Feb. 10, 1948. J. CUTLER 2,435,739

MECHANISM FOR APPLYING ADHESIVE TO BLANKS IN JACKET FORMING MACHINES

Original Filed July 10, 1943 5 Sheets-Sheet 1

Fig. 1.

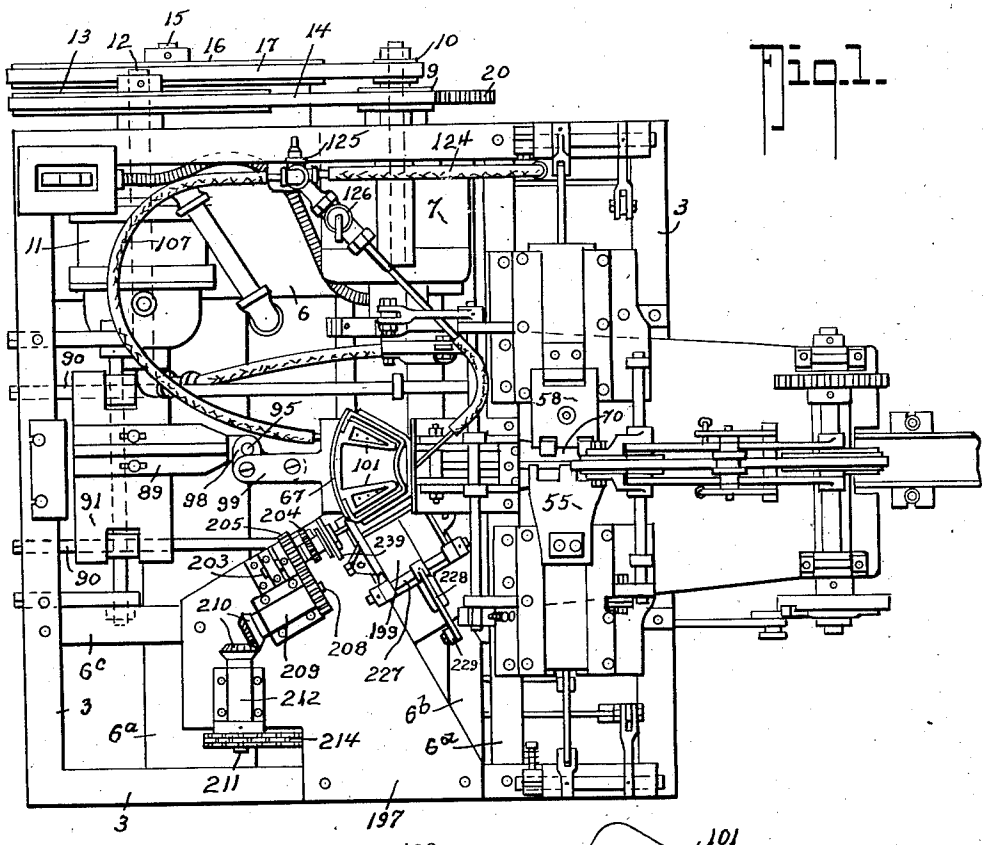
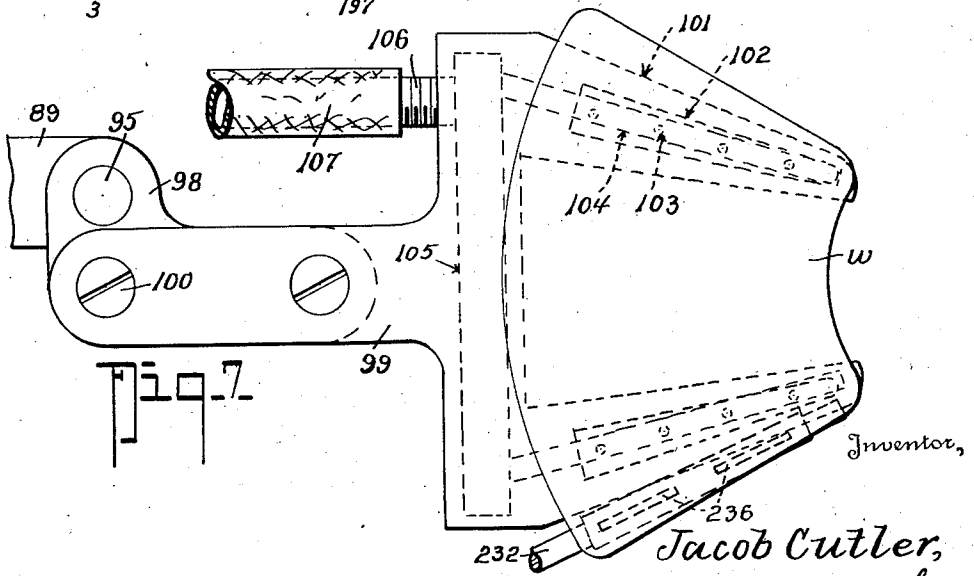


Fig. 7.



