July 20, 1948. M. GLASSNER 2,445,713

CONE JACKET APPLYING MACHINE

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Fig. 1.

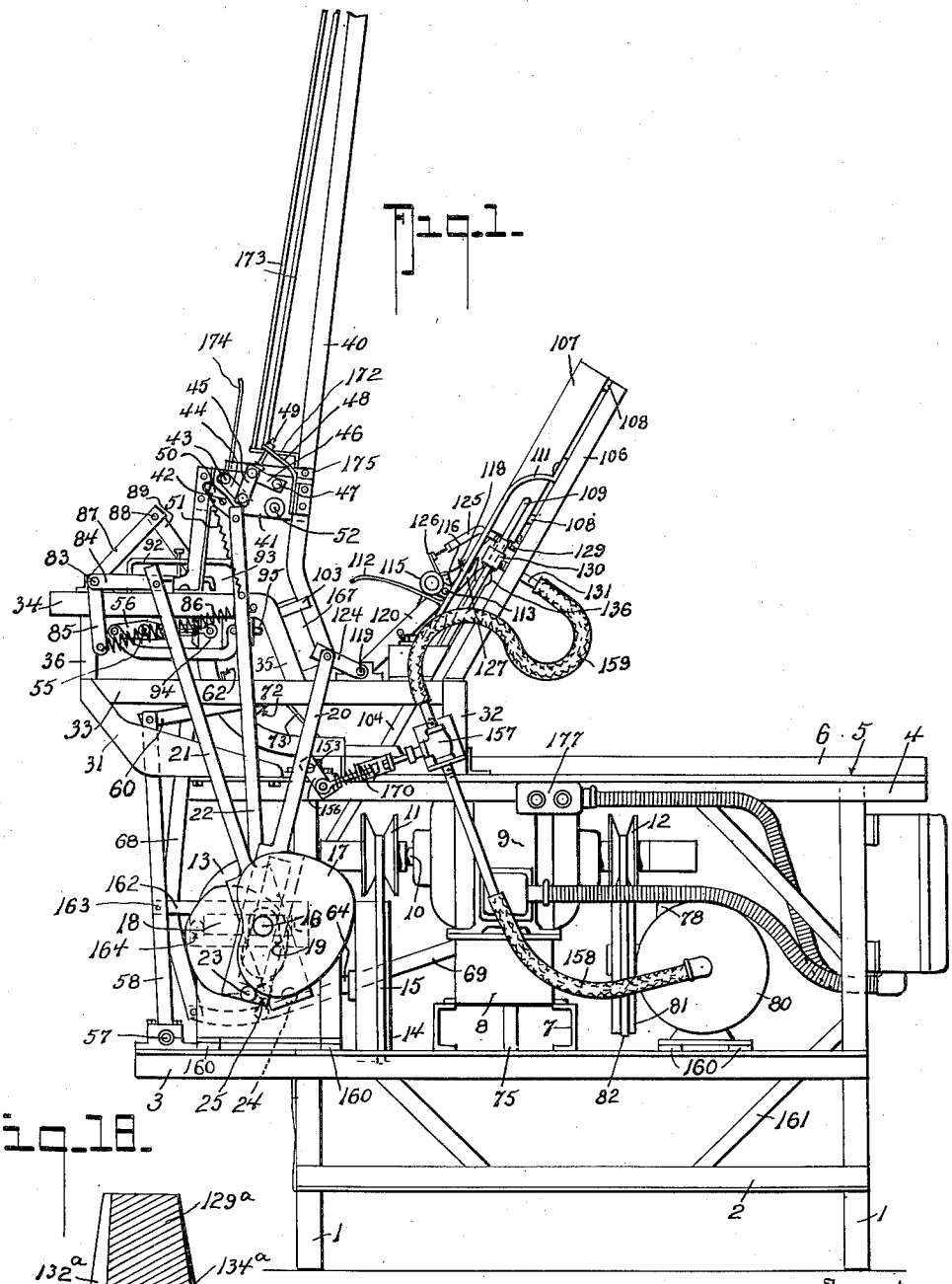
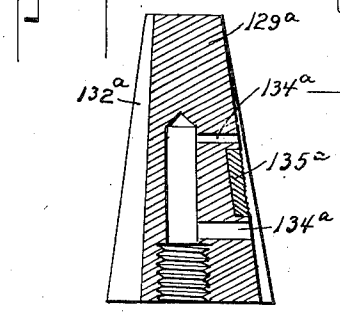



Fig. 18.




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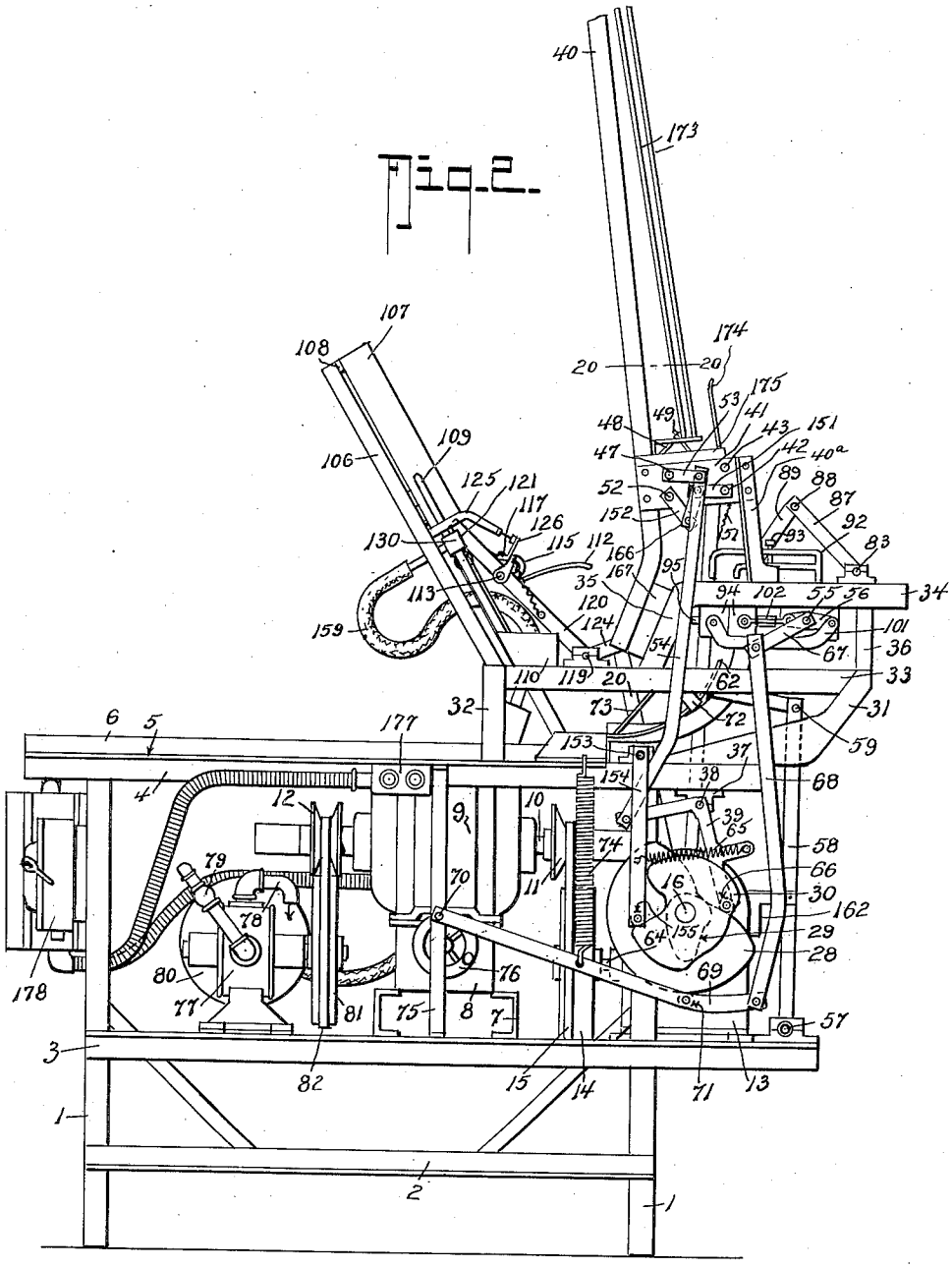
Attorney

