Jan. 8, 1963 E. W. ELLEMAN 3,071,909

SCREW CAP APPLICATOR

Filed April 22, 1960 3 Sheets-Sheet 1

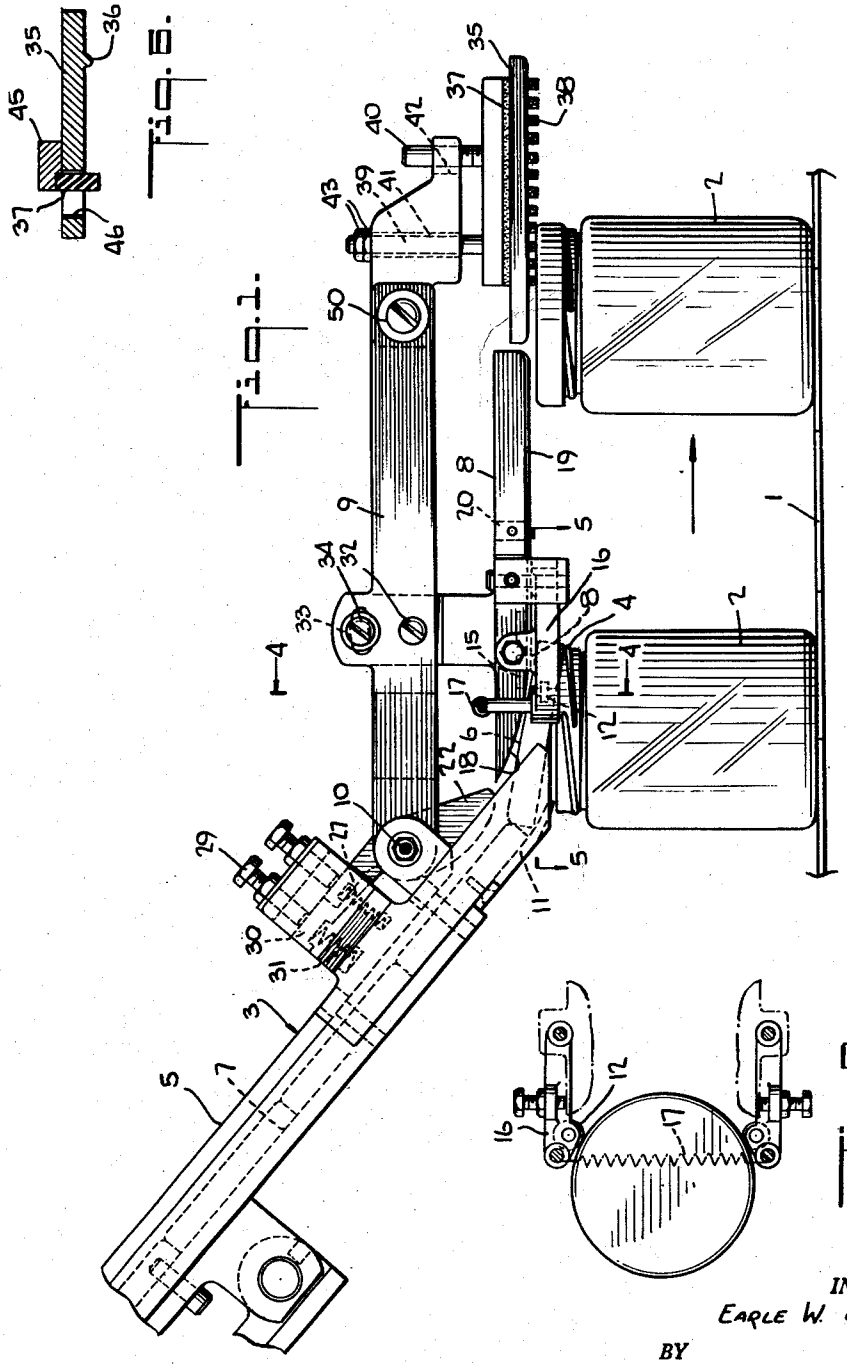


Fig. 6.

Fig. 5.

INVENTOR.
EARLE W. ELLEMAN
BY
Norman X. Holland
ATTORNEY

Jan. 8, 1963 E. W. ELLEMAN 3,071,909

SCREW CAP APPLICATOR

Filed April 22, 1960 3 Sheets-Sheet 2

Fig. 2.

