

Feb. 2, 1926.

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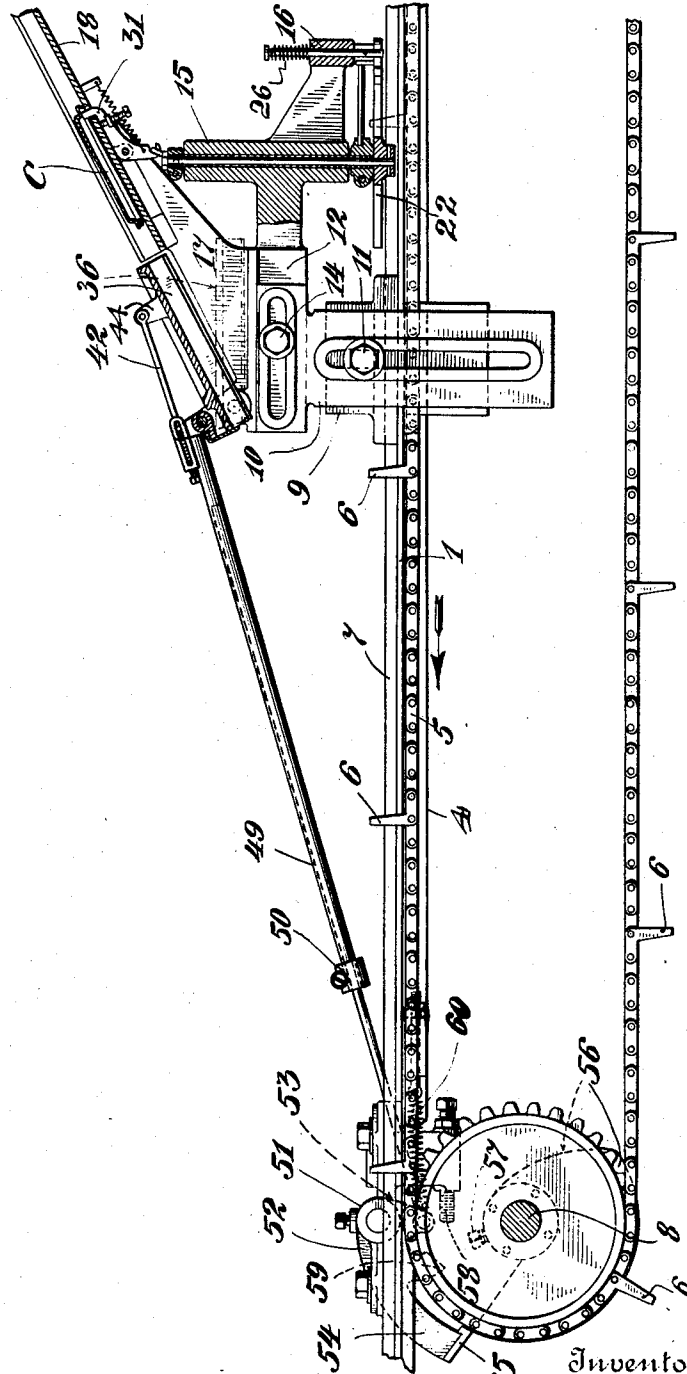
M. JAEGER

PACKAGE ASSEMBLING MACHINE

Filed April 20, 1920

4 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

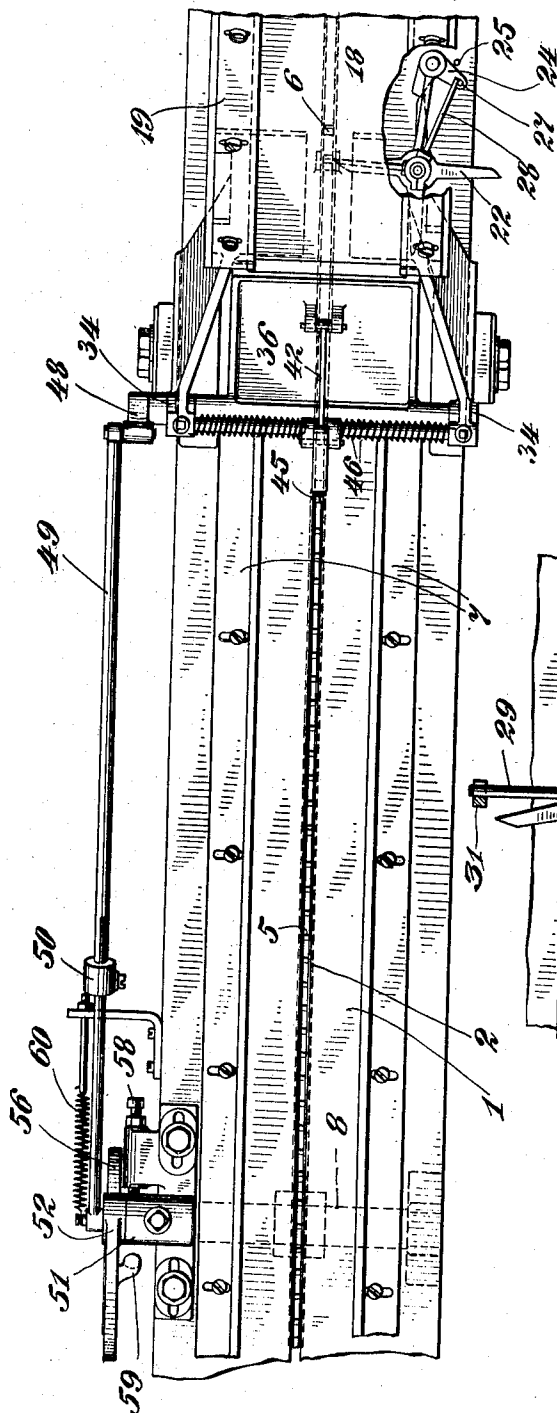
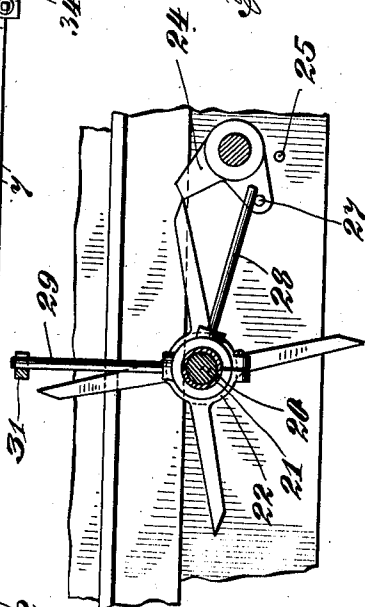


