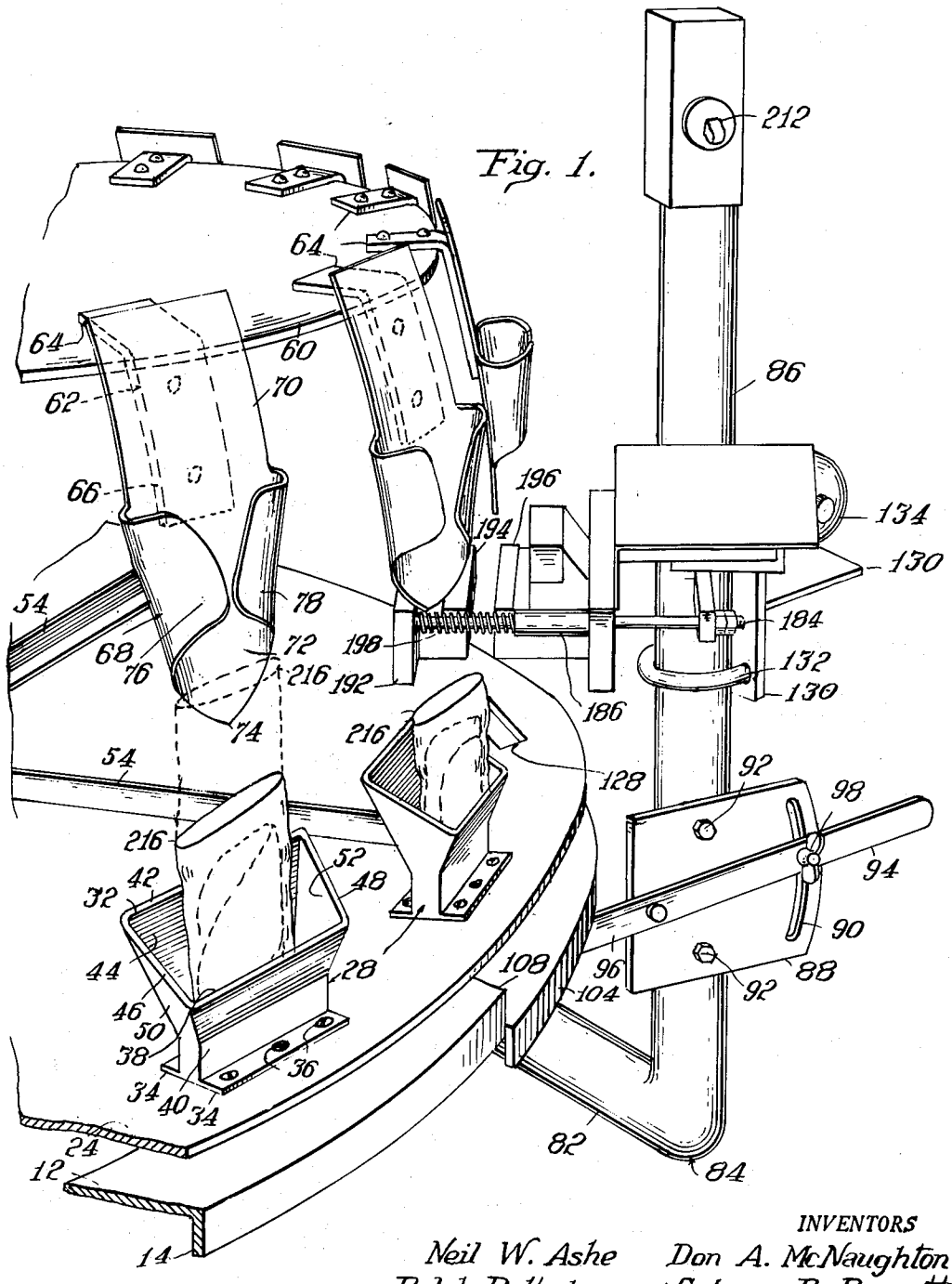
May 8, 1956 N. W. ASHE ET AL 2,744,669

MACHINE FOR PACKAGING MERCHANDISE

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Fig. 1.



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MACHINE FOR PACKAGING MERCHANDISE

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Fig. 2.

