July 26, 1966 L. C. ZIEGLER ETAL 3,262,831

MACHINE FOR FORMING, PRINTING AND APPLYING LABELS TO PRODUCTS

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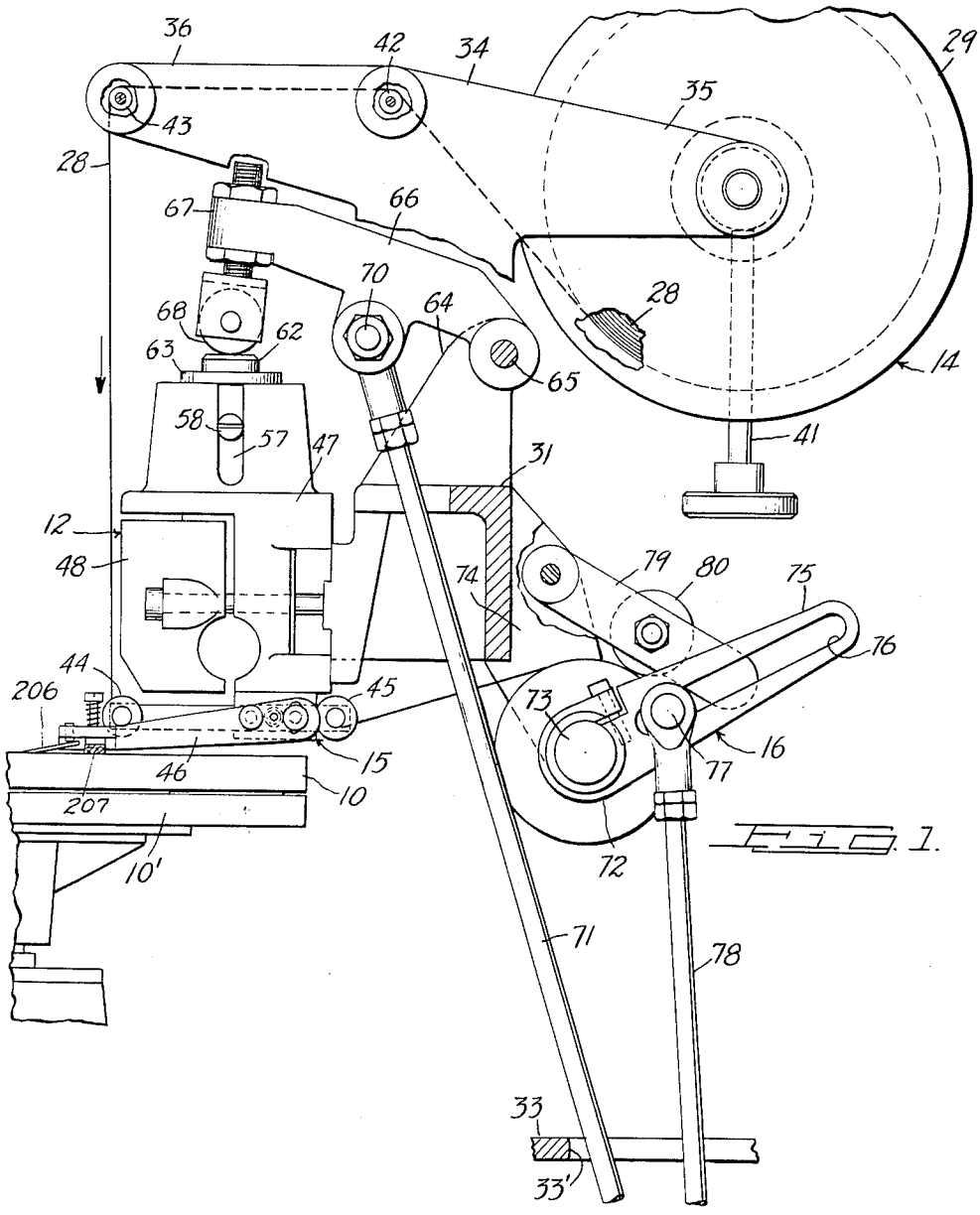


FIG. 1.

INVENTORS
LOUIS C. ZIEGLER
JOSEPH GASTALDO
BY
Howard C. Thompson
ATTORNEY

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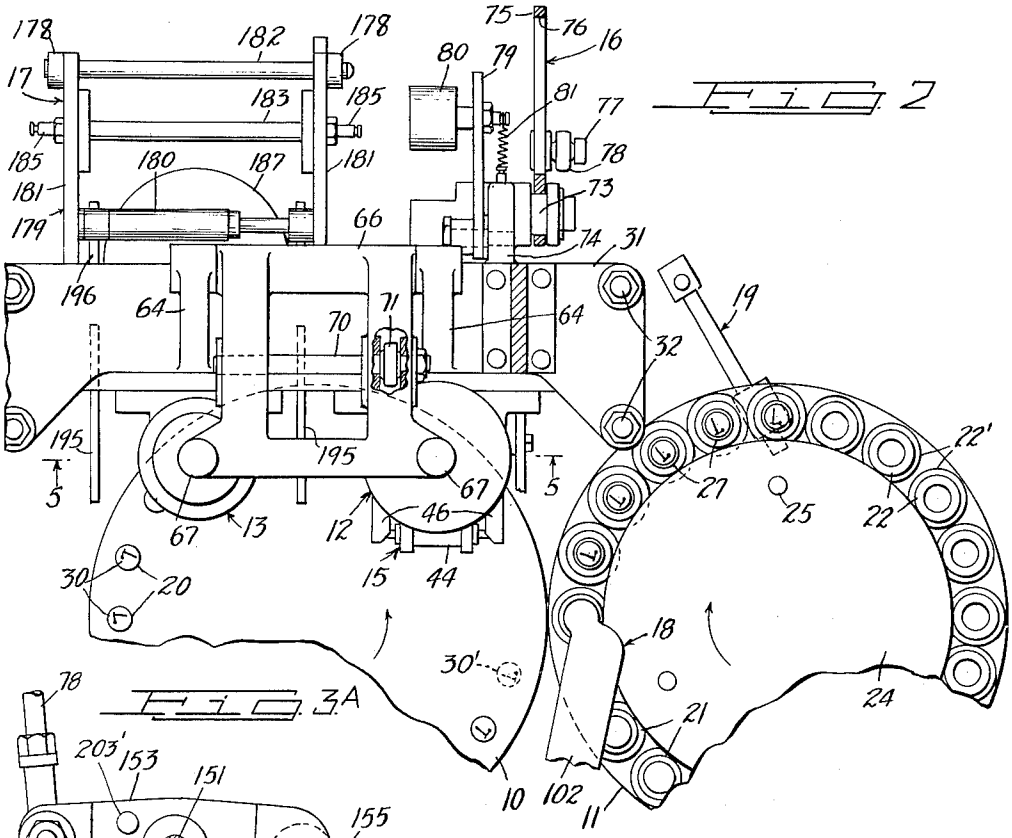