Fig. 3.



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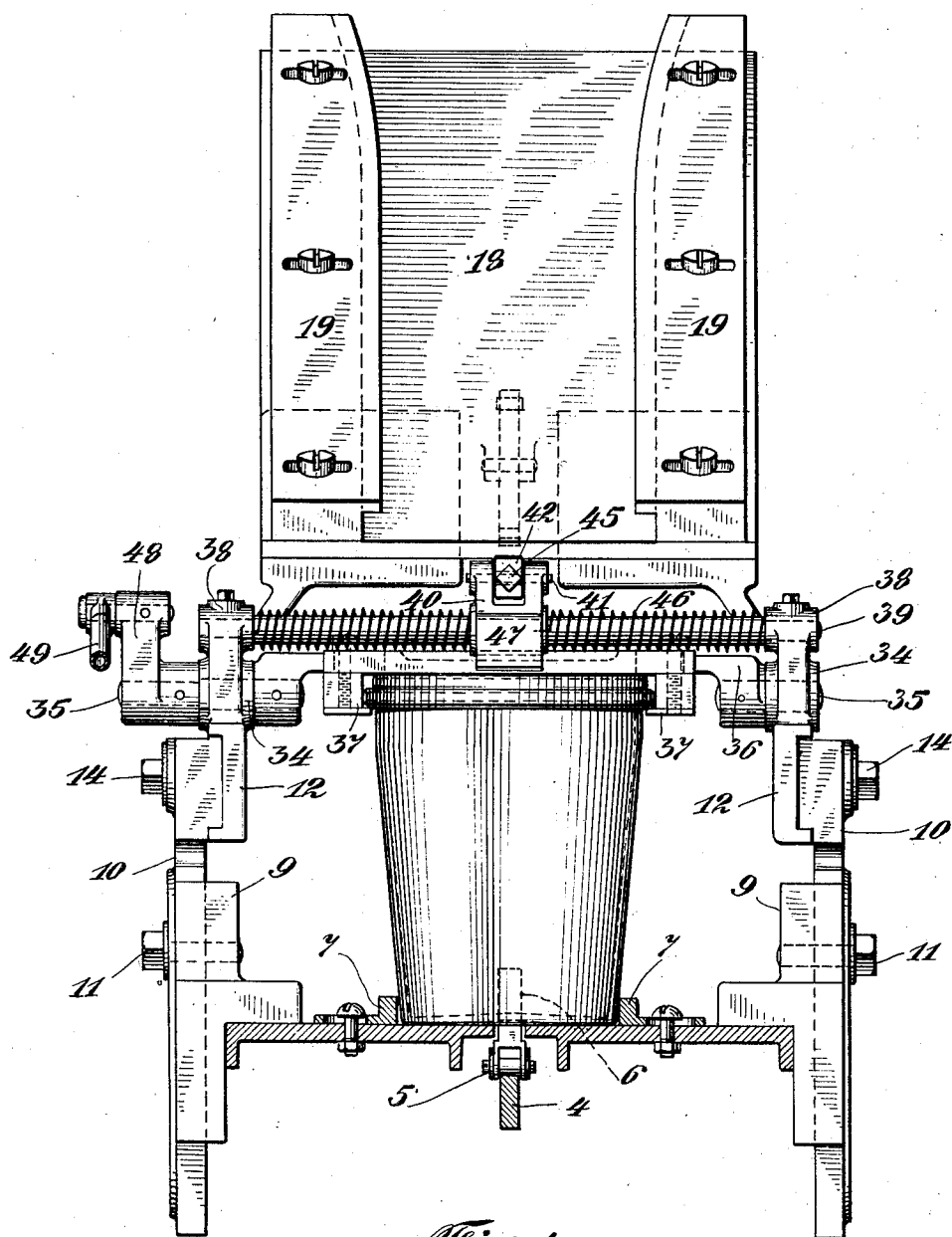


Fig. 4.

