

Sept. 9, 1941.

A. L. KRONQUEST ET AL

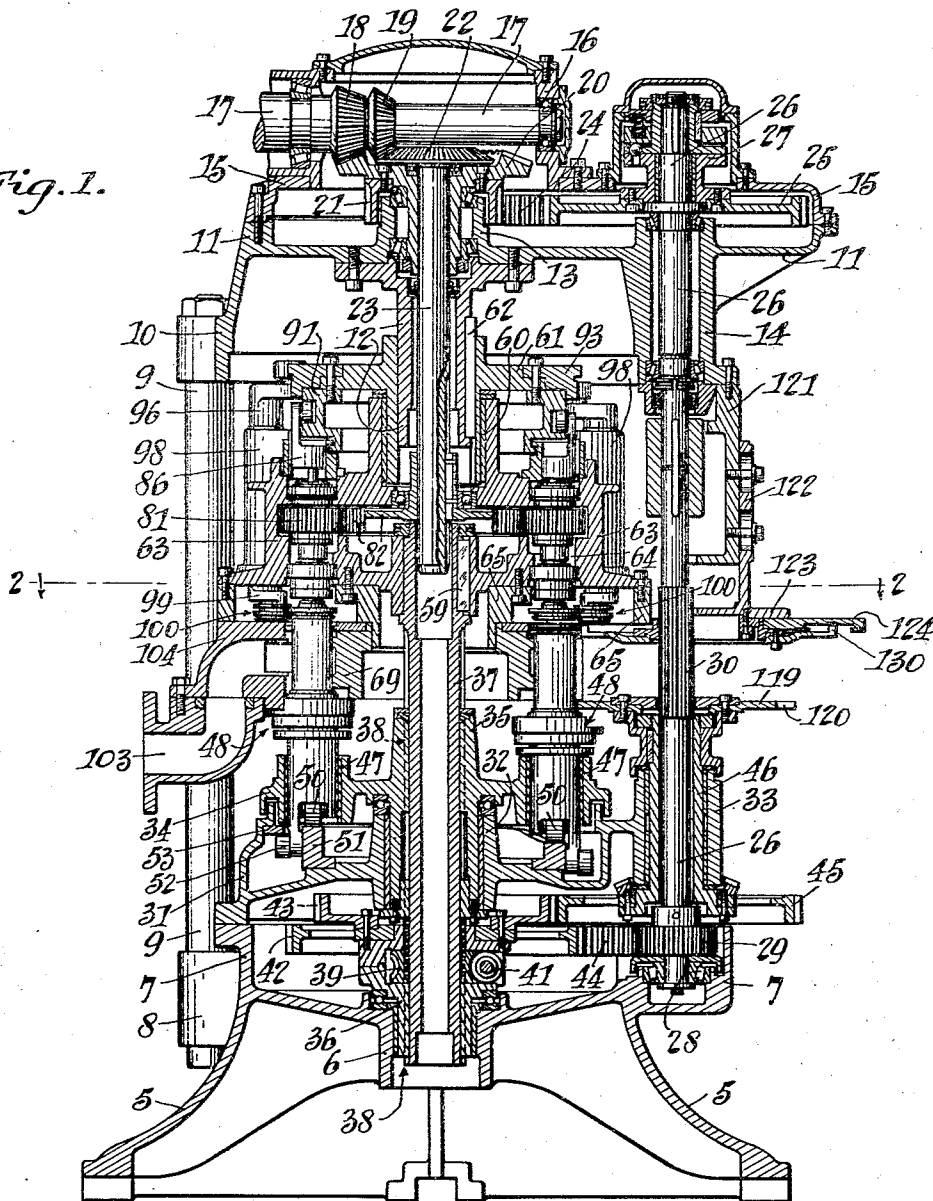
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MACHINE FOR DRAWING A VACUUM IN AND SEALING FILLED CONTAINERS

Filed Sept. 20, 1938

10 Sheets-Sheet 1

Fig. 1.



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10 Sheets-Sheet 2

Fig. 2.

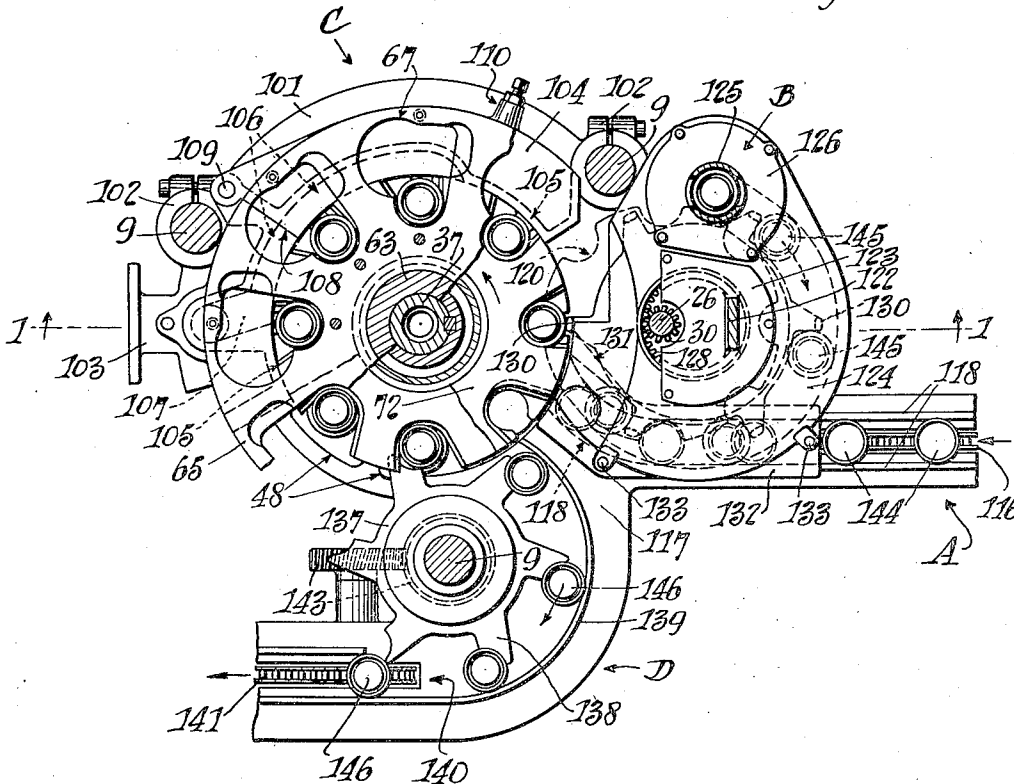
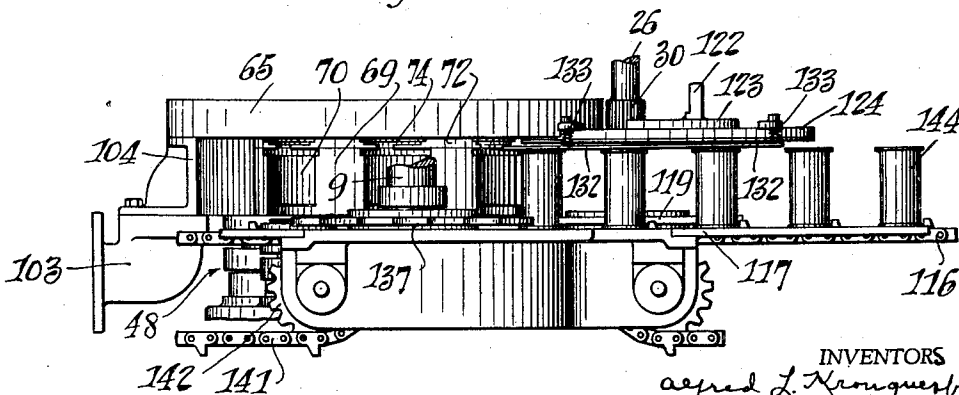


Fig. 3.