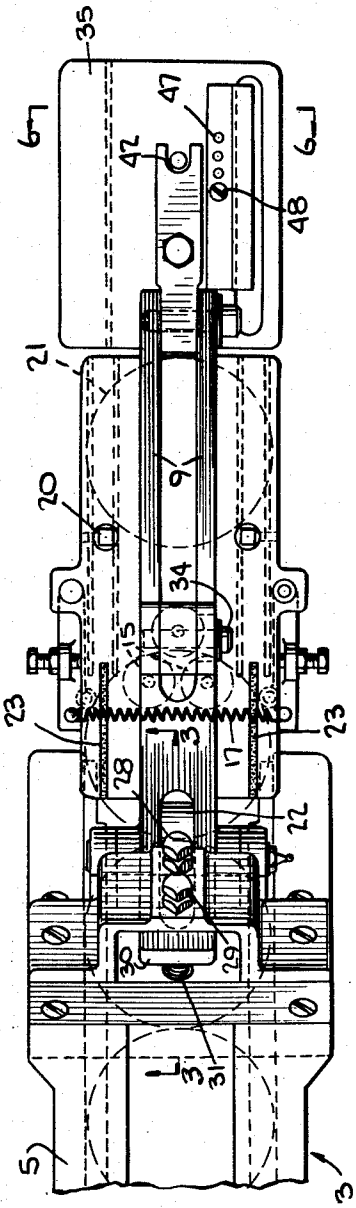


Fig. 3.

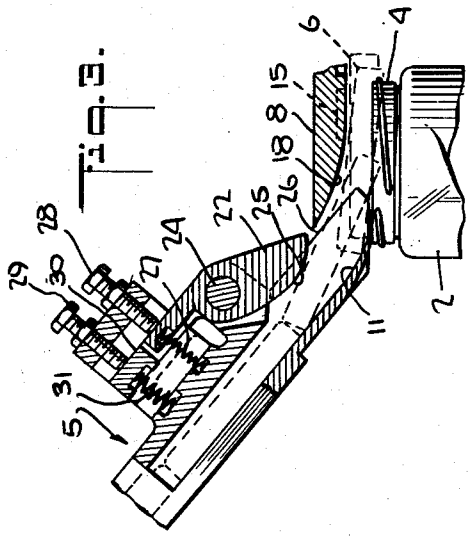
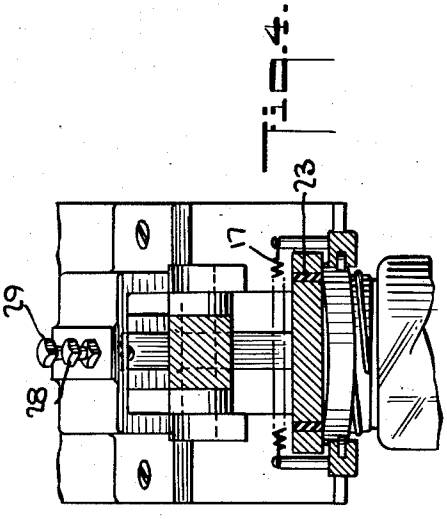


Fig. 4.



INVENTOR.
EARLE W. ELLEMAN

BY

Norman & Holland

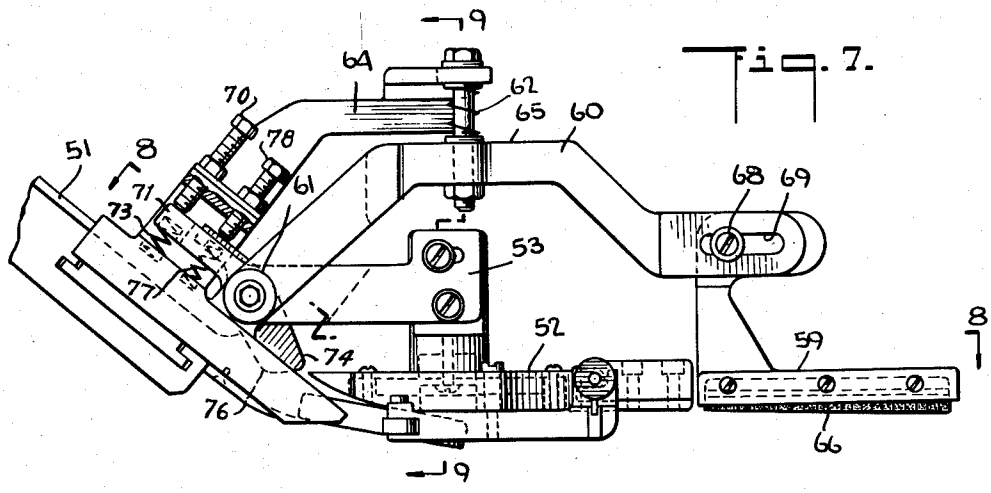
ATTORNEY

Jan. 8, 1963 E. W. ELLEMAN 3,071,909

SCREW CAP APPLICATOR

Filed April 22, 1960 3 Sheets-Sheet 3

Fig. 7.