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4 Sheets-Sheet 4

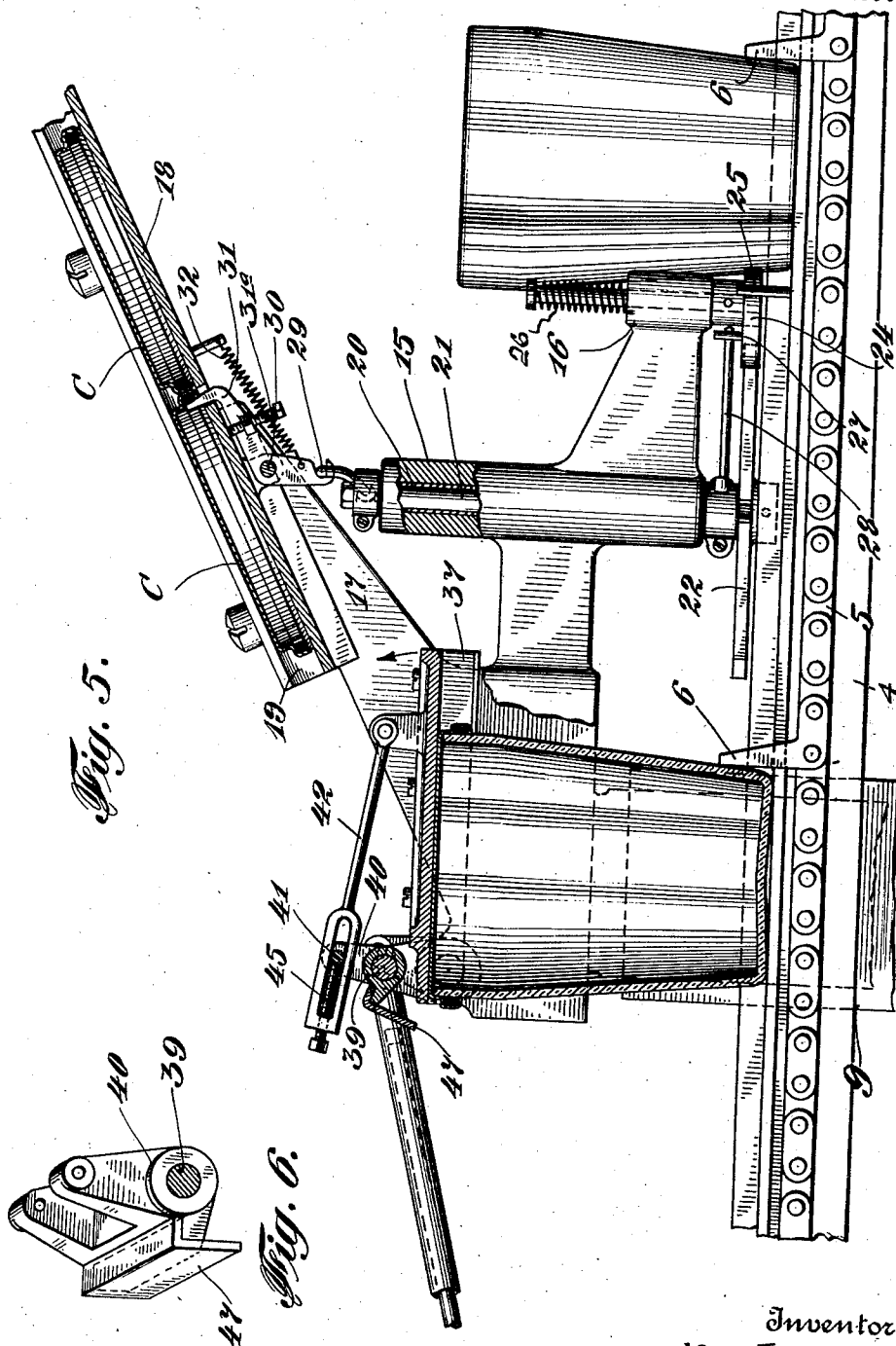


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

MAX JAEGER, OF BROOKLYN, NEW YORK, ASSIGNOR TO ANCHOR CAP & CLOSURE CORPORATION, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

PACKAGE-ASSEMBLING MACHINE.

Application filed April 20, 1920. Serial No. 375,240.

To all whom it may concern:

Be it known that I, MAX JAEGER, a citizen of the United States, residing at Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in Package-Assembling Machines, of which the following is a specification.

This invention relates broadly to the packaging or packing art, and has to do more particularly with improvements in machines utilized for automatically assembling packages by placing suitable closures or caps upon vessels or containers.

As is well known in the art, it is customary to package various products in vessels or cans, and close the receptacles with suitable covers or caps. Sometimes it is desirable to seal the closure hermetically upon the vessel, while with some products hermetic sealing is not necessary. Likewise, in some instances the placing of the cap upon the vessel may complete the operation, as for example, in the case of caps which are retained on the vessels by friction or the resiliency of the cap, while in other instances it is desirable to subject the package to a further operation after the closure has been assembled on the receptacle, for the purpose of forming a seal or for retaining the closure in position on the vessel.

While the particular embodiment which is used as the illustrative disclosure in the following description and accompanying drawings is designed primarily for use in association with a sealing machine, which is rendered effective on the closures after they have been assembled on the receptacles in order to re-form them or form a seal between the closure and the vessel, the invention is not limited to such an embodiment or such a use, but is adaptable to a wide range of variation in the embodiment of the principles of construction, operation and mechanical organization which characterize it.

The general object of the invention is to provide an improved simplified and highly efficient mechanism whereby closures, such as suitable caps, may be accurately assembled upon proper vessels or receptacles automatically at a high rate of speed, and without subjecting the package or its contents to contamination or to handling or

manipulation which might injure a fragile vessel or spill the contents.

A further object of the invention is the provision of such a mechanism which may be synchronized or articulated in manipulation with suitable means for filling the vessels, for feeding them, and for sealing the closures upon them.

A further object of the invention is the provision of an improved mechanism which is operable automatically to feed the closures or caps to vessels presented to receive them, the feed of the respective closures being controlled by the respective vessels to which they are to be applied, so that loss or waste of the caps is avoided, and the application of a cap to each vessel is assured.

