May 16, 1944. E. R. REHFELD 2,349,197

SEAL APPLYING MACHINE

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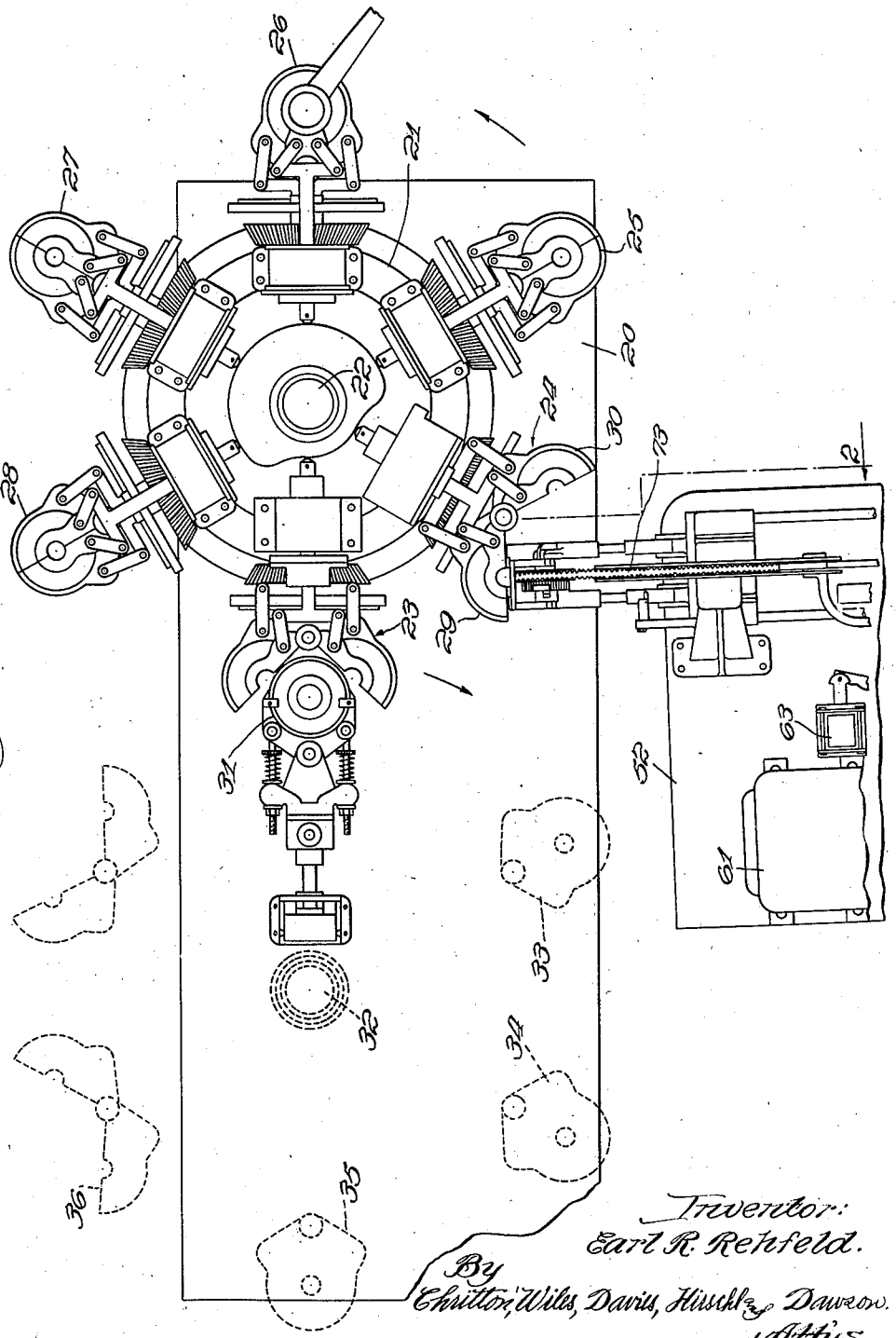


Fig. 1.

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SEAL APPLYING MACHINE

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Fig. 2.

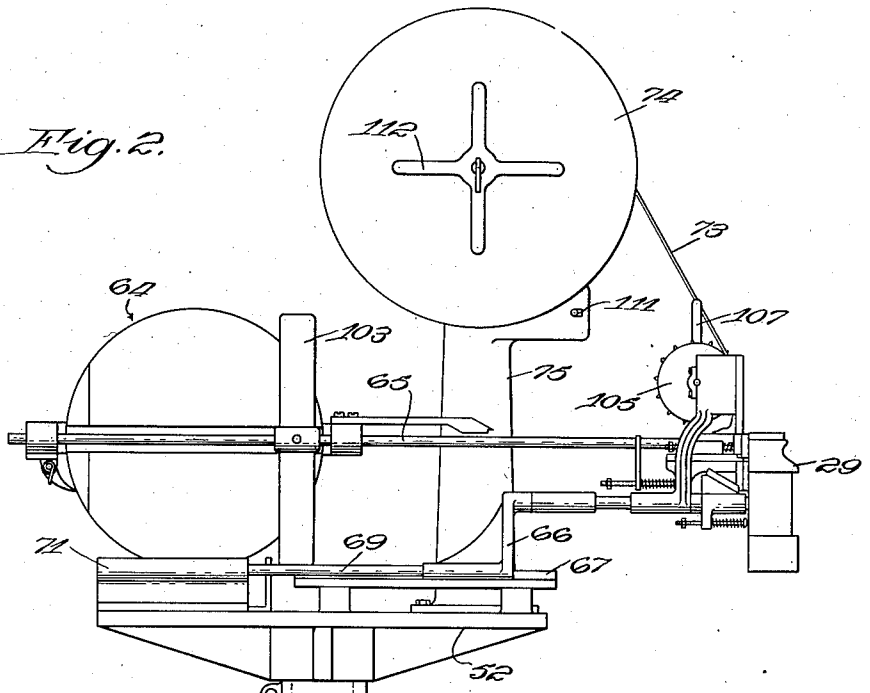
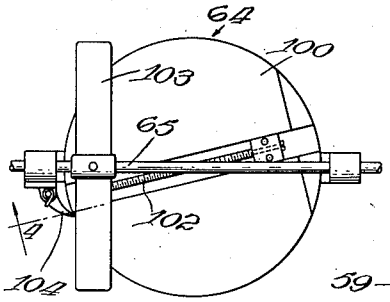


Fig. 3.



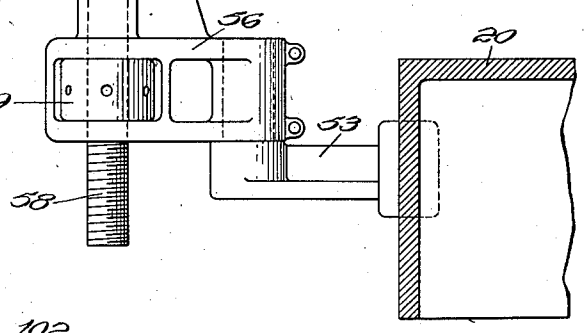
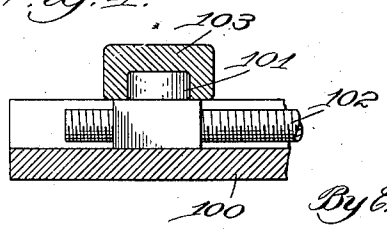


Fig. 4.