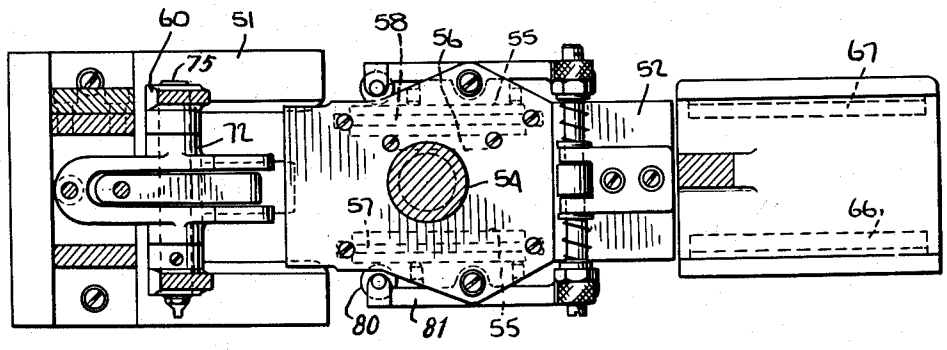
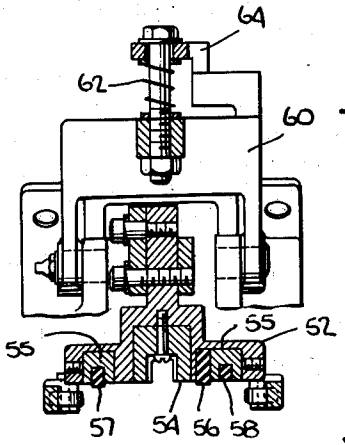


Fig. 8.

Fig. 9.



INVENTOR.
EARLE W. ELLEMAN

BY
Norman M. Holland
ATTORNEY

United States Patent Office

3,071,909
Patented Jan. 8, 1963

1

3,071,909

SCREW CAP APPLICATOR

Earle W. Elleman, Columbus, Ohio, assignor to Anchor Hocking Glass Corporation, Lancaster, Ohio, a corporation of Delaware

Filed Apr. 22, 1960, Ser. No. 23,936
11 Claims. (Cl. 53—315)

The present invention relates to the sealing art and more particularly to a cap feed adapted to feed or apply rotary or screw-type caps to the tops of containers.

Sealing machines are now being used to apply lug or threaded-type screw closures to containers and particularly to food containers so that the consumer will have the advantage of an easily removed and reapplied closure cap. In sealing machines using lug or threaded-type closures to seal containers there are two principal operations. The first of these is the initial feeding or application of a closure cap to the top of each of the filled containers with the cap properly positioned on the container threads for the second operation where the cap is simultaneously rotated and pressed downwardly into final sealing engagement with the container.

In order for the final sealing operation to be satisfactorily performed, the caps must be horizontally placed on the container tops and the lugs or threads of the caps and containers must be aligned so that the final sealing rotation results in a proper threaded connection. In addition, the leveling and positioning of the caps must be done at high speed to satisfy mass production requirements.

The present invention provides an improved means for applying the closure caps to the container threads with no damage to the caps and with the caps properly positioned for the subsequent final sealing operation. The cap feed of the present invention is useful at high speeds so that the highest speed of the final sealing mechanism may be achieved.

Accordingly an object of the present invention is to provide an improved cap feed for the application of threaded or screw-type closure caps to container tops.

Another object of the present invention is to provide an improved cap feed for threaded or screw-type closure caps adapted for use with high speed sealing machines.

Another object of the present invention is to provide a cap feed adapted to handle threaded or screw-type closure caps at high speeds with no scratching of the closure caps.

Another object of the present invention is to provide an improved cap feed for threaded or screw-type closures which prepares the closure caps on the containers for the final sealing rotation by providing an initial light fully controlled thread engaging rotation.

Another object of the present invention is to provide cap feeds for threaded or screw-type closure caps which are readily interchangeable on the sealing machine for different closure sizes.

Another object of the present invention is to provide a relatively simple and rugged cap feed for threaded or screw-type closures which provides both a leveling and an initial thread-engaging twist of the closure cap.