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Fig. 2.

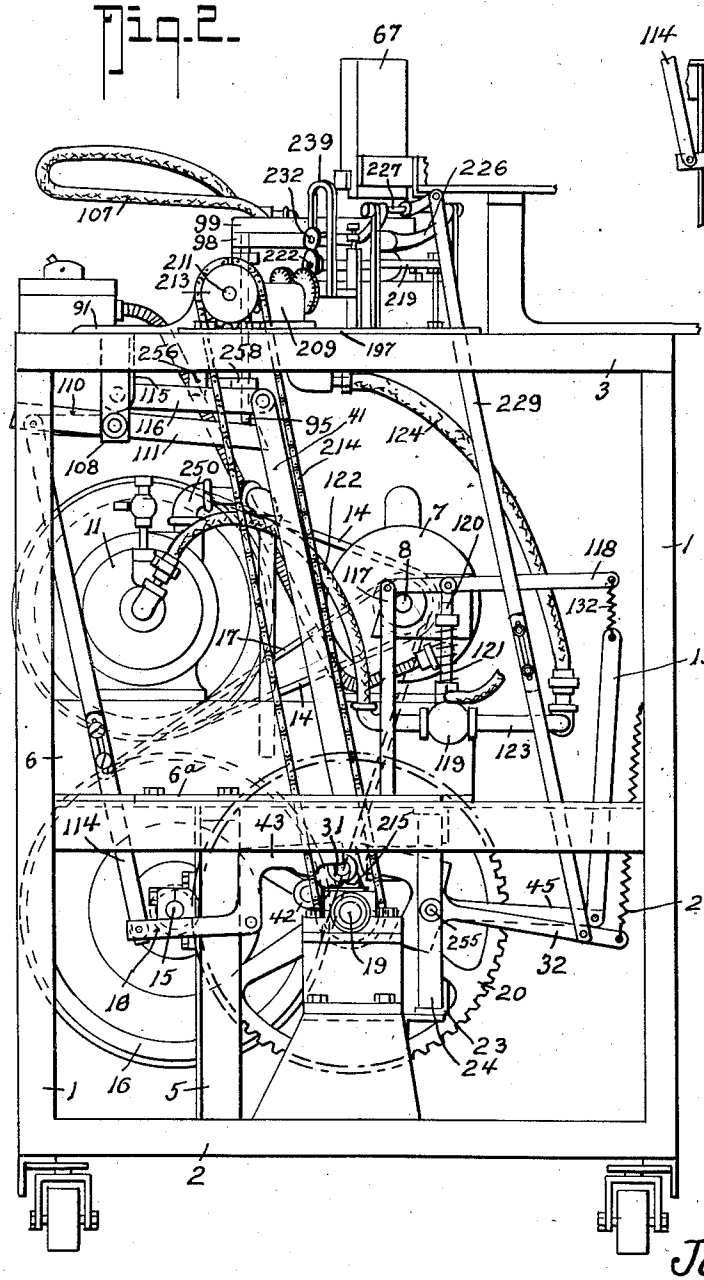


Fig. 8.

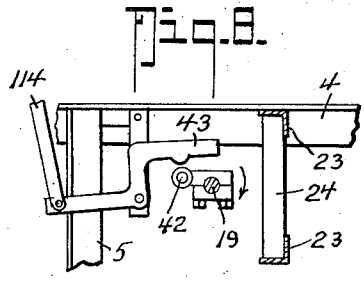


Fig. 9.

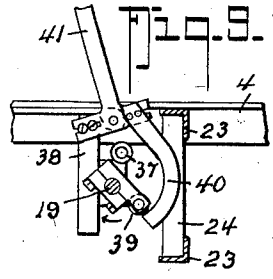


Fig. 10.

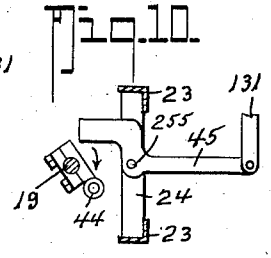
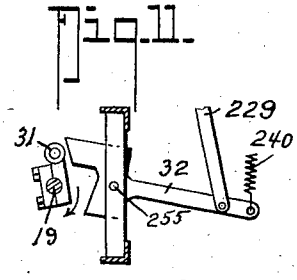


Fig. 11.



