

March 18, 1941.

A. L. KRONQUEST ET AL

2,235,583

MACHINE FOR VACUUMIZING AND CROWN CAPPING CONTAINERS

Filed Nov. 25, 1938

5 Sheets-Sheet 2

7
Inventors
ALFRED L. KRONQUEST and
OTTO ASCHMITT

March 18, 1941.

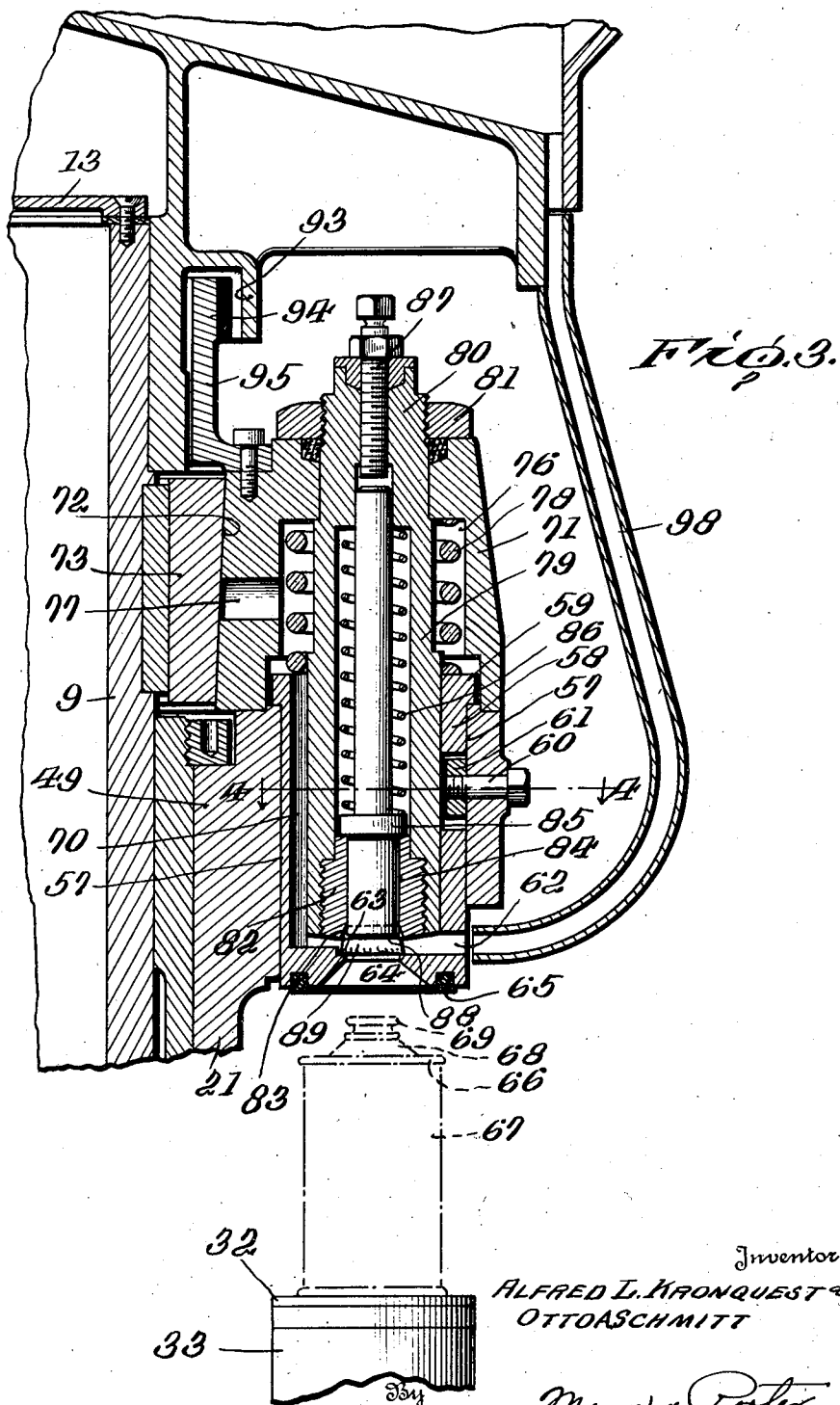
A. L. KRONQUEST ET AL

2,235,583

MACHINE FOR VACUUMIZING AND CROWN CAPPING CONTAINERS

Filed Nov. 25, 1938

5 Sheets-Sheet 3



Inventors
ALFRED L. KRONQUEST and
OTTO SCHMITT

Mason & Porter
Attorneys

March 18, 1941.