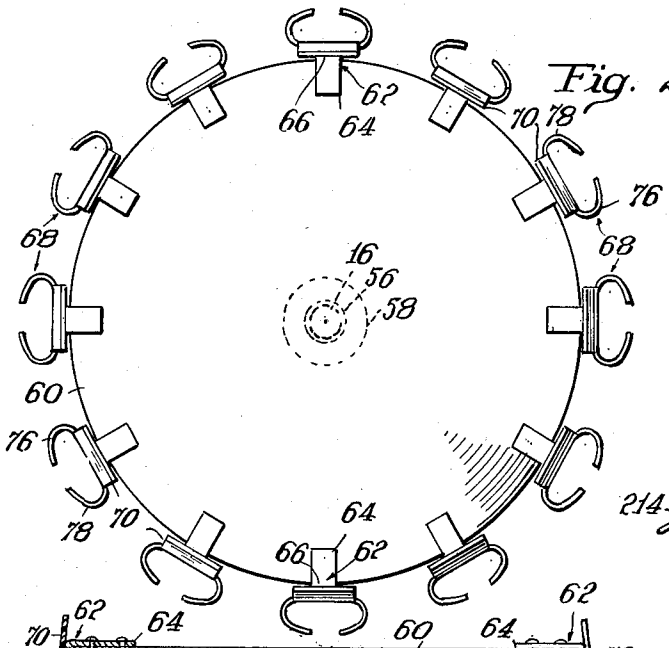
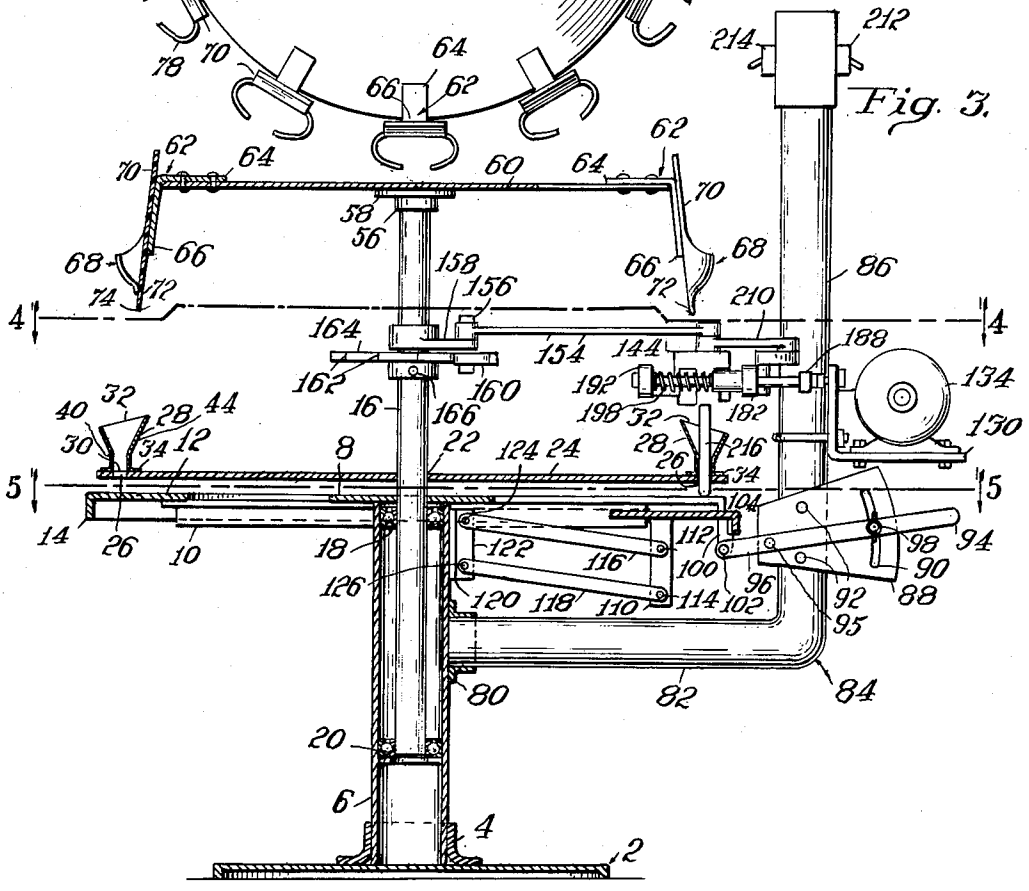


Fig. 3.



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MACHINE FOR PACKAGING MERCHANDISE

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Fig. 4.