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 side elevational view of the cap feed in accordance with the present invention;

2

FIG. 2 is a top plan view of the cap feed of FIG. 1;

FIG. 3 is a vertical sectional view of the cap feed taken along line 3—3 of FIG. 2;

FIG. 4 is a vertical sectional view of the cap feed taken along line 4—4 of FIG. 1;

FIG. 5 is a horizontal sectional view of the cap retaining detent members taken along line 5—5 of FIG. 1;

FIG. 6 is a sectional view taken along line 6—6 of FIG. 2;

FIG. 7 is a side elevational view of another embodiment of the cap feed in accordance with the present invention.

FIG. 8 is a top plan view of the cap feed of FIG. 7; and

FIG. 9 is a sectional view taken along line 9—9 of FIG. 7.

The cap feed of the present invention is adapted to apply closure caps to filled containers being moved along a path by a generally horizontal conveyor as illustrated at 1 in FIG. 1. The conveyor 1 carries a succession of filled containers 2 continuously beneath the cap feed 3. As the container 2 is moved beneath the cap feed 3 the top 4 of the contanier 2 engages the cap 6 at the lower end of cap feeding channel 7 in inclined cap chute 5. Continued movement of the container 2 draws the cap 6 out of the bottom of the chute 5 and into telescoping relationship with the top 4 of the container 2.

The position of the cap 6 in the bottom of the chute 5 and the transfer of the cap 6 from the chute 5 to the top of the container 2 is controlled by the cap leveling plate 8. The cap leveling plate 8 is mounted on arm 9 by a pivotal connection 10 to the chute 5.

The closure 6 is held in its container engaging position in channel 7 of chute 5 with its back portion resting on the spaced side rails 11 and with the detent wheels 12 engaging the front of the closure skirt. The front of the closure 6 is supported at this point by the magnets 15 in the cap leveling plate 8.

As the moving container 2 draws the cap 6 out of the end of the chute 5 the pivotally mounted arms 16 for detent wheels 12 swing outwardly (FIG. 5) against the force of the spring 17 permitting the cap 6 to slide into telescoping relationship with the top 4 of container 2. The magnets 15 now hold the closure 6 upwardly against the leveling plate 8 as the closure 6 slides around the curved portion 18 of the leveling plate 8 and onto the parallel slide rails 19 on the bottom of the leveling plate 8. As the closure 6 passes beyond the magnetic attraction of the magnets 15 it continues to be held against the surface 19 of plate 8 by the spaced magnets 20.

As is illustrated in FIG. 2, when the closure cap reaches the position indicated by cap 21 it has been moved clear of the magnets 20 and at this point the cap 21 drops downwardly in a horizontal position onto the top of the container 2. Magnets 20 are spaced adjacent the edges of the leveling plate 8 so that they attract the outer edges of the caps 6. This causes the magnets 20 to release the caps 6 without engaging the rearward portions of the caps so that the released caps drop in a level position.

In order to feed the cover of the closure 6 smoothly down and beneath the curved front 18 of the leveling plate 8 without scratching, a pivotally mounted cap guide finger 22 (FIG. 3) is provided adjacent the lower end of the chute 5. The finger 22 is pivotally mounted at 24 with a curved cap engaging surface 25 disposed centrally of the lower end of the cap chute 5. The cap engaging surface 25 of the finger 22 is held in light engagement with the cover 26 of the cap by spring 27 which resiliently urges the finger 22 downwardly against the closure. The lower position of the cap positioning surface 25 of the finger 22 is set by the adjusting screw 28.

The lower surface 25 of the finger 22 and the curved

front 18 of the leveling plate 8 combine to form a curved cap guide which guides the caps onto the lower surface of leveling plate 8.

In order to control and retard the movement of the lowermost caps in the chute 5 and to minimize the pressure of the caps 6 against the detent wheels 12, a pair of spaced cap engaging rubber inserts 23 (FIGS. 2 and 4) are provided on the curved edge 18 of the leveling plate 8 so that their lower surfaces engage the covers of the closures 6 as the closures slide down the chute into their container engaging position against the detent wheels 12.

The vertical position of the leveling plate 8 is set by the adjusting screw 29 which engages the extension 30 of the plate mounting arm 9 adjacent its pivotal mounting 10. An upward movement of the arm 9 and of the leveling plate 8 is provided by the rotation of the mounting arm 9 about the pivot 10 against the yieldable bias spring 31. This facilitates the initial engagement between the leveling plate 8 and the cap 6 and also permits a self adjusting leveling action to be applied to the caps 6 by the leveling plate 8 as the caps move along its lower surface.