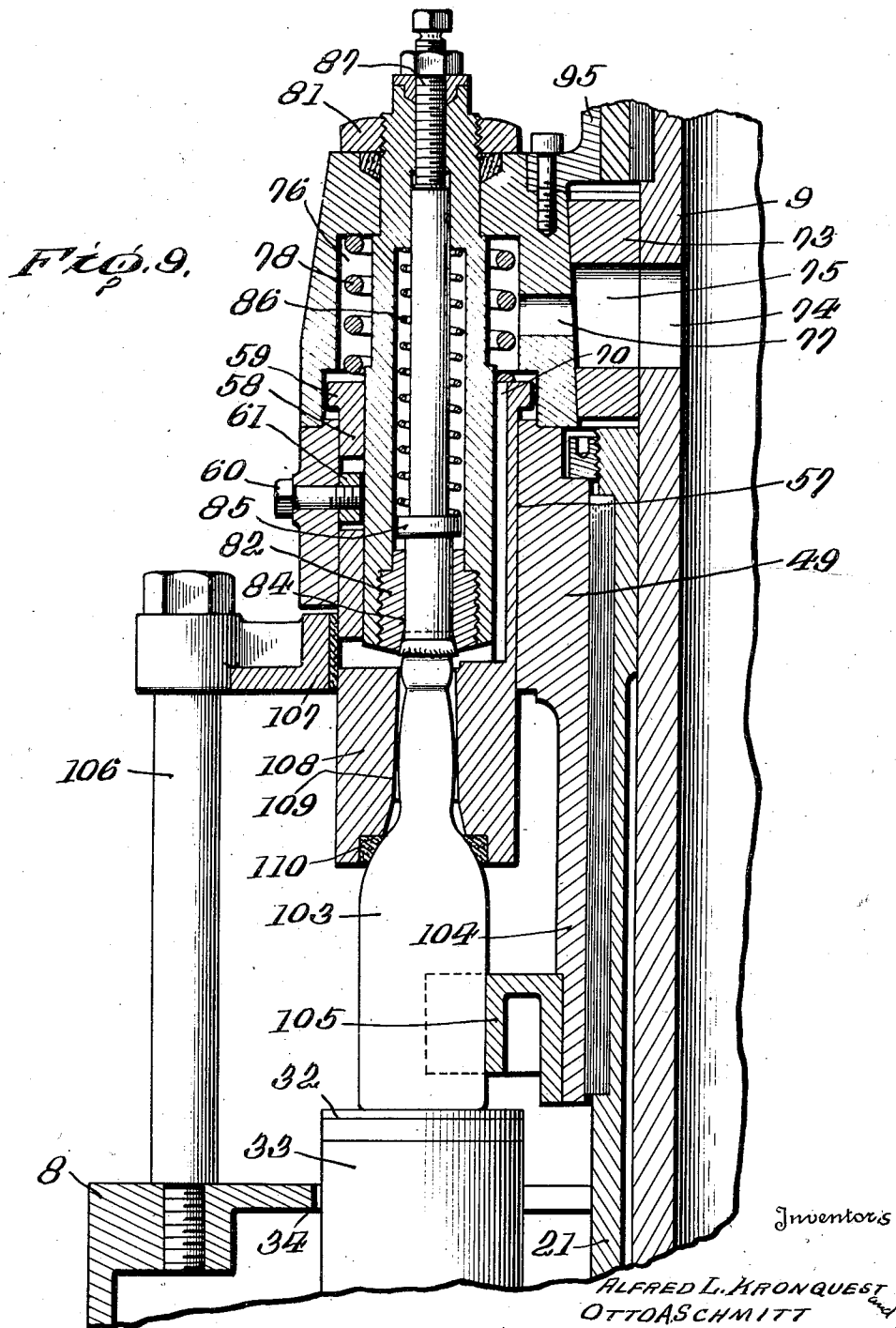
A. L. KRONQUEST ET AL

2,235,583

MACHINE FOR VACUUMIZING AND CROWN CAPPING CONTAINERS

Filed Nov. 25, 1938

5 Sheets-Sheet 5



Inventors

ALFRED L. KRONQUEST
OTTO ASCHMITT

By

Mason & Porter

Attorneys

UNITED STATES PATENT OFFICE

2,235,583

MACHINE FOR VACUUMIZING AND CROWN CAPPING CONTAINERS

Alfred L. Kronquest and Otto A. Schmitt, Syracuse, N. Y., assignors to Continental Can Company, Inc., New York, N. Y., a corporation of New York