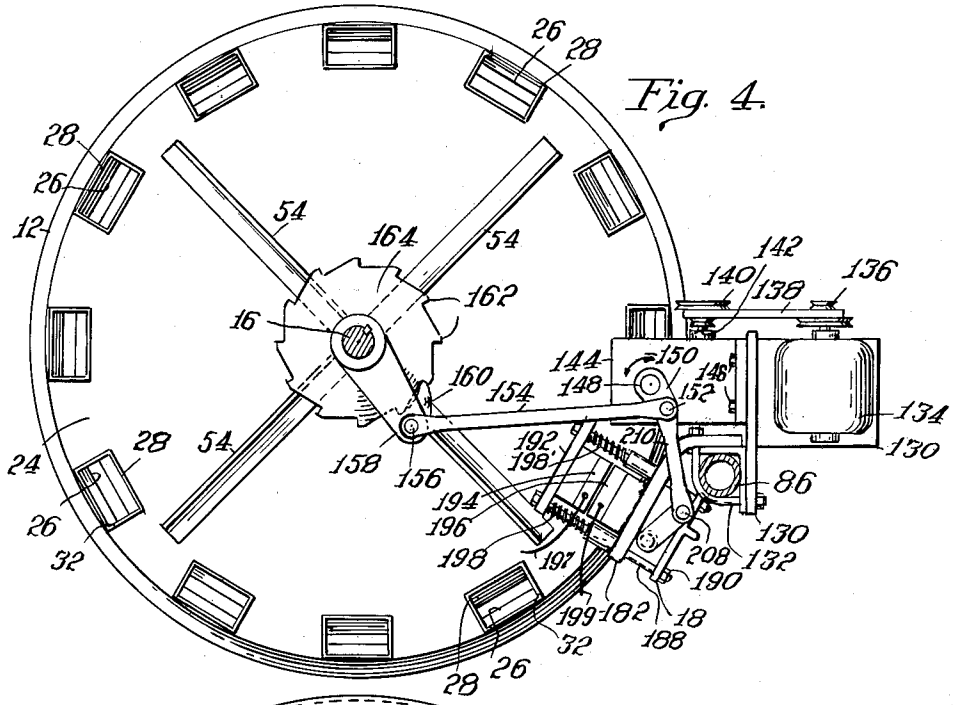
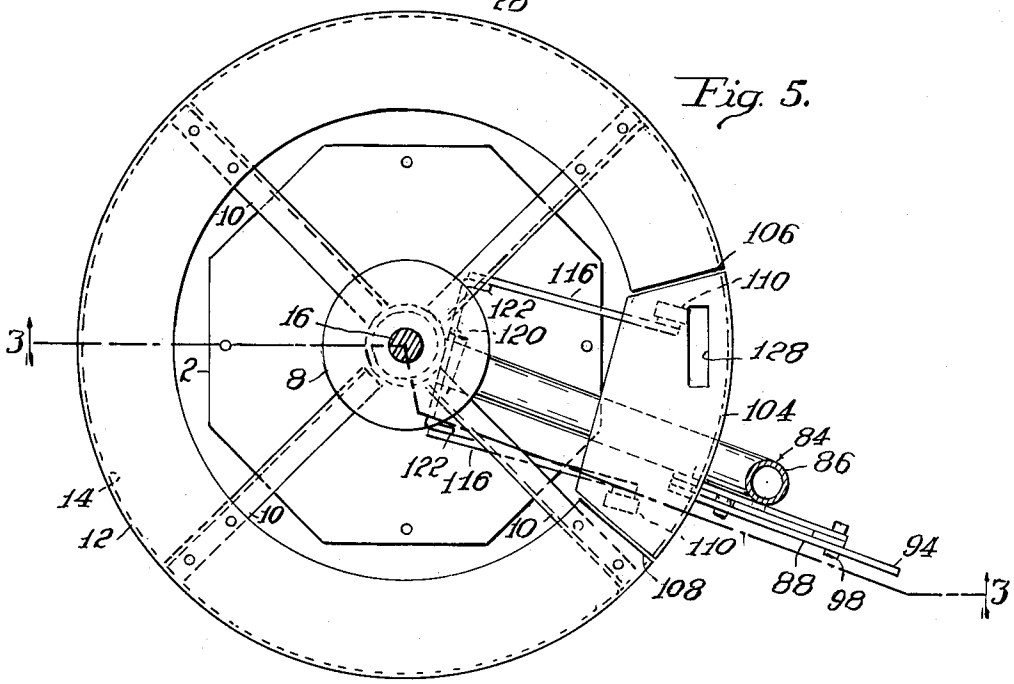


Fig. 5.



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Fig. 6.