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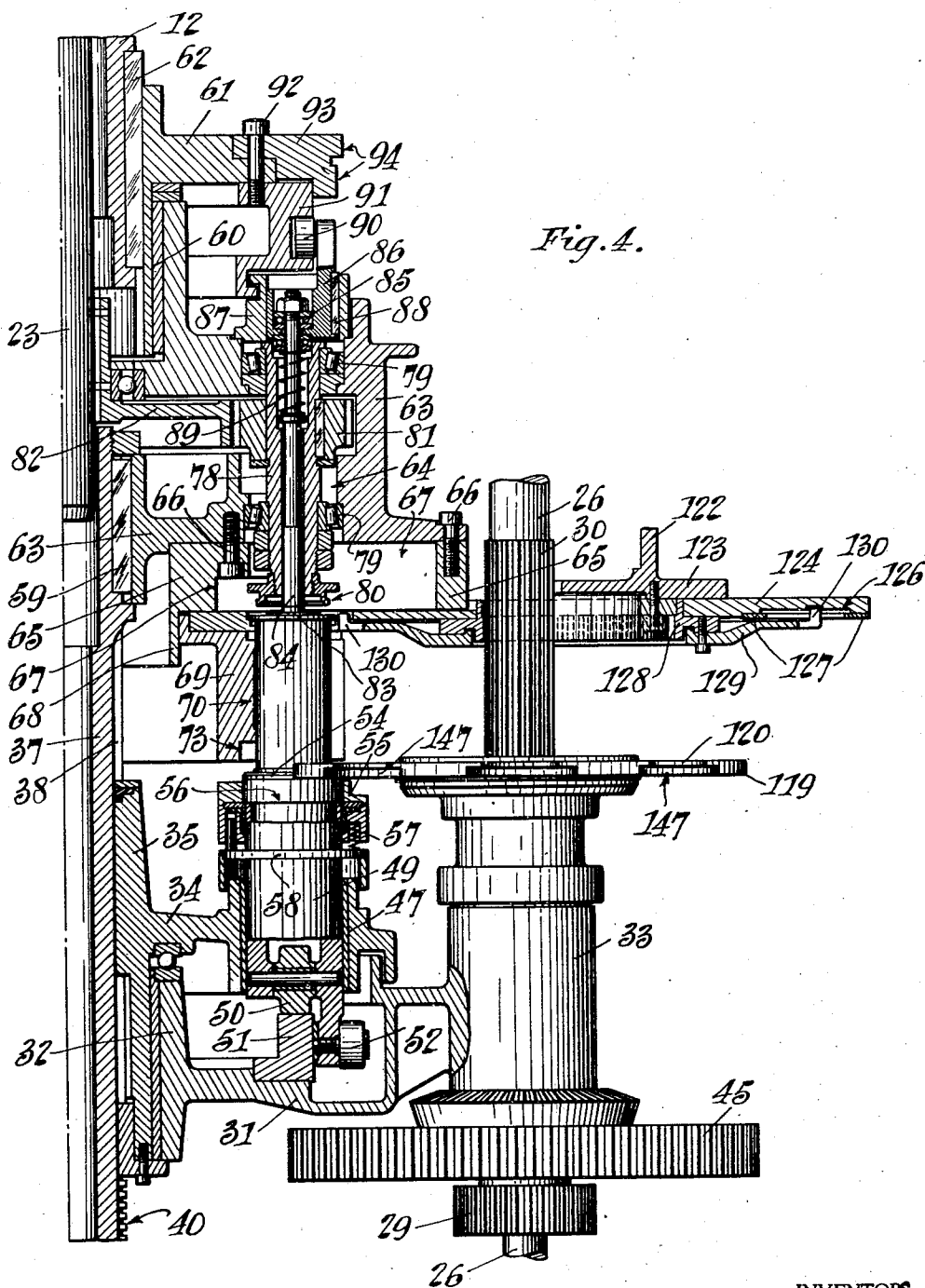


Fig. 4.

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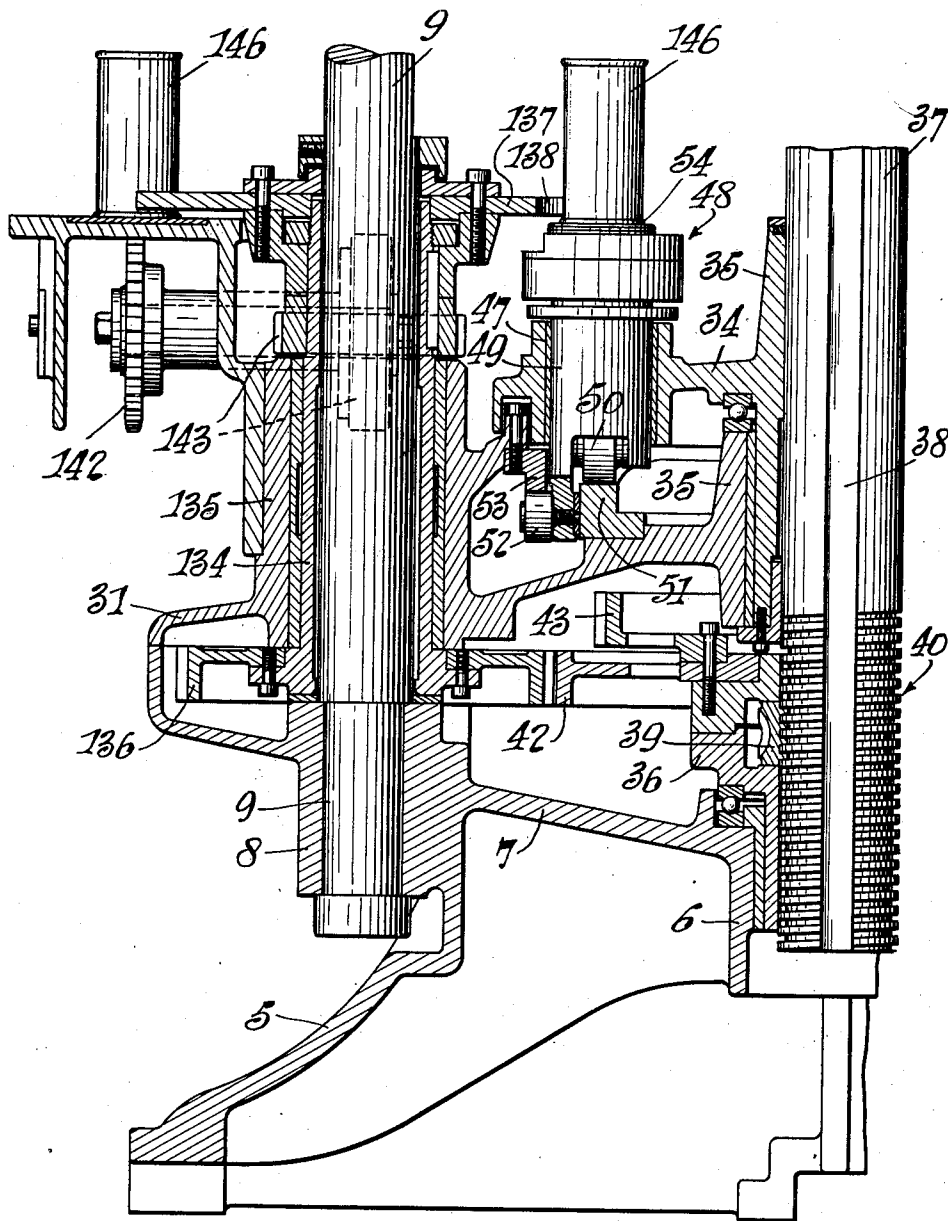
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MACHINE FOR DRAWING A VACUUM IN AND SEALING FILLED CONTAINERS

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10 Sheets-Sheet 4

Fig. 5.



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Fig. 6.