Application November 25, 1938, Serial No. 242,424

10 Claims. (Cl. 226—82)

The invention relates generally to the art of treating filled containers and primarily seeks to provide a novel unitary machine embodying means for receiving filled containers and conveying them in a circuitous path, means for feeding crown caps into registered relation with the filled containers, means for bringing about a loosely assembled relation of the containers and the crown caps, means for drawing a vacuum in the filled containers having the crown caps loosely applied thereon, and means for securely clinching the crown caps on the vacuumized containers.

Another object of the invention is to provide a novel machine structure of the character stated which can be readily adapted to the vacuumizing and crown capping of cans or bottles.

Another object of the invention is to provide a machine of the character stated embodying novel crown capping units including vacuumizing chambers therein and means for drawing a vacuum in said chambers.

Another object of the invention is to provide novel means for sealing the vacuum chambers during the drawing of vacuum in the filled containers.

Another object of the invention is to provide novel means engageable directly with the containers for effecting a partial sealing of the vacuum chambers.

Another object of the invention is to provide a machine of the character stated embodying individual crown cap clinching units movable with the containers and each having a vacuumizing chamber therein, and means for bringing the units and the containers into cooperative relation for first loosely assembling the containers and crown caps and for sealing the chambers and for bringing about additional relative movement between the containers and units to cause the crown caps to be clinched upon the containers.

Another object of the invention is to provide a novel abutment and stripper plunger in each capping unit which operates to overcome any tendency of clinched caps to stick in the dies and which overlies and prevents displacement of crown caps prior to the clinching thereof.

With the above and other objects in view which will hereinafter appear, the nature of the invention will be more fully understood by following the description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a vertical cross section taken on the line 1—1 on Figure 2.

Figure 2 is a horizontal section taken on the line 2—2 on Figure 1.

Figure 3 is an enlarged fragmentary vertical section taken through one of the container vacuumizing and crown cap crimping units at the crown cap feeding station.

Figure 4 is a detail horizontal section taken on the line 4—4 on Figure 3.

Figure 5 is a fragmentary vertical section illustrating the vacuumizing of a container to which a crown cap is loosely applied.

Figure 6 is a view similar to Figure 5 illustrating the crimping of the crown cap or the closing of the container following the vacuumizing thereof.

Figure 7 is a fragmentary vertical section illustrating the driving connections through which rotation is imparted to the crown cap feeding rotor.

Figure 8 is a diagrammatic development of the container supporting pad actuating cam.

Figure 9 is a fragmentary vertical section illustrating a modified form of the invention in which the parts are adapted to the vacuumizing and closing of bottles instead of cans, the crimping of the crown cap onto a previously vacuumized bottle being illustrated.

The machine herein disclosed as embodying the features of the invention includes a framing comprising a base casting 5 and a body casting 6 which is flange-secured upon the base casting as at 7. A table portion 8 is supported in any suitable manner upon the body casting 6 as illustrated in Figures 1 and 2 of the drawings.

A hollow bearing standard 9 is supported uprightly and centrally in a packed bearing 10 provided in the base casting 5 and a cup bearing casting 11 secured as at 12 to depend from the base casting in the manner illustrated in Figure 1. The standard is open at the bottom, and sealed at the top, as at 13, for a purpose later to be described.

The casting 11 is shaped to provide a lower chamber 14 which communicates with the open lower end of the standard 9 and which is connected by a suitable duct 15 with an evacuating pump or any other satisfactory source of negative pressure (not shown).