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CONE JACKET APPLYING MACHINE

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Fig. 2.




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Fig. 3.

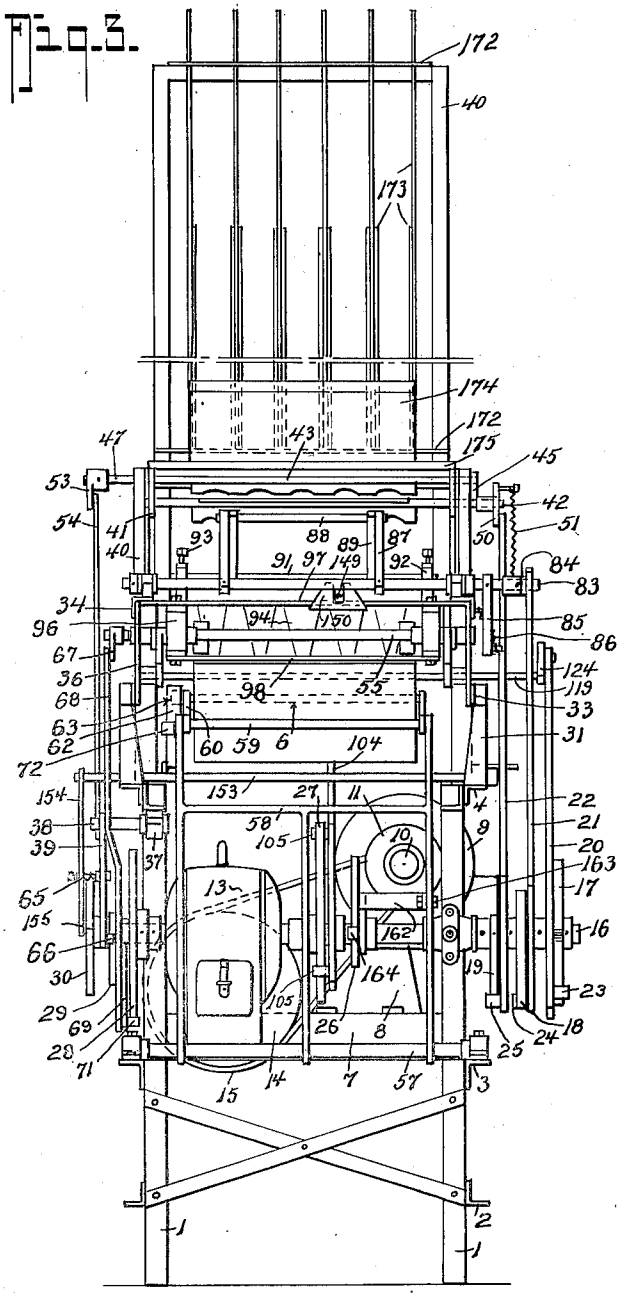



Fig. 16.

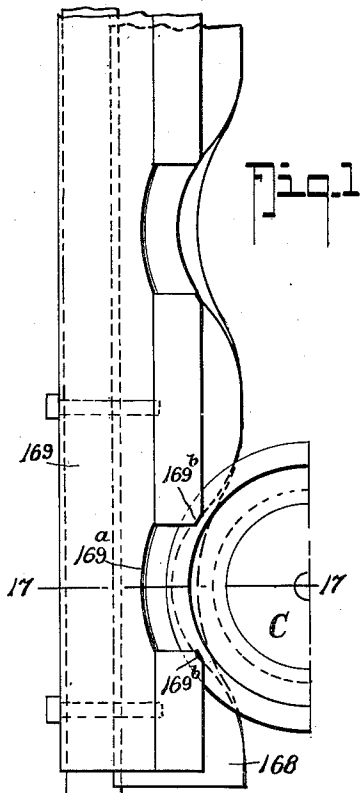
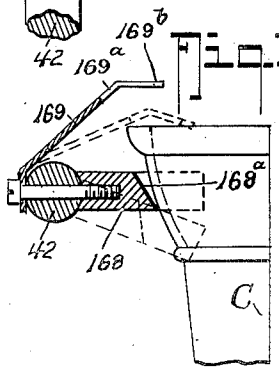



Fig. 17.