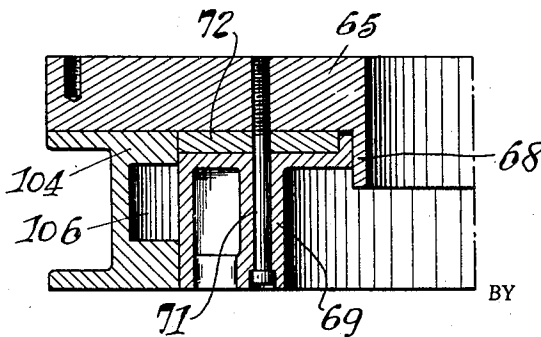
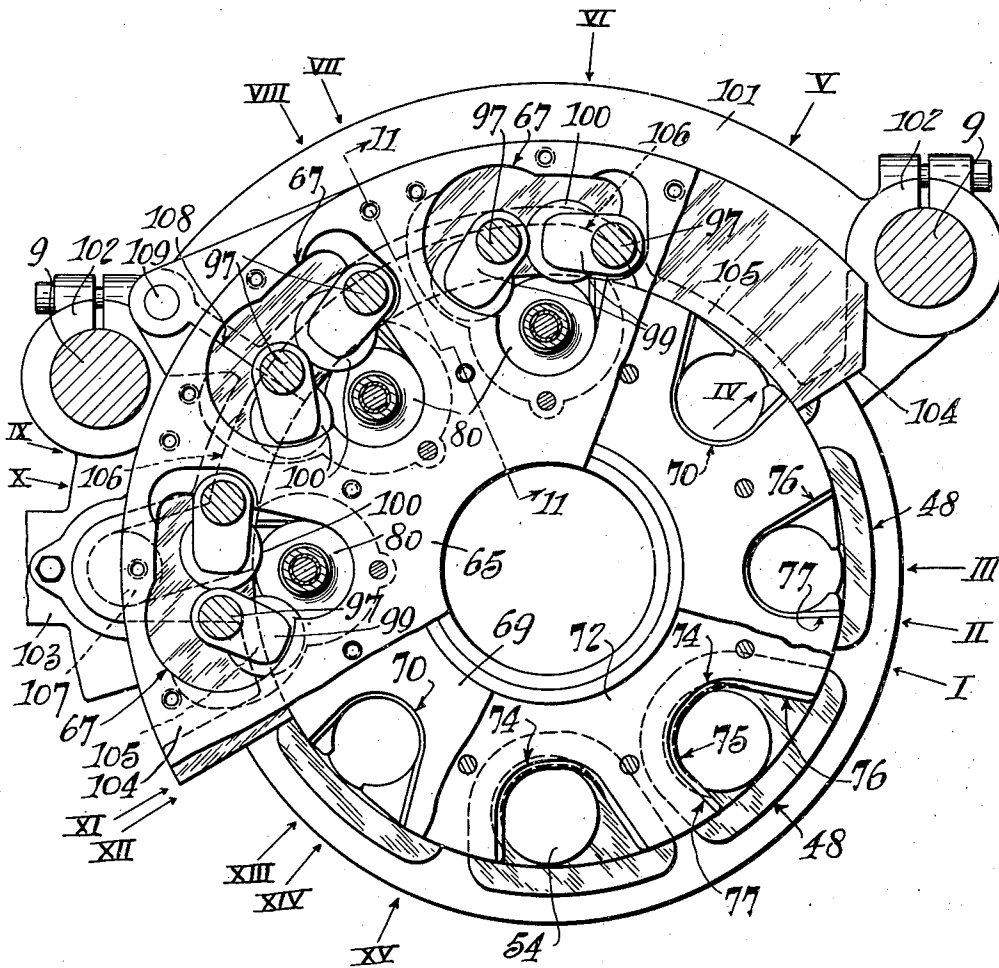


Fig. 11.

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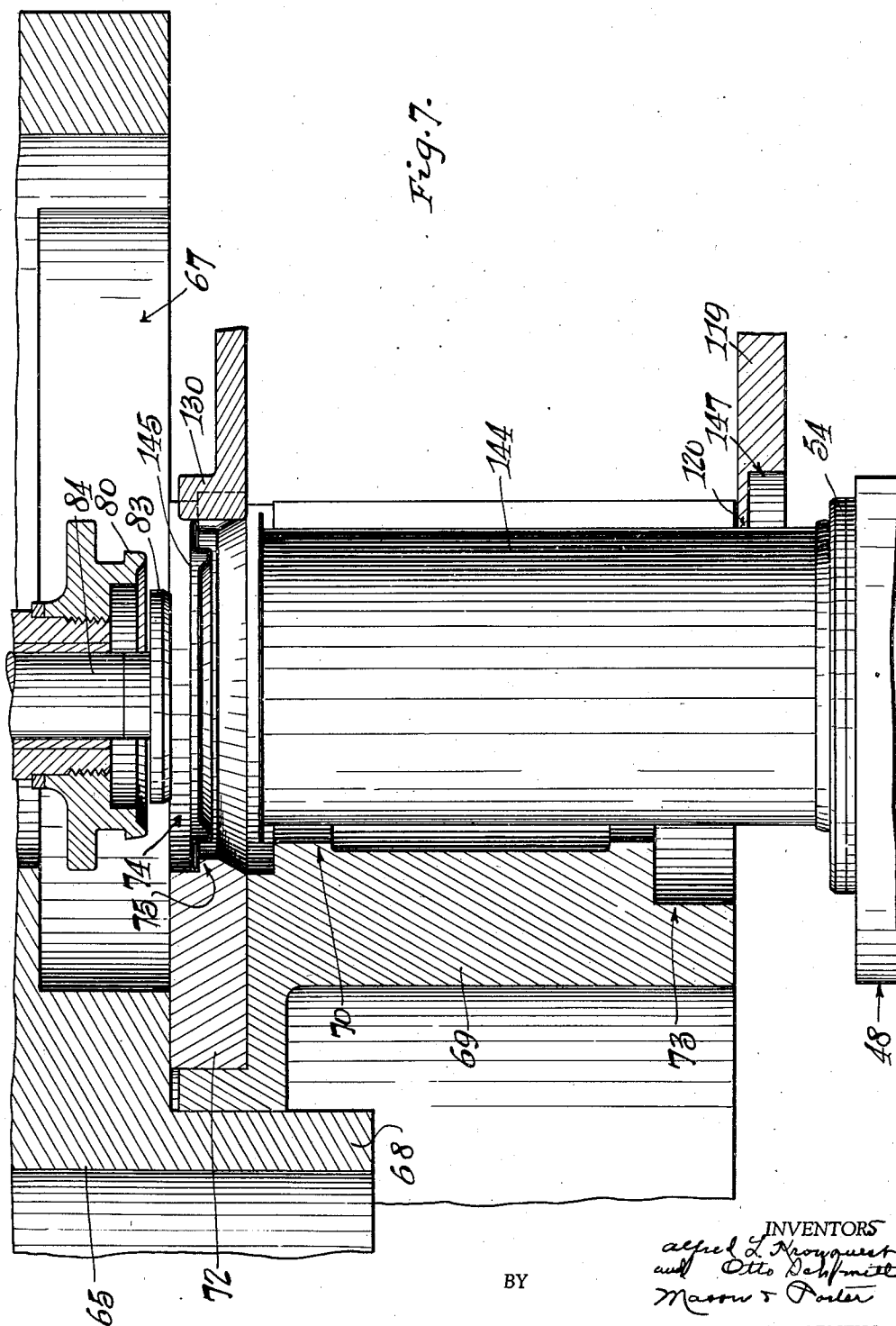
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Fig. 7.



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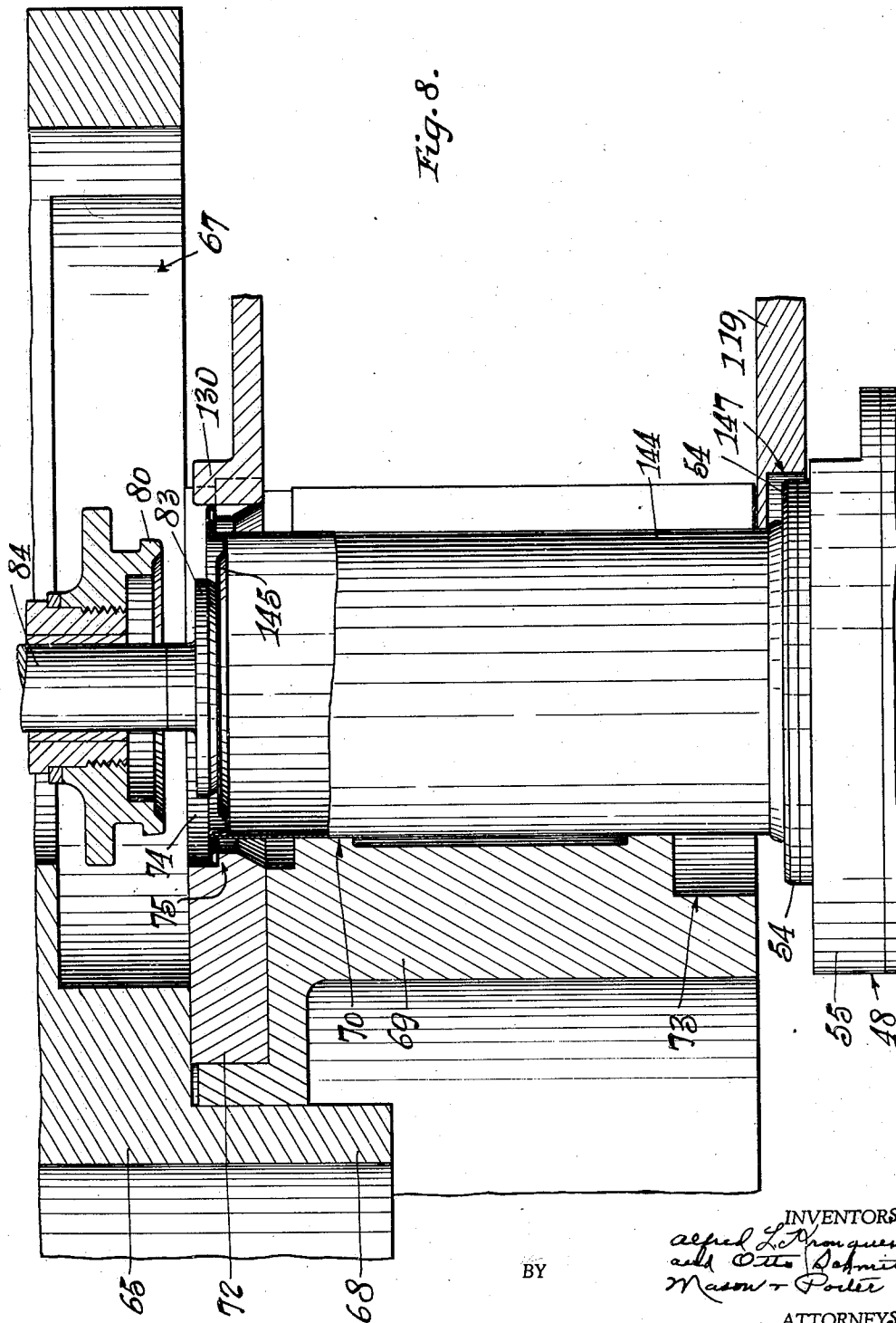
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MACHINE FOR DRAWING A VACUUM IN AND SEALING FILLED CONTAINERS

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Fig. 8.