The hollow standard 9 is vertically slidable in the casting 11, being spline-connected as at 16, and is externally threaded as at 17 through a worm gear 18 rotatable and held captive in a chamber 19 formed in said casting. Rotation may be imparted to the worm gear 18, either mechanically or manually, by a worm gear 20, and by thus

rotating the gear 18 the standard 9 will be caused to move upwardly or downwardly according to the direction of such rotation.

A turret sleeve 21 is rotatable about the standard 9 and carries a flange 22 which is secured to a container supporting turret 23 so as to cause said turret to rotate with the sleeve 21 about the standard 9. The sleeve 21 has rotary bearing as at 24 in a bearing sleeve 25 preferably formed integrally on the body casting 6, and also has thrust bearing on said sleeve, through the turret 23, as at 26. See Figure 1. The container supporting turret includes a depending closure skirt 27 which overlies an upstanding flange 28 of the body casting 6. A plurality (nine being shown) of vertical bearing sleeves 29 are formed on and spaced equidistantly about the turret 23, a portion of each sleeve extending upwardly and a portion downwardly. A container supporting cylinder 30 is vertically reciprocable in each sleeve bearing 29 and is pin-and-slot secured in said sleeve, as at 31, so as to prevent rotation or displacement of the cylinders in said sleeves. Each cylinder carries an individual container supporting pad 32 from which a skirt 33 depends and snugly encircles the respective sleeve 29. The supporting pads 32 rotate about the standard 9 within a central opening 34 formed in the table 8. See Figures 1 and 2.

A worm gear 35 is affixed to the turret sleeve 21 and driven by a worm gear 36 secured upon a power input shaft 37 to which rotation is applied by a belt and pulley equipment 38 or by any other suitable power transmitting connections. By this means, rotation is imparted to the turret sleeve 21 and the parts movable therewith.

It will be noted by reference to Figure 1 of the drawings that each cylinder 30 carries a lifting roller 39 and a lowering roller 40 at its lower end. The lifting rollers 39 ride over a cam track 41 which is diagrammatically developed in Figure 8 and includes a first lift portion 42, a second lift portion 43, and a lowering portion 44. The first lift portion 42 is designed to lift the containers into position for having crown caps loosely assembled therewith and for effecting a sealing of the vacuum chambers hereinafter referred to, the second lift portion 43 lifts the containers an additional distance, after they have been vacuumized, for the purpose of effecting a crimping of the crown caps or a sealing of the containers, the portion 44 of the cam serves to lower the containers to the normal level from which they are discharged from the machine. In order to assure against sticking of any of the container supporting cylinders 30 in an elevated position, a safety cam 45 is disposed adjacent the lowering portion 44 of the track 41 so as to engage the rollers 40 and force down such cylinders 30 as might tend to remain in an elevated position. See Figures 1 and 8.

As is illustrated in Figure 2 of the drawings, the table 8 includes extension portions 46, one of which supports a suitable container feed-in trackway 47, and the other of which supports a suitable container feed-out trackway 48.

The turret sleeve 21 also carries a capping head body 49 which is secured thereto and spaced a considerable distance above the table 8 and the supporting pads 32. In the space intervening the table 8 and the head body portion 49, there is secured to said body portion a container positioning turret 50 having a peripheral con-

tainer receiving and aligning pocket axially aligned with each supporting pad. See Figures 1 and 2. It will be observed by reference to Figure 2, that the pockets in the positioning turret 50 cooperate with similarly spaced peripheral pockets in a feed-in turret 51, and also with similar pockets in a feed-out turret 52. The turrets 51 and 52 are identically constructed and driven and each is mounted upon a shaft 53 having bearing as at 54 in the body casting 6 and is equipped at its lower end with a gear 55 to which rotation is imparted, in suitably timed relation so as to cause the pockets in the turrets 50, 51 and 52 properly to register, by a gear 56 secured to the worm gear 35 hereinbefore referred to. See Figure 1.