FIG. 2

FIG. 3A

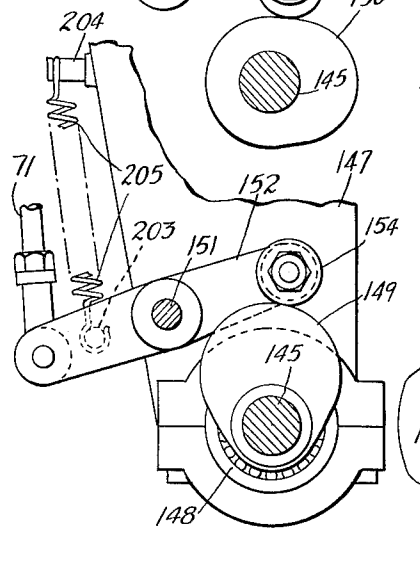
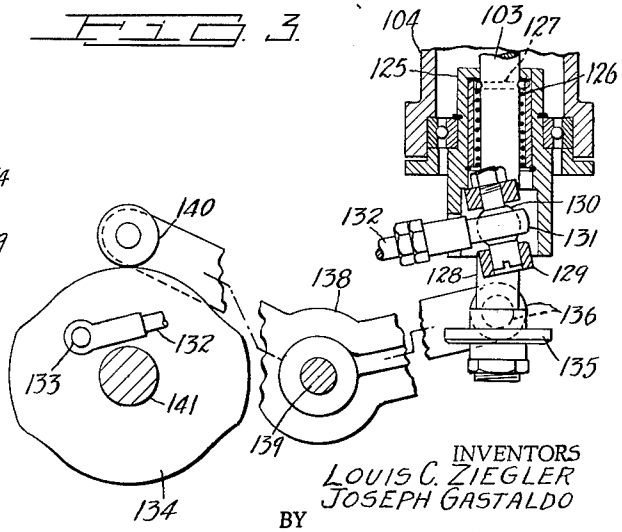


FIG. 3



INVENTORS
LOUIS C. ZIEGLER
JOSEPH GASTALDO
BY
Howard C. Thompson
ATTORNEY

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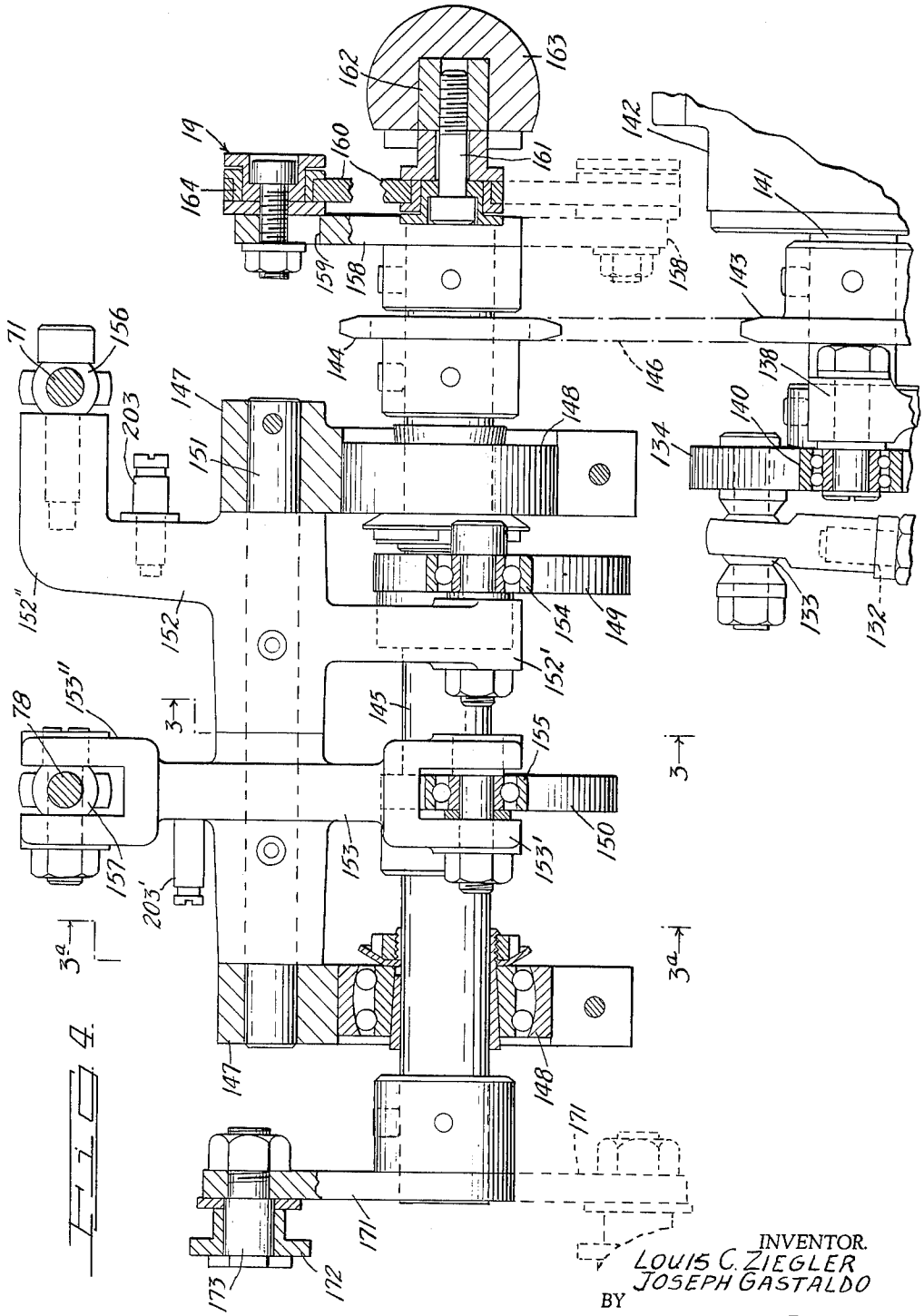


FIG. 4.