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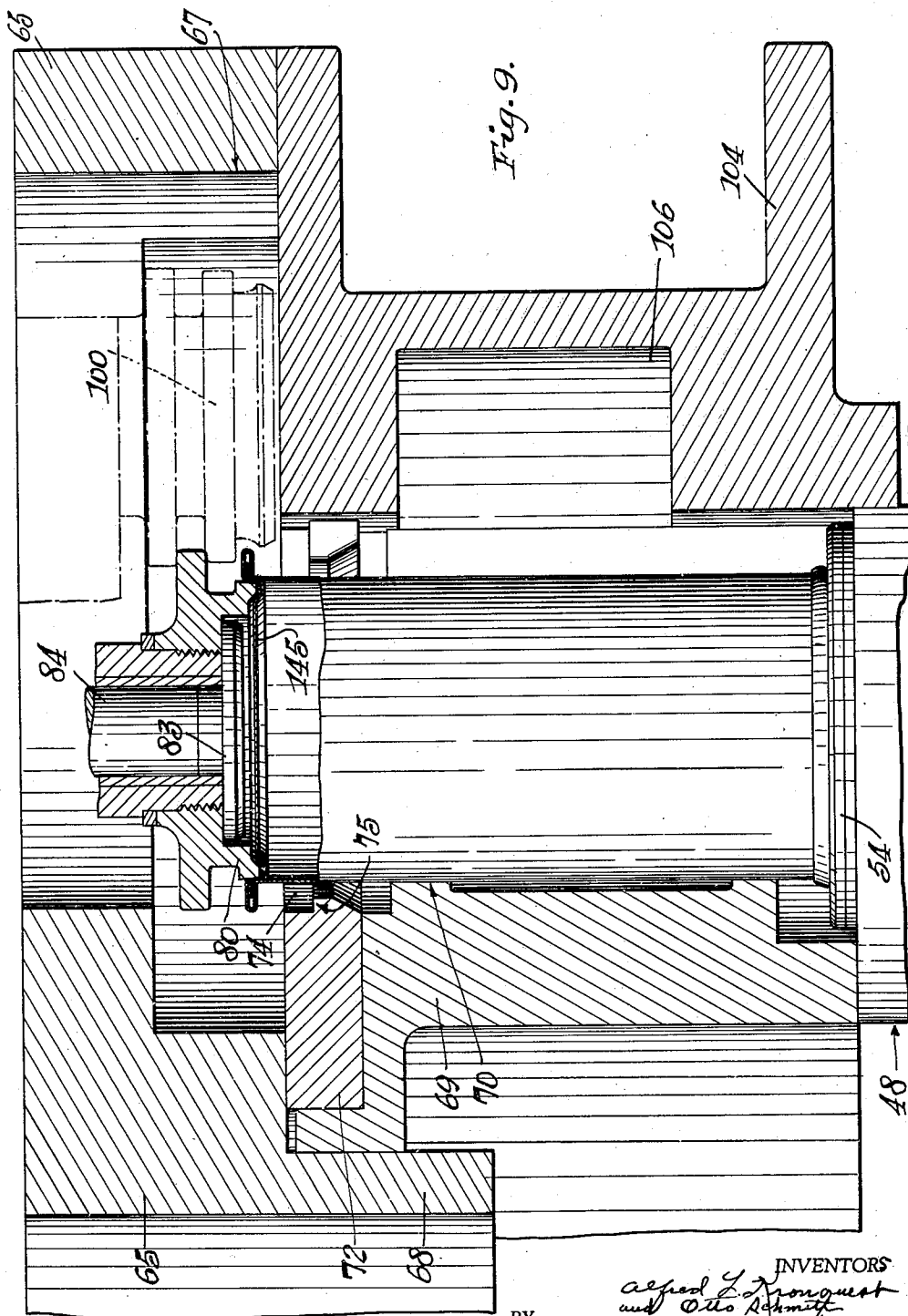
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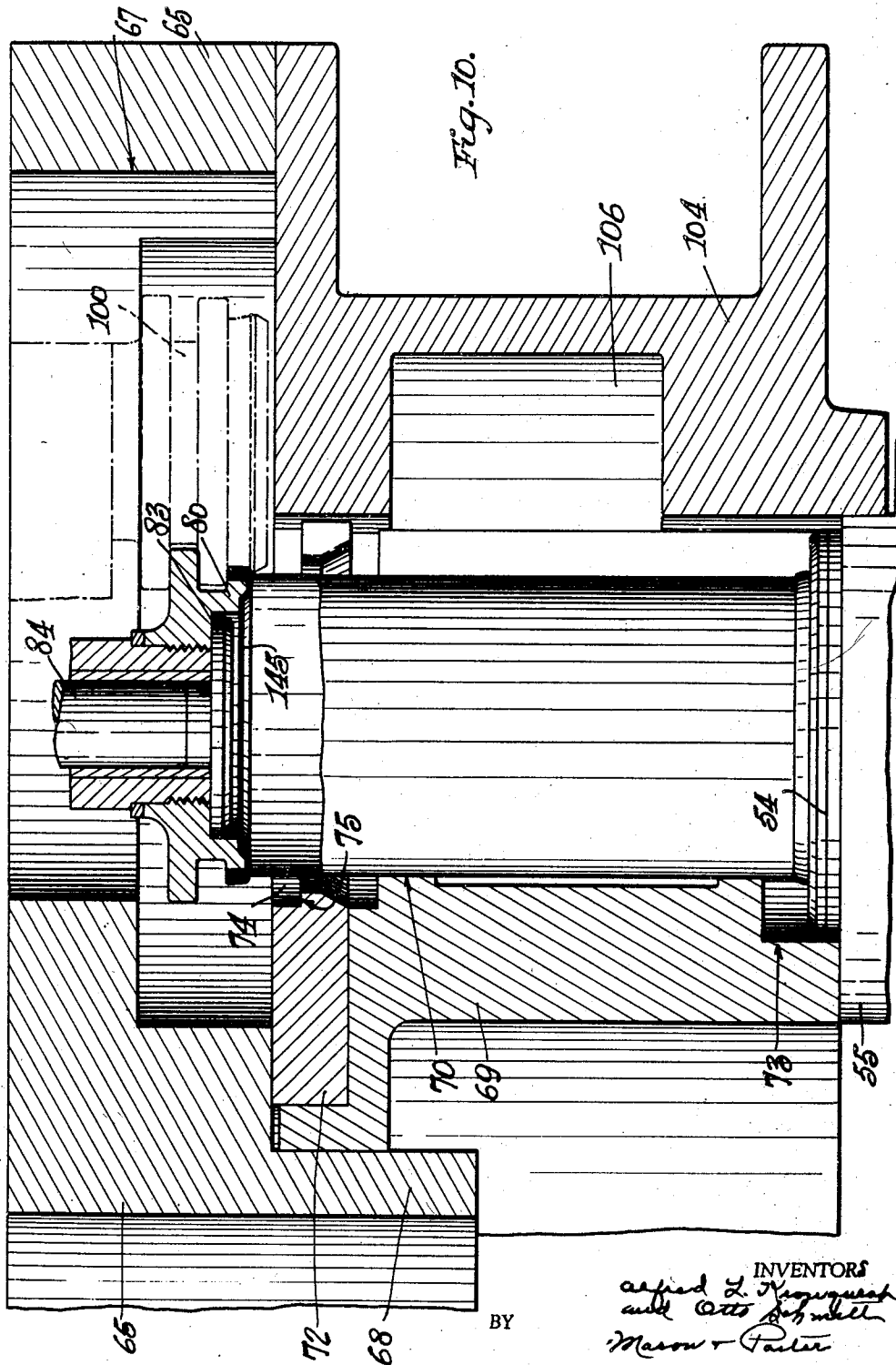
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MACHINE FOR DRAWING A VACUUM IN AND SEALING FILLED CONTAINERS

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MACHINE FOR DRAWING A VACUUM IN AND SEALING FILLED CONTAINERS

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Fig. 12.