The capping head body portion 49 is provided with a plurality of vertical bores 57 each axially aligned with one of the container supporting pads 32. A sleeve 58 is vertically slidable in each bore 57 and includes a stop collar 59 engageable with the upper end of the body portion 49 for determining the distance to which the respective sleeve projects from the bottom end of the body portion 49. Each sleeve 58 includes a longitudinal slot 60 for receiving a key 61 secured to the body portion 49 and serving to prevent rotational displacement of said sleeve. Each sleeve also includes a side wall opening 62 through which crown caps can be fed into the vacuum chamber formed in the bottom of the sleeve and onto the supporting shelf 63 defining the lower terminus of said chamber. Each sleeve also includes a central bottom aperture 64 through which the pouring throat of a container can be inserted into the vacuum chamber, said aperture being defined by a coniform lower surface. The entrance into each aperture 64 is surrounded by a depending gasket 65 adapted to be directly engaged by the top seam flange 66 of a container 67 for the purpose of sealing the vacuum chamber. See Figures 3, 5 and 6. The sleeve apertures 64 are so proportioned that when a container 67 is engaged in sealing contact with the gasket 65, the coniform neck 68 of the container will extend into the flare of the opening 64 and the pouring throat 69 of the container will extend through the aperture 64 and into the vacuumizing chamber in the sleeve for loosely engaging a crown cap in the manner illustrated in Figure 5. Each sleeve 58 also includes a vacuum duct or side wall clearance 70 which serves a purpose later to be described.

The capping head body portion 49 carries a capping head top portion 71 having an upwardly flared inner bore or bearing surface 72 for snugly fitting and rotatably engaging the downwardly tapered external surface of a valve head 73 which is keyed to the hollow standard 9. The standard 9 and the valve body 73 having registering valve ports 74 therein which communicate with a peripheral duct 75 formed in the external surface of the valve member 73 and extending thereabout over the positions of five turret stations or capping unit sleeve portions in the manner illustrated in Figure 2 of the drawings. The top portion 71 of the turret is equipped with a plurality of bores 76, one thereof aligning each bore 57 and each communicating through a port 77 with the bore 72 so as to communicate at times with the peripheral valve duct 75.

A compression spring 78 is mounted in each bore 76 and engages the upper end of the respective sleeve 58 for yieldably holding the sleeve in its

lowermost position as shown in Figures 1, 3 and 5 of the drawings.

A capping sleeve 79 is secured to depend centrally in each bore 76, each said capping sleeve having a shank portion 80 removably secured as at 81 to the capping head portion 71. Each capping sleeve is of a diameter for completely filling the sleeve 58 into which it depends, except for the wall duct or clearance 70 therein, and is of a length for extending downward to, but not across, the crown cap receiving opening 62, thus leaving a vacuum chamber in the bottom of the respective sleeve 58 of small volume and communicating laterally with the respective wall duct 70.

A capping die 82 is removably secured in the lower end of each capping sleeve 79 and includes a suitably flared crimping socket 83. Each crimping socket 83 merges with a bore in which an abutment and stripper plunger 84 is reciprocable. Each plunger 84 includes a stop collar 85 engageable with the upper end of the respective die 82 for limiting the distance to which the lower end of the plunger will extend into the crimping socket 83, and a compression spring 86 surrounds the plunger within the sleeve 79 and yieldably holds the abutment collar against the die. An adjustable stop screw 87 is mounted in each capping sleeve in position for engaging the upper end of the respective plunger 84 and limiting upward movement of said plunger.

It will be observed by reference to Figures 3 and 5 of the drawings that the lower terminus of the plunger 84 is spaced slightly as at 88 above a crown cap 89 supported in the vacuum chamber so that during the vacuumizing of a container (Figure 5) the plunger will prevent displacement of the crown cap and yet not confine it so as to interfere with the drawing of the vacuum in the container.

For suitably feeding the crown caps to the capping head, there is provided a feeding hopper 90 including a depending neck 91 which is secured upon the upper end of the standard 9. The lower end of the neck 91 is socketed for receiving compression spring equipment 92 which bears against the upper end of the valve head 73 so as to constantly urge the head into tight frictional contact with the inner face 72 of the capping head top portion which it opposes. The neck 91 includes a depending skirt 93 which overlies and protects a ring gear 94 formed on the upper end of a mounting neck 95 which surrounds the neck 91 and is secured to the capping head top portion 91 as illustrated in Figures 1, 2 and 7 of the drawings.

The feed hopper includes a rotor 96 driven by suitable transmission connections 97 from the ring gear 94 in suitably timed relation with the movement of the turrets so as to feed a single crown cap downwardly through the delivery tube 98 stationarily positioned at the cap delivery station between the turrets 51 and 52 as illustrated in Figure 2 of the drawings. It is to be understood that any suitable cap feeding equipment may be employed which is capable of being operated in timed relation with the turret movements so as to deliver a single crown cap through each crimping side opening 62 as it comes into registry with the delivery end of the tube 98. See Figure 3.