The leveling plate 8 is also pivotally mounted at 32 on the arm 9 so that the cap slide rails 19 may be positioned parallel to the conveyor and the container tops once the position of the arm 9 has been set. The cooperating slot 33 and locking screw 34 hold the leveling plate 8 in the desired position on arm 9.

The container 2 next moves beneath the cap threading plate 35. As illustrated in FIGS. 1 and 6, the cap threading plate 35 has a container engaging rail 36 which slidably engages one off-center portion of the cap cover and a correspondingly spaced off-center friction member 37 adapted to retard the cap at an off-center position so that the cap is given a twisting force sufficient to turn its lugs or threads into light engagement with the container threads.

The preferred form of the friction member 37 comprises a series of downwardly projecting rubber or other resilient teeth 38 which are disposed with a gradual downward slope so that a gradually increasing pressure and friction force is applied and so that the downward movement of the closure as it turns on the container is compensated for. In order to permit the cap threading plate 35 to rise vertically as it engages the closure cap and to move downwardly as the cap is twisted, the plate 35 is mounted on a pair of vertical posts 39 and 40. Post 39 is slidably mounted in a suitable channel 41 and post 40 is slidably mounted in the end slot 42. The lowermost position of the threading plate 35 is set by adjusting nuts 43 on the threaded top of the post 39.

As illustrated in FIGS. 1, 2 and 6, the friction member 37 on the threading plate 35 is preferably mounted on a separate bracket 45 so that the teeth 38 extend downwardly through an elongated slot 46. The position of the fritcion member 37 along the slot 46 is made adjustable by the provision of a plurality of mounting holes 47 one of which is used to fasten the bracket 45 onto the plate 35 by means of a mounting screw 48.

The cap threading plate 35 is connected to the end of the leveling plate mounting arm 9 by an adjustable swivel connection 50. The threading plate 35 is swung about the coupling connection 50 so that the rail 36 and the friction member 37 on the lower surface of the threading plate 35 are aligned in the desired relationship to the covers of the caps 6 on the moving containers 2.

Another embodiment of the cap feed is illustrated in FIGS. 7 through 9. This embodiment includes an inclined cap chute 51 which feeds closure caps to the moving containers in a similar manner to cap chute 5. A leveling plate 52 is mounted on the lower end of the cap chute 51 in a similar manner to the leveling plate 8 on pivotally connected mounting arm 53 and plate 52 functions to level each of the closures with respect to the moving container top and to thereafter drop the levelled closure downwardly onto the container top. In order to hold the closure against the lower surface of the leveling plate 52 a round horseshoe magnet 54 is mounted on leveling plate 52. On either side of the horseshoe magnet two elongated bar-type horseshoe magnets 55 are provided to further support each closure. As illustrated in FIG. 8 each of the bar horseshoe magnets 55 extend beyond the magnet 54 in the direction of the closure travel. This causes the bar horseshoe magnets to engage each closure at opposite outer portions of its top after the closure is moved free of the horseshoe magnet 54. Since the bar magnets 55 engage only the outer portions of the closure, the closure will be moved free of the bar magnets without any magnetic holding force on the rear end of the closures permitting the closure to drop downwardly onto the container in a level position. As illustrated in FIGS. 7 and 9, an elongated rubber insert 56 is provided on the lower surface of the leveling plate 52 to provide an off-center friction drag on each closure cap as it is moved along the lower surface of the leveling plate 52. This drag bar 56 provides a slight reverse cap rotation to prevent any permanent cocking of the caps in the final sealing due to an unintentional initial engagement between some of the closure lugs and the container threads with the closure in a cocked position. Anti-friction runner inserts 57 and 58 are provided in the center of the bar magnets 55 to facilitate the movement of the closure along the lower surface of the leveling plate 52. As illustrated in FIG. 9 the anti-friction insert 58 has its lower surface above the bottom of the friction drag 56 to permit the effective operation of the friction drag 56 while it is in contact with the closure top.

The vertical position of the leveling plate 52 is set by the adjusting screw 70 which engages the extension 71 of the plate mounting arm 53 adjacent its pivotal connection 72 on pivot pin 75. An upward movement of the mounting arm 53 and the leveling plate 52 is provided by the rotation of the mounting arm 53 about the pivot pin 75 against the yieldable bias spring 73. The movement permitted plate 52 by this arrangement facilitates the initial engagement between the leveling plate 52 and the closure and also permits an adjusting leveling action to be applied to the closures as they move along the lower surface of the leveling plate 52.

A pivotally mounted cap guide finger 74 is also mounted at the lower end of chute 51 on the pivot pin 75. The curved lower surface 76 of the finger 74 is disposed centrally of the lower end of the cap chute 51 and it lightly engages the covers of each of the closures being drawn out of the end of the cap chute 51 under the light spring force of the spring 77. The lower position of the finger 74 is set by the adjusting screw 78.