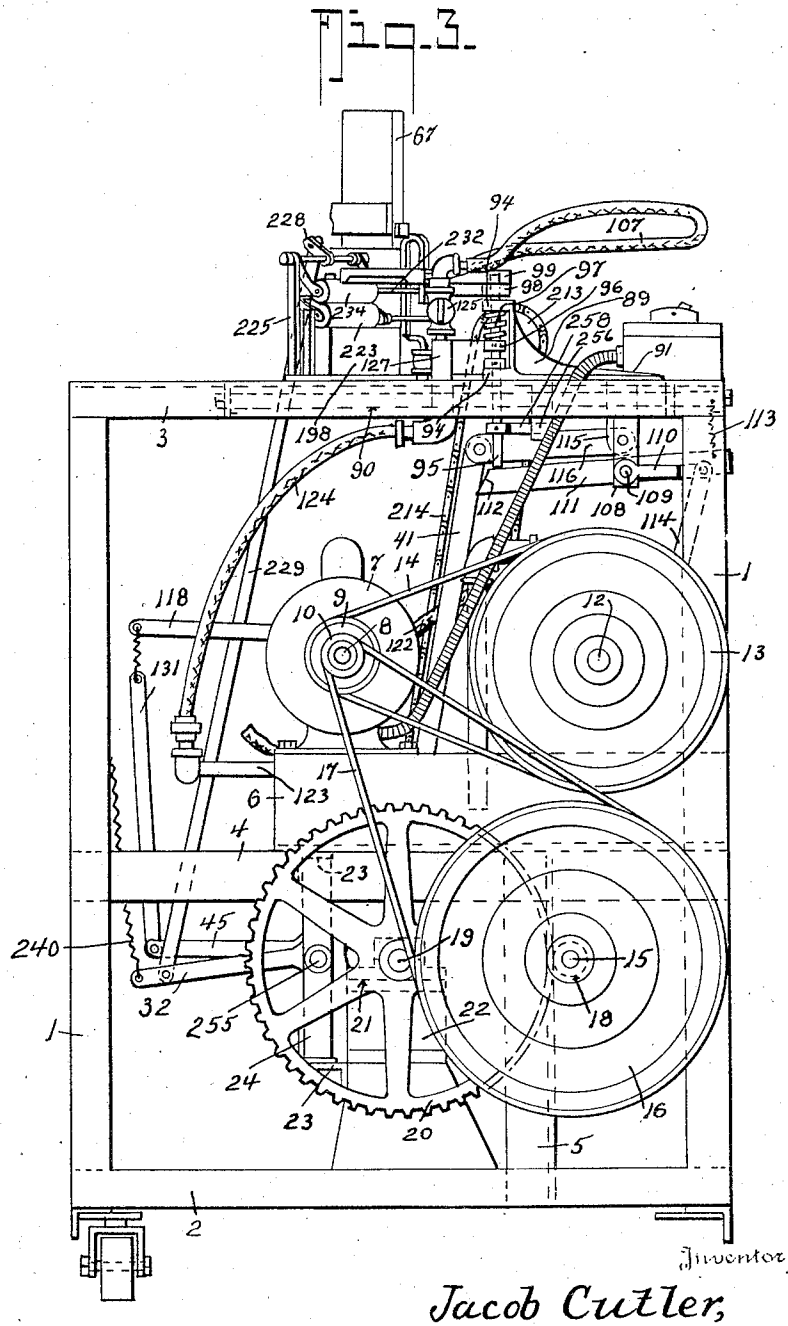
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MECHANISM FOR APPLYING ADHESIVE TO BLANKS IN JACKET FORMING MACHINES

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Fig. 3.



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MECHANISM FOR APPLYING ADHESIVE TO BLANKS IN JACKET FORMING MACHINES

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Fig. 4.