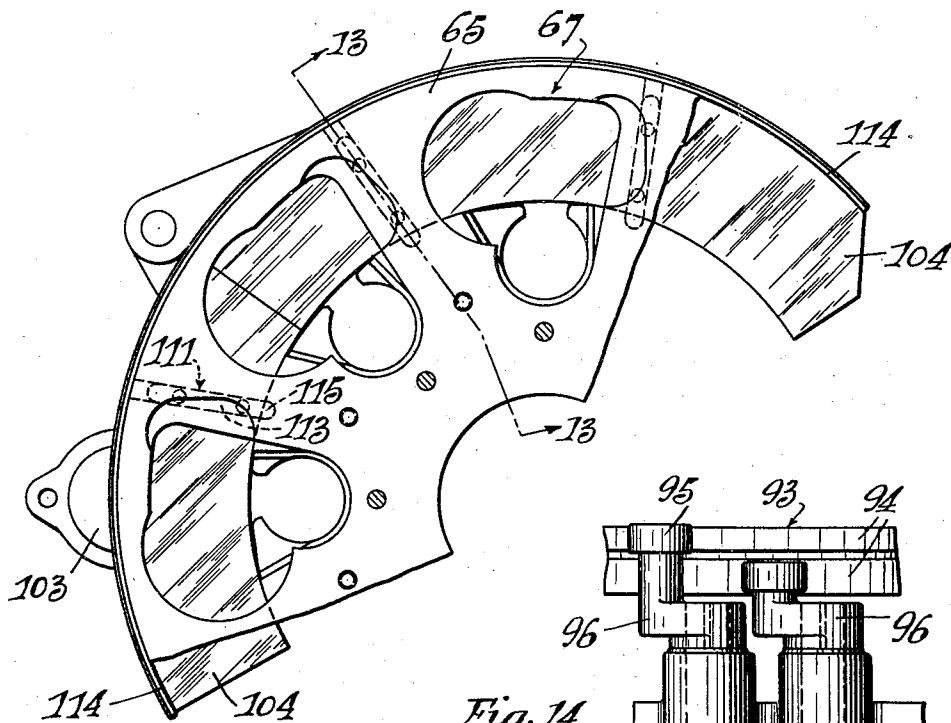


Fig. 14.

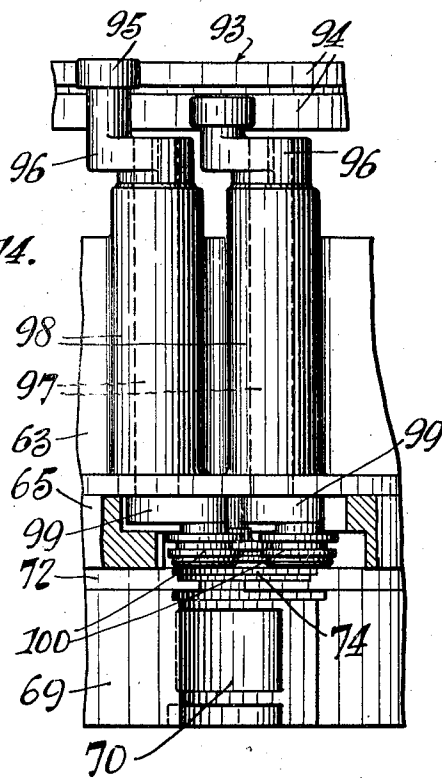
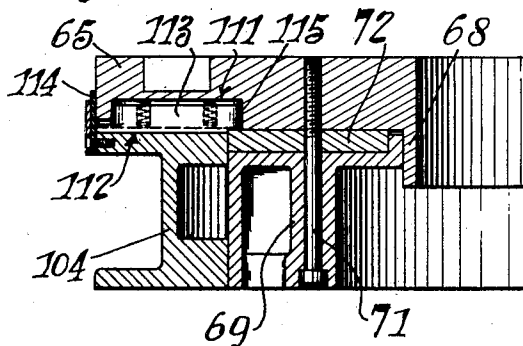


Fig. 13.



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MACHINE FOR DRAWING A VACUUM IN AND SEALING FILLED CONTAINERS

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Application September 20, 1938, Serial No. 230,870

17 Claims. (CL 113—23)

The invention relates generally to the art of treating filled containers and primarily seeks to provide a novel unitary machine structure including means for feeding in filled containers, for serially and loosely applying covers to said containers, for drawing a vacuum in the loosely covered containers, for double seam sealing said containers while the evacuated condition is maintained therein, and for delivering the sealed containers from the machine.

Among other objects, the invention seeks to provide a novel rotating pocketed turret structure, and novel sector like container supporting units and segment plating cooperating to provide vacuum chambers which include the turret pockets.

Another object of the invention is to provide individual vacuum chambers formed and shaped in a novel manner and each including a container head seaming or sealing equipment.

Another object of the invention is to provide novel means for applying the covers to the containers and for supporting the containers and the covers thereon in a manner preventing loss by agitation of the liquid fill of the containers, and for cooperatively moving the container and cover supporting means to first lightly chuck the container and cover during the drawing of the vacuum and thereafter positively chuck them preparatory to double seam sealing the cover on the container.

Another object of the invention is to provide novel means by which the vertical spacing of the container supporting means and the pocketed turret, the seaming devices and the cover feed in devices can be altered to adapt the machine for accommodating containers of various sizes.

Another object of the invention is to provide novel means for preventing spilling of contents of the containers as they are being moved toward the turret pockets.

Another object of the invention is to provide a common actuator for the plurality of individual seaming or sealing units disposed equidistantly about the axis of the turret.

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

In the drawings:

Figure 1 is a vertical cross section of the machine 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 a fragmentary side elevation illustrating a fragment of the turret, the vacuum chamber segment, and the container feed-in and feed-out devices.

Figure 4 is an enlarged fragmentary cross section through one container support, a portion of the turret, and the container and cover feed-in devices.

Figure 5 is an enlarged detail vertical cross section taken through the container feed-out devices and one of the container supports.

Figure 6 is a detail plan view and part horizontal section of the turret and the vacuum chamber segment, parts being broken away.

Figures 7, 8, 9 and 10 are enlarged detail sectional views illustrating a single turret pocket and successively effective positions of cooperating parts associated with that pocket.

Figure 11 is a fragmentary detail vertical section taken on the line 11—11 on Figure 6.

Figure 12 is a fragmentary detail plan view illustrating a modified form of vacuum chamber segment.

Figure 13 is a fragmentary detail vertical section taken on the line 13—13 on Figure 12.

Figure 14 is a fragmentary face view illustrating a single turret pocket and the associated cover seaming complement.

The improved machine for vacuumizing and double seam sealing containers embodies a container feed-in equipment generally designated A, a container cover feed-in mechanism generally designated B, the machine body proper in which the vacuumizing and double seam sealing is effected generally designated C, and means generally designated D for feeding the vacuumized and sealed containers from the machine into a take-off conveyor line.

In the practical development of the machine, there is provided a base 5 including a center bearing portion 6 and an upstanding gear housing portion 7. Bearing lugs 8 project radially from the base and support frame standards 9 upon the ends of which is supported a frame head 10 shaped to provide a lower gear housing portion 11. The gear housing portion 11 supports a removably mounted depending center bearing sleeve 12 and includes an upstanding integral bearing sleeve portion 13 and a laterally disposed integral depending sleeve 14. See Figure 1.

An upper gear housing portion 15 is removably mounted on the portion 11 and supports a removably mounted bearing head 16 which rotat-

ably supports a main drive shaft 17 equipped with driver bevel gears designated 18 and 19 respectively. See Figure 1.

The bevel gear 18 serves to impart rotation to a bevel gear sleeve 20 rotatably supported in suitable bearings in the bearing sleeve 13 and having a driver ring 21 secured thereto as shown in Figure 1 of the drawings.

The bevel gear 19 imparts rotation to a bevel gear 22 and to the center shaft 23 depending therefrom through the bearing sleeves 13 and 12 hereinbefore referred to.

The ring gear 21 imparts rotation through suitable idler gearing 24 to a spur gear 25 mounted between the housing portions 11, 15 and rotatable about a shaft 26 which is rotatably supported in the sleeve 14 and has rotation imparted thereto from the gear 25 through suitable overload clutch equipment illustrated in Figure 1 and generally designated 27.

