a stack of caps, a cup shaped container receptacle provided with an annular interior groove adjacent the mouth and an undercut annular interior groove of smaller diameter beneath said first groove pivotally mounted to be swung horizontally into vertical alignment with and beneath said hole, means for feeding one of said caps over said hole, and a vertically mov-

able plunger adapted to pass through said hole to thereby press said cup into position in that portion of the container carried by said receptacle within said undercut groove.

2. In a capping machine, the combination of a cup shaped container receptacle provided with an annular interior groove adjacent the mouth thereof and an undercut annular interior groove of smaller diameter beneath said first groove, means for feeding a cap over said receptacle, and means for forcing said cap into position within the mouth of a container carried in said receptacle at a point within said smaller annular groove.

In testimony whereof I have signed my name to this specification.

JAMES D. REIFSNYDER.

CERTIFICATE OF CORRECTION.

Patent No. 1,711,540. Granted May 7, 1929, to

JAMES D. REIFSNYDER.

It is hereby certified that the above numbered patent was erroneously issued to "Tulip Cup Corporation, of New York, N. Y., a corporation of New York", whereas said patent should have been issued to "Lily-Tulip Cup Corporation, of New York, N. Y., a corporation of Delaware", said corporation being assignee by mesne assignments of the entire interest in said invention, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction there in that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of June, A. D. 1929.

(Seal)

M. J. Moore
Acting Commissioner of Patents.

CERTIFICATE OF CORRECTION.

Patent No. 1,711,540. Granted May 7, 1929, to

JAMES D. REIFSNYDER.

It is hereby certified that the above numbered patent was erroneously issued to "Tulip Cup Corporation, of New York, N. Y., a corporation of New York", whereas said patent should have been issued to "Lily-Tulip Cup Corporation, of New York, N. Y., a corporation of Delaware", said corporation being assignee by mesne assignments of the entire interest in said invention, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction there in that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of June, A. D. 1929.

M. J. Moore ,
(Seal) Acting Commissioner of Patents.