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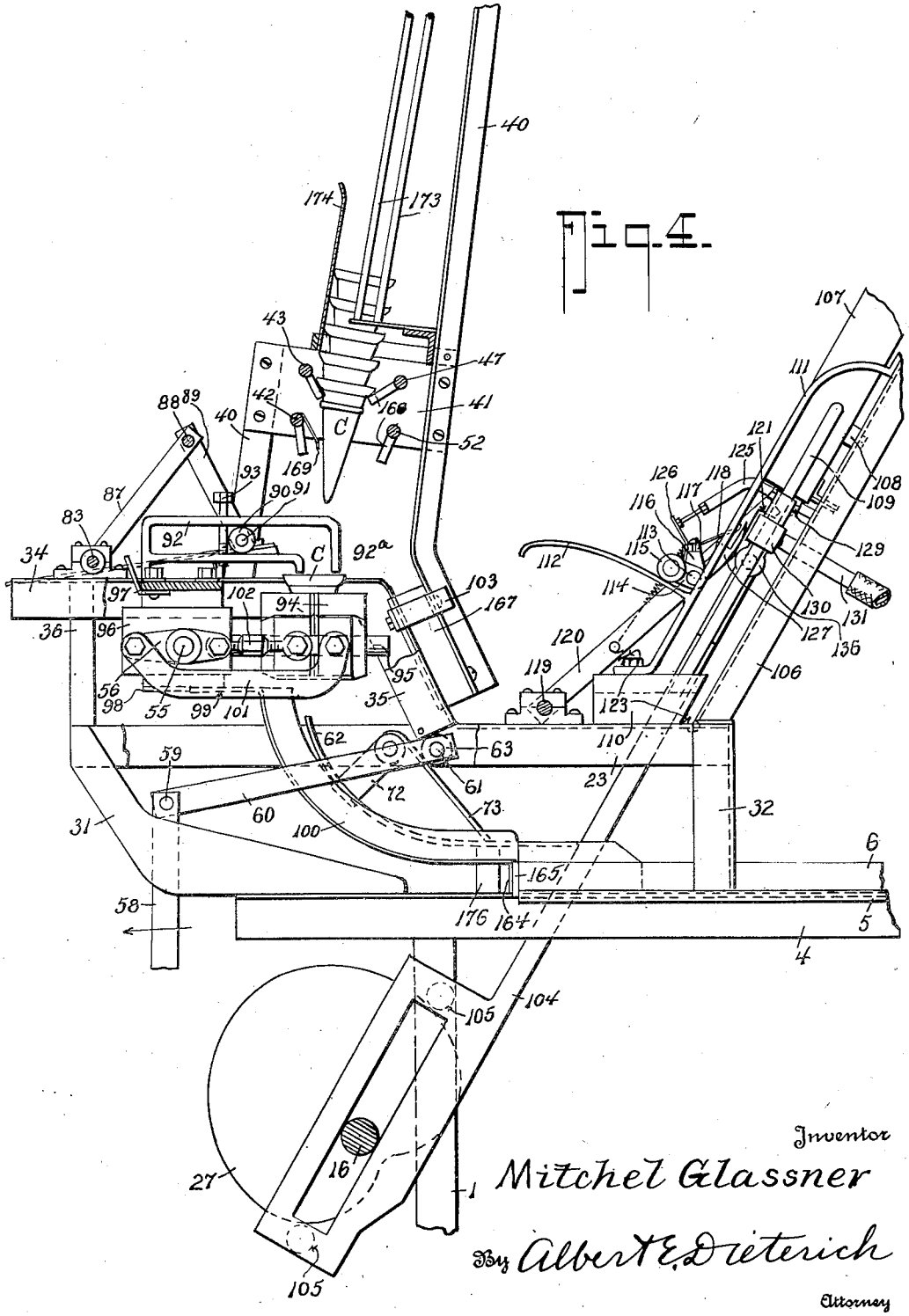
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CONE JACKET APPLYING MACHINE

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Fig. 4.




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Fig. 5.

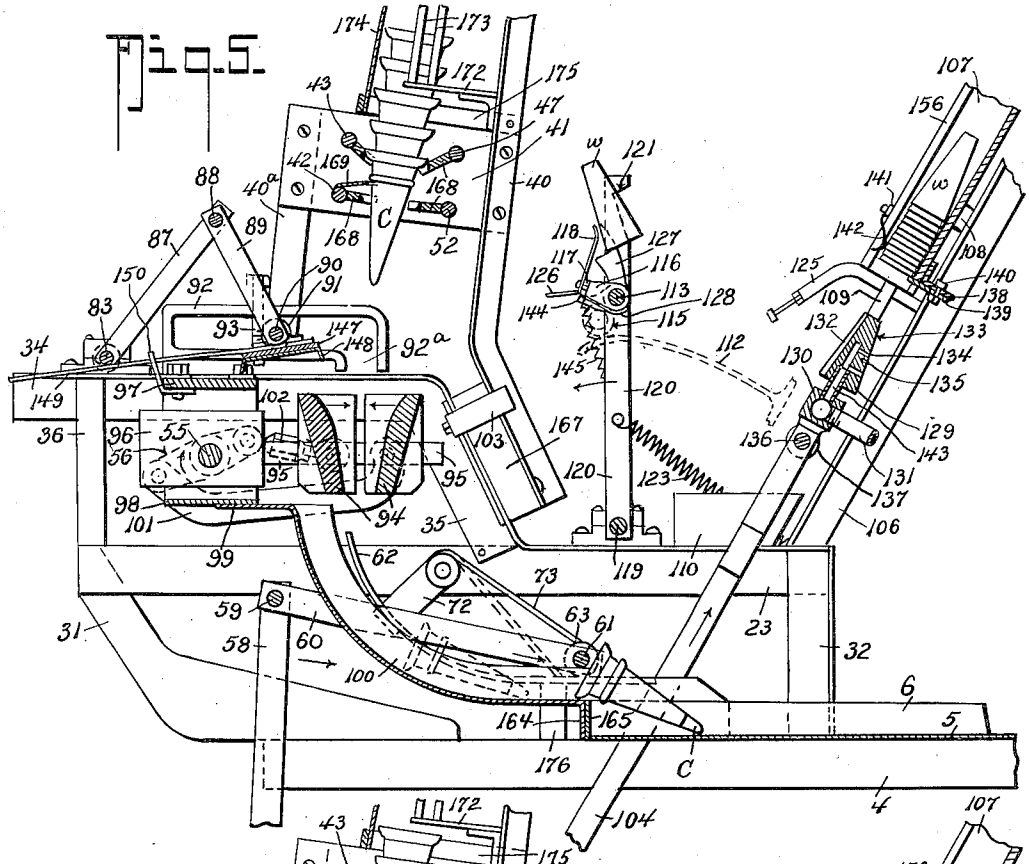
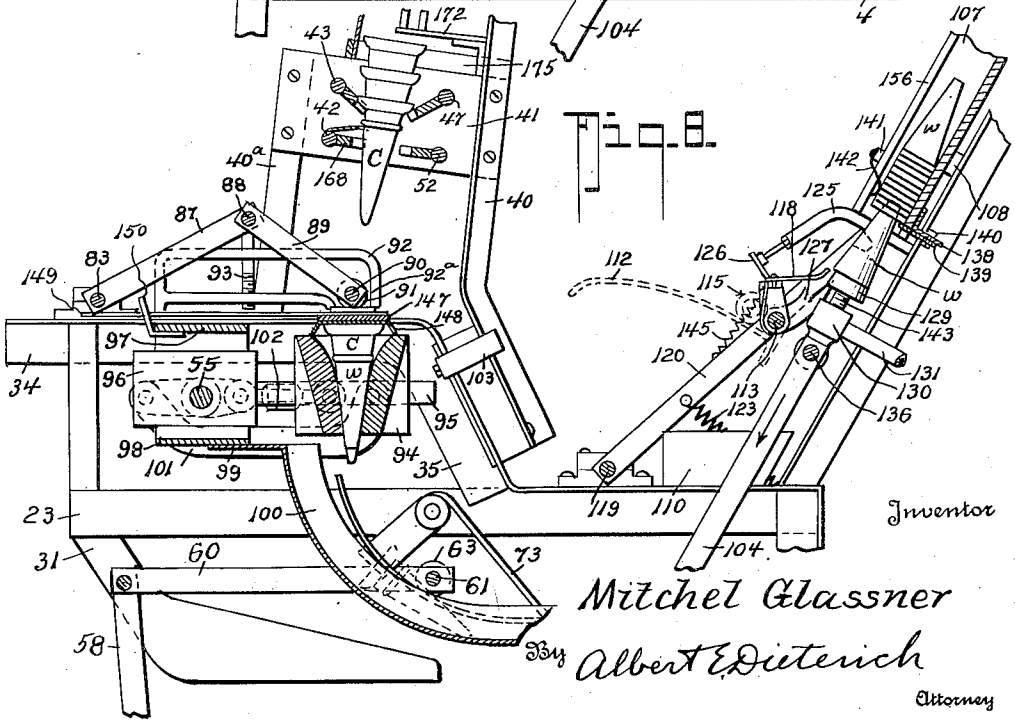


Fig. 8.