INVENTOR.
LOUIS C. ZIEGLER
JOSEPH GASTALDO
BY
Howard C. Thompson
ATTORNEY

July 26, 1966 L. C. ZIEGLER ETAL 3,262,831

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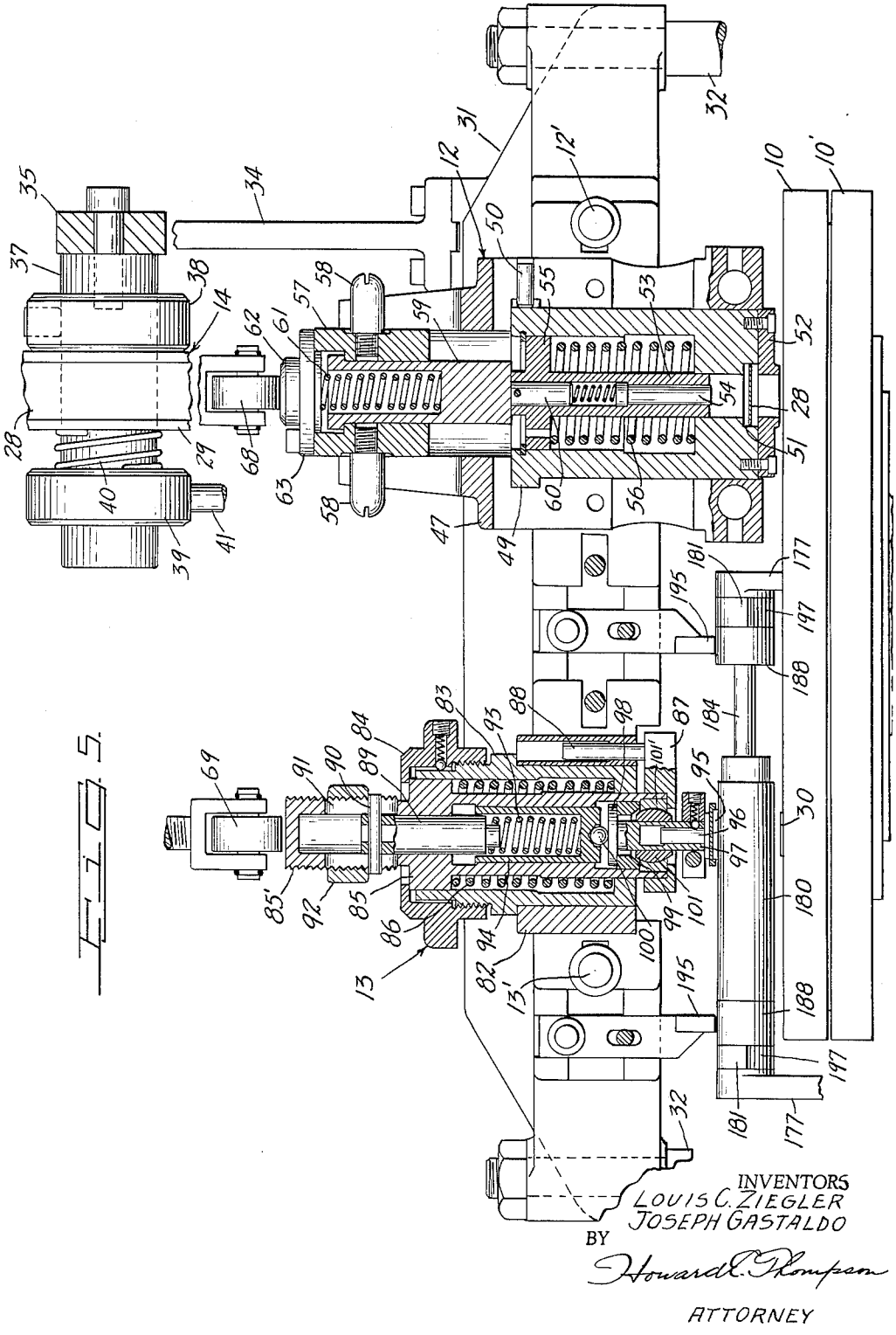


FIG. 5.

INVENTORS
LOUIS C. ZIEGLER
JOSEPH GASTALDO
BY
Howard R. Thompson
ATTORNEY

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FIG. 6.

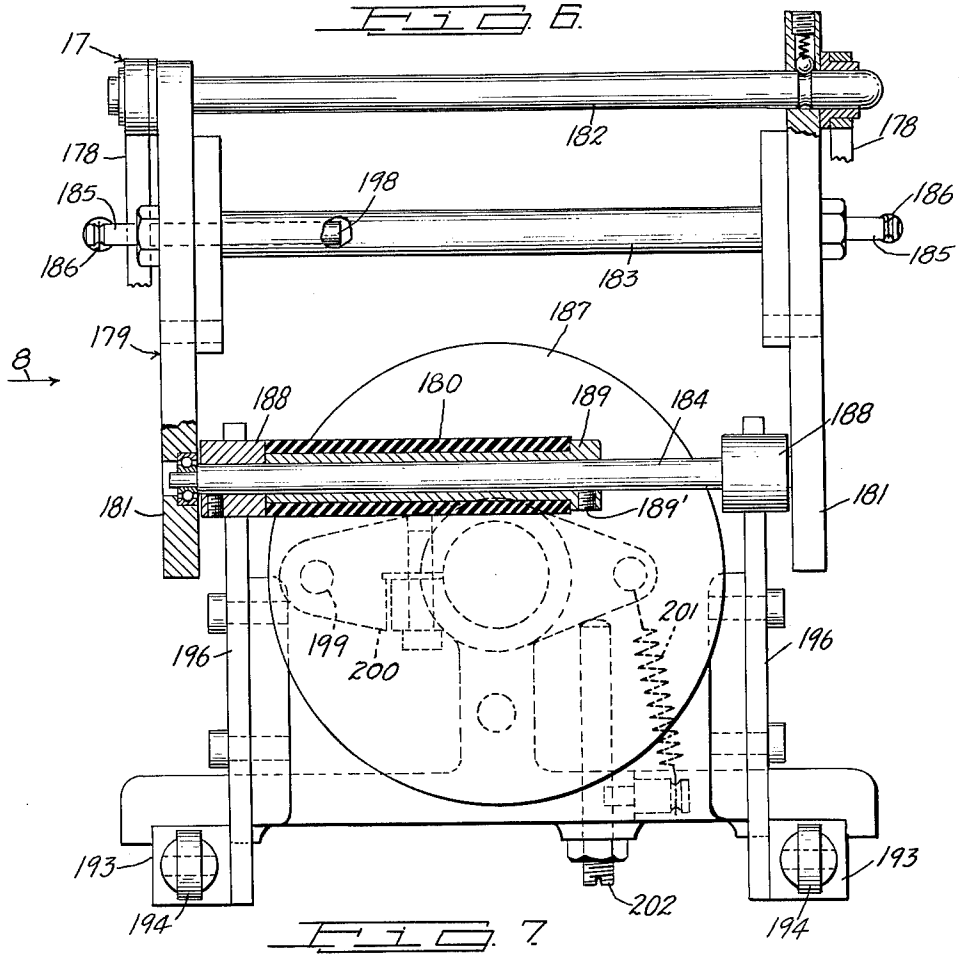
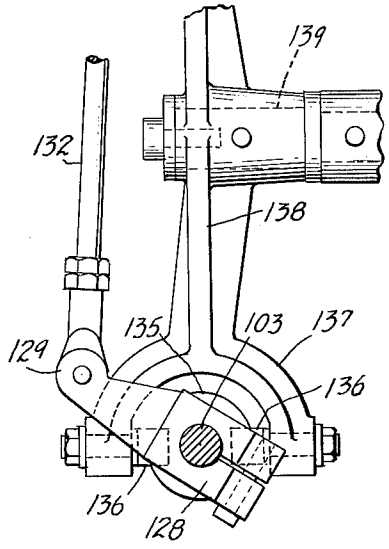


FIG. 7.