A further object of the invention is the provision of improved mechanism which is so organized as to facilitate its rapid adjustment for the accommodation of receptacles and closures of any of a variety of sizes, while maintaining the proper synchronism between the closure applying mechanism and the sealing mechanism.

A further object of the invention is the provision of a mechanism of the character above specified which is adapted to effect the rapid and accurate assembling of closures upon vessels and their complete seating thereon while the latter are being fed or moved progressively, without requiring any stop or any change in the speed of movement of the vessels.

Other and further objects and advantages of the invention will be obvious upon an understanding of the illustrative embodiment disclosed, or indicated in the appended claims.

Described generally, the invention includes a vessel-presenting means which is operable to feed vessels successively at proper definite intervals, and which may operate behind a suitable filling device whereby the contents of the vessels are placed in them, with which vessel-presenting means is associated a cap feeding mechanism which is operable to feed caps successively one at a time to a cap positioning device. By virtue of an interlocking arrangement the release of the respective caps to permit their feeding to the positioning device is under the control of the respective

vessels fed by the vessel-presenting mechanism, so that as each vessel is presented at the capping station, a cap is fed to position to be applied to it, said operation taking place without interruption of the progressive feeding movement of the vessel. The cap positioning device includes a cap receiving portion which is movable with respect to the cap feeding means and the vessel-presenting mechanism, so that the caps fed to it from the former are moved individually by it and placed upon the respective vessels presented at the capping station by the latter. The cap positioning device, moreover, is arranged so that it will maintain the caps positively in proper position for application to the vessel, and permit the caps to partake of the forward or progressive movement of the vessels as soon as they are applied to the vessels, thus obviating any stopping or slowing up of the feeding movement of the latter.

The several features of the invention will be understood more definitely by reference to the accompanying drawings forming a part of the specification, in which

Figure 1 is a sectional elevation of the device with certain parts in side elevation;

Figure 2 is a plan view of the mechanism of Figure 1 showing certain parts broken away;

Figure 3 is a detail in the nature of a top view of parts of Figure 2;

Figure 4 is a sectional view looking to the right of Figure 1, with parts in altered position;

Figure 5 is a detail in the nature of a longitudinal section of the cap positioning device, and

Figure 6 is a perspective detail of the stop carrier.

Referring to these drawings by means of the reference characters, it will be understood that the numeral 1 designates a handling table having a substantially horizontal plane top surface adapted to facilitate the progressive sliding movement of vessels or containers thereon. This handling table may be associated with suitable filling means and sealing means and constitutes a sort of conveyor platform upon which vessels may be fed from the former to the latter past the package assembling mechanism which constitutes the subject matter of this invention. It will be observed that the handling table is provided with a continuous longitudinal slot 2, beneath which is disposed a track 4 upon which a conveyor chain 5 is adapted to ride. This conveyor chain has the upwardly extending flights 6 disposed at proper intervals, which flights travel in the slot 2 so that they project above the upper surface of the table 1 into position to engage the sides of vessels resting upon the latter. The table 1 also includes

adjustable guide means 7, which may be moved toward or from the slot 2 so as to provide properly spaced guides or rails adapted to make lateral contact with vessels transmitted on the table and maintain them in proper alignment. The conveyor chain 5 is transmitted by suitable mechanism in the direction indicated by the arrow, said mechanism including a rotating shaft 8. This shaft may be connected to the sealing mechanism so as to be operated constantly therewith.

Adjustably mounted relative to the table 1 is a pair of brackets 10 which may be vertically slidable in guideways 9 and secured in position selectively by clamping bolts 11. These brackets carry at their upper portions horizontally adjustable extensions 12 adapted to be secured in selective positions by the clamping bolts 14. One of these lateral extensions 12 carries a vertical shaft bearing 15, a trip bearing 16, and a chute bracket 17. Upon the latter is mounted the cap chute 18. This may be in the form of an inclined track-way provided with lateral guide means 19 adjustable transversely of the track-way and cooperating therewith to form a conduit along which closure caps may slide or be fed in a series. The lateral adjustment of the guide means 19 renders the chute adaptable to a variety of sizes of caps. In the bearing 15 is journaled a hollow shaft 20, within which is a free shaft 21, which latter carries at its lower portion a turn-stile 22, the arms of which are of such extent as to project across a portion of the table 1 traversed by the vessels. In the bearing 16 is mounted a trip tappet 24, of bell-crank form, which is yieldably constrained against the stop 25 by a torsion spring 26. One arm of the tappet 24 lies in the orbit of the arms of the turn-stile 22, while the other arm carries a stop member 27. At the lower portion of the hollow shaft 20 is mounted a trip lever 28, the outer end of which lies in the path of movement of the member 27, while the upper portion of the hollow shaft 20 carries a somewhat similar trip arm 29. Pivoted at 30 on the bracket 17 is the trip pawl 31, the nose of which operates through a slot in the chute 18 so that it may be presented in the path of caps transmitted thereon. The pawl 31 is of bell-crank form and is retained under the influence of a spring 32 so that its nose is normally projected into the chute 18 and its depending arm is maintained in cooperation with the trip arm 29. By this means shaft 20 is constrained so that the trip lever 28 is maintained in yielding contact with the member 27.