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Fig. 6.

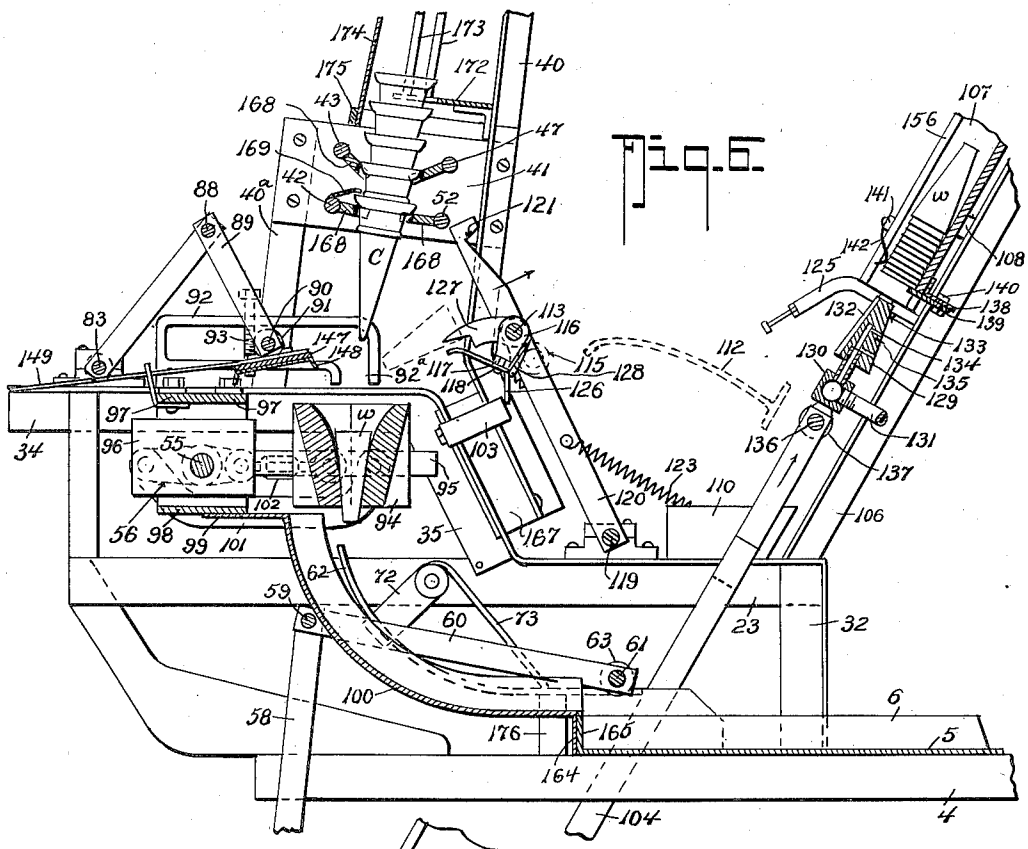


Fig. 14.

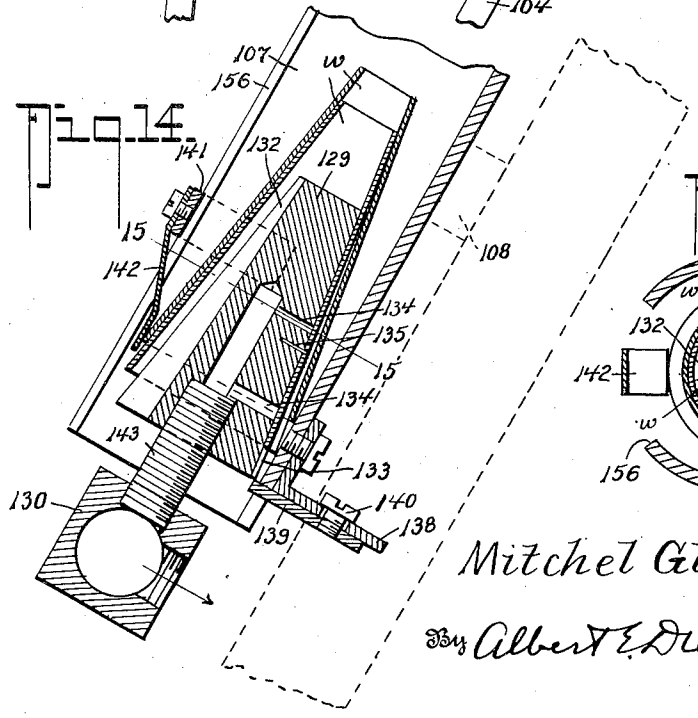
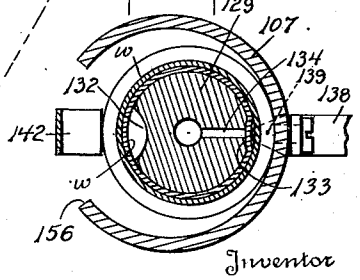


Fig. 15.



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CONE JACKET APPLYING MACHINE