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SEAL APPLYING MACHINE

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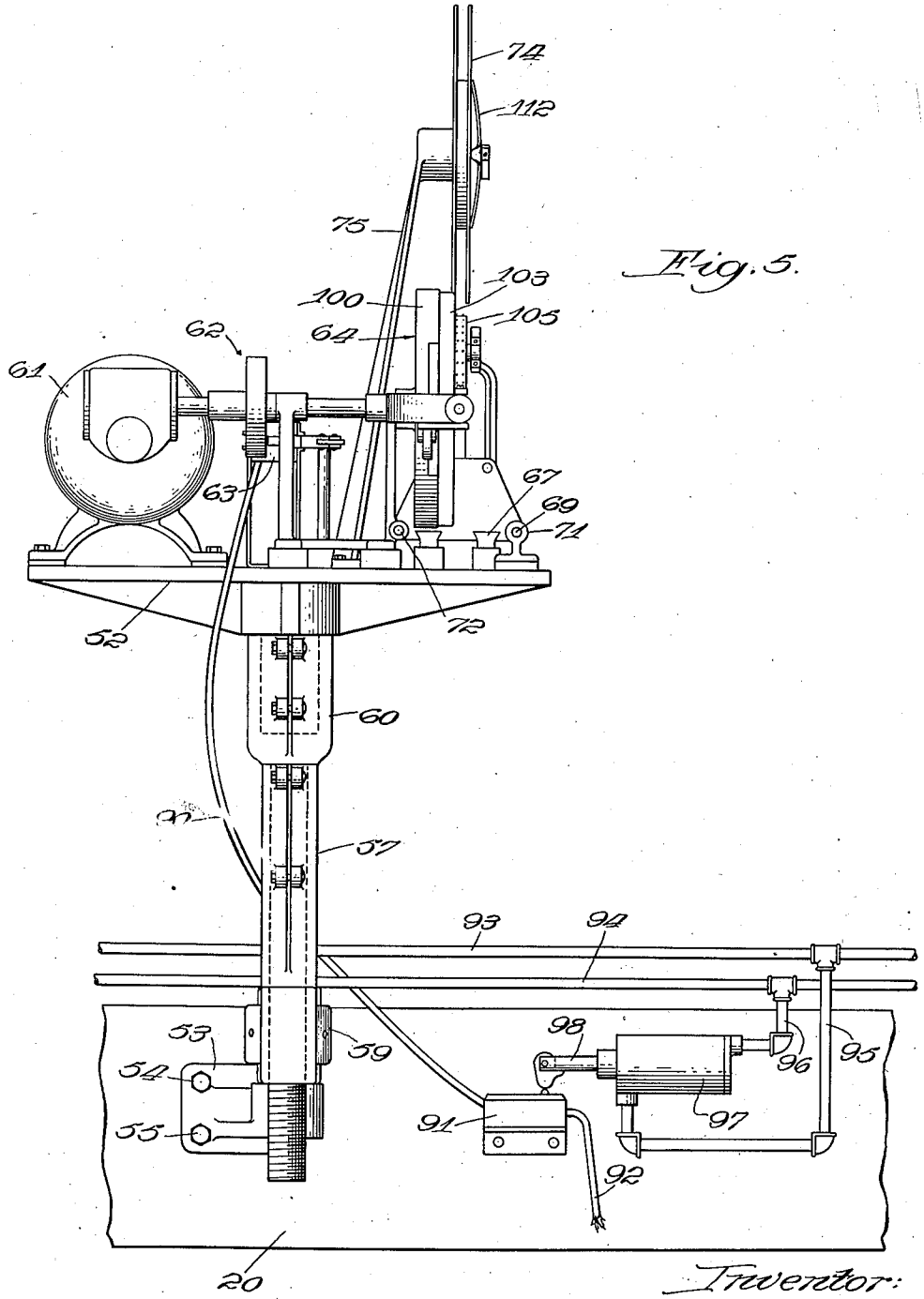


Fig. 5.

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SEAL APPLYING MACHINE

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Fig. 7.

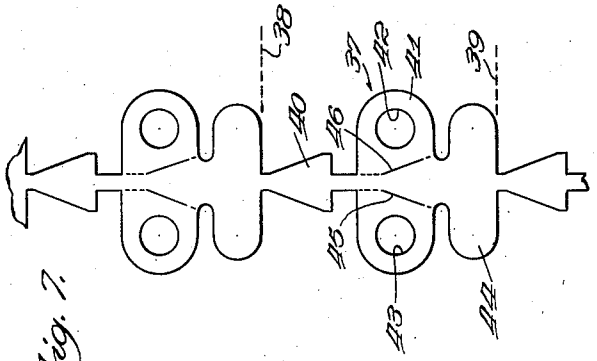
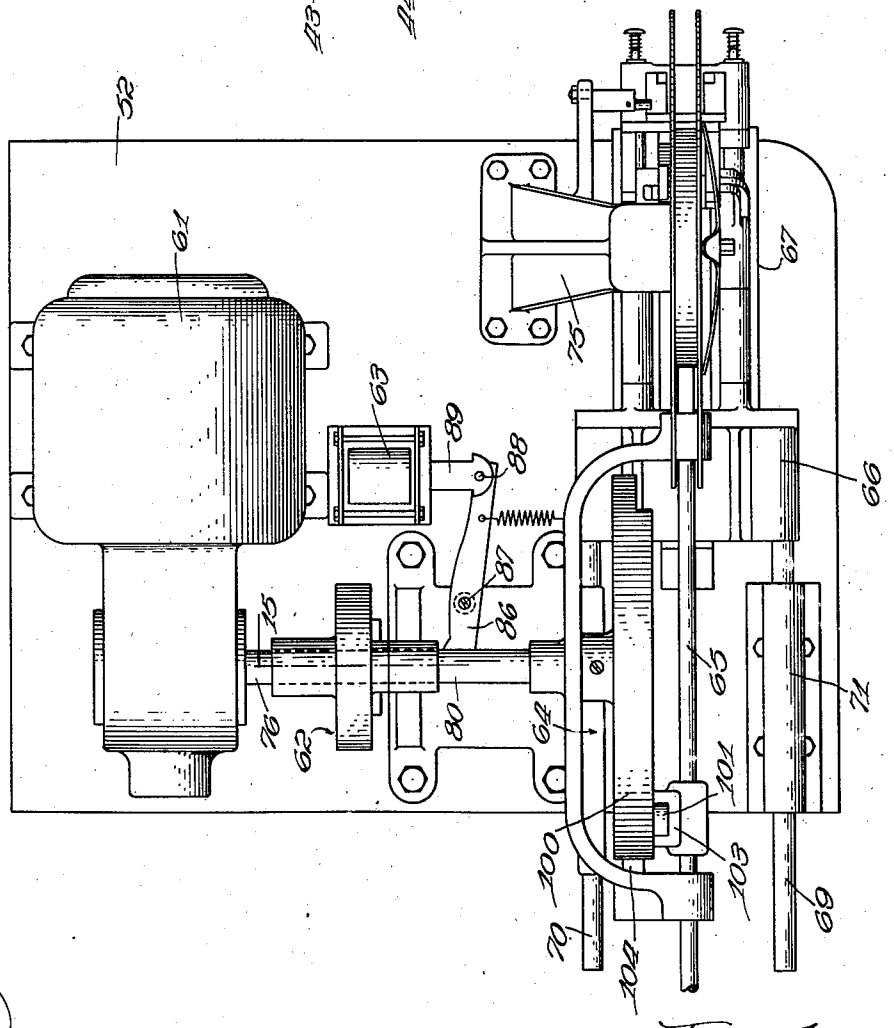


Fig. 6.