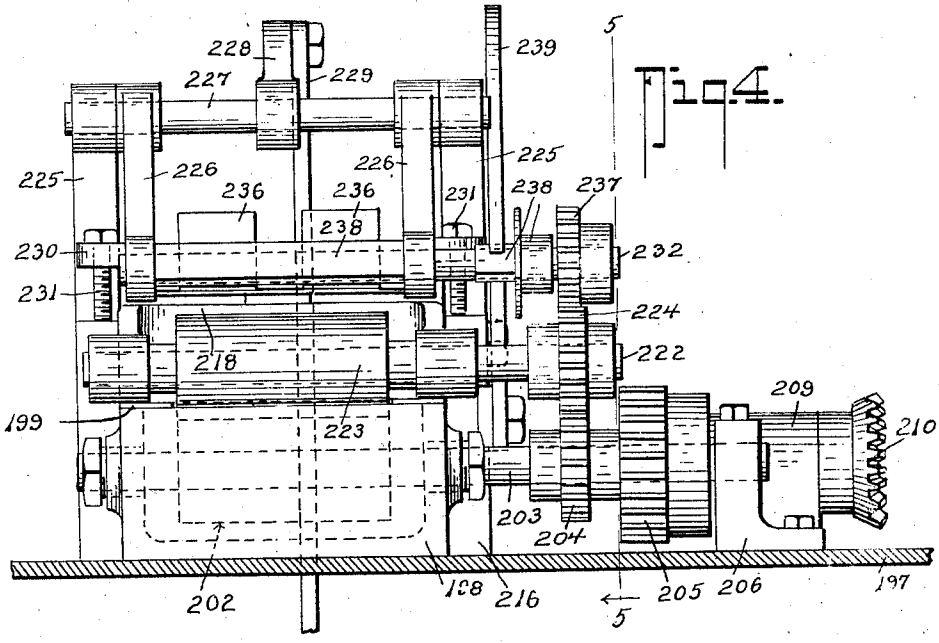
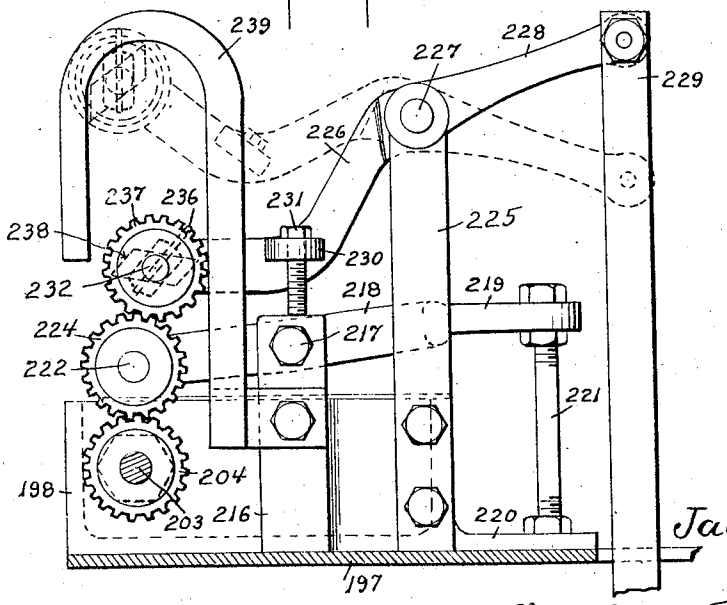


Fig. 5.



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MECHANISM FOR APPLYING ADHESIVE TO BLANKS IN JACKET FORMING MACHINES

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Fig. 6.

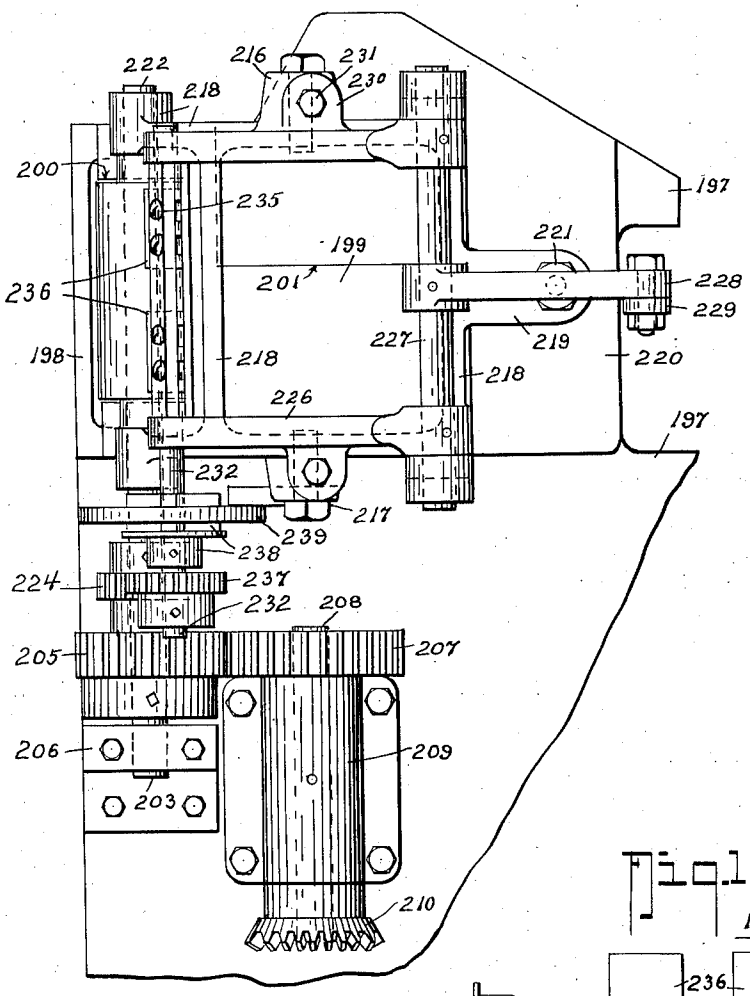


Fig. 12.