This portion of the mechanism comprises what I will designate as the cap feeding means. In operation, as the vessels are fed progressively by the conveyor chain, they

come successively into engagement with an arm of the turn-stile 22 and rotate the same. In the course of such rotation the tappet 24 is swung by the turn-stile against the influence of spring 26 so that the member 27 is rendered effective upon the trip lever 28 to rotate shaft 20 and swing the trip arm 29 to rock pawl 31 on its pivot. This retracts the nose of the pawl out of the path of the cap with which it is in engagement and, freeing said cap, permits it to escape by sliding downwardly in the chute 18. Immediately the tappet 24 rides off the arm of the turn-stile 22, it is returned instantly to normal position against the stop 25 by the pressure of its spring 26, thus permitting shaft 20 and pawl 31 to assume their normal positions under the influence of spring 32. This interposes the nose of pawl 31 in the path of the cap next succeeding that which has just been released, which maintains the cap in proper position for the next escapement operation of turn-stile 22 and its associated parts. As is seen in Figure 1, wherein a cap is designated in section at C, the nose of pawl 31 is adapted to engage the inner periphery of the depending skirt or flange of a cap, and by this means the period of escapement or retraction of the pawl 31 need be but very short, while the distance to be traveled by a cap after its release is also much shorter than it would be if it were retained by the pawl at its forward edge. By virtue of this mechanism, it will be seen that the feeding of each cap is accomplished by the movement of a vessel to the capping station, thus preventing excess feed of caps and assuring that each vessel is supplied with a cap.

I will next describe the portion of the mechanism which I will designate the cap positioning means. Upon the adjustable extensions 12 are mounted bearings 34 in which are journaled transversely extending stub shafts 35. Upon the inner portions of these shafts 35 between the bearings 34, is mounted the cap handling member 36. Said member is thus pivoted at its rearward side and free at its forward side, so that it may swing into alignment with the chute 18, as illustrated in full lines in Figure 1, and thence to a position substantially parallel with the table 1 as illustrated in dotted lines in said figure. The member 36 is formed with an inverted longitudinally extending channel with inwardly projecting ledges at its margins formed by the adjustable track members 37. The track members are movable toward and from the median line of the member 36 to permit adjustment for accommodation of various sizes of caps. Upon the bracket extensions 12 above and slightly to the rear of the bearings 34 is a pair of bearings 38 in which is journaled the stop shaft 39. Upon stop shaft 39 is jour-

naled for rotation the stop carrier 40 which is of clevis shape and carries a pin 41 seated in its arms. A link 42 is pivotally mounted at its forward end on a boss 44 on member 36 and has a longitudinally slotted rearward portion riding on the pin 41 between the arms of the stop carrier 40. An adjustable means 45 is carried by the link 42 and arranged for cooperation with the pin 41 so that, upon forward movement of the link 42, the stop carrier 40 may be rocked on stop shaft 39. The adjustability of means 45 permits the selective variation of the extent of movement of link 42 relative to pin 41, and thereby determines the point in the operation of the link at which it will be rendered effective to swing the stop carrier 40. A spring 46 is effective normally to constrain the stop carrier 40 in its rearward position so that the stop 47 carried thereby may be maintained normally depending at the rear margin of the member 36 across the channel therein and in the path of movement of a cap sustained on the track members 37. As a result, when a cap is in the position just specified, the stop 47 affords a positioning member which positively determines the position of the most advanced margin of the cap, and detains the cap against movement out of the member 36. When the member 36 is swung downwardly upon its pivot in bearings 34, however, at the predetermined point in the movement of said member the means 45 will become effective against the pin 41 to rock the stop holder 40 forwardly and swing the stop 47 rearwardly and upwardly until it is removed out of the path of the cap supported on the track-ways 37. As a means for accomplishing the swinging movement of the member 36, a crank arm 48 is provided on the outer extremity of one of the stub shafts 35, and to said crank arm is connected a push rod 49. This push rod is in two sections so that its effective length may be varied, the sections shown being arranged in telescopic relationship and controlled by the clamp 50. A bracket 51 is adjustably associated with the table 1 in cooperative relationship with the shaft 8. On bracket 51 is mounted a rocking member 52 of bell-crank form. The outer arm 54 of this rocking member is equipped with a wear resisting shoe 55 which is adapted to cooperate with a cam 56, arranged to be fixed, by means of an adjustable fastening 57, for rotation with shaft 8. The cam 56 is quick acting, so that it is effective upon the arm 54 to raise it quickly, sustain it in raised position for a fixed period, and then permit it to drop instantaneously to its lower position. The limit of inward movement of the arm 54 is fixed by an adjustable stop 58 with which contacts the stop portion 59 of the rocking member, and the inward rock-

ing operation of the rocking member is impelled by spring 60. The operation of the rocking member 52 reciprocates the push rod 49 longitudinally by virtue of the pivotal connection thereof to the arm 53 of the rocking member. As a result, when the cam 56 becomes effective upon the arm 54, the rod 49 will be retracted rearwardly to swing the cap receiver 36 into alignment with the chute 18, in which position the cap receiver 36 will be retained while the member 54 is riding upon the periphery of the cam 56. Immediately the arm 54 drops into the dwell of the cam 56, the cap receiver 36 will be instantaneously swung down into its horizontal position and the stop 47 retracted upwardly out of the path of the cap at the proper point in the operation of the member 36. In this fashion, the vessels presented successively at the capping station underneath the member 36 will each have a cap placed upon it without pause or change in the rate of its progressive movement.

Inasmuch as the shaft 8 forms a part of the mechanism for feeding the conveyor chain 5, it is obvious that the rate of operation of the cap positioning member 36 will conform with the speed of movement of the chain and coincide with the rate at which the successive flights 6 on the latter are moved to the capping station. In this fashion the period of operation is always maintained, while by virtue of adjustability of the cam 56 upon the shaft 8, the exact and proper timing of the operation of the member 36 with the presentation of the flights 6 may be established for any of a variety of sizes of vessels. The adjustability of the arms 10 permits the entire mechanism to be quickly and easily adjusted to any desired height of vessel, while the longitudinal adjustability of the extension brackets 12 accommodates the entire mechanism to simultaneous adjustment to the diameter of the vessel, the clamp 50 permitting the necessary alterations in the effective length of push rod 49.