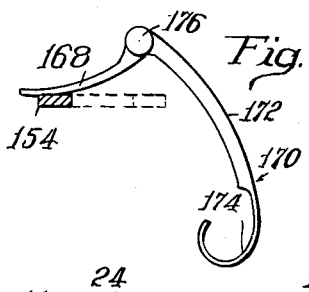
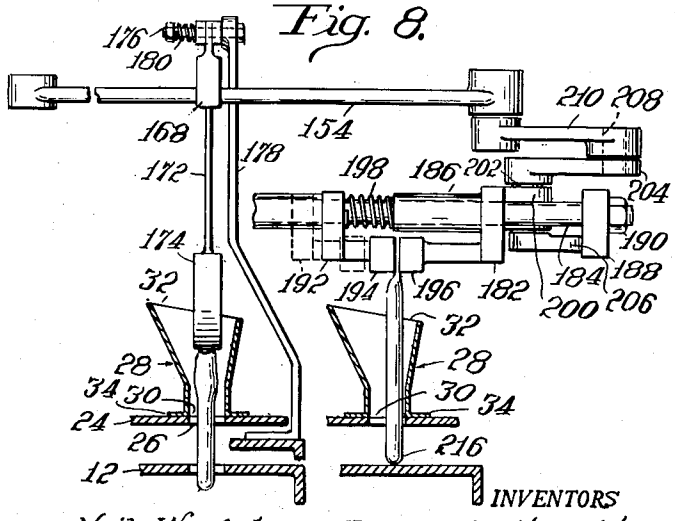


Fig. 7.

Fig. 8.



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MACHINE FOR PACKAGING MERCHANDISE

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Application July 29, 1952, Serial No. 301,592

16 Claims. (Cl. 53—37)

This invention relates to a machine for packaging merchandise, such as hose, in plastic containers formed of cellophane or other plastic materials.

One of the primary objects of this invention is to provide a machine, of the type described, having means facilitating the opening of a cellophane container to receive the merchandise, and then to convey the filled container to a sealing unit, and thereafter to discharge the sealed container with its contents.

Another object of this invention is to provide means for carrying out the sequence of operations referred to above under conditions which permit the goods to be packaged while maintaining a high sanitary standard.

A further object of the present invention is to provide adjustable means whereby containers of various sizes may be presented to the sealing unit.

Other and further objects and advantages of this invention will become more apparent from a consideration of the following specification when read in the light of the annexed drawings, in which:

Fig. 1 is a partial perspective view of the machine shown in Fig. 3;

Fig. 2 is a top plan view of the upper rotatable member shown in Fig. 1;

Fig. 3 is a transverse cross-section of the machine, partly in elevation, taken on the line 3—3 of Fig. 5, and showing the relative positions of the elements of this invention;

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 3;

Fig. 6 is a side elevation of one of the elements of the invention;

Fig. 7 is an enlarged top plan view, taken on the line 7—7 of Fig. 3, and illustrating the details of the driving and sealing mechanism; and

Fig. 8 is a side elevation of the mechanism shown in Fig. 7, and showing, additionally, the sealing and discharge positions of the cellophane bag.

Referring now more particularly to Fig. 3 of the drawings, reference numeral 2 indicates a base plate or support provided with a centrally positioned vertically extending collar 4. One end of a tubular support 6 is fixedly mounted in the collar 4, while the other end thereof is rigidly secured to an annular element 8.

As is more clearly seen in Fig. 5, a plurality of supports, such as angle irons 10, have one of the ends of each secured to the underside of the element 8 at spaced intervals and radiate therefrom. The other ends of the angle irons 10 are rigidly affixed to the underside of an arcuately shaped slide plate 12 having a depending peripheral flange 14. Annular element 8 and slide plate 12 are arranged and disposed in substantially concentric relationship.

A shaft 16 is rotatably supported in a radial bearing 18 and a thrust bearing 20 housed in and secured to the tubular support 6. Fig. 3 of the drawings discloses

that shaft 16 extends upwardly from and above the upper end of the tubular support 6, and is free to rotate in an aperture 22 formed in the annular element 8.

A circular table 24 is mounted on the shaft 16 for rotation therewith. The table 24 (see Figs. 3 and 4) is formed with a plurality of spaced, rectangular slots 26 positioned adjacent its periphery and having their longitudinal axis, at mid-point, substantially normal to one of the radii extending from shaft 16. A hollow guide 28 having a substantially Y-shaped transverse cross-section (Figs. 1, 3 and 4) and open opposite ends 30 and 32, respectively, has its lower open end 30 aligned with and superposed over each slot 26.