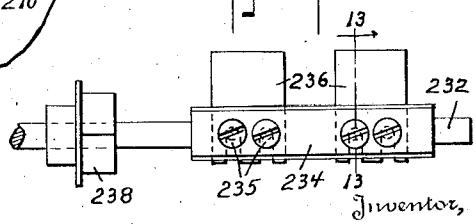
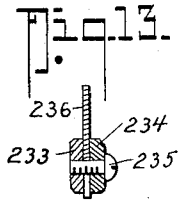


Fig. 13.



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UNITED STATES PATENT OFFICE

2,435,739

MECHANISM FOR APPLYING ADHESIVE TO BLANKS IN JACKET FORMING MACHINES

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Original application July 10, 1943, Serial No. 494,239. Divided and this application November 6, 1944, Serial No. 562,182

7 Claims. (Cl. 91—53)

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My present invention relates to the adhesive applying mechanism used in a machine to form frusto-conical jackets for covering the stems of ice cream cones.

Primarily, the invention of the present application has for its object to provide a new and improved apparatus for applying, to the edges of the jacket blanks which are to be stuck together, spots or "lines" of adhesive.

The invention also has for its object to provide an adhesive applying means which is especially adapted to be used as a part of the complete jacket forming machine which forms the subject matter of, and is fully illustrated in, my application filed July 10, 1943, Ser. No. 494,239, now Patent No. 2,420,417, of which application the present application is a division.

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 specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Fig. 1 is a top plan view of the machine of my aforesaid application, showing the present invention therein.

Fig. 2 is a side elevation of the same, parts being omitted.

Fig. 3 is an elevational view of the machine, parts being omitted, looking at the side opposite Fig. 2.

Fig. 4 is an enlarged detail elevation of the adhesive mechanism proper, looking from left to right in Fig. 5.

Fig. 5 is a section on the line 5—5 of Fig. 4.

Fig. 6 is a top plan view of the mechanism shown in Fig. 4.

Fig. 7 is an enlarged detail plan view of the blank-removing and carrying fork member of the jacket forming machine, showing how it carries the blank and illustrating the position of the adhesive applicator with respect to the fork.

Figs. 8 to 11 inclusive are detail views of the cams and cam levers for operating the several parts of the mechanism or apparatus of the present invention.

Fig. 12 is a detail elevation of the adhesive applicator shaft and its fingers and cam.

Fig. 13 is a cross section on the line 13—13 of Fig. 12.

In the drawings, in which like numerals and

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letters of reference indicate like parts in all the figures, the same reference characters have been employed as in my original application aforesaid.

In general, the machine in which the present invention is especially adapted to be employed, embodies a supporting frame, a drive motor, a vacuum pump, a magazine for the jacket blanks, a means to apply adhesive to the banks as they are withdrawn from the magazine, a means for conveying the blanks from the magazine to the mandrel, a means to fold the blanks around the mandrel and cause the gummed parts to adhere, and a mechanism for stripping the jackets from the mandrel and discharging them from the machine.

The frame of the machine comprises vertical corner angle bars 1, bottom side and end angle bars 2, top angle bars 3, intermediate side angle bars 4, vertical supports 5 and horizontal supports 6, 6a, 6b, 6c, 6d.

Mounted on the support 6 is a driving electric motor 7 and a vacuum pump 11. The motor 7 has a drive pulley 9 and a smaller drive pulley 10 secured to its shaft 8 (see Fig. 3), while the pump shaft 12 carries a large driven pulley 13. The pulleys 9 and 13 are connected by a belt 14, thereby constituting a reduction-speed drive for the pump. The small pulley 10 is connected by a belt 17 to a large pulley 16 on a stub shaft 15. The pulley 16 is secured to the stub shaft 15 as is also a pinion 18 which meshes with a master gear 20 on a cam-shaft 19.

The cam-shaft 19 is journaled in suitable bearings 21 that are mounted on supports 22 which are carried by the side bars 2 of the frame.