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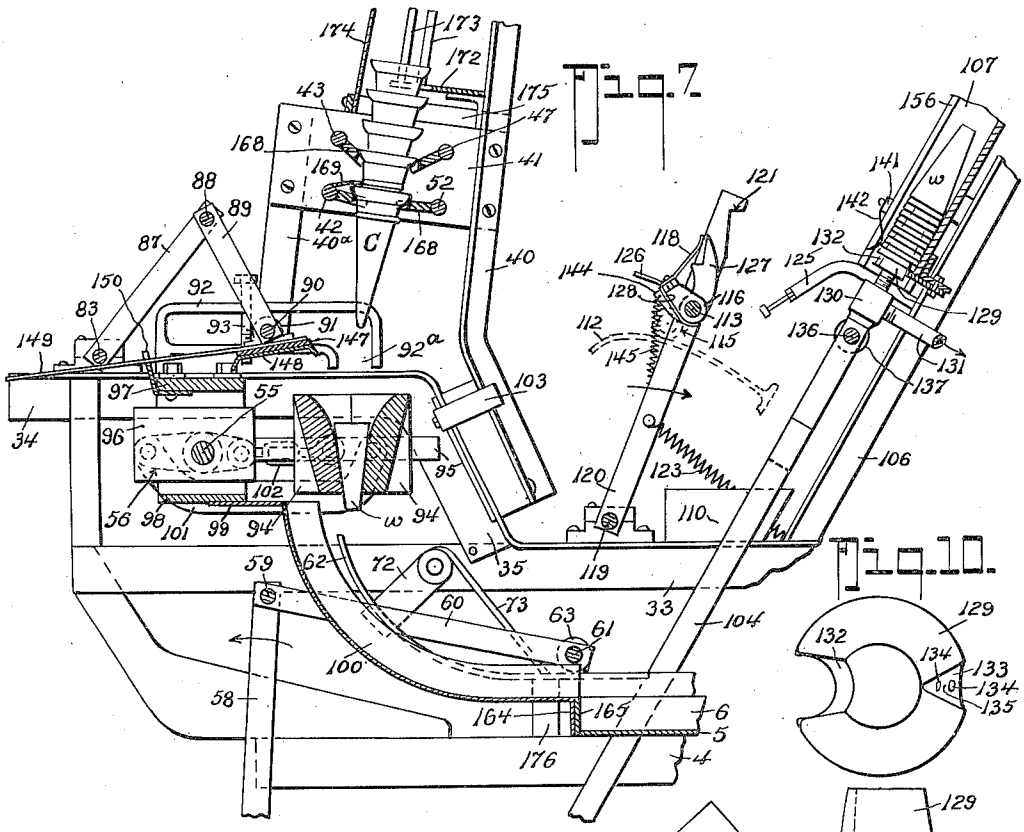


Fig. 7.



Fig. 10.

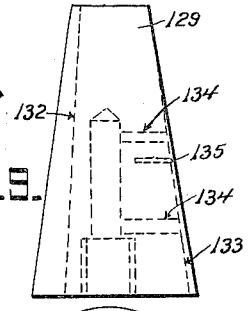


Fig. 9.

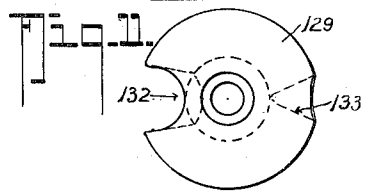


Fig. 11.

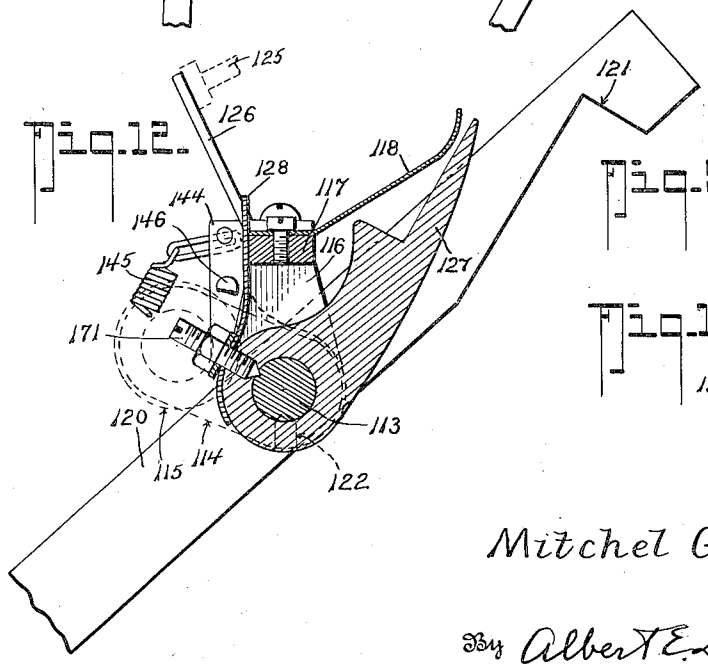


Fig. 12.

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CONE JACKET APPLYING MACHINE

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Fig. 13.

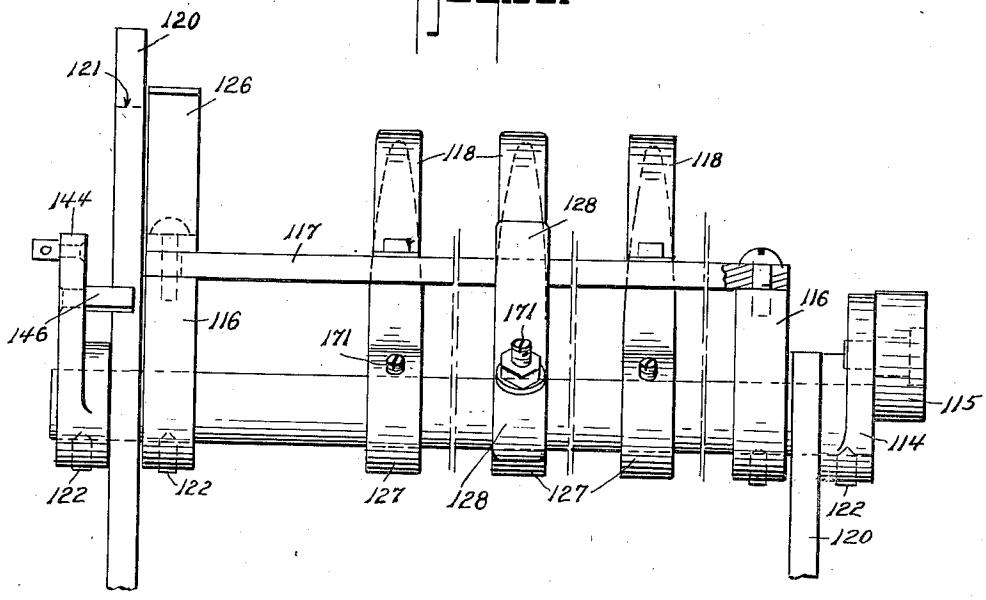



Fig. 20.

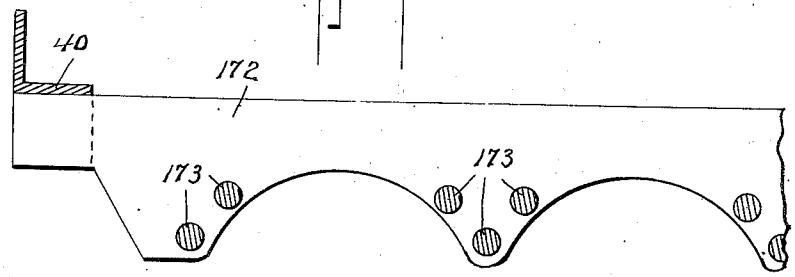
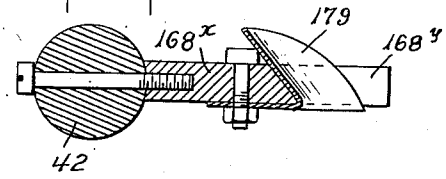



Fig. 18.