As has been hereinbefore described, the bottom openings 64 in the crimping units and the vacuum chambers with which they communicate are sealed by direct contact of the filled contain-

ers, and in order to suitably seal the side openings 62 during the drawing of a vacuum in the filled containers, there is provided a sealing sector 99 supported upon the table 8 upon stud 100. This sector extends about approximately seven stations or vacuum chamber positions of the capping head, or at least a greater distance than that to which the valve duct 75 extends, and the inner face thereof, effective in sealing the side openings 62 of the crimping units, is faced with a suitable seal packing 101. In order to provide for an efficient sealing contact of the sector with the crimping unit sleeves 58, the sleeves are provided with peripheral enlargements 102 conforming in outside curvature with the curvature of the sealing sector. See Figures 1, 2, 5 and 6.

In operation, filled containers fed into the machine over the trackway 47 are picked up in proper spaced relation by the feed-in turret 51 and presented to the pockets of the turret 50 and onto the individual receiving pads 32. As the turret structures 23, 50 and 49 rotate about the standard 9 the pads 32 will be individually and successively lifted by the cam surface 42 to present the flange portions 66 of the containers in vacuum chamber sealing contact with the gaskets 65. This position of the parts is illustrated in Figure 5 of the drawings, and it will be observed that the pouring throat 69 of the container is extended upwardly through the bottom opening 64 and into loose assembly relation with the crown cap 89 which was delivered onto the receiving shelf 63 by the feed tube 98 at the cap feeding station intervening the turrets 51 and 52.

The first lift portion 42 of the cam is so positioned that the lifting of the container just referred to is effected after the particular crimping unit side opening 62 has engaged with and become sealed by the sealing sector 99. Thus the vacuum chamber in the lower end of the respective crimping unit is completely sealed, and as soon as the lateral portion 77 of the unit moves into registry with the valve duct 75, a vacuum will be drawn in the head space of the filled container through the vacuum chamber, the wall duct 70, the lateral duct 77, the valve duct 75, the lateral duct 74, and the interior of the standard 9. It will be observed that the abutment and stripping plunger 84 is spaced slightly above the crown cap 89 as at 88 so as to permit sufficient freedom to avoid interference with the drawing of the vacuum and yet definitely prevent displacement of the crown cap during the drawing of the vacuum. It will be noted by reference to Figure 8 of the drawings that there is a considerable dwell portion between the first lift 42 of the cam and the second lift 43 thereof and so the position of the parts just described and shown in Figure 5 of the drawings pertains throughout the extent of three stations or crimping unit positions.

While the vacuum is still being drawn, the second lift portion 43 of the cam 41 is encountered and the pad 32 is lifted an additional distance to force the can throat 69 tightly against the crown cap 89 and the crown cap into the flared opening 83 in the crimping die 82. This condition of the parts is illustrated in Figure 6 of the drawings in which the crown cap is shown securely crimped on the pouring throat 69 of the can for properly sealing the same. It will be noted that during this lifting of the container the sleeve 58 is displaced upwardly against the resistance of the respective spring 78, and that the abutment and stripper plunger 84 is displaced upwardly against the tension of its associated spring 86. Thus the

crown caps are successively crimped and the containers sealed in the vacuum drawn in the small volume or confining chamber hereinbefore referred to.

5 Just prior to the reaching of the terminus of the sealing sector 99 the lowering portion 44 of the cam is encountered and the pads 32 are successively lowered to the normal position. The respective springs 78 return the sleeves 58 to their normal positions, and the springs 86 return the
10 respective abutment and stripper plungers 84 to their normal positions, the latter serving to strip from the die 82 any crown caps which might tend to stick in the flared die sockets 83. As the pads
15 32 are being lowered, the safety cam 45 will serve to depress any of the carrying cylinders 30 which might tend to remain in elevated position. The vacuumized and sealed containers are delivered from the pockets of the turret 50 to those of the feed-out turret 52 and from thence onto the feed-out trackway 48.