Each guide 28, adjacent its lower end 30, is provided with a pair of oppositely disposed laterally-extending base flanges 34 utilized in affixing guides 28 in their respective relative positions, as by bolts 36. To serve a purpose to be described, the upper edge 38 of front wall 40 is lower than the upper edge 42 of back wall 44, and the upper edges 46 and 48 of side walls 50 and 52 incline downwardly from back wall 44 to front wall 40. Strengthening braces 54 extend across the table 24 to prevent bending.

A collar 56 having a flange 58 is fixedly mounted on the upper end of the shaft 16 and rotates therewith. Any desirable means may be employed to mount rigidly a circular plate 60 on the flange 58. A plurality of regularly spaced inverted L-shaped angle members 62 have their respective feet 64 secured to the plate 60 adjacent its periphery, the arms 66 thereof depending downward therefrom to support a guide and insert member or chute 68, the function of which will be described below.

From Fig. 1 it is seen that the chute 68 is formed of a plastic composition and comprises a substantially flat rectangular upper portion 70 secured to the arm 66, while the lower end 72 is curved about its longitudinal axis and terminates in a pointed end 74. A pair of oppositely disposed inwardly extending and curvilinear sides 76, 78, integral with lower end 72, flare upwardly from each side of the lower end 72 and extend over a portion thereof.

In the present invention, the number of chute or insert elements 68 exactly corresponds to the number of hollow guides 28, and the pointed ends 74 are suspended above the open upper ends 32 of the guides 28.

A fitting 80 secures the horizontal portion 82 of an L-shaped column 84 to the tubular support 6. Portion 82 extends beyond the periphery of the slide plate 12 and then continues into a vertical upwardly extending portion 86.

The plate 88, provided with slot 90, is mounted on the portion 86 by bolts 92. A normally operated lever arm 94 is pivotally mounted at 95 on the plate 88 adjacent one of its ends 96. Nut and bolt 98 secure the lever arm 94 in any adjusted position. The link 100 has one of its ends pivotally connected at 102 with the end 96, while the other end thereof is rigidly secured to the underside of a vertically adjustable plate 104.

As seen in Figs. 1 and 5, the plate 104 may be moved upwardly into the plane of the slide plate 12 between its adjacent ends 106, 108, or adjusted to some position therebelow. Lugs 110 (Fig. 3) depend from the plate 104 and are pivotally connected at 112 and 114 to one of the ends of the parallel spaced bars 116 and 118. Bracket 120 provided with flanges 122 supports the other ends of bars 116, 118 on pivots 124, 126, and the bracket 120 is rigidly secured to the tubular support 6. The adjustable plate 104 is also provided with a slot 128 (Fig. 5) which serves a function to be described.

An L-shaped bracket 130 is bolted at 132 to the vertical portion 86 of the column 84 and supports a motor 134. The motor 134 (Fig. 6) drives the pulley 136 intercon-

nected by a transmission belt **138** with a pulley **140** which is mounted on the input shaft **142** of any well-known speed reducer unit **144**. The latter is secured by bolts **146** to the bracket **130**. Output shaft **148** of the speed reducer **144** is connected to a crank **150** provided with crank-pin **152**.

Pitman **154** (Figs. 3 and 7) has one of its ends rotatably mounted on the pin **152**, the other end thereof being rotatably mounted on a crank-pin **156** of a crank **158**, the latter being mounted for rotation on, and relative to, the shaft **16**. Crank-pin **156** projects downwardly to support a pawl **160** spring biased to engage ratchet teeth **162** of a ratchet gear **164**, the latter being rigidly secured by set screw **166** to the shaft **16** for rotation therewith.

As the pitman **154** moves from its broken-line position shown in Fig. 7 to the full-line position, it (see Fig. 6) engages against the curved arm **168** of a link **170**. The other end **172** of the link is elongated and terminates in a laterally flared and reversely curved end portion **174**. As seen in Fig. 8, the link **170** is rotatably mounted on a shaft **176** carried at the upper end of a brace **178** whose lower end is rigidly secured to the slide plate **12**. Spring **180** normally biases link **170** to maintain its end **172** above guides **28**. The function of the link **170** will be further described below.