INVENTORS
LOUIS C. ZIEGLER
JOSEPH GASTALDO
BY
Howard E. Thompson
ATTORNEY

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FIG. 8

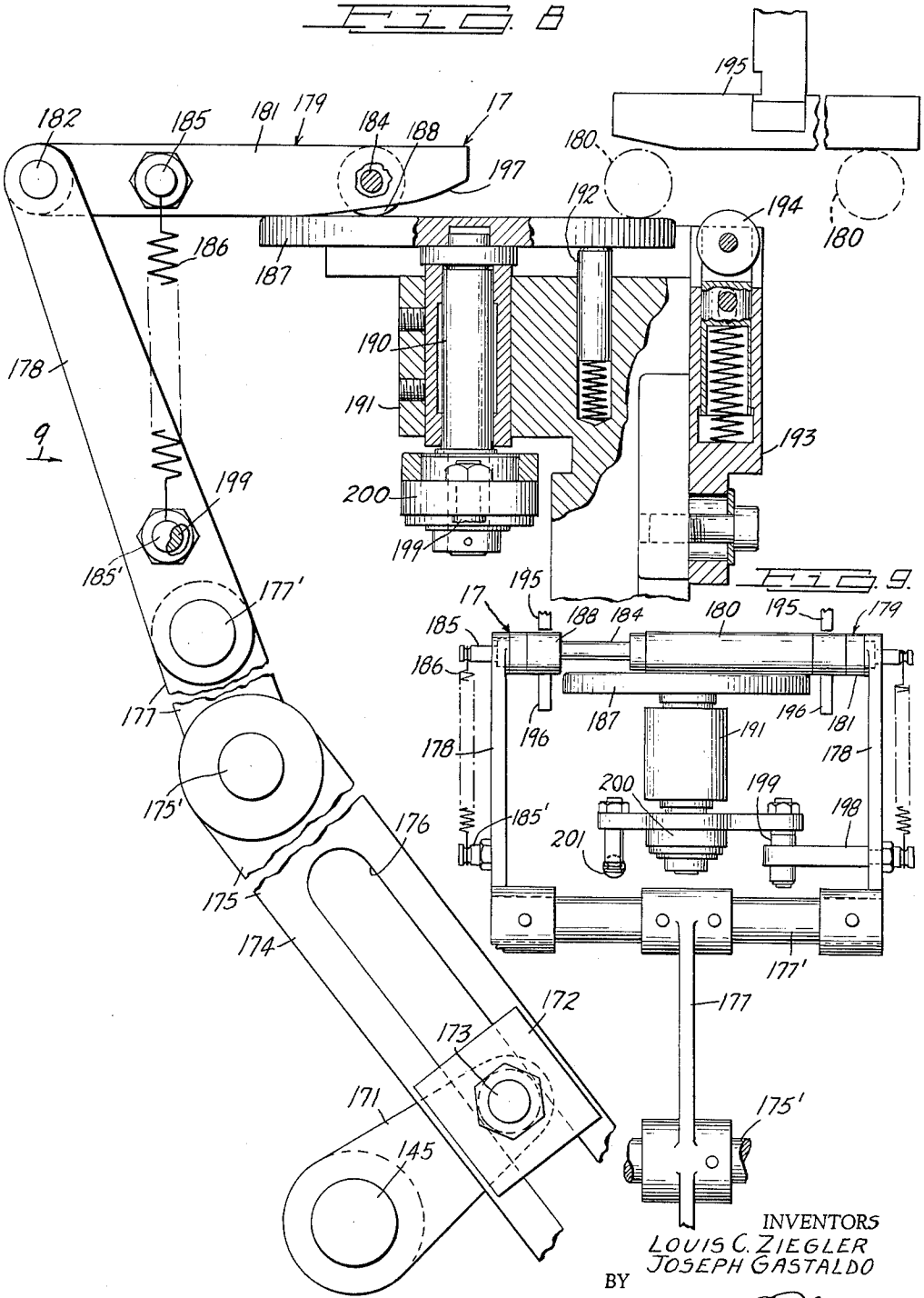


FIG. 9

INVENTORS
LOUIS C. ZIEGLER
JOSEPH GASTALDO
BY
Howard L. Thompson
ATTORNEY

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FIG. 12.

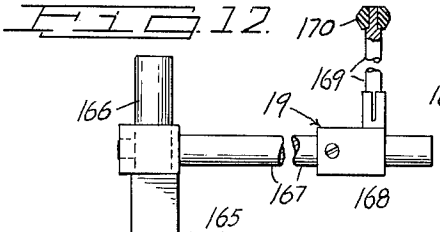


FIG. 10.

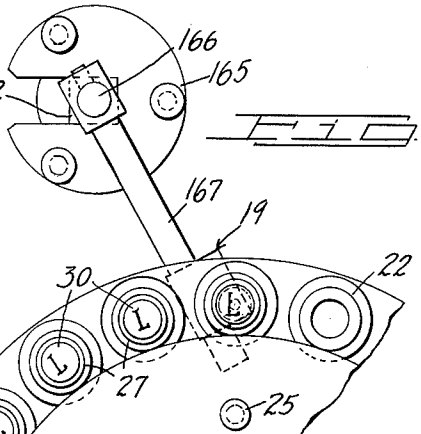
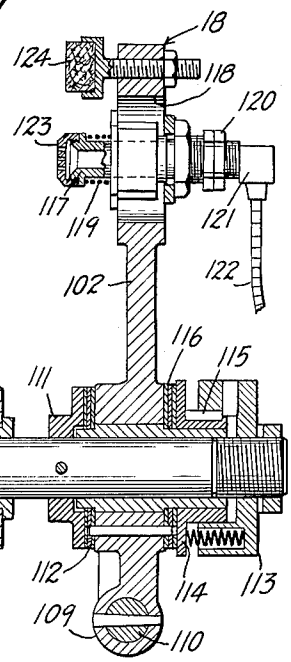


FIG. 11.



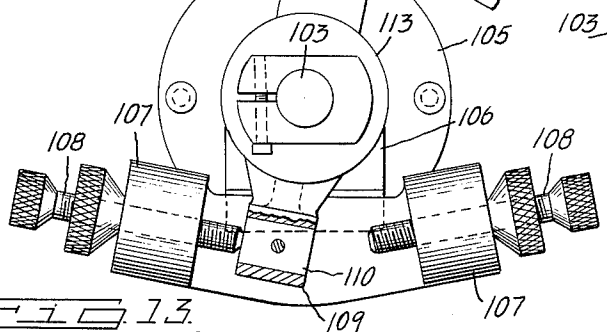
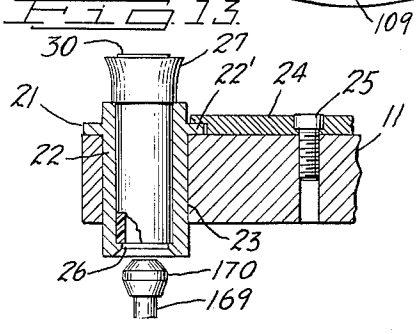


FIG. 13.



INVENTORS
LOUIS C. ZIEGLER
JOSEPH GASTALDO
BY
Howard E. Thompson
ATTORNEY

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3,262,831

MACHINE FOR FORMING, PRINTING AND APPLYING LABELS TO PRODUCTS

Louis C. Ziegler, 5 Skyline Drive, Englewood Cliffs, N.J., and Joseph Gastaldo, 58—03 202nd St., Bayside, N.Y.

Filed Feb. 27, 1963, Ser. No. 261,269
19 Claims. (Cl. 156—384)

This invention relates to machines for feeding a label strip to a forming unit of the machine, which also applies the formed label to an intermittently rotatable table, with another unit operated simultaneously with the first named unit in printing labels applied to said table, the machine having another unit for transferring the label from the first table to a product supported on a second table and to the inclusion of a further unit to eject the labeled product from said second named table. More particularly, the invention deals with a machine of the character described, wherein both of said tables are intermittently and simultaneously rotated in bringing label and product stations in registering position with the respective units defined.