A cap threading plate 59 is mounted beyond the leveling plate 52 in the direction of the container travel. This cap threading plate 59 is generally similar to the above described threading plate 35, however, it is mounted directly on the end of the cap chute 51 independently of the cap leveling plate 52 by the mounting arm 60. The mounting arm 60 is pivotally connected at 61 to the cap chute 51 to permit upward motion of the cap threading plate 59. A spring 62 fitted between bracket 64 and the central portion 65 of the threading plate mounting arm 60 resiliently urges the cap threading plate 59 downwardly against the closure tops while the friction rail 66 and the anti-friction rail 67 cooperate to provide an initial cap rotation to cause an initial light engagement between the lugs or threads of the closure and the lugs or threads on the container finish. The cap threading plate 59 is connected to its mounting arm 60 by means of the bolt 68 in slot 69. Slot 69 permits both the angle and the horizontal position of the cap threading plate 59 to be adjusted for the particular closure and container being sealed.

The operation of the cap feed illustrated in FIGS. 1 through 6 will now be summarized by following the move-

ment of a container 2 and its corresponding cap 6 as the container moves beneath the cap feed 3 on the conveyor 1. The closure cap 6 is placed in position to engage the moving container 2 by being inserted into the channel 7 of the inclined chute 5. The lowermost closure 6 is positioned by the resilient detent wheels 12 at the lower end of the chute 5 so that its forward and lowermost portion engages the top 4 of a container 2 being moved beneath the cap feed 3 by conveyor 1. In this container engaging position, the parallel rails 11 of the cap chute 5 engage a rearward portion of the closure and the front portion of the closure is supported by magnets 15 on the leveling plate 8. As the container 2 engages closure 6 it draws it past the resiliently mounted detent wheels 12 so that the closure 6 moves outwardly of the chute 5 into telescoping relationship with the top of the container 2 with its cover portion being held by magnets 15 against the lower surface of the plate 8. The lower surface 25 of the yieldably mounted finger 22 lightly engages the cap cover as the cap is drawn from the chute to guide the cap into engagement with the curved leading edge 18 of the leveling plate 8. In this position the cover of the closure 6 is held upwardly against the generally horizontal rails 19 of the leveling plate 8 as the moving container 2 slides the closure along the bottom of the leveling plate 8. At this point the threads of the closure 6 are spaced upwardly from the uppermost portions of the container threads so that they are not in engagement. The continuous movement of the container 2, and closure 6, to the point illustrated by the closure 21 in FIG. 2 moves the closure beyond the furthermost magnets 20 on the leveling plate 8 and the closure now drops clear of the leveling plate 8 downwardly onto the container 2 with its lugs or threads resting on corresponding lugs or threads of the container 2. Since the cap is dropped with its cover in a horizontal position and since each of the cap lugs or threads engages a similar portion of the container top, the cap will continue to be seated in a level position on the container top. The moving container 2 now carries the cap 6 into engagement with the cap threading plate 35. As the cap 6 slides along the smooth metal rail 36 on the plate 35 an opposite off-center portion is frictionally engaged by the downward projecting teeth 38 of the friction member 37. The teeth 38 retard this portion of the cap so that the cap is twisted lightly into an initial engagement with the threads of the container. The downward movement of the cap as it rotates is compensated for by the increasing downward length of the friction teeth 38 so that the rotating force remains applied to the cap and so that the tendency of the plate 35 to tilt the cap 6 is eliminated. Vertical movement of the entire plate 35 to compensate for the cap position during the twisting operation is also provided by the slidably mounted posts 39 and 40. As the container 2 passes beyond the threading plate 35 the closure 6 occupies a level position on the top of the container 2 with its threads or lugs turned into light threaded engagement with the cooperating lugs or threads of the container 2 so that the subsequent cap sealing rotation necessary to provide final container sealing may be applied without causing the cap 6 to cock or tilt or to be otherwise damaged.

The embodiment of the cap chute illustrated in FIGS. 7 through 9 operates in a generally similar manner, however, an additional reverse rotational operation is provided by the off-center friction drag 56 on the cap leveling plate 52. This reverse rotation disengages any portions of the threads which may have become accidentally engaged in a cocked position in the initial contact between the container and the closure. A preliminary cocked alignment between the closure lugs or a portion of the closure thread and the container threads may cause a final defective sealing of the closure cap on the container.