Reference is again made to Figs. 7 and 8 wherein it is shown that the vertical portion **86** of the column **84** rigidly supports an L-shaped bar **182**, which in turn carries an electric heat-sealing unit. The unit comprises a pair of laterally spaced parallel shafts **184**, **184'**, which are mounted for reciprocation through suitable openings formed in the bar **182** and through collars **186**, **186'**. A cross-plate **188** connects one of the respective ends of shafts **184**, **184'** and is maintained thereon by nuts **190**, **190'** threaded on the ends of their respective shafts.

The other ends of these shafts are connected by cross-plate **192** which carries one electrical heating element jaw **194**. Plate **192** is secured on the shafts by nuts **195**, **195'** threaded on the ends of their respective shafts. As seen in the drawings, the other jaw **196** is fixedly secured to the bar **182**. Helical springs **198**, **198'** surround their respective shafts and are positioned intermediate the cross-plate **192** and collars **186**, **186'**, whereby the jaw **194** is constantly urged to move away from the jaw **196** to take the broken line position illustrated in Fig. 8.

Each jaw is provided with a curved flexible guide **197**, **199**, serving a function to be described. Bar **182** is provided with a lateral boss **200** in which is rotatably received a pin **202** at one end of a crank **204**. The lower end of the pin **202** has a cam **206** rigidly secured thereto and rotates therewith. The other end of the crank **204** is rotatably connected by a pin **208** to one end of a pitman **210**, the other end thereof being rotatably secured to the crank-pin **152**.

Switches **212** and **214**, mounted on the vertical portion **86**, are connected with a source of E. M. F., the former controlling the current to the heating elements of jaws **194**, **196** through suitable leads (not shown), and the latter being connected in the motor circuit by proper leads (not shown).

Having described the component elements of this machine, the operation and function thereof is deemed manifest. Assuming that both switches **212** and **214** are open, the motor and heating elements are thus deenergized. The operator then closes switch **212** and, after permitting sufficient time to lapse to heat jaws **194**, **196**, thereafter the operator closes switch **214** to energize the motor **134**.

The motor **134** drives the speed reducer **144** which, in turn, rotates the crank **150**. Referring to Fig. 7, as crank **150** rotates, the pitman **154** moves upwardly to force the pawl **160** into engagement with one of the ratchet teeth **162**. Since the ratchet gear **164** is rigidly secured to the rotatable shaft **16**, the shaft rotates in its bearings and also turns the circular plate **60** and the table **24**. When the pitman **154** reaches its dotted-line position, further rotation of crank **150** causes the pawl **160** to become disengaged from the tooth **162** and come to rest behind the succeeding tooth **162'** (Fig. 7).

During this sequence of operations, as the pitman **154** moves from full to broken-line position, the pitman **210** rotates the crank **204** from full to broken-line position, which turns the cam **206** away from the cross-plate **188**, whereby the springs **198**, acting on cross-plate **192**, force the jaw **194** away from the jaw **196**. It is to be noted that as the pitman **154** starts and completes its return stroke, the shaft **16**, plate **60**, and table **24** are stationary, while the cam **184** engages against the cross-plate **188** to force the jaw **194** into juxtaposition with respect to the jaw **196**.

The operator takes his position in front of one of the chutes **68**. A supply of pairs of hose and empty cellophane bags are conveniently located adjacent each hand. With one hand the operator selects one bag **216** and forces the open end thereof upwardly against the pointed end **74** and over the curvilinear sides **76**, **78** of the member **68**. This operation completely opens the bag and prepares it to receive a pair of hose which have been selected by the operator's other hand simultaneously with carrying out of the aforesaid steps.

The operator then drops the hose into the chute **68** while the envelope or bag **216** is held lightly against sides **76**, **78**. When the hose hits against the bottom of the bag **216**, the operator releases it to permit the bag and its contents to fall, under the force of gravity, into guide **28** which is aligned with the member **68** and through slot **26**, coming to rest with its bottom edge engaging against slide **12**. Shaft **16** is then rotated, in the manner described above, to bring the next pair of aligned guide **28** and chute **68** into position before the operator, where the operation is repeated.

As the table **24** is rotated, the envelope **216**, whose upper edges project above the upper end **32** of the guide **28**, is carried toward the adjustable plate **104**. This plate is adjusted either upwardly or downwardly by lever **94** in order that the bag **216**, as it moves thereon, will present to the heating element jaws **194**, **196**, a sufficient portion of its upper edge to effect approximately a one-half inch seal.