Secured to the bars 4 is a transverse angle bar 23, there being another such bar 23 mounted below and secured to the supports 22. Secured, at suitably spaced intervals, to the bars 23 are vertical supports 24 for the pivots 255 of the several cam levers shown in detail in Figs. 10 and 11 inclusive.

The operating cams

Referring now particularly to Figs. 8 to 11 inclusive, it will be seen that the several cams comprise split clamps that carry the various rollers. In Fig. 8 is shown the cam 42 and its lever 43 which serves to effect the raising and lowering of the jacket-blank carrier when the carrier fork is beneath the magazine. Fig. 9 shows the jacket-blank carrier advancing cam 37, the jacket-blank carrier retracting cam 39 and the respective arms 38 and 40 of the lever 41 which cooperate with the cams 37 and 39. Fig. 10 shows the vacuum con-

trol cam 44 and its lever 45. Fig. 11 shows the cam 31 and lever 32 which effect the operation of the glue (or other suitable adhesive) applicator.

In Fig. 1 the mandrel is indicated by 70 and the folding blades by 55 and 58 respectively; as they form no part of the present invention, they will not be further referred to or described.

67 indicates the magazine for the stack of blanks. The magazine is fixedly held in place on the frame of the machine and is open at the bottom.

A carriage 91 is slidably mounted on rods 93 and carries a bracket 89. Vertically, slidably mounted in suitable bearings in the bracket 89 (Fig. 3) is a rod 95, to the top of which is rigidly secured an offset bracket 98, to which the blank removing and carrying forked member (or transfer member) 99 is rigidly fastened, as at 100. The rod 95, between the upper and lower bearings 94, carries a spring 97 and a spring-tension-adjusting collar 96. The shaft or rod 95 is held from turning on its axis by means of an arm 258 whose end is slidable in a vertically slotted stud 256 that is secured to the bracket 89 (Fig. 3).

The jacket blank transfer member 99 includes converging arms 101 having along their upper faces longitudinal grooved portions 102. Ducts 104, 105 are formed in the member 99 and communicate with ports 103 in the grooved portions 102 (Fig. 7). The duct 105 is connected to a flexible duct 107 by means of a nipple 106. The duct 107 is connected to the suction regulating valve 125 that communicates with the suction pump 11 via fitting 127, flexible duct 124, rigid duct 123, suction control valve 119, and flexible duct 122 (Figs. 2 and 3).

Brackets 108, secured to the frame of the machine, carry a rock shaft 109 having an arm 110. A connecting rod 114 connects arm 110 with cam lever 43 (Figs. 2 and 8). Secured to the shaft 109 is a lever or rocker arm 111 having a beveled edge 112. The lever 111 lies in the plane in which the rod 95 is moved by the carriage 91 so that when the carriage is in its retracted or back position the rod 95 will have ridden up onto the end of lever 111 (Fig. 3). A spring 113 connects the rear end of lever 111 with the frame of the machine and constantly tends to urge the lever 111 to lower its beveled end.

The sliding carriage 91 also has a slotted lug 115 to which is pivoted one end of a link 116, the other end of which is pivoted to the cam lever 41.

The suction control (on and off) valve 119 has its stem 120 linked to lever 118. One end of the lever 118 is pivoted to a bracket 117, while the other end thereof is joined by a spring 132, constituting a yieldable connection, to the connecting rod 131 that joins to cam lever 45. The valve 119 is of a special kind in order to effect properly the timely action of the suction means. The valve is moved to to its open position by a spring 121. A vacuum regulating valve 125 is provided to regulate the degree of vacuum in the transfer fork.

The adhesive applying mechanism

Referring now more particularly to Figs. 1, 2, 4 and 5, it will be observed that a plate 197 is mounted on the frame of the machine. The pot 198 for adhesive is secured on this plate and the power transmitting mechanism therefor is also mounted on the plate.

The pot 198 has a cover 199 which is cut away, at 201 to provide a filling opening and at 200 to allow clearance of the adhesive rollers.

Journaled in suitable bearings 206, supported on plate 197 is a shaft 203 which passes through the pot and carries the lower adhesive-gathering roller 202. Outside the pot the shaft 203 carries a gear 204 and a driven gear 205, the latter gear meshing with a gear 207 on a shaft 208 which is journaled in a bearing 209 (which bearing is supported on plate 197).

Journaled in a bearing 212 (which bearing is supported on plate 197) is a drive shaft 211. The shafts 211 and 203 are connected by bevel gears 210 and are driven by a sprocket and chain connection 213, 214, 215 from cam shaft 19.