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Patented July 20, 1948

2,445,713

# UNITED STATES PATENT OFFICE

2,445,713

## CONE JACKET APPLYING MACHINE

Mitchel Glassner, Baltimore, Md., assignor to Maryland Baking Company, Inc., Baltimore, Md., a corporation of Maryland

Application April 14, 1943, Serial No. 483,075

9 Claims. (Cl. 226—2)

1

This invention relates to machines for placing jackets or wrappers on ice cream cones and the like. Such jackets are usually made of paper in the form of a truncated cone and envelope only the stem of the cone below the bowl, or below the nesting ring when such a ring is present on the cone.

Primarily the invention has for an object to provide a machine, for the purpose stated, of a simple, inexpensive construction, a machine that is fully automatic in its operation, one that occupies but little space and is not costly to maintain.

Generically the machine comprises a magazine for the cones, a magazine for the jackets, a receiver for the jackets and cones, mechanism for removing the jackets, one at a time, from their magazine and placing them in the receiver, a mechanism for discharging the cones from their magazine into the jackets previously placed in the receiver, a device for pressing the cones into the jackets to secure the jackets to the cones, and finally a mechanism for discharging the jacketed cones from the machine and nesting the cones that have been discharged from the receiver as they are being delivered from the machine.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends the invention still further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, and then be particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which:

Fig. 1 is a side elevation of the machine which embodies my invention.

Fig. 2 is a side elevation of the other side of the same.

Fig. 3 is an end elevation of the machine looking from left to right in Fig. 1.

Fig. 4 is an enlarged side elevation and part longitudinal section on a larger scale than that of the preceding figures.

Figs. 5 to 8 inclusive are views similar to Fig. 4 and on the same scale as those figures, showing the different positions of the parts during a cycle of operation.

Fig. 9 is a side elevation of one of the frusto-conical (truncated cone) jacket-removing plugs.

Fig. 10 is a top plan view of the same.

Fig. 11 is a bottom plan view of the same.

Fig. 12 is a detail vertical section on an enlarged scale of a portion of the jacket transfer mechanism.

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Fig. 13 is a detail elevation looking from left to right in Fig. 12.

Fig. 14 is an enlarged detail vertical section showing how the jacket transfer mechanism takes on a jacket in the jacket magazine.

Fig. 15 is a cross section on the line 15—15 of Fig. 14.

Fig. 16 is a plan view of one of the lower cone-releasing rockers.

Fig. 17 is a cross section on the line 17—17 of Fig. 16.

Fig. 18 is a vertical section of a modified form of jacket removing plug.

Fig. 19 is a detail view similar to Fig. 17 but showing a modification.

Fig. 20 is a detail horizontal section on the line 20—20 of Fig. 2.

In the accompanying drawings in which like numbers of reference indicate like parts in all the figures, 1 represents the legs, 2 the lower longitudinal bars, 3 the intermediate longitudinal bars, 4 the upper longitudinal bars, 160 the cross bars and 161 the frame braces of the main or base frame of the machine.

Supported on the upper bars 4 of the machine is the stacking table top 5 having vertical longitudinal partitions 6 that divide the top into longitudinal troughs, one for each cone stack.

Mounted on transverse supports 7 is a speed control device 8 and a driving motor (electric preferably) 9, whose shaft 10 carries two pulleys 11 and 12. These pulleys are made in two halves each, which halves are spring pressed together; as they are not a part of the present invention a further description and a detailed drawing thereof is not necessary.

The pulley 11 drives, through a belt 15, the pulley 14 on the driven shaft 64 of the reduction gearing (not shown) which is located in the housing 13, for driving the main shaft 16 on which are fastened a set of cams 17 to 19 and 26 to 30 inclusive.

The cam 17 operates the swinging frame 120 of the jacket transferring mechanism; the cam 18 operates the cone presser 148; the cam 19 operates the lower cone releasing means; the cam 26 operates the jacketed cone retarder and nesting rod 61; the cam 27 operates the plug carrier 130; the cam 28 operates the "mold" or jacket-and-cone receiver 94; the cam 29 operates the upper cone releasing means; and the cam 30 operates the vacuum valve 157, all of which will later be more fully explained.

A connecting rod 20 has a roller 23 to engage the cam 17. The rod 20 has its end that is remote from the cam pivoted to an arm 124 that is secured to the shaft 119 of the jacket transfer mechanism. The roller 23 is constantly held in operative relation to the cam 17 by the spring 123 (see Fig. 5). The spring 123 continuously tends to swing the frame 120 in a clockwise direction in Fig. 1, thereby continuously (through shaft 119 and arm 124) tends to move the rod 20 upwardly in Fig. 1 and consequently holds roller 23 against its cam.

A connecting rod 21 has a roller 24 to engage the cam 18. The end of the rod which is remote from the roller 24 is connecting to the arm 84 which is in turn secured to the rock shaft 83. Links 87 are secured to a shaft 83 and are connected to links 89, as at 88, which links 89 in turn carry the shaft 90 of the cone presser 147, 148 (Fig. 5). Rollers 91 on the ends of the shaft 90 run in horizontal guideways 92, each of which guideways has a downwardly directed passageway 92a for the rollers 91 to pass down and bring the presser over the cone which is located in the jacket in the jacket-and-cone receiver 94 as will be more fully understood later. The shaft 83 has a second arm 85 to which a spring 86 is connected (Fig. 1). The spring is anchored to the bar 34.

A connecting rod 22 has a roller 25 to be engaged by the cam 19. The rod 22 is in turn connected to the rocker lever 50 on the operating shaft 42 of the cone releasing mechanism. A spring 51 is connected to the lever 50 and connecting rod 22 as shown in Fig. 1.

A connecting rod 162 is pivoted, at 163, to the frame 58 and carries rollers 164 to cooperate with the cam 26.

A connecting rod 104 has a pair of rollers 105 to engage with the cam 27 (Fig. 3) and is pivoted on a rod 136 that is mounted in ears 137 on the plug carrier 130.

An arm 69 is pivoted at 70 to the bar 75 and carries a roller 71 that is held against the cam 28 by a stout spring 74. To the free end of the bar 69 is pivoted a connecting rod 68 which in turn is pivoted to the arm 67 that is fastened to the rock shaft 55. The shaft 55 is mounted in the fixed blocks 96 that are secured to and beneath the cross bar 97 that is mounted on the side bars 34 of the sub-frame of the machine. A cross bar 98 is secured beneath the bearing blocks 96 and to this bar 98 the upper end 99 of the chute 100 is fastened in any suitable way. The lower end 164 of the chute 100 is secured to a cross bar 165 that is mounted on the frame side bars 4.

A bell crank lever 39 is pivoted to a stub shaft 38 that is mounted in a bearing 37.

The bell crank has a roller 66 on one arm to be engaged by the cam 29. The other arm of the lever 39 is pivoted to a connecting rod 54 that is in turn pivoted to a rocker arm 53 on the operating shaft 47 of the cone releasing mechanism.