At its lower end the shaft 26 is rotatably supported as at 28 in the base portion 7 and has a driver pinion 29 affixed thereto. This shaft also is equipped intermediate its ends with an elongated driver pinion 30, the purpose for which will later be described. See Figure 1.

An upper gear housing portion 31 is removably secured to the base housing portion 7 and includes an integral central bearing sleeve 32 and an integral lateral bearing sleeve 33, the latter encircling the shaft 26. See Figures 1 and 4.

A lower or container supporting turret 34 is rotatably supported in the bearing sleeve 32 and includes a central sleeve portion 35 which cooperates with a sleeve member 36 having rotative bearing in the bearing portion 6 of the base in mounting an upper or container conveying turret supporting sleeve 37 spline-connected as at 38 for vertical sliding movement of adjustment in the sleeves 35 and 36 for a purpose later to be described.

The lower sleeve member 36 is formed in two parts so as to provide an intermediate space in which an adjusting worm gear 39 is rotatably mounted. The worm gear 39 is internally threaded to receive the threads 40 formed on the sleeve 37. Rotation may be imparted to the worm gear 39 by a worm 41, and such rotation will serve to impart longitudinal movement to the sleeve 37 upwardly or downwardly depending upon the direction of the rotation. See Figures 1 and 5.

A large spur gear 42 and a smaller spur gear 43 are fixed to the sleeve member 37. Rotation is imparted to the gear 42 from the driver pinion 29 through suitable idler gearing 44, and rotation is imparted from the gear 43 to a gear 45 secured to a sleeve 46 rotatable in the bearing sleeve 33 and about the lower end of the shaft 26. See Figure 1.

The lower or container supporting turret 34 is constructed to include eight equidistantly spaced vertical bearings 47 each mounting a sector-like container supporting unit generally designated 48. See Figures 1, 2 and 4 of the drawings.

It will be observed by reference to Figure 4 of the drawings that each unit generally designated 48 includes a plunger portion 49 vertically reciprocable in the respective bearing 47 and equipped with a central roller 50 for riding a control cam track 51 and a lateral roller 52 engageable with a track section 53 secured to depend from a part of the housing portion 31, as shown in Figures 1 and 5 of the drawings. The track

51 serves to lift and lower the unit plungers 49, and the track section 53 is in the nature of a safety device assuring the lowering of any unit plungers which might tend to remain in elevated position after completion of the container sealing operation. See also Figure 5.

Each unit generally designated 48 also includes a container supporting pad 54, a support sector proper designated 55 and also in the nature of a vacuum sealing plate serving in a manner later to be described for sealing the lower ends of the container receiving turret pockets, and which is normally held elevated against the abutment shoulder 56 of the plunger by springs 57 interposed between the composite sector 55 and an abutment ring 58 carried by the plunger. See Figure 4.

Keyed as at 59 to the vertically adjustable center sleeve 37, and having rotative bearing as at 60 about a control cam supporting and bearing sleeve unit 61 in turn keyed as at 62 to the depending bearing sleeve 12, is an upper turret 63. See Figures 1 and 4 of the drawings. The turret 63 is constructed to include eight equidistantly spaced operative mechanism receiving bores 64. A plate member 65 is secured as at 66 to depend from the turret body 63 and is cored out, as illustrated in Figures 1, 4 and 6 of the drawings, to provide chambers 67 for accommodating the individual double seam sealing equipments. The plate 65 also includes a depending boss 68 on which is mounted a container conveying turret portion 69 formed to include eight equidistantly spaced peripheral pockets 70 each open at top and bottom and toward the periphery. Each pocket 70 is adapted to receive a container and is vertically aligned with the turret bores 64 hereinbefore referred to. The turret portion 69 is secured by screws 71 to the plate 65 with a head or cover ring 72 interposed therebetween in the manner illustrated in Figures 1, 6 and 11 of the drawings.

Each container receiving pocket in the turret portion 69 includes a container pad receiving recess 73, and at the position of each of the pockets the ring 72 is equipped with a cover receiving pocket 74 and suitable cover flange seating equipment 75, as is best shown in Figures 4, 6 and 7 to 10 of the drawings.

It will be observed by reference to Figure 6 of the drawings that the container receiving pockets in the turret portion 69 and the ring 72 have advance flared receiving wall portions 76 and abutment or trailing wall portions 77 angled slightly forward of an imaginary line drawn radially through the turret and pocket axes whereby to facilitate the feeding of the containers and covers into the pockets and the retention thereof in said pockets during movement of the turret.

In each turret bore 64 a chuck sleeve 78 is rotatably supported in bearings 79, the rotary chuck proper being supported at the lower end of the respective sleeve and designated 80. A pinion 81 is keyed to each sleeve 78, and all of the pinions and sleeves are simultaneously rotated by a single spur gear 82 secured to the lower end of the center shaft 23 hereinbefore described.

A container cover supporting and knockout pad 83 is associated with and recessed in each chuck 80 and each pad is carried at the lower end of an actuator rod 84 reciprocable in the respective sleeve 78 and supported rotatably at its upper end as at 85 in an actuator head 86 vertically reciprocable in a bearing member 87, each said actuator head being splined as at 88 within its associ-

ated bearing member as indicated in Figure 4. A spring 88 tends to force each rod 84 and pad 83 downwardly, and each head 86 carries a roller 90 movable in a suitable groove in a cam 91 stationarily suspended as at 92 from the supporting member 61.

Another cam 93 is supported on the member 61 and includes two individual peripheral cam surfaces 94 which are engaged by rollers 95 on actuator cranks 96 secured to rock shafts 97 which are rockable in bearings 98 carried by the turret body 63 and which carry cranks 99 at their lower ends upon which are mounted the first and second operation seaming rollers generally designated 100. See Figures 1, 4, 6 and 14.

It will be observed by reference to Figures 1, 2 and 6 of the drawings, that the vacuum chamber equipment includes a base sector 101 secured as at 102 to the frame standards 9 and having formed therein a duct 103 for connection with any suitable evacuating means (not shown). The body sector 104 of this equipment is formed to provide pocket closure plate sectors 105 and a vacuum chamber portion 106, the latter communicating as at 107 with the duct 103. The sector 104 may be divided as at 108 and the sections thereof hinge-connected as at 109, the longer free section being removably secured in place by any suitable securing means 110. By thus forming the body 104 the hinged section thereof may be swung outwardly away from the turret so as to render the turret pockets accessible.

In Figures 12 and 13 of the drawings a modified equipment is disclosed in which the plate 65 is provided at its under surface with a plurality of cross grooves 111, one thereof being positioned intermediate each adjacent pair of plate chambers 67. In this equipment the upper surface of the chamber body 104 is spaced below the under surface of the plate 65 as indicated at 112 in Figure 13. In each groove 111 is mounted a spring pressed key 113, the spring equipments serving to yieldably press the keys against the upper surface of the body 104. A leather strip 114 is secured to the body 104 and serves to seal the space intervening said body and the edge of the plate 65. In order to prevent displacement of the keys when they are not in contact with the body 104, the inner ends 115 thereof overlie the outer portion of the ring 72.

It will be noted that the keys 113 are disposed on an angle inwardly and backwardly with respect to a radial of the turret and thus tend to spread oil film present on the upper surface of the body 104 inwardly over the body so as to facilitate vacuum seal. It should be understood that the surfaces of the turret portion 69, the plate 65 and the body 104 which move relatively in contacting relation are kept supplied with a thin film of oil so as to provide an efficient vacuum seal.

Containers are fed into the machine by a suitably driven endless conveyor 116 onto a supporting table 117, being suitably guided as at 118. At the delivery end of the chain 116, control of the moving can bodies is assumed by a rotating disc 119 key-secured to the upper end of the sleeve 46 and provided with eight equidistantly spaced peripheral pockets 120 for receiving and imparting movement to the containers. It will be observed by reference to Figure 2 of the drawings that the disc 119 is disposed at one side of the container conveying turret and is driven in timed relation therewith so as to feed the containers serially into the turret pockets 70.

Upon a frame segment 121 secured to and depending from the frame head 14 is vertically adjustably secured a bracket 122 having a base flange 123 to which is secured a supporting plate 124. See Figures 1, 2 and 4. A container cover feeding mechanism 125 is supported upon the plate 124 and this unit may be of any conventional construction capable of holding a plurality of covers and delivering them serially out of the bottom thereof.