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SEAL APPLYING MACHINE

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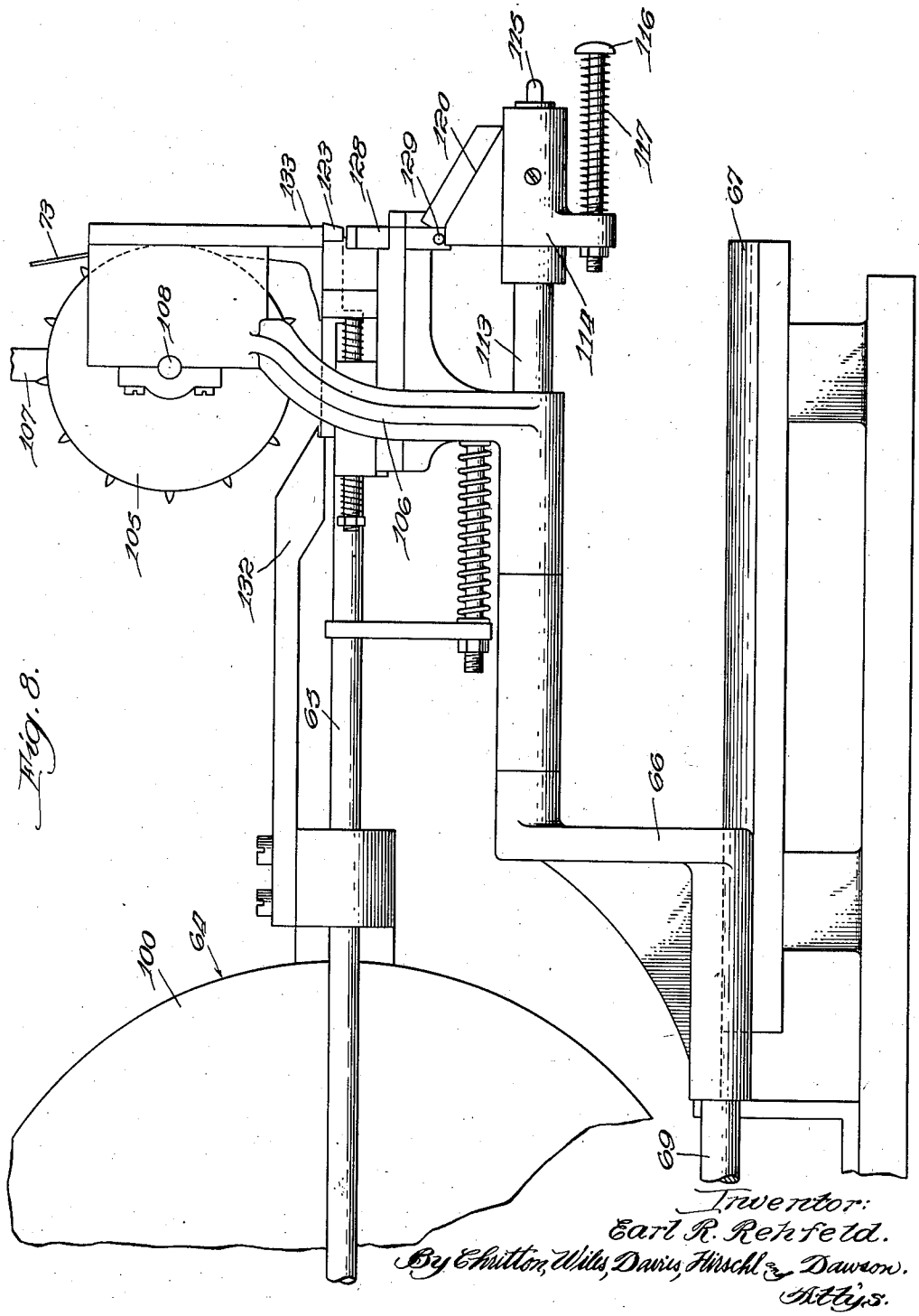


Fig. 8.

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SEAL APPLYING MACHINE

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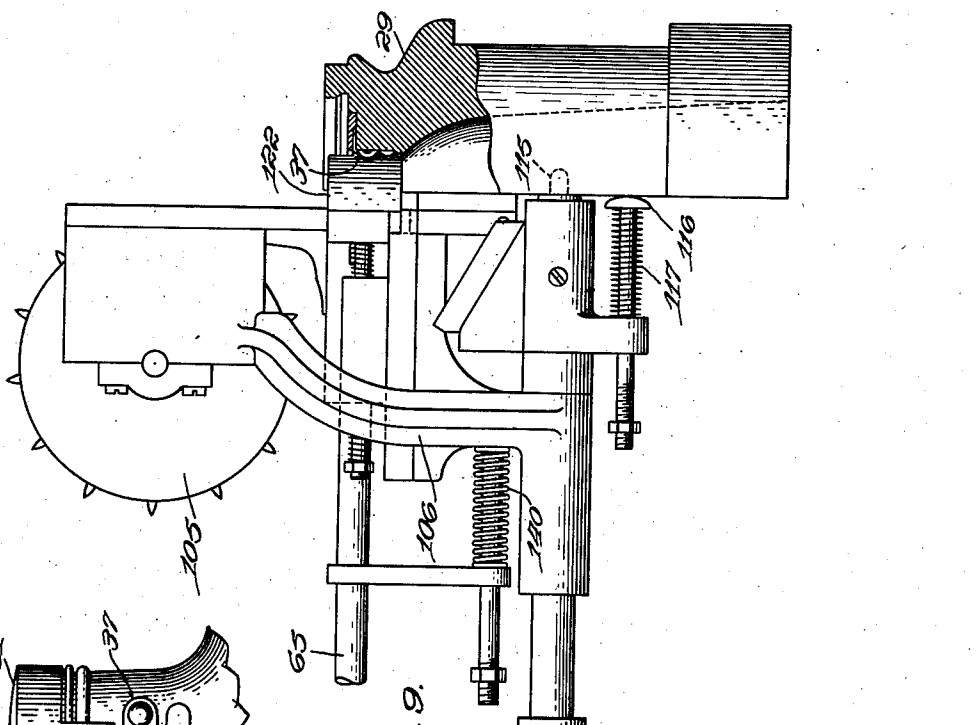


Fig. 9.

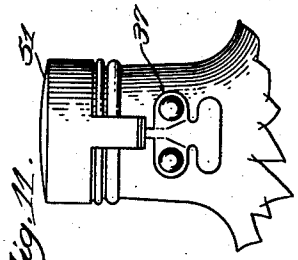


Fig. 11.

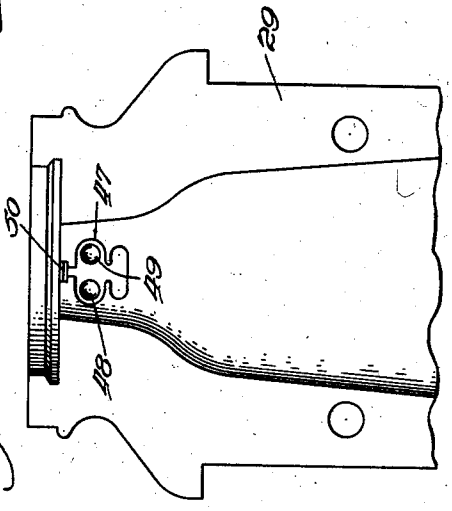


Fig. 10.