At the beginning of the next step in the periodic movement of the table **24**, the upper end of the bag **216** is brought between the flexible guides **197**, **199**, and comes to rest between the jaws **194**, **196**. Pitman **210** now actuates the jaw **194**, forcing it to move toward the jaw **196** against the tension of the springs **198**, **198'**, to compress and seal the upper edge of the bag **216** (see Fig. 8). The cam **206** now turns in the opposite direction to permit the jaws **194**, **196** to separate slightly before the pawl **160** engages the next ratchet tooth **162**. Upon effecting this engagement, the table **24** is advanced one position, bringing the packaged hose in the bag **216** in alignment with the slot **128** in the adjustable plate **104**. During this movement, the pitman **154** has moved from its full-line position (Figs. 6 and 7) to its broken-line position, allowing the spring **180** to force the end portion **174** of the link **170** into the guide member **28** and against the upper end of the bag **216**. This insures that the bag **216** will be expelled through the slot **128** to drop into a box or onto a conveyor for subsequent handling. The return of the pitman **154** permits the spring **180** to raise the end **174**, thereby completing the cycle.

Having described and illustrated this invention in detail, it is to be understood that the present embodiment is offered by way of example, and that the invention is to be limited only by the scope of the following claims.

We claim:

1. A method for packaging and sealing merchandise within a plastic container having an open end, comprising the steps of inserting said merchandise into said container through said open end, supporting said container

and its contents on a slide plate having a slot formed therein, sliding said container and its contents over said plate at periodic intervals toward and into a heat sealing unit, sealing the open end of said container, sliding said sealed container and contents over said plate from said unit to said slot, and discharging said sealed container and contents downwardly from said plate through said slot.

2. A method for packaging and sealing merchandise within a plastic container having an open upper end, comprising the steps of supporting said container in a position spaced from and directly above a slide plate having a slot formed therein, inserting said merchandise into said container through said open end, releasing said container with its contents to permit it to fall on said slide plate, moving said container and contents at periodic intervals toward and into a heat sealing unit, sealing said open end, moving said sealed container and contents from said unit and to a position over said slot, and discharging said sealed container with its contents downwardly from said plate through said slot.

3. A method for packaging and sealing merchandise within a plastic container having an open end, comprising the steps of forcing said open end over a hollow insert to open said container, dropping said merchandise through said hollow insert into said container, dropping said container with its contents on a stationary slide plate, moving said container and contents over said first plate and onto a second slide plate adjustable relative to the plane of said first plate and having a slot formed therein, moving said container and its contents on said second plate toward and into a heat sealing unit, sealing said open end of said container, moving said sealed container and its contents from said unit to a position above said slot, and discharging said container with its contents from said second plate through said slot.

4. A method for packaging and sealing merchandise within a plastic container having an open end, comprising the steps of energizing an electrical heat sealing unit, energizing means to drive a pair of rotatable elements at periodic intervals, one of said elements being superposed over the other, forcing said open end of said container over one of a plurality of hollow inserts carried by the upper-most of said elements, dropping said merchandise through said hollow insert into said container, releasing said container to permit it to partially drop through one of a plurality of slots formed in the second rotatable element and aligned with said inserts coming to rest on a fixed slide plate positioned therebelow, said second element periodically forcing said container and merchandise to slide over said fixed slide plate toward and onto a second slide plate adjustable into and below the plane of said first plate and having a slot formed therein, said second element periodically forcing said container over said second plate toward and into a sealing unit, sealing said open end of said container while said rotatable elements are at rest, and during this period forcing a second container over a second hollow insert and dropping said merchandise through said hollow insert into said container, releasing said container to drop through a second slot formed in said second rotatable element to come to rest on said stationary plate, advancing said second rotatable element to force said first container with its contents sealed therein from said sealing unit to a position over said slot and simultaneously advancing said second container with its contents toward said second plate, and discharging said sealed container with its contents from said second plate through said slot formed therein.

5. A machine for packaging and sealing merchandise within a plastic container, comprising a support, a slide plate mounted on said support and having a slot formed therein, heat sealing means mounted on said support, guide means mounted on said support for holding an open-ended plastic container with merchandise therein in a substantially upright position on said slide plate with its open end up and its lower end resting upon said slide plate, means for moving said guide means at periodic intervals to slide said container over said slide plate to said heat sealing means and then on to said slot, means actuating said heat sealing means to seal said container when positioned therein and while said guide means is at rest, and means for discharging said sealed container downwardly through said slot.