At its under surface the plate 124 is provided with a grooveway 126 lined by cover retaining flanges 127. A ring gear 128 is rotatable within a central aperture in the plate 124, and it will be observed that the plate is disposed eccentrically with relation to the shaft 26 so that the gear 128 meshes with the elongated pinion 30 carried by said shaft and rotation of the shaft is imparted to the ring gear 128. A star wheel 129 is secured to rotate with the ring gear and is equipped with radially projected fingers 130 which project into the plate grooveway 126 and serve to convey container covers through the grooveway and over the supporting flanges 127. It will be observed by reference to Figure 2 of the drawings that the cover guiding surfaces include a deflector surface 131 which facilitates movement of the covers serially from the grooveway 126 into the receiving pockets 74 and onto the supporting flanges 75 of the turret ring 72.

In order to prevent sloshing and spilling of liquid with which the containers are filled during the transferring of the containers from the chain 116 to the disc 119 and thence into the turret pockets, a spill prevention plate 132 is supported over the path of travel of the containers in the manner illustrated in Figures 2 and 3 of the drawings. The plate 132 is suspended from the supporting plate 124 and is yieldably pressed against the upper or open ends of the containers by spring mounting devices 133 in the manner illustrated in Figure 3 of the drawings.

A sleeve 134 is rotatable about the frame standard 9 at the discharge side of the machine and within the bearing sleeve 135 carried by the housing portion 31. A gear 136 is affixed to the sleeve 134 and meshes with the driver gear 42 hereinbefore referred to. At its upper end the sleeve carries a star wheel 137 having arms 138 extended therefrom in a generally radial direction and serving to feed containers which have been vacuumized and sealed out of the turret pockets and onto an offtake conveyor. While being moved by the arms the containers are guided by a suitable guide rail 139, as indicated in Figure 2 of the drawings, and said containers are ultimately discharged onto the offtake runway 140 to be conveyed away from the machine on a suitable conveyor 141, the drive sprocket 142 of which is driven by worm connections 143 from the sleeve 134.

The filled container bodies are indicated at 144, the covers at 145, and the completed or vacuumized and sealed containers at 146.

In operation, the filled containers are conveyed to the machine on the chain 116 and are transferred by the rotating disc 119 to the individual turret pockets 70. Spilling of liquid from the containers during alteration of their path of movement while entering the machine is avoided by yielding contact of the presser plate 132 with the open tops of the containers.

The machine turret structures, the container conveying disc 119, and the cover conveying star wheel 129 are arranged in a novel and compact

manner designed to consume a minimum of space. It will be observed by reference to Figure 2 of the drawings that the star wheel 129 is disposed above the disc 119 and eccentrically of the axis thereof. The disc and star wheel rotate at different speeds but are so timed that a cover is definitely placed over each container in each turret pocket in the manner illustrated in Figures 2 and 7 of the drawings.

In Figures 7 to 10 of the drawings, successive steps in the positioning, vacuumizing and sealing of the containers are shown, and in Figure 6 of the drawings the timing of the essential successive operations in the machine is marked by turret position indications identified by Roman numerals.

The cams 51, 91 and 94 are so shaped and co-relatively positioned that the moving parts of the machine function in the manner hereinafter outlined.

It is to be understood that the composite machine turret structure 63, 69, 34 constantly rotates. At point I indicated on Figure 6, the cover supporting and knockout pad 83 starts down. At this time neither the container 144 nor the cover 145 are properly positioned in the turret.

At point II the parts are positioned as indicated in Figure 7 of the drawings. The cover 145 is substantially in place in the turret, but it will be noted that the container 144 is not fully seated in the receiving pocket.

At point III the container and cover are properly positioned in the turret pocket, the pad 83 is in engagement with the cover and the container supporting pad 54 has been elevated high enough to force the container tightly against the cover. This contacting of container and cover under control of the pads above and below effectively prevents displacement and loss of liquid from the containers during movement thereof incident to operation of the machine. At this time the star wheel 129, 130 and the feed disc 119 are still in effective engagement with the cover and container, and it will be noted that the under surface of the disc 119 is provided with recesses 147 to permit elevation of the container supporting pads 54 at this interval of the machine operation. See Figures 4 and 8.

At point IV, the turret pocket 70 has encountered one of the pocket closing sectors 104 of the vacuum chamber unit and is closed peripherally by the plating 105 as shown in Figure 6. At this point the container supporting pad 54 has cleared the container feed disc 119 and this pad and the cover supporting and knockout pad 83 start to rise in unison with the container and cover held between them in the assembled state.

At point V, the pocket bottom sealing sector portion 55 reaches the position where it yieldably engages the bottom surface of the turret 69 and seals the bottom of the pocket 70. At this time the container cover is positioned $\frac{1}{8}$ of an inch below the chuck 80 and the cover supporting and knockout pad 83 is still in engagement with the cover.

At point VI, the cover supporting and knockout pad 83 moves all the way up in the chuck 80 so that in this position the cover is freed and loosely held upon the container. This condition of the parts is illustrated in Figure 9, and while the parts are in this condition vacuumizing of the container takes place.

At point VII, the container supporting pad 54 is again elevated slightly to raise the container and cover against the chuck in the manner illus-

trated in Figure 10 of the drawings, the pad 83 having been previously elevated out of contact with the cover above stated. In this condition of the parts the vacuumizing of the container has been completed and double seam sealing operation is about to begin.

Obviously, the sealing function is completed while the evacuated condition in the container is maintained and for the purpose of maintaining that condition.

At point VIII, the first seaming operation begins; at point IX, the first seaming operation terminates; at point X, the second seaming operation begins, and at point XI, the second seaming operation terminates and the knockout pad 83 starts to move downwardly. At point XII, the container support and knockout pad move downwardly in unison, and at point XIII these parts reach their lowermost position. At point XIV the knockout pad starts upwardly away from the container cover and completes this movement at point XV so that the sealed container can be removed from its support at the discharge station.

As has been previously described, the track section 53 assures replacement of the container supporting plungers 49 at their lowermost positions prior to the discharging of the sealed containers so that contact with the star wheel 137 is prevented.

Since the vacuum chamber sector 104 communicates constantly, through the duct 107, 103, with a suitable evacuating means, this sector constitutes means for drawing a vacuum in the turret pockets 70 as they serially move into communication with the chamber 106 of that sector.

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.

We claim:

1. In a machine of the character described, a turret having container receiving pockets therein each open at the bottom and communicating at the top with a sealing chamber portion, container sealing means in each chamber portion including a chuck, means for supporting a cover in each pocket, means for supporting and lifting containers in the pockets and movable to seal the bottoms of the pockets and lift the covers from their supports and move them on the containers into engagement with the chuck, means for holding each cover on each upwardly moving can and movable away to free the cover to rest lightly on the container when the cover is spaced only slightly from the chuck and means for controlling the drawing of a vacuum in each container while the cover is resting lightly on the container.

2. In a machine of the character described, a rotatable turret having container receiving pockets therein each open at the bottom and communicating at the top with a sealing chamber portion, container sealing means in each chamber portion including a chuck, a cover pad recessed in and vertically movable relative to said chuck, means for supporting a cover in each pocket, a pocket bottom sealing and container supporting and lifting unit associated with each pocket and each including a turret engaging and pocket sealing head and a support pad movable relative to and through the head, means for co-operatively moving the pads and units to cause each head to seal the bottom of its associated pocket and each support pad to lift a container

into contact with the associated cover and thence upward toward the chuck and each cover pad to engage the respective cover and hold it on the upwardly moving container until it is but slightly spaced from the chuck and then move upwardly away from the cover to free the cover and permit it to rest lightly on the container and means for controlling the drawing of a vacuum in each container while the cover is resting lightly on the container.

3. In a machine of the character described, a rotatable turret having container receiving pockets therein each open at the bottom and communicating at the top with a sealing chamber portion, container sealing means in each chamber portion including a chuck, a cover pad recessed in and vertically movable relative to said chuck, means for supporting a cover in each pocket, a pocket bottom sealing and container supporting and lifting unit associated with each pocket and each including a turret engaging and pocket sealing head and a support pad movable relative to and through the head, means for cooperatively moving the pads and units to cause each head to seal the bottom of its associated pocket and each support pad to lift a container into contact with the associated cover and thence upward toward the chuck and each cover pad to engage the respective cover and hold it on the upwardly moving container until it is but slightly spaced from the chuck and then move upwardly away from the cover to free the cover and permit it to rest lightly on the container, means controlling the drawing of a vacuum in each container while the cover is resting lightly thereon, means for thereafter additionally lifting the support pad to chuck the container and cover, and means for actuating the container sealing means to seal the containers while the vacuum is maintained.