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SEAL APPLYING MACHINE

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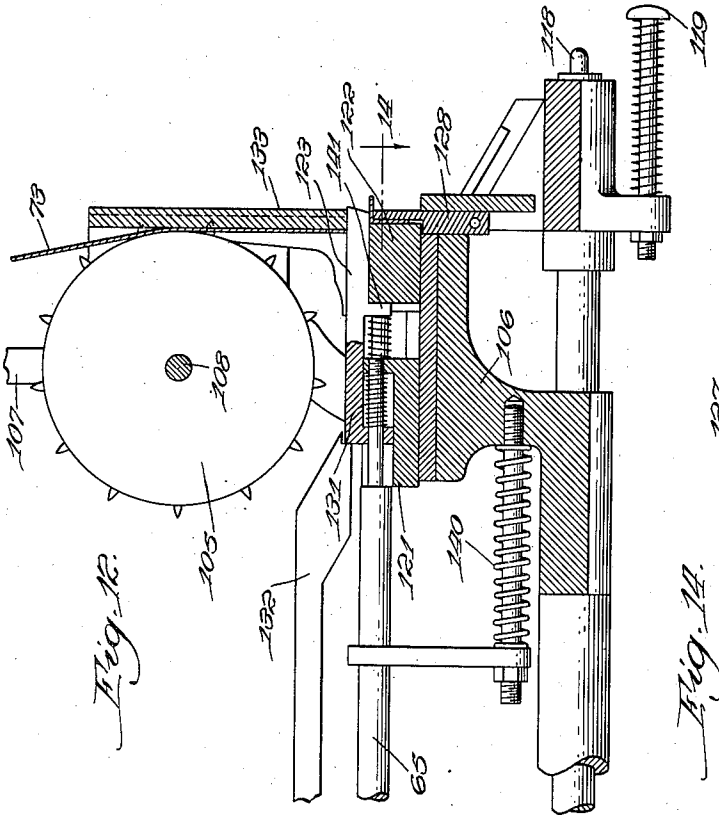


Fig. 12.

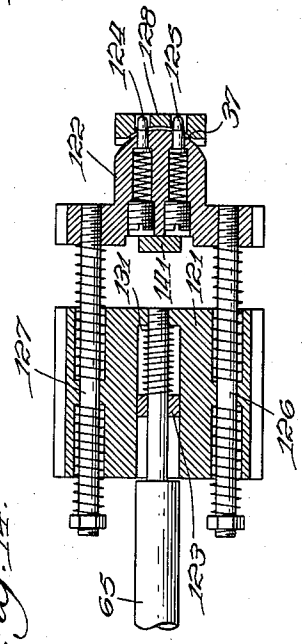


Fig. 14.

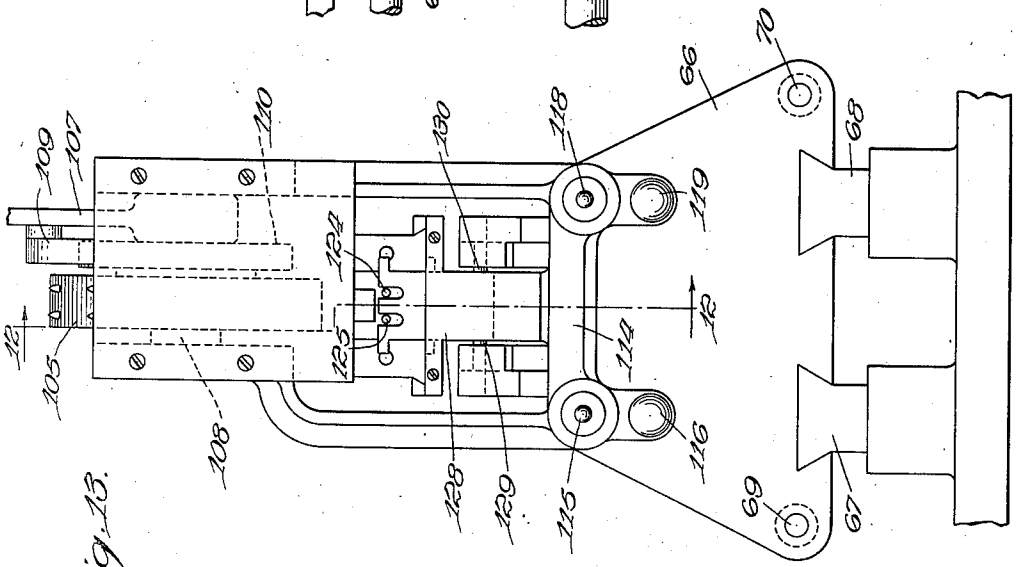


Fig. 13.

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May 16, 1944. E. R. REHFELD 2,349,197

SEAL APPLYING MACHINE

Filed July 5, 1939 8 Sheets-Sheet 8

Fig. 15.

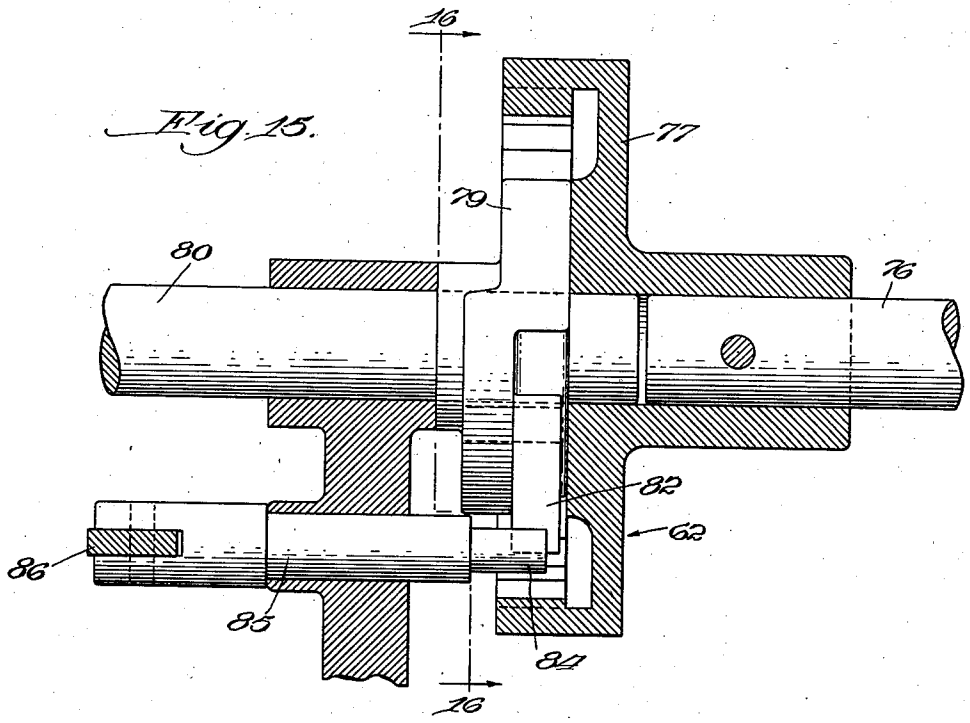
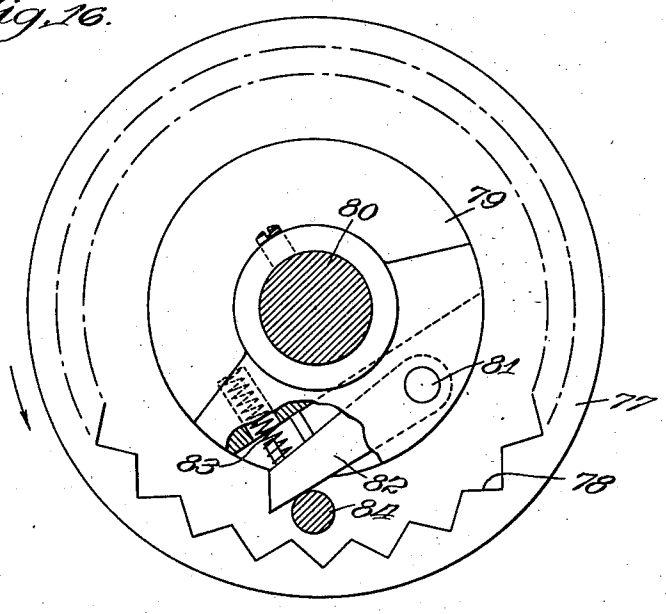


Fig. 16.