Still more particularly, the invention deals with a machine of the character described, wherein the printing unit has associated therewith an inking unit for inking the printing plate of the printing unit.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

FIG. 1 is a diagrammatic side view of the upper portion of the machine, with parts of the construction broken away and with parts in section and omitting background showing.

FIG. 2 is a diagrammatic plan view of the machine on a reduced scale from the showing in FIG. 1 and illustrating the arrangement of the various operating units of the machine with respect to each other and the tables of the machine, with parts of the construction broken away and parts shown in section and omitting background showing of the base of the machine.

FIG. 3 is a reduced section generally on the line 3—3 of FIG. 4, with parts of the construction broken away and parts in section and omitting background showing.

FIG. 3A is a detail section on the line 3A—3A of FIG. 4 and otherwise similar to the showing in FIG. 3.

FIG. 4 is an enlarged plan view of the lefthand portion of FIGS. 3–3A and diagrammatically illustrating the cam shaft and associated parts, with parts of the construction broken away and in section and with parts shown in a different position in dotted lines.

FIG. 5 is an enlarged sectional view through the label forming and label printing units of the machine, with parts of the construction shown in elevation and parts broken away, the section being generally on the line 5—5 of FIG. 2.

FIG. 6 is an enlarged plan view of the inking unit shown in FIG. 2, with parts of the construction broken away and in section and omitting background showing.

FIG. 7 is a detail view, on a reduced scale of part of the structure extending from the lower portion of the showing in FIG. 4 and omitting the housing structure of FIG. 3, this figure being also a partial sectional plan view of the righthand portion of FIG. 3.

FIG. 8 is a view looking in the direction of the arrow 8 of FIG. 6 and illustrating the drive for the inking unit, with parts of the structure broken away and parts in section and, further, indicating different positions of the inking roller in dotted and dot-dash lines.

FIG. 9 is a view on a reduced scale looking in the direction of the arrow 9 of FIG. 8 and omitting background showing.

FIG. 10 is an enlarged plan view illustrating in more detail the transfer unit and the ejector unit, as diagrammatically seen in FIG. 2 and showing portions of both tables of the machine.

FIG. 11 is a detail longitudinal sectional view through the transfer unit shown in FIG. 10 and illustrating the suction hose connection, which is omitted in FIG. 10.

FIG. 12 is a partial side view of the ejector unit, omitting parts of the construction; and

FIG. 13 is an enlarged sectional detail view of a part of the table at the ejector station showing a product preparatory to ejection by the finger of the ejector unit.

In the several views and as noted in part, background showings have, for the most part, been omitted, as well as supporting frames for the shafts or other parts of the machine in order to simplify the illustration and no specific showings of the motor drive and intermittent drives of the tables are illustrated, as such drives will be understood by those skilled in the art.

Considering the diagrammatic showing of FIG. 2 of the drawing, it will appear that the machine comprises two intermittently rotatable tables **10** and **11**. Associated with the table **10** is a label forming and applying unit **12** and a printing unit **13**. Operating in conjunction with the unit **12** is a label strip delivery guide and feeding mechanism, generally identified as the delivery **14**, the guide **15** and feed **16** in FIG. 1 of the drawing. At **17**, in FIGS. 2, 5, 6, 8 and 9, is shown the inking unit. At **18**, FIGS. 2, 10 and 11, is shown, at least in part, the label transfer unit of the machine and at **19**, FIGS. 2, 4, 10 and 12, is shown at least in part, the product ejector unit of the machine.

The tables **10** and **11** are intermittently rotated by any suitable means in the base of the machine and such means is not shown. This intermittent rotation brings label stations **20** on the table **10** and product stations **21** on table **11** in registration with the respective unit, as will be apparent from a consideration of FIG. 2. In other words, the units **12** and **13** are registered with the stations **20**, unit **18** with stations **20–21** and unit **19** with stations **21**. The labels are formed and applied to the table **10** by unit **12** and then printed by unit **13**. The printed labels are then transferred from the table **10** by transfer unit **18** to products at stations **21** on the table **11**. Finally, the labeled products are ejected from stations **21** by ejector unit **19**. Stations **21** are definitely formed in the table **11** by mounting product supporting sleeves **22** in apertures **23** in the table **11**. One of the stations **21** is shown in sectional detail in FIG. 13. Each of the sleeves has a flange **22'** at its upper end engaged by the undercut rim of a disc **24** fixed to **11** by screws, as at **25**. The lower ends of the sleeves **22** have stop shoulders **26** checking downward movement of a product **27**. The product **27** shown is in the form of a plastic lipstick case.

Beneath the table **10** is a supplemental and suitably heated table **10'**, note FIGS. 1 and 5, to heat table **10**. The label strip **28**, from a spool **29** of the delivery **14**, has an adhesive on one surface thereof, so that, when the labels **30** are cut and applied to table **10** at the unit **12**, the heat of **10** will temporarily position the labels on the face of **10** in forming the aforesaid stations **20**, as seen, in part, in FIGS. 2 and 10. Suitable adjustments are provided at **12'** and **13'**, note FIG. 5, to adjust units **12**, **13** with respect to each other, as well as to synchronize with the unit **18**.

Considering FIGS. 1, 2 and 5, it will appear that a frame **31** is supported on rods extending upwardly from the top of the base of the machine. Part of these rods

is shown at 32 in FIGS. 2 and 5 and, in FIG. 1, a part of the top of the base is indicated at 33. Fixed to 31 is an upstanding bracket 34 having laterally extending arms 35, 36, note FIGS. 1 and 5. Fixed to the arm 35 is a shaft 37 having adjustable collars 38 and 39, FIG. 5, for alining the spool 29 of the delivery 14. A spring 40 tensionally supports 29 on the face of 38 and at 41 is shown a screw in collar 39 engaging shaft 37 in adjusting tension of the spring 40.

Mounted in bracket 34 and arm 36 are guide rollers 42, 43, FIG. 1, over which strip 28 passes. The strip 28 passes over other guide rollers 44 and 45 suitably supported in side arms 46 pivoted and adjustable on a housing 47 of the unit 12, as diagrammatically seen in FIG. 1 and shown, in part, in FIG. 2. This structure forms the guide mechanism 15.

Secured to the housing 47 by a semi-circular clamp 48, FIG. 1, is a cylinder 49 pinned against rotation, as seen at 50, FIG. 5. The lower end of the cylinder 49 has a guide channel 51 for the strip 28. Fixed to the lower surface of the cylinder is a label guide plate 52 which also forms a guide for the punch 53 of unit 12. In the punch is a spring supported pin 54 to fix the cut label 30 to the surface of the heated table 10. The punch 53 has a head 55 which operates in the cylinder 49 and a spring 56 normally supports the punch in raised position. Mounted in the upper end of housing 47 is a supplemental cylinder 57 keyed to 47, as at 58. Mounted in 57 is a plunger 59 having a pin 60 fixed to the punch 53. Arranged in the plunger 59 is a spring 61 seating on a button 62 movable in a ring 63 mounted on 57, as shown in FIG. 5.