4. In a machine of the character described, a rotatable turret having container receiving pockets therein each open at the bottom and peripherally communicating at the top with a sealing chamber portion, container sealing means in each chamber portion including a chuck, a cover pad recessed in and vertically movable relative to said chuck, means for supporting a cover in each pocket, a pocket bottom sealing and container supporting and lifting unit associated with each pocket and each including a turret engaging and pocket sealing head and a support pad movable relative to and through the head, means for cooperatively moving the pads and units to cause each head to seal the bottom of its associated pocket and each support pad to lift a container into contact with the associated cover and thence upward toward the chuck and each cover pad to engage the respective cover and hold it on the upwardly moving container until it is but slightly spaced from the chuck and then move upwardly away from the cover to free the cover and permit it to rest lightly on the container, a chambered sector opposed to a portion of the periphery of the turret and effective to peripherally seal pockets opposed thereto, said sector chamber having a vacuum drawn therein so that a vacuum will be drawn in pockets communicating with the sector chamber and in the containers in said pockets while their covers rest lightly thereon, means effective after the drawing of a vacuum in each container to additionally lift the respective support pad to chuck the container, and means for actuating the container sealing means

to seal the containers while the vacuum is maintained.

5. In a machine of the character described, a rotatable turret structure composed of upper and lower vertically spaced portions rotatable in unison and one telescopically mounted with respect to the other, said lower portion including container supporting means, and said upper portion having a plurality of container receiving pockets, means for drawing a vacuum in the pockets, container sealing means associated with each pocket, and means including self-locking worm and gear connections for moving the turret portions apart or for drawing them together to adjust the vertical spacing of said turret portions.

6. In a machine of the character described, a rotatable turret having container receiving pockets therein, means for supporting containers in said pockets, means effective for drawing a vacuum in said pockets, a container sealing means associated with each pocket and each including first and second operation seaming rollers and a rotary chuck, means movable with the turret for actuating each set of seaming rollers, an individual gear for driving each chuck, a single driver gear for actuating all of the individual gears, a stationary ring presenting cam surfaces effective for actuating all of the seaming roller actuating means, a container cover engaging pad recessed in and movable relative to each chuck, an actuator for each pad, a stationary cam for actuating all of the pad actuators, a common support on which said ring and said cams are removably mounted, and means for moving vertically all parts enumerated other than the container supporting means to adapt the machine for operations upon containers of varied heights.

7. In a machine for sealing containers in vacuum, a container supporting turret comprising a rotor having a plurality of equidistantly spaced vertical bearings, a plunger movable in each bearing and having a container supporting pad at its upper end, a pocket sealing head surrounding and slidable on each plunger, stop means limiting upward movement of said head, means yieldably urging each head into contact with its associated stop means whereby said head and pad normally move together with the plunger and said head can be held against movement while permitting the pad to move additionally, and cam means for lifting and lowering of the plungers in the bearings.

8. In a machine of the character described, a turret including a plurality of equidistantly spaced container receiving pockets open peripherally and at bottom and top, a head having bores therein registering with the pockets, a plate interposed between the head and the turret and having individual sealing chambers therein one associated with each pocket, sealing means in each bore and chamber, means for elevating a container in each pocket including a pocket bottom sealing head, and means encountered by the turret during movement thereof for closing the pockets peripherally and for drawing a vacuum in said pockets.

9. In a machine of the character described, a turret including a plurality of equidistantly spaced container receiving pockets open peripherally and at bottom and top, a head having bores therein registering with the pockets, a plate interposed between the head and the turret and having individual sealing chambers

therein one associated with each pocket, sealing means in each bore and sealing chamber, means for elevating a container in each pocket including a pocket bottom sealing head, and a stationary chambered sector opposed to a portion of the periphery of the turret and effective to peripherally seal pockets opposed thereto, said sector chamber having a vacuum drawn therein so that a vacuum will be drawn in said opposed pockets, and said sealing chambers including portions overlying and adapted to be sealed by said sector.

10. In a machine of the character described, a turret including a plurality of equidistantly spaced container receiving pockets open peripherally and at bottom and top, a head having bores therein registering with the pockets, a plate interposed between the head and the turret and having individual sealing chambers therein one associated with each pocket, sealing means in each bore and chamber, means for elevating a container in each pocket including a pocket bottom sealing head, a cover supporting ring interposed between the turret and the plate and having provision therein for supporting a cover at the upper end of each pocket, and means encountered by the turret during movement thereof for closing the pockets peripherally and for drawing a vacuum in said pockets.

11. In a machine of the character described, a turret including a plurality of equidistantly spaced container receiving pockets open peripherally and at bottom and top, a head having bores therein registering with the pockets, a plate interposed between the head and the turret and having individual sealing chambers therein one associated with each pocket, sealing means in each bore and chamber, means for elevating a container in each pocket including a pocket bottom sealing head, a cover supporting ring interposed between the turret and the plate and having provision therein for supporting a cover at the upper end of each pocket, means encountered by the turret during movement thereof for closing the pockets peripherally and for drawing a vacuum in said pockets, and separate feeding means mounted in vertically spaced relation and rotatable about individual axes the lowermost of said means being effective for feeding containers into the turret pockets and the uppermost of said means being effective for feeding a cover to the supporting means therefor above each container.

12. In a machine of the character described, a rotatable turret having a plurality of equidistantly spaced pockets each having a cover supporting means and a sealing means associated therewith including a chuck, means for supporting and elevating containers in the pockets for causing them to engage and lift the covers and move with them toward the chucks, means for holding the covers on the containers while moving upwardly to prevent spilling of container contents, means for releasing the holding means to free the covers, means for thereafter drawing a vacuum in the pockets, and means for thereafter effecting a sealing of the container.

13. In a machine of the character described, a rotatable turret having a plurality of equidistantly spaced pockets each having a cover supporting means and a sealing means associated therewith including a chuck, means for supporting and elevating containers in the

pockets for causing them to engage and lift the covers and move with them toward the chucks, means for holding the covers on the containers while moving upwardly to prevent spilling of container contents, means for releasing the holding means to free the covers, means for thereafter drawing a vacuum in the pockets, means for thereafter effecting a sealing of the containers, and means for feeding covers and containers into the pockets including a yieldable plate engaged by the upper ends of the in-feeding containers and effective to prevent spilling of contents from the containers.

14. In a machine of the character described, a rotatable turret structure composed of upper and lower vertically spaced portions rotatable in unison and one telescopically mounted with respect to the other to permit adjustment of the vertical spacing of the portions, said lower portion including container supporting means, and said upper portion having a plurality of container receiving pockets, means for drawing a vacuum in the pockets, container sealing means associated with each pocket, frame means including a head portion, means for feeding containers into the pockets, a drive shaft for imparting movement to said container feeding means and including an elongated pinion portion, means for feeding covers into said pockets including a ring gear driven by said pinion portion, and means for vertically-adjustably supporting said cover feeding means on said frame head portion.

15. In a machine of the character described, a turret including a plurality of equidistantly spaced container receiving pockets open peripherally and at bottom and top, a head having bores therein registering with the pockets, a plate interposed between the head and the turret and having individual sealing chambers therein one associated with each pocket, sealing means in each bore and chamber, means for elevating a container in each pocket including a pocket bottom sealing head, a stationary chambered sector opposed to a portion of the periphery of the turret and effective to peripherally seal pockets, said sector chamber having a vacuum drawn therein so that a vacuum will be drawn in said opposed pockets, said chambers including portions overlying and adapted to be sealed by said sector, yieldable means sealing said plate and sector against ingress of air over the length of said sector, and a seal key yieldably depending from said plates between each adjacent pair of sealing chambers and presented for sealing engagement with and across said sector for preventing free communication between said adjacent sealing chambers where they overlie said sector.

16. In a machine of the character described, the combination of a rotatable turret having a plurality of container receiving pockets each open peripherally, container sealing means associated with each pocket, a stationary chambered sector opposed to a portion of the periphery of the turret and effective to peripherally seal pockets opposed thereto, said sector chamber having a vacuum drawn therein so that a vacuum will be drawn in said opposed pockets, vertically reciprocable means for supporting a container in each pocket beneath the associated sealing means and including a pocket bottom sealing head, and means for effecting a lifting of each container supporting means including the bottom sealing head to close the bottoms

of pockets while they are peripherally opposed to the sector and present the containers in position for engagement by the respective sealing means and a lowering thereof for opening said pocket bottoms and withdrawing said containers 5 from said position.

17. In a machine of the character described, a rotatable turret structure composed of upper and lower vertically spaced portions rotatable in unison and one telescopically mounted and vertically relatively movable with respect to each 10 other to provide adjustability of the vertical

spacing of the portions, said upper portion having a plurality of container receiving pockets, means for drawing a vacuum in the pockets, container sealing means associated with each pocket, and means including worm gearing connections for moving the turret portions apart or for drawing them together and also effective for securing the adjusted spaced relation of the turret portions.

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