Cast with the pot 198 are side posts 216 between which, at 217, is pivoted a skeleton frame 218 which carries the shaft 222 of the upper adhesive-spreading roller 223. The frame 218 has an ear 219 which is adjustably connected to the rigid threaded post 221 to hold the rollers 202 and 223 in contact or so close together as to provide a thin layer of adhesive on the surface of roller 223. The post 221 is secured to the base extension 220 of the adhesive pot 198, as best shown in Fig. 5.

A gear 224, fast to shaft 222, meshes constantly with gear 204.

Standards 225 are fastened to the pot 198 and carry a shaft 227 on which is secured a skeleton frame 226, in the free ends of whose arms is journaled a shaft 232 which has a back 233 and a clamp plate 234 between which the applicator finger-plates 236 (preferably metallic) are secured by means of screws 235 (Fig. 12). The frame 226 has an arm 228 to which is pivoted a connecting rod 229 that connects to the cam lever 32 (Figs. 3 and 11). A spring 240 connected to lever 32 and anchored to the frame of the machine continuously tends to swing the frame 226 counter clockwise in Fig. 5.

The frame 226 has lugs 230 carrying adjustable stop screws 231 that rest on the top ends of the posts 216.

The shaft 232 carries a gear 237 that normally meshes with gear 224. A cam 238, fixed to the shaft 232, cooperates with the fixed cam track 239 that is mounted on the posts 216.

As the blank transfer member is raised to contact the lowest blank in the magazine, the applicator shaft 232 is also raised and the fingers 236 move alongside the adjacent furcation 101 of the member 99 so as to contact the blank as it is being pulled down by suction onto the member 99 in order to give a wiping action of the blank over the edges of the applicator fingers to "brush" on the adhesive. If desired, the fingers may be timed to apply the paste before the blank is sucked down.

Operation

Assume the parts to be in the position shown in Figs. 1, 2 and 3. At this time the blank transferring mechanism is in its retracted position, the fork 99 lying directly beneath the magazine 67.

Cam 42 is just about to engage lever 43 to cause lever 111 to lift rod 95 and the jacket-transferring member 99 in order to gather a jacket blank from the magazine. Continued operation of the machine causes the member 99 to be raised up to the magazine; causes valve 119 to open, allowing pump 11 to produce a suction in grooves 102 of the transfer fork, thereby to draw down the bottom blank from the magazine. As soon as the blank has adhered to the arms

101 of the fork 99, the fork is instantly lowered, whereupon the carriage 89 is advanced toward the mandrel 70.

Upon the parts leaving the position shown in Figs. 1, 2 and 3, cam 31, acting on lever 32, causes frame 226 to be moved on its pivot from the full line to the dotted line position of Fig. 5. In doing so gear 237 is unmeshed from gear 224, cam 238 is engaged with track 239 and the blades 236, which were previously rotated to contact roller 223, are brought to vertical position and raised alongside an arm 101 of the fork 99 into contact with the bottom blank of the stack to deposit two spaced lines of adhesive on the blank. The fingers are so positioned that the lines of adhesive will register with the spaces between the furcations of the folding plate when the blank is on the mandrel. Having raised the applicator to the blank, the cam then releases lever 32 and the spring 240, assisted by the cam, restores the lever 32 to its rest position (Fig. 11) and permits gear 237 to drop into mesh again with gear 224. Gears 224 and 202 turn constantly during the operation of the machine.

By adjusting the connection between the ear 219 and the bolt 221, the distance between rollers 202 and 223 can be varied to adjust the thickness of the film of adhesive adhering to roller 223 and hence adjust the amount which will be taken off on the ends of the applicator fingers.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, operation and advantages of the invention will be clear to those skilled in the art.

What I claim is:

1. In a machine wherein is provided a magazine for stacked blanks, the combination of an adhesive applicator, means to raise the applicator to a position beneath the stack of blanks and apply adhesive to a portion of the underside of the lowermost blank in the stack, a blank transfer device and means to raise the end transfer device into contact with the underside of the blank to which the adhesive has been applied and including means to draw said blank down from the magazine and into wiping engagement with said applicator while said applicator is still in the raised position.

2. In a machine of the class described wherein jacket blanks are spotted with an adhesive, removed from a magazine and shaped around a mandrel: the combination of a magazine for holding a stack of flat blanks; a jacket blank transferring mechanism for lowering blanks one at a time from the bottom of the stack; and means including an adhesive applicator to apply adhesive to the underside adjacent the longitudinal edge of the blank in the magazine, said blank transferring mechanism having provision for drawing the blank over the said adhesive applicator to effect a brushing action on the adhesive as the blank is withdrawn from the magazine.