Mounted in spaced bearings 64 on the frame 31, note FIG. 2, is a pivot pin 65, FIG. 1 for a yoke frame or element 66. In lateral end extensions 67 of 66 are adjustably mounted rollers 68 and 69 for actuating units 12 and 13, respectively, note FIGS. 1 and 5. No detail showing of these rollers is illustrated in FIG. 2. Most of the showings in FIG. 2 are purely diagrammatic, as this figure is simply to generally associate the respective units and mechanism. Pivoted to the yoke frame 66 on rod 70 is an operating link 71, which extends into the base through an aperture in 33, as at 33', FIG. 1. At this time, it will be understood that both units 12 and 13 are simultaneously actuated through element 66 in depression of the rollers 68 and 69 to simultaneously operate units 12 and 13. The action of the link 71 will be later described.

Returning now to the strip feed mechanism 16, FIGS. 1 and 2, at 72 is shown the feed roller fixed to a shaft 73 mounted in an extension 74 on the frame 31, FIG. 1. Mounted on the shaft 73 is a one-way clutch lever 75, having an elongated slot 76 therein. The lever serves to intermittently rotate feed roller 72 in one direction only. Operating in the slot 76 is a pin 77, with which the upper end of a link 78, FIG. 1, is coupled, this link also extending through aperture 33' and will be later described. Supported on an arm 79 pivoted in 74 is a pressure roller 80 engaging the strip 28 wound on 72 to keep the strip taut at all times. A spring 81, shown only in FIG. 2, supports 80 in constant engagement with wound strip 28 on 72.

Now, viewing the left side of FIG. 5, at 82 is shown a housing supported in frame 31. Suitably supported in 82 is a cylinder 83, having an adjustable cap 84 at its upper end, keyed as indicated. Mounted in 83 is a plunger 85 normally held in raised position against the adjustable cap 84 by a spring 86. Adjustment of 85 fixes the position of 85 with respect to 69. Fixed to the lower end of 85 is a bracket 87 keyed to 82 by a sliding pin 88. Sliding in the upper end of 85 is a pin 89 having a transverse key pin 90 operating in slots 91 in the threaded extension 85' on 85. A nut 92 is adjustable on 85' to check upward movement of pin 89 by a spring 93 mounted in a supplemental plunger 95 and controls tension of spring 93. A printing plate 95 is mounted on a holder including a pin 96 keyed in a lower plunger 97, as illustrated in FIG. 5. Plunger 97 has a head 98 seating on a bushing 99 in 85 to support plate 95 in flat state during the inking operation. Between the lower end of the plunger 94 and the head 98 is a steel ball 100 housed in the end of plunger 94. On the plunger 97 is a rounded bearing 101 having a universal movement in a bushing 101' mounted in the lower end of plunger 85. It will be apparent that the plate 95 has a universal engagement with the label and the spring 93 provides yieldable engagement with the label 30 being printed. In this engagement, the head 98 is moved off its seat on 99 and 95, 96, 97 and 98 may be said to comprise a universally supported printing head, free to compensate for any engagement of plate 95 with label 30 and the table 10 supporting the label.

The transfer unit 18, shown best in FIGS. 10 and 11 and, in part, in FIGS. 3, 4 and 7, comprises an arm 102 mounted on a vertical shaft 103, FIGS. 10 and 11. Supported on the base is a tubular casing, shown, in part, at 104 in FIG. 3. The casing 104 has a flanged top 105, FIG. 10, above which is a projecting bearing 106, FIGS. 10 and 11. On the bearing 106 is a projecting bracket, having spaced ears 107, in which are adjustably supported screws 108, FIG. 10. The screws operate in conjunction with a short extension 109 on the arm 102, in which is pinned a plug 110 of suitable material, against which the screws 108 operate in checking the two movements of the arm 102 for registration with the label 30 on table 10 and the product 27 on table 11.

Considering FIG. 11, it will be seen that a disc 111 is pinned to the shaft 103 and between 111 and one side of the hub portion of the arm 102 are arranged friction discs 112. Secured to the shaft 103 at one side of the arm is a clamp block 113, between which and the arm is a spring actuated disc 114 keyed to 113, as at 115. Other friction discs 116 are arranged between 114 and the other side of the arm 102. It will thus be seen that the arm 102 is frictionally driven. The block 113 is adjustable on the shaft 103 to control the frictional drive.

A cylinder or element 117 is adjustably positioned in an elongated aperture 118 in the arm 102. A spring 119 extends the cylinder 117, which extension is checked by nuts 120. A suitable coupling 121 on an air suction tube 122 is coupled with one end of the cylinder 117, note FIG. 11. On the other end of the cylinder 117 is mounted a perforated label engaging cap 123 which, in addition to picking up a printed label 30 against the action of the adhesive on the label, also yieldably pressure applies the printed label to the product 27, as diagrammatically seen in FIG. 10. The arm 102 adjustably supports on the offset terminal end thereof a fibrous or other yieldable pressure element 124. This element applies final pressure to the label on a product at an advanced station 21 on table 11, as clearly shown in FIG. 10. It will be apparent that suitable means will be employed in the machine to apply suction in the cylinder 117 in picking up a label from table 10, as well as to cut off this suction in application of the label to the product on table 11.

The means for imparting longitudinal and rotary swinging movement to the shaft 103 to move the arm 102 between tables 10 and 11 and toward and from the tables is best shown in FIGS. 3, 4 and 7. FIG. 3 shows the lower end of the casing 104 and shaft 103. A sleeve 125 has a ball bearing mounting in casing 104. A coil spring 126 is supported in the sleeve 125, this spring engaging a pin 127 in shaft 103 to normally move the shaft in support of the arm 102 in raised position to clear the tables 10 and 11. Secured to the shaft 103 and arranged partially within the sleeve 125 is an adjustable block 128, note FIG. 7, which, for clarity, omits the sleeve 125. The block 128 has, at its end, a fork 129 supporting a

rounded bearing **130** in providing universal support of the end **131** of a link **132**, which imparts the rotary oscillating movement to the shaft **103** in shifting the arm **102** to its two positions over the tables **10** and **11**.

The other end of link **132** has a universal coupling, as at **133**, on a pin fixed to a cam **134**, as seen in FIGS. 3 and 4. Fixed to the lower end of the shaft **103** is a shaft **135**, FIGS. 3 and 7, engaged by rollers **136** on the forked end **137** of a lever **138**. The lever **138** is pivoted, as seen at **139**, note FIGS. 3 and 7. The other end of the lever **138** supports a roller **140** operating on the periphery of the cam **134** which is mounted on a shaft **141**. The shaft **141** is a drive shaft from a motor or other drive shown, in part, at **142** in FIG. 4. Fixed to the shaft **141** is a sprocket **143**. Another sprocket **144** is fixed to the main cam shaft **145**, FIG. 4. Both sprockets are diagrammatically outlined for simplification and the chain engaging these sprockets is indicated by dot-dash lines at **146**.