In Figure 9 of the drawings we have illustrated a fragment of the machine adapted for vacuumizing and sealing bottles instead of the cans hereinbefore referred to and illustrated in Figures 1, 3, 5 and 6. In this adaptation of the machine the structure and operation of the parts are identical with those hereinbefore described except that the greater height of the bottles 103 necessitates the provision of a longer depending skirt 104 on the
30 capping head body portion 49 so as to position the pocketed body positioning turret 105 for engaging the bottles at a suitably low point despite the fact that the capping head portion 49 has been adjusted to an elevated position. The elevation of the capping head as a whole necessitates the use of longer studs 106 for supporting the side open sealing sector 107, and the capping unit sleeves 58 include lengthy downward extensions
40 108 having long throat openings 109 for accommodating the bottle necks and defined at their lower ends by sealing gaskets 110 directly engaged by the bottles for sealing the respective vacuum chambers.

45 It is to be understood that in adjusting the machine for the adaptation illustrated in Figure 9, the worm gearing equipments 20, 18, 17 are utilized to lift the hollow standard 9 and the capping head mounted thereon so as to increase the space
50 intervening the table 8 and the capping head.

It is of course to be understood that the details of structure and arrangement of parts may be variously changed and modified without departing from the spirit and scope of our invention.

55 We claim:

1. In a machine of the character described, a supporting unit for supporting a filled container having a pouring throat adapted to be closed with a crown cap, a crimping unit aligned with and
60 spaced from the supporting unit and having a vacuum chamber therein and a crown cap supporting shelf in said chamber, means for feeding a crown cap onto said shelf, means for moving one unit to loosely apply a crown cap to a container throat, means through which a vacuum is
65 drawn in said chamber while the crown cap is loosely applied, means for moving one unit to cause the crown cap to be engaged with and crimped by the crimping unit for sealing the vacuumized container, said crimping unit including a rigid sleeve member having a bottom opening for receiving the container throat and a side opening through which the crown caps are fed, both said openings communicating with said chamber, a gasket surrounding the bottom open-

ing directly engaged by the container for sealing the vacuum chamber, and means for sealing the side opening during the drawing of a vacuum in said chamber.

2. In a machine of the character described, a supporting unit for supporting a filled container having a pouring throat adapted to be closed with a crown cap, a crimping unit aligned with and spaced from the supporting unit and having a vacuum chamber therein and a crown cap supporting shelf in said chamber, means for feeding a crown cap onto said shelf, means for moving one unit to loosely apply a crown cap to a container throat, means through which a vacuum is drawn in said chamber while the crown cap is loosely applied, yieldably mounted stripper means in said crimping unit normally presented for closely overlying and preventing displacement of the crown cap during the drawing of a vacuum in the container, and means for moving one unit to cause the crown cap to be engaged with and crimped by the crimping unit for sealing the vacuumized container, said stripper means being displaceable by crown cap contact during said crimping function.

3. In a machine of the character described; a plurality of sets of vertically aligned container supporting and crown cap crimping units; turrets rotatable about a vertical axis for moving said sets of units about said axis; means for feeding to said supporting units filled containers having pouring throats adapted to be closed with crown caps; each said crimping unit including a vacuum chamber into which a container throat may be received through a bottom opening and a crown cap supporting shelf for supporting a crown cap over the bottom opening and accessible through a side opening; a single means for feeding crown caps through each said side openings as it registers with said feeding means; means directly engaged by a container for sealing said vacuum chamber; means for moving one unit of each set for loosely applying a crown cap to a container throat; means through which a vacuum is drawn in each chamber when the respective crown cap and container are loosely engaged; means for moving one unit of each set for causing the respective crown cap to be engaged with and crimped by the respective crimping unit, and means for sealing the side openings stationarily mounted for overlying said side openings during the drawing of vacuum in said chambers.

4. In a machine of the character described, a standard having a vacuum chamber therein, a turret movable about said standard and carrying a plurality of container vacuumizing chambers and a crown cap crimping means in each chamber, means affording communication between said turret and standard chambers for drawing a vacuum in said turret chambers, said chambers including side openings, means for feeding crown caps through said side openings into position beneath said crimping means, means effective during movement of the turret for simultaneously sealing a plurality of said side openings, and means directly engaged by containers being vacuumized for sealing said turret chambers.