An arm 154 on a rock shaft 153 has a roller 155 that is held in constant engagement with the cam 30 by means of a spring 65 that is connected to the arm 154 and to the bell crank lever 39.

The roller 66 is held at the desired distance of adjustment with respect to the cam 29 by reason of the fact that the shaft 47 at the end opposite that to which the arm 53 is attached has an arm 48 which engages the adjustable stop 49.

The shaft 46 and the shaft 43 of the upper



cone holding and releasing mechanism are caused to operate in harmony by means of an arm 44 on the shaft 43 that is linked, at 45, to the arm 46, while the shafts 42 and 52 are connected to operate in harmony by means of arms 151, 152 connected by a link 166.

The sub-frame, which is built on the main frame, comprises the uprights 32, the brackets 31, the longitudinal horizontal bars 33, the uprights 36 and side bars 34 and their downward extensions 35.

The upright bars 40 of the cone magazine frame are secured to the downward extensions 35 and are spaced therefrom by blocks 167. Other uprights 40a are mounted on the frame bars 34. To the pairs of uprights 40, 40a are secured the side plates 41 in and between which the shafts 43, 47 and 42, 52 are mounted.

The shafts 42, 43, 47, and 53 each carry plates 168 which are provided with curved recesses 168a in their free edges partly to embrace the cones C (Figs. 16 and 17). The shaft 42 also carries a safety cone-release plate 169 having recesses 169a that leave corners 169b to overlie the rims of the cones caught by the lower pair of plates 168 and push the cones free should they not drop by gravity when the lower plates move to release or drop a cone into the jacket-and-cone receiver.

The jacket-and-cone receiver comprises two half moldlike members 94 which are slidably mounted on rods 95 that are carried by the bearing blocks 96. The rock shaft 55, at each end, has a rocker arm 56, one end of which arm is linked to one member 94 by a long link 101 and the other end of which is linked to the other member 94 by an adjustable short link 102 so that as the arm 56 is rocked the members 94 will be separated (opened) or brought together (closed) accordingly as the arm 56 is rocked in one direction or the other.

The frame 58 has, at its pivot end, a shaft 57 that is mounted in bearings on the main frame bars 3. The frame 58, at its upper end, has a rod 59 to which arms 60 are pivoted. These arms straddle the chute 100 and at their free ends they carry a rod 61 which extends over and across the chute. At one end of the rod 61 is a roller 63 which rides under and over a track 73, that is pivoted to a bracket 72, and along a curved track 62. The bracket 72 is secured to the track 62 which in turn is mounted on a side bar 4 in any suitable way, as by means of a bracket 176.

A vacuum or suction pump 77 is mounted on a pair of cross bars 160. The outlet 78 of the pump delivers to atmosphere while the intake 79 connects to a tank 80. The pump 77 is driven, via pulley 81 and belt 82 from the pulley 12 on the shaft 10 of the motor 9. The tank 80 is connected, via duct 158, to the vacuum control valve 157. The valve 157 has an adjustable yieldable connection 170 to the arm 153 (Fig. 1).

The supporting frame of the jacket magazine is numbered 106 and is mounted on the sub-frame 23, 32 and carries cross bars 108 on which the jacket holding tubes or magazines 107 are carried.

Guide rod supporting blocks 110, mounted on the frame bars 23, carry the guide rods 109 on which the jacket transfer plug carrier 130 is slidably mounted.

A bracket 111 is rigidly secured to a block 110 at one side of the machine and to one of the side bars of the frame 106 (Figs. 1 and 4). This bracket carries a cam track 112.

The swinging frame of the jacket transfer

mechanism carries a finger carrying shaft 113 on which a set of rigid fingers 127 is secured by set screws 171, there being one finger for each jacket tube 107. A bridge member composed of two or more arms 116 connected by a cross bar 117, is freely pivoted on the shaft 113. The bar 117 carries a set of spring fingers 118, one for each finger 127, and these fingers 118 are continuously pressed toward their associated fingers 127 by a leaf spring 128 that is fastened to one of the fingers 127 (Fig. 12).

An arm 114 is secured to the shaft 113 and carries a roller 115 to cooperate with cam track 112, while a rigid arm 126, on the bar 117, cooperates with a stop arm 125 secured to one of the frame bars.

One or both (one only being shown) of the frame bars 120 may be extended and provided with a notch 121 to serve as a stop or guide in adjusting the maximum elevation of the plug carrier 130.

An arm 144 is secured to the shaft 113 by a set screw 122 and carries a stop lug 146 that may be engaged with the adjacent bar 120 when in the position of Fig. 6 and when the shaft 113 is turned counter clockwise in Figs. 1 and 4 and after the roller 115 leaves the end of the cam track 112, under the influence of the spring 145. The spring is anchored to frame 120 and to the arm 144 as shown.

The plug carrier 130 is hollow and has a nipple 131 connected to the flexible suction duct 159 that comes from valve 157. A set of nipples 143 on the carrier 130 carries a set of plugs 129. Each plug is of truncated cone or frusto-conical form and is designed to fit loosely within the jackets *w*. At the side of the plug which faces the longitudinal slot 156 in the tube 107, the plug has a deep groove 132 to receive a finger 127, while at the opposite side the plug has a shallow groove 133. The plug has a bore with a lateral duct or port 134 that terminates at the groove 133 (see Figs. 9, 10, 11, 14, and 15). Each plug 129 is provided with a pin point 135 (Fig. 9) or saw teeth 135ª (Fig. 18) projecting into groove 133 so as to provide the plug with a rough place in the groove 133. When a jacket is sucked into groove 133 (Figs. 14 and 15) it will be caught by the pin 135 or teeth 135ª so that it cannot slip off the plug as the plug is being withdrawn from the magazine 107. Each tube 107 has a slot through which a finger 139 projects into the tube to hold the stack of jackets *w* from dropping down through the tube 107. The finger 139 is secured (preferably adjustably) at 140 to a bracket 138 that is suitably fastened to the tube 107. Another bracket 141, secured to the tube 107, carries a spring finger 142 which presses the stack of jackets toward the side of the tube which carries the finger 139.

A rod 149 is secured to the pusher 148 and passes through a guide 150 and under shaft 83 and serves to keep the pusher approximately horizontal at all times.

Brackets 172, secured to the bars 40, support the rods 173 which are arranged to hold the stacks of nested cones, a guard plate 174 being provided and supported on a yoke 175, if desired.

An "on" and "off" switch 177 and mainline connection box 178 are provided and are of the usual construction.

*Operation*

Assume that the tubes 107 contain a supply of jackets nested loosely with their larger ends down.



Assume that the cone holders 173 contain a supply of cones and assume that the parts are in the position shown in Figs. 1 to 4 inclusive. At this time a jacket and a cone will have been deposited in the receiver 94; a plug 129 will be located within the lowermost jacket of the stack of jackets (as shown in Figs. 4 and 7); the transfer frame 120 will be at rest; the plug carrier will also be at rest.