It is thought that from the foregoing description the operation of the device is perfectly plain, but a general statement in order to bring out the sequence of operations may be advantageous:

The vessels to be capped are fed constantly in a series along the handling table 1. the constant rate of travel being maintained by the continuously operating conveyor chain 5, and the proper interval being maintained by the equidistantly spaced flights 6. Each vessel is brought into contact with an arm of the turn-stile 22 and is rendered effective to rotate the latter to operate the tappet 24 and, through the connecting mechanism, the pawl 31, to release a single cap. As the vessel continues to move forwardly the released cap slides into the

cap handling device 36, where its position is definitely established by the stop 47. By virtue of the articulation of the conveyor chain with the cam 56, immediately the vessel arrives at the capping station, which is in proper position under the member 36, the latter is swung down instantaneously and places the cap therein upon the vessel. Said cap, theretofore retained by the stop 47, is allowed to partake of the forward movement of the vessel, as soon as it is placed thereon, by the lifting of said stop through the swinging of the stop holder 40 by link 42, until the stop is swung clear of the cap channel and the cap, now resting upon the vessel, is permitted to be carried forwardly by the advance of the latter and out of the cap handling device 36. If the cap is of the friction retained type, the mechanism may be adapted to seat the cap on the vessel, the member 36 and its operating parts being arranged to apply the necessary pressure; or if the cap is of the type designed to be hermetically sealed upon the vessel by a suitable means, it may be loosely seated, as above described, and subsequently presented, in the proper course of the movement of the conveyor chain 5, to a suitable sealing mechanism.

Having thus described my invention, what I claim is:

1. In a machine of the class described, in combination, means for advancing vessels continuously past a cap handling device, supply means for guiding caps, a movable cap handling device having a cap receiving position and a cap applying position, means for retaining the cap handling device stationarily in said positions alternately, a stop for determining the position of a cap on the positioning means, cap feeding means effective upon caps successively to control their movement to the cap handling device, and means for operating the stop to release a cap from the cap handling device.

2. In a package assembling machine, in combination vessel-presenting means operable to advance vessels continuously, cap feeding means adapted to feed caps individually, cap positioning means operable to receive a cap fed by the cap feeding means and to place it upon a vessel in movement by the vessel-presenting means, means operable with the vessel-presenting means for operating the cap positioning means, and means for varying the timing of the cap-positioning means relative to that of the vessel-presenting means.

3. In a package assembling machine, in combination vessel-presenting means operable to advance vessels continuously, cap feeding means adapted to feed caps individually, said cap feeding means being operable by the vessel-presenting means through the intermediation of a vessel, and cap positioning

means operable to receive a cap fed by the cap feeding means and to place it upon a vessel during a movement terminating in a pause period, said cap positioning means being effective during a pause period to permit removal of a cap therefrom by the vessel presenting means through the intermediation of a vessel.

4. In a package assembling machine, in combination vessel-presenting means operable to advance vessels continuously, cap feeding means adapted to feed caps individually, said cap feeding means being operable by the vessel-presenting means through the intermediation of a vessel, cap positioning means operable to receive a cap fed by the cap feeding means and to place it upon a vessel in movement by the vessel-presenting means, means operable with the vessel-presenting means for operating the cap positioning means, and means for varying the operation of the positioning means relative to that of the feeding means.

5. In a machine of the class described, in combination, means for advancing vessels continuously, supply means for guiding caps, a cap handling device having parallel cap supports arranged for cooperation with the supply means and vessel advancing means, means effective upon caps successively to control their movement on to and off of the cap positioning means.

6. In a machine of the class described, in combination, means for advancing vessels continuously, supply means for guiding caps, positioning means for moving caps therefrom singly, said positioning means including oppositely disposed cap supports and a stop effective upon a cap during movement of the cap positioning means, and means for operating the stop to permit movement of a cap along the cap supports during a pause period of the positioning means.

7. In a machine of the class described, a cap positioning device having lateral cap supports, a cap feeding device arranged to transmit caps along said supports into the positioning device, advancing means for moving vessels along the cap supports to remove caps therefrom, and means for moving the positioning device alternately into association with the feeding device and the advancing device.

8. In a machine of the class described, in combination, a support for vessels, supply means for guiding caps toward said support, a cap positioning device movable intermittently toward said support to a cap applying position, means operable intermittently to supply caps from the supply means to the positioning device, and means for advancing vessels continuously to remove caps successively from the positioning device while it is in cap applying position.

9. In a machine of the class described, in combination, a support for vessels, supply means for guiding caps toward said support, a cap positioning device movable intermittently toward said support, means operable intermittently to supply caps from the supply means to the positioning device, means for advancing vessels continuously to remove caps successively from the positioning device while it is stationary, and means operable to permit selective adjustment of the positioning device relative to the support to accommodate vessels of different heights.

10. In a machine of the class described, in combination, a support for vessels, means for advancing vessels continuously at a substantially constant speed past a cap positioning device, supply means for guiding caps angularly toward the support, a cap positioning device retained against advance with the vessels and arranged to receive caps singly from said supply means, and means for operating said positioning device to present caps in parallel relationship to the support and position them upon vessels supported thereon.