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Patented May 16, 1944 2,349,197

UNITED STATES PATENT OFFICE

2,349,197

SEAL APPLYING MACHINE

Earl E. Rehfeld, Chicago, Ill.

Application July 5, 1939, Serial No. 282,932

27 Claims. (Cl. 49—1)

This invention relates to a seal-applying machine, and more particularly to a machine for automatically applying sealing straps to a container, such as a glass bottle, during the formation thereof.

One feature of this invention is that it provides completely automatic means for effecting permanent attachment of a sealing strap to the wall of a container, as a bottle, during the formation of such containers by high speed automatic machinery; another feature of this invention is that it does not interfere with the normal container-making machinery now generally found in commercial usage, but cooperates with such machinery; a further feature is that the sealing strap is applied to the bottle or other container and permanently joined thereto without setting up undesired strains in or otherwise weakening the wall of the container; yet another feature of this invention is that it provides machinery for making commercially available sealing methods and apparatus heretofore made the subject of other applications by this inventor; a further feature of this invention is that it provides a recessed mold, or segment of a mold, for receiving the sealing strap, and efficient means for automatically placing the straps in the recesses at appropriate intervals in the container-making operation; a further feature of this invention is that the straps are located in the recesses with accuracy; other features and advantages of this invention will be apparent from the following specification and the drawings, in which:

Figure 1 is a partial top plan view of bottle-making and strap-applying machinery; Figure 2 is a side elevation of the strap-applying apparatus, along the line 2 of Figure 1; Figure 3 is a detailed view of drive mechanism transforming rotary motion into reciprocatory motion; Figure 4 is a fragmentary sectional detail view along the line 4 of Figure 3; Figure 5 is a rear elevation of the strap-applying apparatus and a portion of the base of the bottle-making machine; Figure 6 is a complete top plan view of the applying apparatus; Figure 7 is a detail view of a plurality of the sealing straps in continuous relation; Figure 8 is a partial elevation of the seal-applying apparatus in its back or cutting and forming position; Figure 9 is a partial side elevation view of the apparatus in its forward or strap-applying position; Figure 10 is a partial elevation of a mold segment with a strap in place therein; Figure 11 is a view of a sealed bottle neck; Figure 12 is a detailed view of the forward end of the apparatus, partially in section, along the line 12—12 of Figure 13; Figure 13 is a detailed partial front elevation of the applying apparatus; Figure 14 is a detailed sectional view along the line 14 of Figure 12; Figure 15 is a detailed view, partly in section, of the clutch mechanism, the view being taken along the line 15 of Figure 6; and Figure 16 is a further detailed view of the clutch mechanism along the line 16—16 of Figure 15.

I have heretofore invented improved means for sealing a container such as a bottle to prevent unauthorized refilling, or at least to show unmistakable signs of such unauthorized refilling. The sealing means comprises a sealing strap adapted to be permanently attached or fused to the wall of the bottle during the formation; a metallic closure for covering the orifice of the bottle, the closure having a depending portion arranged to lie in juxtaposition to a portion of the strap; and a permanent junction between the strap and the depending portion of the closure, so that the closure cannot be removed from the orifice without destruction or tearing of either it or the sealing strap.

Such sealing means are more fully disclosed in my earlier co-pending applications 108,326 and 149,337, which issued as Patents 2,255,570 and 2,213,932 on September 9, 1941, and September 3, 1940, respectively, so that this specification will not be lengthened by a complete redescription. The particular type of sealing strap here shown as the strap being applied by the method and apparatus forming the subject of this patent application is particularly shown in Figures 12, 13 and 14 of my aforesaid application, Serial No. 149,337.

I contemplate permanently attaching such sealing straps as those shown in Figure 7 of this patent application by placing them in recesses in the bottle molds prior to the introduction of the glass and the blowing of the bottle. The straps are provided with two spaced openings and the mold has enlarged openings in registry with and behind the openings in the strap. During the blowing operation, therefore, as the bottle wall is formed, part of the glass is forced through the openings in the sealing strap and caused to expand in the mold openings therebehind, so that rivet-like projections permanently fuse the strap to the wall of the bottle.

Present-day high-speed automatic bottle-making machinery generally forms a slug of hot, plastic glass and inserts it in a body mold comprising two separated segments. The segments are then closed, a blowing head applied, and the bottle blown to the desired shape. The mold seg-

ments are then opened, the bottle removed and transferred to a finish mold. In this latter portion of the machine the desired surface finishing of the bottle is provided by a second blowing or vacuum operation. In present day commercial practice the body-making molds rotate on a table, different operations taking place at different stages about such table. My present apparatus is adapted to be so located on and operated in conjunction with a standard bottle-making machine that it applies sealing straps to a recess provided in one of each pair of body mold segments while they are open and just before the slug of glass is placed therein. Subsequent blowing and bottle removing operations remain exactly the same, it being only necessary to use molds provided with an appropriate recess.

In general, my apparatus comprises a continuously operating driving motor; timing apparatus for effecting driving connection between the motor and the machinery at appropriate intervals; a supply of sealing straps; means for feeding a strap to the head of the machine, and forming it to a desired shape; and guide means insuring insertion of the strap in the recess provided therefor in one of the body mold segments as the head of the machine is moved forward at the appropriate time.

Before describing in detail my strap-applying apparatus I believe it desirable to describe briefly the construction and operation of an automatic bottle-making machine of conventional type.

Referring more particularly to Figure 1, a top plan view, the table and molds for the preliminary formation of a bottle are shown in detail; and the positions of the molds on the second cooperating or finishing table are also indicated. The bottle making machine has a base **20** on which is mounted a table **21** rotatable about an axis **22**; and this table carries a plurality of molds, here shown as six in number and indicated as **23**, **24**, **25**, **26**, **27** and **28**. Each mold, as for example mold **24**, is made up of two complementary segments, as **29** and **30**. I shall hereafter refer to the molds on this table **21** as body molds, although they are sometimes also known in the industry as blank molds.

The table **21** rotates counter-clockwise (speaking with respect to Figure 1) in steps, being operated by pneumatic mechanism. That is, each mold dwells for a short period in the station or position shown in Figure 1; the rotation of the table moves the mold to the next station, where it again dwells for a short time. The speed of rotation of the tables is generally from five to ten revolutions per minute. This intermittent rotation may be effected in conventional manner by an air motor as shown in Figure 3 of Patent 2,067,949 to Rez, which issued January 19, 1937. A slug of glass is inserted in the mold **26** at the station shown in the drawings. As the mold **26** moves to the stations in which molds **27** and **28** are shown, the slug is blown to form a parison of the general shape and size desired, but with a smooth exterior surface. The segments of the mold then separate and when the mold reaches the station which is shown occupied by the mold **23** the parison is transferred to the mold **31** of the finishing table, which rotates about the axis **32**. As this mold moves through the stations here indicated in dotted lines, as **33**, **34** and **35**, the glass is formed into the desired final finish, with any external markings on the surface of the bottle. This may be done by blowing, by vacuum, or by a combination of both. When the mold reaches the station here referred to as **36** its segments open and the bottle is dropped on a conveyor to be carried off to an annealing furnace or other desired point.

In order to provide the sealing arrangement which I have invented, a strap or segment of sheet metal having openings therethrough must be placed in such a relation to the glass during the first blowing of the body of the bottle that part of the glass is forced through the openings in the strap. Figure 7 shows a portion of the strip or tape in which I form my straps, the portion shown comprising slightly more than two complete strap segments. One strap **37** of the kind applied to each bottle is completely defined by the space between the dotted lines **38** and **39**. It has a connecting portion **40** having the general shape of an arrow head; an attachment portion **41** having openings **42** and **43** therein; and a tab or pull portion **44**. Score lines **45** and **46**, or lines of weakening of the metal, are provided as illustrated so that when the tear tab **44** is pulled by the fingers the central portion will tear away from the portion of metal about the openings **42** and **43**.