3. In a machine of the character described: a vertical magazine for a stack of flat blanks; and means to apply adhesive to the under side of the lowermost blank in the stack adjacent one edge of the blank, said means including a pot for fluid adhesive, a roller rotatable in the pot; a second roller above the first roller, an adjustable frame carrying said second roller, gears constantly connecting said rollers, a pivoted frame carried by said pot, a rotatable shaft carried by said pivoted frame, a gear on said shaft for meshing normally with the gear of said second roller, an applicator finger carried by said rotatable shaft, a cam on said rotatable shaft, a cam track cooperating with said cam for positioning said finger so as to engage the blank when raised thereto, and means to rock said pivoted frame to raise and lower said rotatable shaft and finger, the gear on said rotatable shaft unmeshing from the gear of the second roller when said finger-carrying shaft is raised, said finger rotating into contact with said second roller to pick up adhesive when in its lowered position, and means for turning said first mentioned roller.

4. In a machine of the class described wherein there is provided a magazine for stacked sheet blanks, and means for removing blanks successively from the magazine through the bottom thereof, the improvement which comprises: a glue pot; a glue roller journaled on the pot; a second glue roller; a member carrying said second glue roller; means for adjustably holding said second glue roller over said first mentioned glue roller in operative position with relation to the same; means for driving said rollers together constantly; an applicator shaft; applicator fingers carried by said applicator shaft; pivoted arms having bearings to carry said applicator shaft; means to rock said pivoted arms to apply the applicator fingers to said second glue roller; means for turning said applicator shaft while said applicator shaft is adjacent said second glue roller; and means for holding said applicator shaft against rotation with the applicator fingers in position to engage the blank and thus apply adhesive to the blank.

5. In a machine of the class described wherein there is provided a magazine for stacked sheet blanks, and means for removing blanks successively from the magazine through the bottom thereof, the improvement which comprises: a glue pot; a glue roller journaled on the pot; a second glue roller; a member carrying said second glue roller; means for adjustably holding said second glue roller over said first mentioned glue roller in operative position with relation to the same; means for driving said roller together constantly; an applicator shaft; applicator fingers carried by said applicator shaft; pivoted arms having bearings to carry said applicator shaft; means to rock said pivoted arms to apply the applicator fingers to said second glue roller; means for turning said applicator shaft while said applicator shaft is adjacent said second glue roller; and means for holding said applicator shaft against rotation with the applicator fingers in position to engage the blank and thus apply adhesive to the blank, said last named means including a cam on said applicator shaft and a fixed cam track for said cam.

6. In a machine of the class described wherein there is provided a magazine for stacked sheet blanks, and means for removing blanks successively from the magazine through the bottom thereof, the improvement which comprises: an adhesive reservoir; a first adhesive roller journaled in said reservoir; means for rotating said roller; a pivoted frame located above the reservoir; posts on which said frame is pivoted; a second adhesive roller carried by said pivoted frame to cooperate with said first adhesive roller; an adjusting screw to adjust said frame to bring the rollers closer together or farther apart; gears connecting said rollers to turn together; standards;

adhesive applicator arms pivoted to said standards; an adhesive applicator shaft journaled in said adhesive applicator arms; normally meshing gear connections between said second adhesive roller and said applicator shaft; applicator fingers carried by said applicator shaft to engage with said second adhesive roller when said applicator shaft is rotating; means for rocking said applicator arms to unmesh the gear connection between said applicator shaft and said second adhesive roller; and means for holding said applicator shaft against rotation with the fingers in position to apply the adhesive to the blank after said applicator arms shall have been rocked.

7. In a machine of the class described wherein there is provided a magazine for stacked sheet blanks, and means for removing blanks successively from the magazine through the bottom thereof, the improvement which comprises: an adhesive reservoir; a first adhesive roller journaled in said reservoir; means for rotating said roller; a pivoted frame located above the reservoir; posts on which said frame is pivoted; a second adhesive roller carried by said pivoted frame to cooperate with said first adhesive roller; an adjusting screw to adjust said frame to bring the rollers closer together or farther apart; gears

connecting said rollers to turn together; standards; adhesive applicator arms pivoted to said standards; an adhesive applicator shaft journaled in said adhesive applicator arms; normally meshing gear connections between said second adhesive roller and said applicator shaft; applicator fingers carried by said applicator shaft to engage with said second adhesive roller when said applicator shaft is rotating; means for rocking said applicator arms to unmesh the gear connection between said applicator shaft and said second adhesive roller; and means for holding said applicator shaft against rotation with the fingers in position to apply the adhesive to the blank after said applicator arms shall have been rocked, said last named means including a cam on said applicator shaft and a fixed cam track for engagement by said cam.

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REFERENCES CITED

The following references are of record in the file of this patent:

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