6. A machine for packaging and sealing merchandise within plastic containers, comprising a support, an arcuately shaped plate rigidly mounted on said support, a second slide plate adjustably mounted on said support for movement relative to the plane of said first slide plate, a shaft mounted for rotation within said support and extending thereabove, a circular table rigidly secured to said shaft and rotatable therewith, said circular table having a plurality of slots formed therein adjacent its periphery, a plurality of hollow guides rigidly secured to said table and each guide surrounding and projecting upwardly from one of said slots, a circular plate rigidly secured to the upper end of said shaft for rotation therewith and in spaced relation with respect to said circular table, a plurality of hollow pointed container opening and merchandise guiding elements depending from the periphery of said circular plate at spaced intervals, each of said last-named elements being disposed above one of said guides mounted on said table, means for driving said shaft at periodic intervals, and heat sealing means carried by said support and positioned above said adjustable slide plate.

7. A machine for packaging and sealing merchandise within plastic containers as defined in claim 6, said driving means including kinematic means for driving said shaft while rendering said sealing means inoperative, and vice versa.

8. A machine for packaging and sealing merchandise within plastic containers as defined in claim 6, and manually operated means for adjusting the position of said adjustable slide plate relative to said arcuately shaped slide plate.

9. A machine for packaging merchandise, comprising a table, a tubular guide mounted on the table and having a flaring upper end, and a chute fixedly mounted with respect to said table over the tubular guide in position to receive a receptacle therearound and to receive merchandise in the chute to be directed into the receptacle and to be dropped therefrom into the guide.

10. A machine for packaging merchandise, comprising a slide surface, a movable table mounted over the slide surface and having a slot therein, a tubular guide mounted on the table and having an opening therethrough in register with the slot in the table, and a chute fixedly mounted with respect to said table over the tubular guide in position to receive a receptacle therearound and to direct merchandise through the chute into the receptacle to be dropped into the tubular guide.

11. A machine for packaging merchandise, comprising a slide surface, a movable table mounted over the slide surface and having a slot therein, a tubular guide mounted on the table and having an opening therethrough in register with the slot in the table, said guide having a flaring open upper end, and a chute fixedly mounted with respect to said table over the tubular guide in position to receive a receptacle therearound and to direct merchandise through the chute into the receptacle to be dropped into the tubular guide.

12. A machine for packaging merchandise, comprising a slide surface, a movable table mounted over the slide surface and having a slot therein, a tubular guide mounted on the table and having an opening therethrough in register with the slot in the table, and a chute fixedly mounted with respect to said table over the tubular guide, said chute having a pointed lower end and curved sides in position to receive a receptacle therearound and to direct merchandise through the chute into the receptacle to be dropped into the tubular guide.

13. A machine for packaging merchandise, comprising a slide surface, a movable table mounted over the slide surface and having a slot therein, a tubular guide mounted on the table and having an opening therethrough in register with the slot in the table, a chute fixedly mounted with respect to said table over the tubular guide in position to receive a receptacle therearound and to direct merchandise through the chute into the receptacle to be dropped into the tubular guide, said slide surface having a discharge opening therein in position to register with the tubular guide, and an ejecting device mounted over the tubular guide in position to discharge the receptacle downwardly from the guide when the openings in the guide and the slide surface are in register with each other.

14. A machine for packaging merchandise, comprising a slide surface, a movable table mounted over the slide surface, a tubular guide mounted on the table and having an opening therethrough and through the table, a chute mounted over the tubular guide in position to receive a receptacle therearound and to direct merchandise through the chute in the receptacle for dropping into the tubular guide, a sealing device for the receptacle in position to embrace and seal the edges thereof, an auxiliary slide surface for the receptacle at the sealing device, and means for adjusting the height of the auxiliary slide surface relative to the sealing device.

15. A machine for packaging and sealing merchandise within a container comprising a support, a slide plate mounted on said support and having a slot formed therein, container sealing means mounted on said support, means for sliding an open-ended container with merchandise therein along a predetermined path on said slide plate past said sealing means to seal the open end of the container and then over the said slot, and means for engaging the upper portion of said container when the container is over said slot to positively eject the sealed container downwardly through said slot.

16. A machine for packaging and sealing merchandise in containers comprising a slide surface, a movable guide mounted over said slide surface to advance an open-ended container having merchandise therein along the slide surface, drive means for said guide, a sealing device mounted over the slide surface in position to receive and seal the open end of said container as the container rests upon said slide surface, and means for adjusting the position of said slide surface relative to the position of said sealing device to control the distance therebetween and the width of the seal produced by the sealing device.

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