As the parts pass from the position shown in Fig. 4 toward the position shown in Fig. 8, the lower plates 168 turn to their approximately horizontal position shown in Fig. 8; the pusher 147, 148 passes to the position shown in Fig. 8 and presses the cone C down into tight contact with the jacket *w*; the plug carrier 130 moves down from its position in Fig. 4, the finger 127 enters the groove 132 to receive the jacket and strip it from the plug. While the plug was in the position of Fig. 4 the valve 157 was opened so that suction was applied to deflect a portion of the innermost jacket into the groove 133 where it was held until the plug and jacket passed the finger 139 (Fig. 14). In passing from the position of Fig. 4 the roller 63 rides up the incline 73 and after the roller has passed over the top of that incline and dropped down on the track 62, the "molds" 94 are opened to discharge the jacketed cone which is then caught by the rod 61 and retarded in the chute while the rod continues to push a previously released cone onto the nesting table 5 and nest the cones.

As soon as a jacketed cone has been discharged from the "mold," the "mold" is again closed; the presser is again withdrawn against stop 93; the jacket *w* Fig. 8 will have been deposited on the finger 127 and the transfer frame will move from the position of Fig. 8. As the frame 120 moves from the position of Fig. 8, the arm 126 will have left the stop 125 and spring 128 will have brought finger 118 into pressure contact with the jacket on finger 127 to hold the jacket on the finger. By the time the parts reach the position of Fig. 5 the plug carrier will have reached its lowermost position and be starting up again; frame 120 and its carried parts will have reached the vertical position where the roller 115 is about to leave the track 112; the "mold" will be closing and will be fully closed before roller 115 leaves track 112. On leaving the position of Fig. 5, the roller 115 leaves the track 112 whereupon the spring 145 turns the shaft 113 counter clockwise to invert the jacket; as soon as the arm 126 strikes the stop 103 the finger 118 will be released from the jacket and the jacket will be thrown into the "mold" small end down (see dotted lines and full lines in Fig. 6).

In passing from the position of Fig. 5 toward that of Fig. 6, the upper plates 168 turn downwardly to release a cone from the cones above, whereupon the upper plates 168 move upwardly again and the released cone is caught by the lower plates 168 (see Fig. 6) and until the proper time for its release into the jacket within the "mold."

On leaving the position of Fig. 6 the parts pass the position of Fig. 7 to the position of Fig. 8, during which time the lower plates 168 turn down to drop a cone into the jacket that has been deposited in the "mold." This completes the cycle of operation.

In Fig. 19 is shown a modification of the plate 168. In this form a relatively thin plate 168ˣ is used and the required thickness for engaging and holding the cones is built up by means of

sheet metal members 179 secured in each cut-out portion 168[y] of the plates 168[x].

While I have disclosed a preferred embodiment of my invention I wish it understood that changes in the details of construction and arrangement of parts may readily be made by those skilled in the art without departing from the invention within the scope of the appended claims.

What I claim is:

1. In a machine of the class described: a cone magazine, a receiver; means for depositing cones in the receiver with their points down; a magazine for nested conical jackets located at a place remote from the cone magazine and the receiver; means for holding said jackets in their magazine with their larger ends down; mechanism for removing the jackets from their magazine; mechanism for conveying the jackets from the removing mechanism to the receiver and depositing them in the receiver with their larger ends up; said removing mechanism comprising a reciprocally mounted plug carrier and plug, means to operate said carrier to cause said plug to enter the lowermost jacket in the jacket magazine, detach the jacket from the remainder in the magazine and remove the jacket from the magazine; and means to receive the jacket from the removing mechanism and conveying the jacket to and depositing it in said receiver.

2. The machine of claim 1 wherein the last named means comprises a pivoted frame, a pivoted jacket receiving finger carried by said frame, means cooperating with said finger for holding a jacket thereon while being transferred, means for turning said finger to invert the jacket, and means to release said holding means to permit the jacket to be deposited in said receiver.

3. A machine for applying jackets to cones including: a stationary magazine for holding the cones nested points down; a stationary magazine for holding the jackets nested and inverted: a stationarily located receiver which comprises a split "mold" and toggle means for moving the parts of the "mold" to open and close the same; mechanism for removing a jacket from its magazine and carrying it to the receiver and including means for reverting the jacket and depositing it in the receiver; mechanism for depositing a cone from its magazine into the jacket in the receiver; means for pressing the cone into the said jacket to effect a tight engagement therebetween; and means for releasing the jacketed cone from the receiver, said last named means comprising mechanism for operating the toggle means.

4. In a machine of the class described: a jacket and cone assembly mechanism comprising a split "mold"; means to deliver a jacket to said mold and thereafter deposit a cone in said jacket loosely; a cone presser; and means for operating said presser; said presser comprising a plate, a rod on which said plate is carried, rollers on said rod, a slotted guideway for said rollers and having a horizontal portion and a downwardly directed portion, the former portion serving to hold the presser out of operation and the latter portion serving to permit the presser to function.

5. The mechanism of claim 4 wherein the presser operating means comprises a rock shaft, articulated arms connecting said rock shaft to said rod, and means to rock said rock shaft.

6. In a machine of the class described: a frame; a magazine for jackets; an inclined support for said magazine; inclined guide rods mounted on the frame below said magazine; a plug carrier mounted on said guide rods; and a plug on said carrier; means to reciprocate said carrier and plug toward and from said magazine; means for holding the jackets inverted and stacked in said magazine; said plug being adapted to enter the lowermost jacket of the stack in said magazine; means cooperative with said plug for causing the adjacent jacket to adhere to said plug while the plug is being withdrawn from the magazine and for breaking the adhesion after the plug leaves the magazine; a receiver; means to take the removed jacket from the plug, revert it and deposit it in said receiver; means to deposit a cone in the jacket in the receiver; means to effect adhesion between jacket and cone while in the receiver; and means to open the receiver and release the jacketed cone therefrom.

7. The machine of claim 6 wherein is provided means to catch and retard a released cone from the receiver and simultaneously nest the previously freed cones.

8. The machine of claim 6 wherein is provided means to catch and retard a released cone from the receiver and simultaneously nest the previously freed cones, said last named means comprising a chute, a fixed cam track, a pivoted cam track cooperating with the fixed cam track, a bar overlying the chute, means to bodily move said bar over and under said pivoted cam track and along said fixed cam track and over the chute, said bar having means to operatively engage said cam tracks.

9. In a jacket applying machine wherein frusto-conical jackets are assembled on ice cream cones and wherein is provided a jacket and cone receiver, the improvement which includes: a tube to hold a stack of conical jackets inverted; means for removing one jacket at a time from the stack in the tube; mechanism for receiving the removed jacket from said jacket-removing means and carrying it away from the same, said last named mechanism including a finger to enter the jacket, the jacket removing means including a reciprocating plug to enter the lowermost jacket in the stack and withdraw the same from the stack, said plug having a finger-receiving groove into which said finger is passed as the plug is being withdrawn from the stack, by virtue of all of which the finger strips the jacket from the plug as the plug recedes.

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