Also in the embodiment illustrated in FIGS. 7 through 9 an upwardly swinging accommodation is provided for the closure threading plate 59 as it rotated on the relatively long mounting arm 60 in place of the generally vertical upward sliding movement of the closure threading plate 35.

In both the embodiment of the cap chute illustrated in FIGS. 1 through 6 and the embodiment illustrated in FIGS. 7 through 9 an additional novel and effective operating action is provided during the cap application by the resilient cap stops or detents located at the bottom of the chute. In the embodiment of FIGS. 1 through 6 these are the two detent wheels 12, each mounted at the end of the pivotal arm 16. The primary function of these detents 12 is to releasably hold the lowermost cap in the bottom of the cap chute and to permit this cap to be drawn from the cap chute by the top of the container 2 being moved beneath the chute as illustrated in FIG. 1. As the cap is drawn past the detent wheels 12 the arms 16 swing outwardly permitting passage of the cap. This initial spreading of the detent wheels provides a backward pressure on the cap to draw it against the top of the container as the closure is drawn downwardly onto the container top. Thereafter as the detent wheels 12 move past the widest portion of the cap it will be seen that the spring force drawing the arms 16 together will change to a forwardly directed movement which will tend to snap the cap forwardly on the container top.

This successive backward and forward movement tends to move the caps downwardly into position with the lugs in a preliminary sealing position beneath the container lugs or threads. This movement, therefore, minimizes the amount of sealing rotation required to tightly seal the cap onto the container.

The same successive backward and forward movements are also provided in the embodiments illustrated in FIGS. 7 through 9 by the detent wheels 80 mounted on the pivotal mounting arms 81 and this arrangement operates in the above described manner to aid in the initial sealing of the closure on the container with the closure and container threads in position for the rotational sealing action.

It will be seen that an improved closure cap feed has been provided wherein the closure caps are fed rapidly and smoothly onto the tops of moving containers and wherein the caps are quickly leveled and moved into light initial engagement with the container without tilting or cocking on the container threads.

The closure feeding means provides for exact closure control during the applying action and also provides for rapid closure feed while at the same time being relatively simple in design and being easily adjusted and maintained for high speed closure application and for continuous high speed trouble-free sealing machine runs.

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. A screw applicator comprising the combination of an inclined cap chute, a leveling plate pivotally mounted on the end of said cap chute, a cap supporting magnet on said leveling plate adjacent the end of said chute adapted to hold a cap against said leveling plate, a vertically yieldable cap twisting plate mounted beyond said leveling plate, an elongated friction member on the bottom of said cap twisting plate, and a pair of spaced magnets on said leveling plate positioned beyond said cap supporting magnet on opposite sides of said leveling plate whereby they engage edge portions of the cap and thereby release the cap in level position when the cap is moved beyond said pair of magnets.

2. The applicator as claimed in claim 1 in which a friction drag member is mounted on an off-center portion of said leveling plate whereby each cap is initially rotated in such a direction as to disengage it from the container threads.

3. The applicator as claimed in claim 1 in which said friction member comprises a plurality of separate teeth.

4. The applicator as claimed in claim 3 in which said teeth have a successively increasing length downwardly from the twisting plate.

5. A screw cap applicator for applying caps to containers on a moving conveyor comprising the combination of an inclined cap chute, a leveling plate pivotally mounted on the end of said cap chute, a cap supporting magnet on said leveling plate adjacent the end of said chute adapted to hold a cap against said leveling plate, a vertically yieldable cap twisting plate mounted beyond said leveling plate, an elongated friction member on the bottom of said cap twisting plate positioned to engage off-center portions of caps on the moving conveyor, and a friction drag member mounted on an off-center portion of said leveling plate whereby each cap is initially rotated in such a direction as to disengage it from the container threads.

6. In a sealing machine wherein containers are carried therethrough on a conveyor a cap applicator comprising the combination of an inclined cap chute having its lower end positioned above said conveyor to present a cap in telescoping relationship to the top of each container carried beneath it on the conveyor, a leveling plate pivotally mounted on said chute having a generally level lower surface portion positioned to engage caps on the containers, a curved cap guide between said chute and said leveling plate, a magnet on said leveling plate to hold caps against the lower surface portion to level them on the containers, a vertically yieldable cap twisting plate mounted beyond said leveling plate at a height so that its bottom engages caps on the containers moving on the conveyor, the bottom of said twisting plate including a smooth rail positioned to engage an off-center portion of the closure top and an elongated friction member positioned to engage an opposite off-center portion of the cap cover to twist the cap on said container, and said friction member having a plurality of teeth with successively decreasing spacing from the conveyor in the direction of container travel.