I insert the strap in a recess provided therefor in the mold segment **29** while the mold is dwelling in the position shown in Figure 1, and then withdraw my strap-inserting apparatus to permit the mold segments to close and move on about the table in conventional manner. The time during which the mold segment **29** dwells at the point shown in the drawings is very brief; and my strap-applying machinery must, therefore, separate the strap from the tape, bend it to a desired shape, insert it in the mold segment, and withdraw therefrom within a very short time.

The recess in the mold segment **29** adapted to receive the strap **37** is best shown in Figure 10, and is here indicated as **47**. It consists of a shallow portion conforming to the general outline of the strap; deeper substantially hemispherical portions **48** and **49** adapted to lie behind the openings in the strap; and an upper slot portion **50** adapted to receive the head or connecting portion **40** of the strap. The position of the strap **37** in the mold segment **29** may be seen in Figure 9 on the same sheet. The finished sealed bottle is illustrated in part in Figure 11 on the same sheet, the strap **37** being shown as permanently connected, as by spot-welding, to a depending portion of the closure cap **51**.

My apparatus for cutting, forming and inserting the straps in the mold segments is shown in part in Figure 1; in side elevation in Figure 2, in back elevation in Figure 5; and in top plan in Figure 6. Various details of the apparatus are shown in the other views which will be hereinafter described when they become pertinent.

The operating mechanism is carried on a base **52** which is supported in such a way as to enable correct adjustment of the position of the apparatus with respect to mold segments. This support is here shown as comprising several parts, one part being a bracket **53** adapted to be rigidly mounted on the side of the base **20** of the automatic glass-making machine heretofore described, as by the studs **54** and **55**. This has pivotally mounted on it an extending member **56**. This extending member has a tubular portion **57** adapted to form a guide for a threaded rod **58**; and adjustable positioning of the rod is effected

by an internally threaded rotatable nut member 59 carried in an appropriate slot in the member 56. The final support for the table or base 52 is in the form of the member 60 which is slightly eccentrically located with respect to the rod 58. All of these various parts can be locked in any desired position. It will thus be readily apparent that despite the size and shape of the bottle which the machine is to make and consequently the difference in location of the strap-receiving recess, the machine can be adjusted to the proper height, direction and spacing.

The table or base 52 carries an electric driving motor 61 adapted to be continuously rotated during operation of the machine, and here shown as incorporating a gear reduction. The motor operates through clutch mechanism referred to in general as 62 and controlled by a solenoid 63 to intermittently rotate cam mechanism 64 which transforms the rotary motion into reciprocating longitudinal motion of the rod 65.

A carriage 66 is mounted for reciprocatory movement on the two rails 67 and 68; and is guided for steadier movement by the two backwardly extending rods 69 and 70, which are slidably journalled in the brackets 71 and 72.

The carriage 66 carries at its forward end an operating head hereinafter to be more fully described. The head has limited longitudinal movement with respect to the carriage; and includes seal feeding, cutting, forming and holding means. Sealing straps in the form of a continuous tape 73 are supplied to the operating head from a reel 74 mounted on a bracket 75 on the base 52.

Returning to the drive mechanism, the clutch 62 is best shown in detail in Figures 15 and 16. Driving shaft 76 is continuously rotated, through the speed reduction gears as intermediaries, by the motor 61. This driving shaft carries an annular housing 77 internally toothed as at 78. An internal rotatable member 79 is rigidly connected to shaft 80 to drive it and the cam mechanism 64. The internal clutch member 79 has pivotally mounted at 81 a dog or pawl member 82. This member is urged outwardly by the spring 83 in a direction which would cause it to engage with the teeth 78 were it not otherwise restrained. The restraining means provided is in the form of a projecting plunger or stop member 84 carried on the end of a longitudinally slidable rod 85. The rod 85 is bifurcated at its lefthand end (speaking with respect to Figure 15) and has pivotally mounted thereon one end of the control lever 86. Referring more particularly to Figure 6, it will be seen that the control lever is fulcrumed about the pin 87 and pivotally connected at the other end by the pin 88 to the plunger 89. When the plunger 89 is pulled to the left (speaking with respect to Figure 6) by energization of the solenoid 63, the rod 85 (see Figure 15) is pulled to the left to withdraw the stop member 84 from beneath the pawl 82. The pawl is immediately urged outwardly by the spring 83 to engage the internally toothed portion of the rotating outer clutch member 77, so that the shaft 80 is then driven through one complete counterclockwise rotation (speaking with respect to Figure 16). When the clutch member 79 and shaft 80 have made a complete revolution the stop member 84 is again in the position shown in Figure 15 as a result of deenergization of the solenoid 63; the pawl 82 is therefore knocked out of engagement with the cooperating teeth, and driving connection between the shafts 76 and 80 is discontinued until another energization of the solenoid takes place.

Referring more particularly to Figure 5, the circuit leads from the solenoid 63 are carried through the cable 90 to a switch 91, and then through the cable 92 to any convenient source of actuating current. As before mentioned, the table 21 of the automatic bottle-making machine (not shown in Figure 5) is rotated in steps by pneumatic means. The pulsating air supply for this pneumatic table drive passes through the pipes 93 and 94; and branch or take-off pipes 95 and 96 divert some of this air to a switch actuating cylinder 97. A projecting rod 98 reciprocated by the piston in the cylinder 97 actuates the switch 91 to energize the solenoid 63 at intervals properly timed in relation to the step by step movement of the mold-carrying table of the bottle-blowing machine. That is, each time an open mold segment reaches the position occupied by mold segment 29 in Figure 1 the switch 91 is momentarily closed to cause a forward movement of the operating head of the apparatus to place a sealing strap into the recess in the mold, whereupon the head immediately withdraws to permit the mold to pass to the next station.

The intermittent rotation of the shaft 80 through one complete turn is translated by the cam mechanism 64 into a forward and backward stroke of the rod 65. Referring particularly to Figures 2, 3, 4 and 6, it will be seen that the disk 100 is fastened to the shaft 80 and intermittently rotated by it through one complete revolution in the manner heretofore described. The disk carries a trunnion 101 radially adjustable on the threaded rod 102, so that the length of the stroke of the carriage can be adjusted. The trunnion 101 is received in a vertical slot or guideway in the channel bar 103 as may be best seen in Figure 4. This channel bar is rigidly mounted on the rod 65 parallel to the face of the disk 100; and is of a length equal to the diameter of the disk. A locking pawl 104 is provided to prevent backward rotation of the disk, which is designed to rotate in a counter-clockwise direction (speaking with respect to Figures 2 and 3).

At rest position, with the clutch members disconnected as shown in Figure 16, the disk is adapted to lie in the position shown in Figure 3. When the clutch members are connected by energization of the solenoid 63 a complete rotation of the disk 100 takes place and this drives the channel bar 103 from its back position shown in Figure 3 to its forward position shown in Figure 2, and then returns it again to the back position illustrated in Figure 3. Since the channel bar 103 is rigidly connected to the rod 65 and this is in turn connected to the carriage 66 on which the operating head is mounted, this action causes a forward and return stroke of the carriage and head at the desired time.