In the base of the machine are supports **147**, in which are secured ball bearings **148**. Note the detail showing at the left of FIG. 4. These bearings form supports for the cam shaft **145**. On the shaft **145**, intermediate the supports **147**, are fixed cams **149** and **150**. Rotatable on a pin **151** extending between the supports **147** are levers **152** and **153**. Supported on one end **152'** of lever **152** is a ball bearing roller **154** operating on cam **149**. On the forked end **153'** of lever **153** is a similar roller **155** operating on cam **150**. Mounted in an offset end **152''** of lever **152** is a universal coupling **156** for the link **71**. The other forked end **153''** of lever **153** supports a universal coupling **157** for the link **78**. It will thus be seen that the cam **149** operates units **12** and **13** and the cam **150** operates the feed roller **72** of the feed mechanism **16**.

The ejector unit **19** is actuated by a crank arm **158** on one end of shaft **145**, FIG. 4. Adjustable in an elongated slot **159** of **158** is a link **160**, pivoted at **161** to an elongated bar **162**, square in cross-sectional form, as seen in FIG. 4. Also note FIG. 12. The bar **162** is slidable in a long bearing **163**. The link **160** has a rotatable mounting on the adjustment, as seen at **164** in FIG. 4. In this figure, the rotation of arm **158** is indicated by the dotted line showing. The bearing **162** projects through an upper slotted disc **165** on **163** and its upper end is rounded, as seen at **166** in FIG. 12. Adjustably fixed to **166** is a radial finger **167**, on which is adjustably fixed a block **168**, with which is coupled up upwardly projecting pin **169**, having a head end **170** of rubber or other plastic material. The head **170** and part of the pin **169** is shown in FIG. 13 in its normal lowered position. FIGS. 2 and 10 show the adjusted position of the finger to register with the stations **21** on the table **11**. In action of the arm **158** and link **160**, the pin **169** and head **170** move upwardly in the sleeves **22** simultaneously to dislodge the products **27** at the ejector station comprising the unit **19**.

Fixed to the other end of shaft **145** is an arm **171**, in the end of which is pivoted a channelled slide block **172**, as seen at **173** in FIG. 4. Operating in the block is one end **174** of a lever **175**, note FIG. 8, the other end **174** having an elongated aperture **176** therein, in which the block **172** slides. Rotation of arm **171** is indicated by the dotted line showing thereof in FIG. 4. The other end **177** of the lever **175**, which is pivoted as seen at **175'** in FIGS. 8 and 9, has arms **178** widely spaced by pin **177'** fixed to **177**. To ends of the arms **178** is pivoted the frame **179** of the inking roller **180** of the inking unit **17**.

The frame **179** consists of side strips **181** joined and coupled by rods **182** and **183** and to a shaft **184** supporting the inking roller **180**, note FIG. 8. The rod **172** forms the pivot for the arms **178**. In alinement with rod **183**, the side strips **181** have projecting grooved spring supporting pins **185** and similar pins **185'** are on the arm **178**. Spring **186** join these pins to tensionally hold the roller **180** in engagement with the inking surface of an inking disc **187** of the unit **17**.

The inking roller shaft **184** has free bearing mountings in strips **181** and fixed to the shaft **184**, adjacent **181**, are rollers **188**. A sleeve **189** supports the inking roller **180** and has a set screw **189'** to adjust roller **180** longitudinally of the shaft **184** to compensate for wear. Sleeve **189** can be reversed on **184**.

A shaft **190** of the disc **187** has a bearing support in a part of the frame **191**, shown in FIG. 8. In the frame **191** is a spring pressed pin **192** engaging disc **187** to prevent reverse movement thereof. Adjustable in sides of frame **191** are brackets **193**, FIGS. 6 and 8, in which are yieldably supported projecting rollers **194**, said rollers **194** being in alinement with the strips **181** of the frame **179**. It will thus be seen that, as the inking roller **180** passes beneath the printing plate **95**, rollers **194** will move rollers **188** into engagement with upper rails **195** adjustable in frame **31**, as seen in FIG. 5, to control pressure engagement of inking roller **180** with the printing plate **95**. Considering FIG. 6, it will appear that lower rails **196** on frame **191** support the frame **179** in its advancing movement. The lower surface of the forward ends of strips **181** are bevelled, as seen at **197** in FIG. 8, to guide strips **181** on rollers **194** in yieldable support of inking roller **180** in the raised inking position, indicated in dotted lines at **180'** in FIG. 8. This action is against the tension of springs **186**. The printing unit **13** is actuated after the frame **179** and roller **180** have been withdrawn from beneath the printing plate **95**.

In the aforesaid forward inking movement of frame **179**, an inwardly projecting pin **198** on one of the arms **178**, see FIG. 9, strikes a downwardly directed pin **199** on a one-way clutch **200** on the shaft **190** in rotating the inking disc **187** a partial revolution to change the ink surface engaged by roller **180**. This movement is against the tension of a spring **201**, FIG. 6. The spring **201** serves to retain the clutch **200** in normal position, as shown in FIG. 6, when the frame **179** is retracted. This latter movement of the clutch is checked by an adjustable stop screw **202** shown in FIG. 6.

Mounted on the lever **152** is a pin **203** and another pin **204** is mounted on **147**. Coupled with these pins is a spring **205**, FIG. 3, which normally maintains roller **154** in constant engagement with the cam **149**. At **203'** is shown a pin, similar to **203**, on the lever **153** and a similar spring structure, not shown, is employed to support roller **155** in engagement with cam **150**, as will be apparent from a consideration of FIG. 3A.

Considering FIG. 1 of the drawing, it will appear that at the left end of guide mechanism **15** is diagrammatically shown a knife or scraper blade **206** and a wiper pad **207** to clear and clean the surface of the table **10** in advance of the unit **12**. The blade **206**, in addition to removing adhesive from the table **10**, will also serve to displace unremoved labels to avoid double label applications to a product at the transfer station.

In many instances throughout the description of the several units, it will appear that reference to detail structures shown are omitted, as their function and operation will be apparent to those skilled in the art. In this manner, a lengthy specification is obviated.

The operation of the machine will be readily understood from the foregoing description and the following brief statement.

At first, it will be understood in advance of the unit **18**, products **27** are manually or otherwise placed in the apertures **23** of table **11** in such manner as to assure the delivery of the products to the unit **18** for reception of the labels **30**. In intermittent rotation of the tables **10** and **11**, stations **20**, **21** are brought simultaneously into registration with the respective spaced units **12**, **13**, **18** and **19**. The strip **28** is fed or advanced and the frame **179** is advanced when the tables are rotated; whereupon, the feed

of strip **28** is stopped and the frame **179** retracted so that the moment the tables **10** and **11** come to rest, all of the units **12, 13, 18** and **19** are actuated. Unit **12** forms from the strip **28** a label of any contour and applies the labels to the heated table **10** to which the label is attached by the adhesive employed. Unit **13** prints the label, which, at the time, registers with unit **13**, to form the printed label **30**. Unit **18** removes label **30** from the dotted line showing at **30'** in FIGS. 1 and 10 by suction through the cylinder **117** and immediately applies the label to a product on the table **11**. From this standpoint, it will be apparent that the two cam surfaces on cam **134** will provide in each revolution of the shaft **141** the two downward movements contributed to the arm **102**, first into engagement with table **10** and, then, to engage table **11**.

In the operation of applying label to the product, in this same operation, a previously applied label is pressure pressed on a product by element **125**. The unit **19** ejects a labeled product from one of the sleeves **22** at a station **21**.