7. In a sealing machine wherein containers are carried therethrough on a conveyor a cap applicator comprising the combination of an inclined cap chute having its lower end positioned above said conveyor to present a cap in telescoping relationship to the top of each container carried beneath it on the conveyor, a leveling plate pivotally mounted on said chute having a generally level lower surface portion positioned to engage caps on the containers, a curved cap guide between said chute and said leveling plate, a magnet on said leveling plate to hold caps against the lower surface portion to level them on the containers, a vertically yieldable cap twisting plate mounted beyond said leveling plate at a height so that its bottom engages caps on the containers moving on the conveyor, the bottom of said twisting plate including a smooth rail positioned to engage an off-center portion of the closure top and an elongated friction member positioned to engage an opposite off-center portion of the cap cover to twist the cap on said container, and a friction drag member mounted on an off-center portion of said leveling plate whereby each cap is initially rotated in such a direction as to disengage it from the container threads.

8. In a sealing machine wherein containers are carried therethrough on a conveyor a cap applicator comprising the combination of an inclined cap chute having its lower end positioned above said conveyor to present a cap in telescoping relationship to the top of each container carried beneath it on the conveyor, a leveling plate pivotally mounted on said chute having a generally level lower surface portion positioned to engage caps on the containers, a curved cap guide between said chute and said leveling plate, a magnet on said leveling plate to hold caps against the lower surface portion to level them on the containers, a vertically yieldable cap twisting plate mounted beyond said leveling plate at a height so that its bottom engages caps on the containers moving on the conveyor, the bottom of said twisting plate including a smooth rail positioned to engage an off-center portion of the closure top and an elongated friction member positioned to engage an opposite off-center portion of the cap cover to twist the cap on said container, and a pair of spaced resilient cap engaging detents at said leveling plate adapted to slide each cap successively backward and forward in a generally level position on the container top as the cap is drawn out of said chute by a moving container.

9. A screw cap applicator for applying caps to containers on a moving conveyor comprising the combination of an inclined cap chute, a vertically yieldable leveling plate mounted at the end of said cap chute, a cap supporting magnet at said leveling plate adapted to hold a cap against said leveling plate, a vertically yieldable cap twisting plate mounted beyond said leveling plate, an elongated friction member on an off-center portion of the bottom of said cap twisting plate positioned to engage off-center portions of caps on the moving conveyor, and an anti-friction member mounted on an opposite off-center portion of said twisting plate whereby each cap is pressed down and rotated by said members in such a direction as to engage it with the container threads.

10. A screw cap applicator for applying caps to containers on a moving conveyor comprising the combination of an inclined cap chute, a vertically yieldable leveling plate mounted at the end of said cap chute, a cap supporting magnet at said leveling plate adapted to hold a cap against said leveling plate, a vertically yieldable cap twisting plate mounted beyond said leveling plate, an elongated friction member on the bottom of said cap twisting plate positioned to engage off-center portions of caps on the moving conveyor, and a friction drag member mounted on an off-center portion of said leveling plate whereby each cap is initially rotated in such a direction as to disengage it from the container threads.

11. A screw cap applicator for applying caps to containers on a moving conveyor comprising the combination of an inclined cap chute having its lower end positioned above said conveyor for presenting a cap in telescoping relationship to the top of a container on said conveyor, a vertically yieldable leveling plate mounted at the end of said cap chute, a cap supporting magnet at said leveling plate adapted to hold a cap against said leveling plate, a vertically yieldable cap twisting plate mounted beyond said leveling plate, an elongated friction member on the bottom of said cap twisting plate positioned to engage off-center portions of caps on the moving conveyor, and a pair of spaced resilient cap engaging detents at said leveling plate for engaging and sliding each cap successively backward and forward on the container top as the cap is drawn past the detents on the container top.

References Cited in the file of this patent

UNITED STATES PATENTS

1,664,514	Kramer	Apr. 3, 1928
2,041,891	White	May 26, 1936
2,630,959	Brown	Mar. 10, 1953
2,658,654	Schweizer	Nov. 10, 1953
2,732,991	De Bastos et al.	Jan. 31, 1956
2,876,605	McElroy et al.	Mar. 10, 1959
2,951,327	Fauth	Sept. 6, 1960
2,012,388	Stover	Dec. 12, 1961

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,071,909 January 8, 1

Earl W. Elleman

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 7, line 15, and column 8, lines 26, 40 and 56, for "conveyor", each occurrence, read -- containers --.

Signed and sealed this 27th day of August 1963.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Paten