5. In a machine of the character described a capping head having a vacuum chamber therein, a crown cap supporting means, a crown cap crimping die, and a container throat receiving bottom opening beneath said die; a container supporting means and means for lifting the supporting means a distance to cause the container to seal the bottom opening, means through which

a vacuum is drawn in said chamber, and means for lifting the support an additional distance to tightly engage the container throat with a cap on the support and force said cap into the crimping die.

6. In a machine of the character described a capping head having a vacuum chamber therein, a crown cap supporting means, a crown cap crimping die, and a container throat receiving bottom opening beneath said die; a container supporting means, and means for lifting the supporting means a distance to cause the container to seal the bottom opening, means through which a vacuum is drawn in said chamber, and means for lifting the support an additional distance to tightly engage the container throat with a cap on the support and force said cap into the crimping die, said die including a part normally closely overlying and preventing displacement of the crown cap.

7. In a machine of the character described, a turret for vacuumizing and crown capping containers comprising a rotatable body having a plurality of equidistantly spaced vertical bores therein; a sleeve vertically movable in each bore yieldably held in the lower end of the bore and having a vacuum chamber in its lower end, a restricted container throat receiving bottom opening communicating with said chamber, and a crown cap supporting shelf immediately over said opening; a capping sleeve depending in said sleeve and defining the upper limit of said chamber and having a crimping die at its lower end overlying and preventing displacement of a crown cap on said shelf; means on said first mentioned sleeve directly engaged by a container for sealing said bottom opening; and ducts for connecting said chamber with a negative pressure source.

8. In a machine of the character described, a turret for vacuumizing and crown capping containers comprising a rotatable body having a plurality of equidistantly spaced vertical bores therein; a sleeve vertically movable in each bore yieldably held in the lower end of the bore and having a vacuum chamber in its lower end, a restricted container throat receiving bottom opening communicating with said chamber, and a crown cap supporting shelf immediately over said opening; a capping sleeve depending in said sleeve and defining the upper limit of said chamber and having a flared crown cap crimping opening in its lower end; means on said first mentioned sleeve directly engaged by a container for sealing said bottom opening; ducts for connecting said chamber with a negative pressure source, an abutment and stripper plunger yieldably projected into each said flared opening for closely overlying and preventing displacement of a crown cap on said shelf; each said first men-

tioned sleeve having a side enlargement presenting an outer surface having a center of curvature in common with the center of the turret and having a side opening therethrough communicating with the sleeve vacuum chamber and through which a crown cap can be fed onto the receiving shelf; and a side opening sealing sector extending partially around the turret and engaged by said side enlargements.

9. In a machine of the character described, a supporting body having a vertical bore therein; a sleeve vertically movable in said bore yieldably held in the lower end of the bore and having a vacuum chamber in its lower end, a restricted container throat receiving bottom opening communicating with said chamber, and a crown cap supporting shelf immediately over said bottom opening; a capping sleeve depending in said sleeve and defining the upper limit of said chamber and having a flared crown cap crimping opening in its lower end; means on said first mentioned sleeve directly engaged by a container for sealing said bottom opening; a duct for connecting said chamber with a negative pressure source; a stripper plunger yieldably projected into said flared opening for closely overlying and preventing displacement of a crown cap on said shelf; said first mentioned sleeve having a side opening therein through which a crown cap can be fed onto said shelf; means for closing said side opening during drawing of a vacuum in said chamber; and means for bringing about mutual contact between a container and said first mentioned sleeve to first seal said bottom opening and center the container throat in a crown cap on said shelf for vacuumizing purposes, and then for displacing said first mentioned sleeve to engage the container throat, the crown cap and the crimping opening for sealing the vacuumized and capped container.

10. In a machine of the character described, a capping head having a vacuum chamber therein, a crown cap supporting means, a crown cap crimping die, and a container throat receiving bottom opening beneath said die; a container supporting means; means through which a vacuum is drawn in said chamber; and means for bringing about relative movement between said chamber and said container supporting means for first causing a container to seal the bottom opening and loosely present its throat within a crown cap on the crown cap supporting means and for thereafter bringing about additional relative movement for causing said throat to tightly engage said crown cap and render the crimping die effective.

ALFRED L. KRONQUEST.
OTTO A. SCHMITT.