I will now describe the operating head, its details being best shown in Figures 8, 9, 12, 13 and 14. A toothed feed wheel 105 is rotatably mounted on a bracket 106. An operating lever 107 acts to rotate the feed wheel 105 clockwise (speaking with respect to Figure 8) each time the lever itself is moved. Referring particularly to Figure 13, it will be seen that the lever 107 is pivotally mounted on the same pin 108 that carries the feed wheel 105. The lever has pivotally mounted on it a pawl 109 which cooperates with a ratchet 110 to effect movement of the feed wheel in one direction only. Referring now for a moment to Figure 2, it will be seen that the bracket 75 which carries the reel

has mounted on it a stud or stop member 111. The carriage and head are in their forward position in Figure 2; as they return to their back position, however, the lever 107 strikes the stud 111 to effect movement of the feed wheel 105. This moves the tape 73 down, against resistance interposed by the friction arms 112 acting on the reel, a distance equal to the length of one sealing strap. The teeth on the feed wheel 105 are in pairs so spaced as to engage the openings 42 and 43 (see Figure 7) in the sealing straps. This insures proper location of each successive strap segment of the tape 73.

The bracket 106 serves as a support of secondary carriage mounted for limited movement on the carriage 66. As may be best seen in Figures 8, 9 and 12, the carriage 66 has a pair of forwardly projecting rods, the rod 113 being shown in the drawings and there being a similar rod on the other side of the carriage. The bracket 106 is slideably mounted on these rods, its rearward position with respect to the carriage 66 being shown in Figure 8 and its forward position with respect to such carriage being shown in Figure 9. These two forwardly projecting rods on the carriage 66 have a member 114 fixedly mounted thereon at the forward end. This member has a pair of locating fingers on the forward end adapted to be received by cooperating recesses in the mold segment 29, the finger 115 being shown in Figure 9. Beneath these fingers is mounted a pair of slideable buffers or contact members, normally urged out ahead of the locating fingers. These bumper portions contact the mold segment 29 before the locating fingers and serve to steady the head of the carriage as the locating fingers move into the appropriate recesses in the mold, the bumper 116 and its urging spring 117 being shown in Fig. 9. The other end of the member 114, as may be best seen in Figure 13, carries a similar locating finger 118 and a similar spring-pressed bumper 119. Each side of the member 114 at the forward end of the rods on the carriage also includes a wedge or inclined cam surface, as 120.

The bracket or head carriage 106 is connected to rod 65 through the spring 140. As may be best seen in Figures 12 and 14, the rod 65 is threaded into a block portion 121 which is slideably mounted on the bracket 106. This portion 121 has yieldingly connected to it the sealing strap carrying portion 122, also slideably mounted in the bracket 106; and supports the cutting and bending member 123.

The strap carrying portion 122 has yieldably mounted in the forward end thereof two supporting pins 124 and 125, as may be best seen in Figures 13 and 14. These are normally in the position shown in Figure 14, and are adapted to pass through the openings 42 and 43 (see Figure 7) in the seal 37. When the seal is applied to the recess in the mold segment 29, however, these pins are able to yield. As before mentioned, this supporting member 122 is slideably supported in the top portion of the bracket 106. A pair of rods 126 and 127 and the springs surrounding these rods serve to keep the member 122 in the relation to the plate 121 shown in Figure 14 except when some part of this member 122 is in actual engagement with the mold segment.

A plate 128 is slideably mounted on the forward part of the bracket 106 and is provided with sidewardly extending pins 129 and 130 adapted to cooperate with the inclined cam surfaces, as 120, to effect vertical movement of the plate.

After the apparatus has inserted a sealing strap in the recess in a mold segment the operating head is moved backwardly on its return stroke by the drive mechanism heretofore described. As it moves rearwardly the lever 107 first strikes the stop member 111 (see Figure 2) to rotate the feed wheel 105 and bring a new segment of the tape down in place in front of the supporting member 122 and between it and the plate 128, which lies in the position shown in Figures 12 and 13, as soon as the operating head has backed away from the mold an inch or two. Further backward movement of the operating head causes the cutting member 123 (normally urged to a position back of the tape 73 by the spring 131) to strike a stop member 132, this stop member being rigidly mounted on the base 52. Still further backward movement of the operating head causes relative forward motion of the cutting member 123 to the position shown in Figure 12. While the cutting member actually stands still at this time, the further backward movement of the operating head causes the relative motion between the parts. This relative motion, since the cutting member has an upwardly and forwardly inclined forward face, first cuts the tape 73 (acting in combination with the lower shearing edge of the plate 133) along the desired line, as for example the line 38 illustrated in Figure 7; and then bends the head portion 40 of the sealing strap 37 forward to the position shown in Figure 12. During this last movement the depending portion 141 comes into contact with the back of the member 122 and forces it up tightly against the strap and the plate 128 to give the strap a curve adapting it to conform to the neck of the finished bottle. At this time the clutch has disconnected and the cam drive mechanism has reached the position shown in Figure 3, the parts of the operating head all being in the position shown in Figure 8.

When the mold table of the glass machine has rotated to the next station the heretofore described timing mechanism again connects the clutch and causes a forward movement of the drive rod 65, and thus of the operating head. The carriage 66 and bracket 106 stay in the position with respect to each other shown in Figure 8 until the bumpers and locating fingers engage the mold segment 29, as shown in Figure 9. Thereafter the bracket 106 moves forwardly with respect to the carriage 66 until it reaches the position shown in Figure 9. During this forward movement the plate 128 drops down away from its position in front of the sealing strap, since the pins 129 and 130 travel down the inclined cam surfaces. By the time the bracket 106 reaches its furthest forward position the pins 124 and 125 have already entered the holes 48 and 49 in the mold recess; and the sealing strap has been forced into position in the recess. The recess is designed to be a sufficiently tight fit that the sealing strap remains in place therein as the operating head of the machine withdraws on its return stroke. At the foremost part of its movement there is, of course, nothing positively holding the strap to the supporting member 122, the strap merely lying in place on the pins 124 and 125.

After the operating head has withdrawn the mold moves to the next station, that occupied by the mold 25 in Figure 1, and during this movement the mold segments 29 and 30 close. When the mold reaches the next stage, as heretofore described, a slug of molten glass is inserted.

Thereafter the bottle is blown and the plastic glass flows through the openings 42 and 43 in the sealing strap to form rivet-like pieces permanently attaching the strap to the bottle wall. When the bottle leaves the finishing table of the machine it travels to an annealing furnace. The bottles are then shipped to a distiller or the like, where they are fed to a filling and capping machine of conventional type, and thereafter a closure is applied and the depending portion of the closure spot-welded to the upwardly projecting head 40 of the sealing strap to make a finished sealed assembly of the kind shown in Figure 11.

The strap-applying apparatus is capable of use with present standard bottle-making machines; and it may be adjusted for any size or shape of bottle within the capacity of the machine. The machine is rugged and positive in action, yet capable of the high speed of operation necessary to keep up with a bottle-making machine which turns out nearly a bottle a minute. No reorganization of the bottle-making machine is required, it only being necessary to drill a few holes in the base to enable attachment of the bracket 53, and to provide recessed molds. The molds are, of course, always readily interchangeable parts of a conventional bottle-making machine, so that there is no difficulty in using special molds.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims.

I claim:

1. Apparatus for severing sealing straps from a flat tape comprising a plurality of identical sealing straps and supplying them to holding means on a member adapted to move to and away from a mold to insert a strap in a recess in each mold of a plurality of molds successively presented to the member, including: means for moving the tape in steps equal to the length of a strap; means for severing the end strap from the tape at each movement thereof; and means for bending a portion of the severed strap at an angle to the remainder thereof.

2. Apparatus of the character claimed in claim 1, wherein the severing and bending means comprise a movable bar having an upwardly and forwardly inclined face, a shear plate adapted to cooperate with the upper edge of the face to effect severance of the end strap, and a plate adapted to cooperate with the lower edge of the face to bend a portion of the strap at an angle to the remainder thereof.

3. Apparatus for releasably holding a strap of thin material with an opening therethrough on the forward end of a reciprocable member adapted to insert the strap in a recess in a mold, including: a pin projecting forwardly from the member and adapted to project through the opening in the strap; and a plate vertically movable in a plane immediately in front of the strap when said strap is supported on the pin.