During the above cycle of operation defined with respect to the primary units, it will be understood that, after one label has been cut from the strip, the strip is fed an interval sufficient to provide formation of the next successive label and the inking unit **17** has been actuated to ink the printing plate, these latter operations being also performed when the tables **10** and **11** are rotated. The foregoing operations are repeated in each cycle of operation of the machine.

In the adaptation of the invention as disclosed, the stations **21** are on a second table moved in synchronism with the table **10**. However, in some adaptations of the invention, these stations may be otherwise intermittently brought into registration for delivering products in position to receive labels transferred from **10** by the transfer unit **18**.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A machine for forming, printing and applying a label to a product in a cycle of operation of the machine, comprising a rotatable table, a label forming and applying unit and printing unit arranged in spaced relation over said table, a transfer unit movable over and toward and from said table, a product supporting station adjacent said transfer unit, whereby operation of the transfer unit will transfer a printed label from said table and apply the same to a product supported at said product supporting station, and a single element simultaneously operating the label forming and applying unit and said printing unit, in movement of said units in the direction of the table in applying a label to the table and printing a label supported on the table.

2. A machine for forming, printing and applying a label to a product in a cycle of operation of the machine, comprising a rotatable table, a label forming and applying unit and printing unit arranged in spaced relation over said table, a transfer unit movable over and toward and from said table, a product supporting station adjacent said transfer unit, whereby operation of the transfer unit will transfer a printed label from said table and apply the same to a product supported at said product supporting station, a single element simultaneously operating the label forming and applying unit and said printing unit, said element comprising a yoke-shaped frame pivotally supported in the machine, and a cam actuated lever having a link connection with said yoke-shaped frame in actuation of the label forming and printing units.

3. A machine as defined in claim **2**, wherein a cam shaft is employed having one cam thereon for actuation of said element, another cam for actuation of means for intermittently feeding a label strip with respect to the label forming unit, a pair of crank arms fixed to said shaft, one of said crank arms actuating a product ejector unit spaced with respect to said transfer unit, the other crank arm actuating an inking unit movable relatively to the printing unit, and other means in operative engagement with said cam shaft for actuation of the transfer unit in moving an arm of said unit over said table and said station and toward and from the table and station in picking up a printed label from the table and applying the same to a product at said station.

4. A machine as defined in claim **3**, wherein the arm of said transfer unit includes other means for pressure applying printed labels to products supported at said station.

5. A machine as defined in claim **3**, wherein the inking unit comprises a frame in which the inking roller is rotatably, mounted, a lever structure for actuating said frame, the second named crank arm operatively engaging said lever structure, and tensional means between the lever structure and said inking roller frame for tensionally supporting the inking roller in engagement with an inking disc of said inking unit.

6. A machine as defined in claim **5**, wherein said inking disc includes a shaft, a one-way clutch for rotating said shaft and disc, and interengaging means between said clutch and lever structure for actuating the clutch in one directional movement of the inking unit.

7. A machine as defined in claim **3**, wherein said last named means includes a cam, a lever operatively engaging the periphery of the cam for movement of the transfer arm toward and from said table and station, and a link coupled with the last named cam and a shaft of said transfer arm for imparting reciprocating movement to the arm for positioning over said table and station.

8. A machine for forming, printing and applying a label to a product in a cycle of operation of the machine, comprising a rotatable table, a label forming and applying unit and printing unit arranged in spaced relation over said table, a transfer unit movable over and toward and from said table, a product supporting station adjacent said transfer unit, whereby operation of the transfer unit will transfer a printed label from said table and apply the same to a product supported at said product supporting station, a single element simultaneously operating the label forming and applying unit and said printing unit, means being employed for intermittently feeding a label strip in position registering with the first named unit, means for guiding the strip in its registering position with said first named unit, the label strip feeding means comprising a cam actuated lever having a link adjustably coupled with a one-way clutch lever for intermittently rotating a shaft, upon which the formed strip is wound, and a tensioned pressure roller operatively engaging the wound strip.

9. A machine for forming, printing and applying a label to a product in a cycle of operation of the machine, comprising two intermittently rotatable tables, a label forming and applying unit and printing unit arranged in spaced relation over a first table, a transfer unit movable over and toward and from both of said tables, the second table having means for positioning a plurality of products in spaced stations thereon, whereby operation of the transfer unit will transfer a printed label from the first table and apply the same to a product supported at a station of the second table, an ejector unit at the second table for ejecting labeled products from stations of said table, a single element simultaneously operating the label forming and applying unit and said printing unit, a cam shaft having one cam thereon for actuation of said element, another cam for actuation of means for intermittently feeding a label strip with respect to the label forming unit, a pair of crank arms fixed to said shaft, one of said crank arms actuating said ejector unit, the other crank arm actuating an inking unit movable relatively to the printing unit, and other means in operative engagement with said cam shaft for actuation of the transfer unit in moving an arm of said unit over both of said tables and toward and from the tables in picking up a printed label from the first table and applying the same to a product on the second table.

10. A machine as defined in claim 2, wherein the machine includes an inking unit employing an inking roller movable across the path of the printing unit in inking a printing plate on said printing unit, preparatory to printing a label then positioned at said printing unit.

11. A machine as defined in claim 10, wherein said inking station includes an inking disc, and means for intermittently rotating said disc in each cycle of operation of the machine.

12. A machine as defined in claim 11, wherein said last named means includes a one-way clutch, said inking roller being mounted in and actuated by a frame, and said frame including means for actuating said one-way clutch in one directional movement of said frame.

13. A machine as defined in claim 12, wherein means is employed for supporting and guiding the frame in its movement in the machine, and means operatively engaging the frame in yieldably supporting the inking roller of the frame in engagement with the printing plate of said printing unit.

14. A machine as defined in claim 2, wherein means is employed adjacent and in advance of the first named unit for clearing and cleaning the surface of said table.

15. A machine as defined in claim 2, wherein the first named unit includes a label forming tool, means for guiding the tool and label for positioning on the surface of the first table, yieldable means in said forming tool for pressure urging the label onto the surface of the first table, the surface of the label having an adhesive engaging the table, and said table being heated to retain the label at a fixed station on the heated table for proper registration with the printing unit and said transfer unit.

16. A machine as defined in claim 2, wherein said printing unit includes a yieldably and universally supported and actuated printing head, and adjustable means engaging the plunger of the printing unit for adjusting positioning of the printing plate of said head.

17. A machine as defined in claim 16, wherein an inking unit including an inking roller is movable across the path of the printing plate of said printing unit in inking said printing plate, means on said head for yieldably supporting the printing plate in a flat state, and means for adjusting position of the inking roller with respect to the printing plate.

18. A machine as defined in claim 2, wherein means is employed for adjusting the first and second named units in said yoke-shaped frame for controlling synchronization of the printing unit with a label applied to the table by said first named unit.

19. A machine as defined in claim 2, wherein said transfer unit includes means adjusting movement of an arm of said unit for positioning over said table and station, and other adjustable means for registration of the transfer element of said arm with a label on the table and a product supported at said station.

References Cited by the Examiner

UNITED STATES PATENTS

3,124,498	5/1964	Ziegler	156—384
3,193,431	7/1965	Seifert	156—384

EARL M. BERGERT, *Primary Examiner.*

HAROLD ANSHER, *Examiner.*