11. In a machine of the class described, in combination, a support for vessels, means for advancing vessels continuously, supply means for guiding caps angularly toward the support, a cap positioning device arranged to receive caps singly from said supply means, means for moving said positioning device to a stationary position to present caps in parallel relationship to the support to be engaged by the advancing vessels and applied thereon, and means operable to permit selective variation of the zone of operation of the positioning device relative to the support.

12. In a package assembling machine, in combination, a support for sustaining vessels in upright position, means for advancing vessels supported thereon continuously, supply means for guiding caps toward the support, and cap positioning means retained against advance with the vessels and operable to move caps from the supply means to vessels on the support and change the angularity of such caps relative to the vessels.

13. In a package assembling machine, in combination, a support for sustaining vessels at a capping station, means for advancing vessels continuously past said station, supply means for guiding caps toward the support, and cap positioning means retained against advance with the vessels and operable intermittently to move caps from the supply means to vessels at the capping station and change the angularity of such caps relative to the vessels.

14. In a package assembling machine, in combination, a support for sustaining vessels at a capping station, means for advancing vessels continuously past said

station, supply means for guiding caps toward the support, and cap handling means retained against advance in a direction parallel to the movement of the advancing vessels and operable intermittently to move caps from the supply means and press them upon vessels at the capping station.

15. In a package assembling machine, in combination, a support for sustaining vessels at a capping station, means for advancing vessels continuously past said station, supply means for guiding caps toward the support, and a cap handling device retained against advance in a direction parallel to the advancing vessels and operable intermittently to move caps from the supply means and place them upon vessels presented successively at the capping station.

16. In a package assembling machine, in combination, a support for vessels, means for advancing vessels continuously at a substantially constant speed past a capping station, supply means for guiding caps toward the support, a cap handling means retained against advance in a direction parallel to the support and movable to advance caps from the supply means toward said support, and means for actuating the cap handling means to press caps upon vessels on the support.

17. In a package assembling machine, in combination, a support for vessels, means for advancing vessels on the support continuously, supply means for guiding caps toward the support, a cap positioning means retained against advance in a direction parallel to the support and movable intermittently to advance caps from the supply means toward said support, and means for actuating the cap handling means to press caps upon vessels on the support.

18. In a machine of the class described, in combination, a support for vessels, means for advancing vessels in an upright position past a cap positioning device, supply means for guiding caps toward the support, a swinging cap positioning device retained against advance with the vessels and movable into cooperation with the supply means and with the support, and operable means for detaining a cap on said device.

19. In a machine of the class described, in combination, a support for sustaining vessels at a capping station, means for advancing vessels continuously past said station, supply means for guiding caps toward the support, a swinging cap positioning device movable into stationary cooperation with the supply means and with the support at the capping station, and operable means for detaining a cap on said device.

20. In a machine of the class described, in combination a support for vessels, means for advancing vessels continuously, past a cap positioning device, supply means for

guiding caps toward the support, a cap positioning device movable into stationary cooperation with the supply means and the support, means for detaining a cap from the supply means on said device, and means actuated through movement of the positioning device for operating said detaining means to release a cap for movement with a vessel on the support.

21. In a machine of the class described, in combination, a support for vessels, means for advancing filled vessels in an upright position past a capping station, supply means for guiding caps toward the support, a cap positioning device movable into stationary cooperation with the supply means and the support, means for detaining a cap from the supply means on said device, and means for operating said detaining means to release a cap for movement with a moving vessel on the support.

22. In a machine of the class described, in combination, a support for vessels, means for moving filled vessels in an upright position continuously to a cap handling device, means for guiding caps toward the support, a cap handling device movable to stationary effective positions with respect to said last mentioned means and the support, means for supplying caps to said cap handling device, a stop for determining the position of caps on said device, and a mechanism for operating both the cap handling device and stop to control the position of a cap relative to a vessel on the support.

23. In a machine of the class described, in combination, a support for sustaining vessels at a capping station, means for moving vessels continuously past said station, means for guiding caps toward the support, a cap positioning device movable with respect to said last mentioned means and the support, means for supplying caps to said positioning device, a stop for determining the position of caps on said device, a mechanism for operating both the cap positioning device and stop to control the position of a cap relative to a vessel on the support, and means for selectively varying the operation of the stop relative to that of the positioning device.

24. In a machine of the class described, in combination, a support for vessels, means for advancing vessels continuously, means for feeding caps intermittently, a cap positioning device arranged to receive caps from said last mentioned means and place them on vessels on the support, a stop for determining the position of a cap on the positioning device, and means for operating the stop to permit movement of a cap on said device while it is in cap applying position.

25. In a machine of the class described, in combination, a support for vessels, means for advancing vessels continuously, means

for feeding caps intermittently, a cap positioning device arranged to receive caps from said last mentioned means and place them on vessels on the support, a stop movable on the positioning device for determining the position of a cap thereon, and means for selectively timing the operation of the stop with that of the positioning device.

26. In a package assembling machine, the combination of means for advancing vessels continuously, supply means for guiding caps toward vessels in movement by said means, and a cap positioning means operable to move caps individually from the supply means to vessels in movement by the advancing means; said cap positioning means including a stop for controlling the positioning of caps relative to vessels and means for operating the stop to accommodate caps to the movement of vessels past the cap positioning means.

27. In a package assembling machine, the combination of means for advancing vessels continuously, supply means for guiding caps toward vessels in movement by said means, and a cap positioning means operable to move caps individually from the supply means to vessels in movement by the advancing means; said cap positioning means remaining stationary for a period after the cap is applied to a vessel; said cap positioning means including a stop for controlling the positioning of caps relative to vessels and means for operating the stop to accommodate caps to the movement of vessels while the cap positioning means is stationary.