4. Apparatus for releasably holding a strap of thin material with an opening therethrough on the forward end of a reciprocable member adapted to insert the strap in a recess in a mold, including: a pin projecting forwardly from the member and adapted to project through the opening in the strap; a plate vertically movable in a plane immediately in front of the strap when said strap is supported on the pin and normally in front of the strap to positively maintain it on the pin; and means for moving the plate out of its position in front of the strap, said means including a portion adapted to engage the mold before the strap and being operative upon such engagement.

5. Apparatus of the character claimed in claim 3, including a second pin horizontally spaced from the first mentioned pin and adapted to project through a second opening in the strap.

6. Apparatus of the character described for successively inserting at least a portion of a sealing element in a desired position in each of a plurality of molds, including: means for supporting a plurality of molds; means for moving said supporting means to successively bring said molds to a desired position; a member movable toward and away from said position; means on the member for releasably holding an element; and means for moving the member toward each mold as it is brought to said position to deposit the element therein.

7. Apparatus of the character described for successively inserting at least a portion of a sealing element in a recess provided therefor in each of a plurality of molds, including: means for supporting a plurality of molds; means for moving said supporting means to successively bring said molds to a desired position; a member movable toward and away from said position; means on the member for releasably holding an element; means for moving the member toward each mold as it reaches said position to deposit the element in the recess therein; and means for supplying another element to the holding means each time an element is removed therefrom.

8. Apparatus of the character claimed in claim 6, including automatic means for causing movement of the supporting means and movement of the member to be effected in properly timed relationship.

9. Apparatus of the character described for successively inserting at least a portion of a sealing element in a recess provided therefor in each of a plurality of molds, including: means for supporting a plurality of molds; means for effecting step-by-step movement of the supporting means to successively bring said molds to a desired operating station; a member movable toward and away from the position occupied by the mold at said station; means on the member for releasably holding an element; means for moving the member toward and away from each mold as it stands at said particular station to deposit the element in the recess therein; and feed means for supplying another element to the holding means each time an element is removed therefrom.

10. Apparatus of the character claimed in claim 6, including cooperating aligning means on the member adapted to cooperate with aligning means on each mold.

11. Apparatus of the character claimed in claim 9, including aligning means on the forward end of the member adapted to cooperate with aligning means on each mold.

12. Apparatus of the character claimed in claim 7, wherein the elements are initially in the form of a strip or tape, and the feed means includes means for severing each successive element from the tape as it is supplied to the holding means.

13. Apparatus of the character claimed in claim 9, wherein the elements are initially in the form of a strip or tape, and the feed means includes means for severing each successive element from the tape as it is supplied to the holding means.

14. Apparatus of the character claimed in claim 7, wherein the elements are initially in the form of a flat strip or tape, and the feed means includes means for severing each successive element from the tape as it is supplied to the holding means and bending a portion of the element at an angle to the remainder thereof.

15. Apparatus of the character described for successively inserting at least a portion of a sealing element in a recess provided therefor in each of a plurality of molds, including: means for supporting a plurality of molds; means for effecting step-by-step movement of the supporting means to successively bring said molds to a desired operating station; a member movable toward and away from the position occupied by the mold at said station; means on the member for releasably holding an element; means for moving the member toward and away from each mold as it stands at said station to deposit the element in the recess therein; feed means for supplying another element to the holding means each time an element is removed therefrom; and means for coordinating the movement of the member in properly timed relationship with that of the mold supporting means.

16. Apparatus of the character described for successively inserting at least a portion of a sealing element in a recess provided therefor in each of a plurality of molds, including: means for supporting a plurality of molds, means for effecting step-by-step movement of the supporting means to successively bring said molds to a desired operating station; a member movable toward and away from the position occupied by the mold at said station; means on the member for releasably holding an element; means for moving the member toward and away from each mold as it stands at said station to deposit the element in the recess therein; feed means for supplying another element to the holding means each time an element is removed therefrom; continuously operating drive means; and means for intermittently connecting the drive means to the member to effect a forward and rearward stroke of the member at each such connection.

17. Apparatus of the character described for successively inserting at least a portion of a sealing element in a recess provided therefor in each of a plurality of molds, including: means for supporting a plurality of molds, means for effecting step-by-step movement of the supporting means to successively bring said molds to a desired operating station; a member movable toward and away from the position occupied by the mold at said station; means on the member for releasably holding an element; means for moving the member toward and away from each mold as it stands at said station to deposit the element in the recess therein; feed means for supplying another element to the holding means each time an element is removed therefrom; a continuously rotating drive shaft; a second shaft; means connecting the second shaft to the member to effect reciprocatory movement thereof; clutch means adapted to connect the shafts; and means for operating the clutch in accordance with movement of the mold supporting means.

18. Apparatus of the character claimed in claim 17, wherein the apparatus is so constructed and arranged as to effect a complete forward and rearward stroke of the member upon each connecting operation of the clutch.

19. Apparatus of the character claimed in claim 17, including means for causing the clutch, when once connected, to remain in engagement for one complete revolution of the shafts and then to automatically disengage.

20. Apparatus of the character claimed in claim 9, including a base on which the mold supporting means is itself supported, a track on which the member moves, and means carried by the base and supporting the track, this last mentioned means being so constructed and arranged as to enable adjustment of the track as to angle, height, and spacing from the mold supporting means.

21. Apparatus of the character claimed in claim 9, including a base on which the mold supporting means is itself supported, a track on which the member moves, and means carried by the base and supporting the track, this last mentioned means being so constructed and arranged as to enable adjustment of the track as to angle, height, and spacing from the mold supporting means, the apparatus further including means for adjusting the length of stroke of the member.

22. Apparatus of the character claimed in claim 6, wherein the holding means includes a pin adapted to pass through an opening in the element and a member positively maintaining the element in place on the pin during most of the movement of the first mentioned member toward the mold, but automatically moving away from said element just before the element is inserted in the mold.

23. Apparatus of the character claimed in claim 9, wherein the holding means includes a pin adapted to pass through an opening in the element and a member positively maintaining the element in place on the pin during most of the movement of the first mentioned member toward the mold, the maintaining member being movably mounted to move down away from the element just before it reaches the recess in the mold.

24. Apparatus of the character claimed in claim 15 wherein the elements are derived from a tape, including means for moving said tape and severing elements therefrom, and means for causing said moving and severing operations to be successively effected during the movement of the member away from the mold.

25. Apparatus of the character claimed in claim 15, wherein the elements are derived from a tape, including means for moving said tape and severing elements therefrom, wherein said tape moving and severing means are movable with the member and are adapted to be successively operated during the movement of the member away from the mold by engagement of movable portions of said last mentioned means with fixed stops.

26. Apparatus of the character described for successively inserting at least a portion of a sealing element in a desired position in each of a plurality of molds, including: means for supporting a plurality of molds; means for moving said supporting means to successively bring said molds to a desired position; a member movable

toward and away from the mold in said position; means on the member for releasably holding an element; aligning means on the member adapted to engage cooperating aligning means on the mold before the sealing element engages the mold to insure placement of the element in the desired position; and means for moving the member toward each mold as it reaches said position to deposit the element therein.

27. Apparatus of the character described for successively inserting at least a portion of a sealing element in a recess provided therefor in each of a plurality of molds, including: means for supporting a plurality of molds; means for effecting step-by-step movement of the supporting means to successively bring said molds to a desired operating station; a member movable toward and away from the mold at said station; means on the member for releasably holding an element; means for aligning the member with respect to the mold comprising a pin adapted to be at least partially received by a bore before the sealing element reaches the recess; and means for moving the member toward and away from each mold as it stands at said station to deposit the element in the recess therein.

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