28. In a package assembling machine, the combination of means for advancing vessels continuously, supply means for guiding caps toward vessels in movement by said means, and a cap positioning means operable to move caps individually from the supply means to successive vessels in movement by the advancing means; said cap positioning means including a stop for predetermining the position of caps relative to vessels and means for operating the stop to accommodate caps to the movement of vessels past the stop.

29. In a package assembling machine, in combination, a support for vessels, means for advancing vessels continuously, supply means for guiding caps toward the support, a cap positioning means retained against advance with the vessels, means for operating the same intermittently to move caps from the supply means to vessels on the support, a stop for determining the position of a cap while in movement by the positioning means, and means for operating said stop to accommodate the cap to movement of the vessel-advancing means.

30. In a package assembling machine, in combination, vessel presenting means oper-

able to advance vessels continuously at intervals, cap supplying means, cap feeding means for controlling the feed of caps therefrom, means for operating the cap feeding means to release caps individually, cap positioning means disposed to receive caps released by said cap feeding means, and means to operate said cap positioning means intermittently to position it stationarily in the path of vessels during their movement by the vessel-presenting means.

31. In a package assembling machine, in combination, vessel-presenting means operable to advance vessels continuously at intervals, cap supplying means, cap feeding means for controlling the feed of caps therefrom, means for intermittently operating the cap feeding means to feed caps individually, cap positioning means disposed to receive caps released by said cap feeding means, and operating mechanism for said cap positioning means effective to hold it stationary intermittently to permit removal of caps therefrom by vessels during their movement by the vessel-presenting means.

32. In a package assembling machine, in combination, vessel-presenting means operable to advance vessels continuously at intervals, cap supplying means, cap feeding means for controlling the feed of caps therefrom successively, cap positioning means disposed to receive the successive caps fed by said cap feeding means, and mechanism to operate said cap positioning means intermittently to convey caps successively from the cap feeding means and deposit them upon successive vessels during their movement by the vessel-presenting means; said mechanism being effective to hold the cap positioning means stationary during the removal of caps therefrom.

33. In a machine of the class described, in combination, a support for vessels, means for feeding caps toward said support, a cap positioning device including cap guiding members disposed to receive caps individually from said means, means for moving said device to deposit caps carried thereby upon vessels on said support and to retain said device stationary for a period after the cap is positioned, and means for advancing vessels continuously to move caps successively out of the positioning device while it is stationary; said cap guiding members being adjustable selectively to accommodate caps of different sizes.

34. In a package assembling machine, in combination, a support for sustaining vessels at a capping station, means for advancing vessels continuously past said station, supply means for guiding caps toward the support, and cap positioning means operable intermittently to move caps from the supply means to vessels at the capping station and change the angularity of such caps

relative to the vessels; said supply means and positioning means including cap guiding members adjustable selectively to accommodate caps of different sizes.

35. In a package assembling machine, in combination, a support for vessels, means for advancing vessels continuously, supply means for guiding caps toward the support, a cap positioning means movable intermittently to advance caps from the supply means toward said support, and means for actuating the cap positioning means to press caps upon vessels on the support; said cap positioning means including cap engaging members adjustable selectively to accommodate caps of different sizes.

36. In a machine of the class described, in combination, a support for vessels, means for advancing vessels continuously, supply means for guiding caps toward the support, a swinging cap-positioning device movable into cooperation with the supply means and with the support, and operable means for detaining a cap on said device; said cap positioning means including cap-guiding members adjustable selectively relative to the detaining means to accommodate caps of different sizes.

37. In a package assembling machine, in combination, a support for vessels, means for advancing vessels thereon, a chute for guiding caps toward said support, a cap handling device movable intermittently from said last mentioned means toward said support, said cap handling device having lateral cap supports movable into a alignment with the chute and the path of the vessels, and means for controlling the feed of caps from the chute to the cap handling device.

38. In a package assembling machine, in combination, means for advancing vessels continuously in a series, means for guiding caps, a cap handling device including laterally disposed cap supporting members arranged to receive caps from said last mentioned means, and movable intermittently to place caps on vessels presented successively by the advancing means, means for controlling the feed of caps to the cap handling device, and a support for guiding

vessels past the cap handling device with their upper extremities between the cap supporting members.

39. In a package assembling machine, in combination, a support for vessels, means for advancing vessels continuously, means for supplying caps, a cap positioning means having a longitudinal channel with lateral cap supporting members movable in association with said last mentioned means and said support to place caps from the former upon vessels on the latter, means for varying the elevation of the cap positioning means relative to the support, and means for feeding caps intermittently to the cap positioning means.

40. In a machine of the class described, a cap handling device having a plurality of cap supports, means permitting the sliding of caps on to said supports, means for positioning said caps on one of said supports, means for removing said positioning means prior to the engagement of an advancing vessel with said cap and means for advancing vessels to slide successive caps from said supports.

41. In a machine of the class described, a cap handling device having a plurality of cap supports with cooperating grooves for the reception of caps, means permitting the sliding of caps successively into said grooves, means for positioning said caps on said supports, means for removing said positioning means prior to the engagement of an advancing vessel with a cap, and means for advancing vessels to slide successive caps from said supports.

42. In a machine of the class described, a cap handling device having a plurality of cap supports with cooperating grooves for the reception of caps, means permitting the sliding of caps successively into said grooves, means for positioning a cap on said grooved supports, means for moving said supports into operative relation to advancing vessels, means for removing said positioning means prior to the engagement of an advancing vessel with said cap, and means for advancing vessels to slide successive caps from said supports.

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