United States Patent

[11] 3,592,091

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[45] Patented **July 13, 1971**

[73] Assignee **Allamatic Corporation**
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[54] **DIECUTTER**
2 Claims, 20 Drawing Figs.

[52] U.S. Cl. **83/6,** 83/599, 83/602, 83/658
[51] **Int. Cl.** **B26d 3/08**
[50] **Field of Search** 83/6, 7, 8, 11, 599, 602, 658; 101/128.2, 128.4; 156/248, 268, 384, 388, 528, 584, 589

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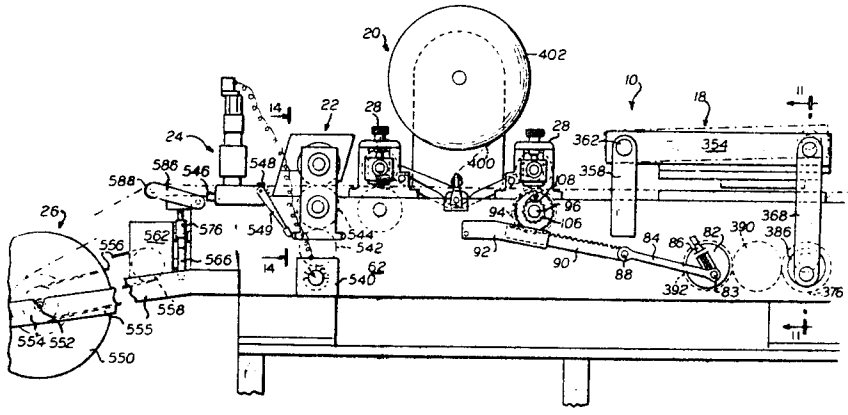
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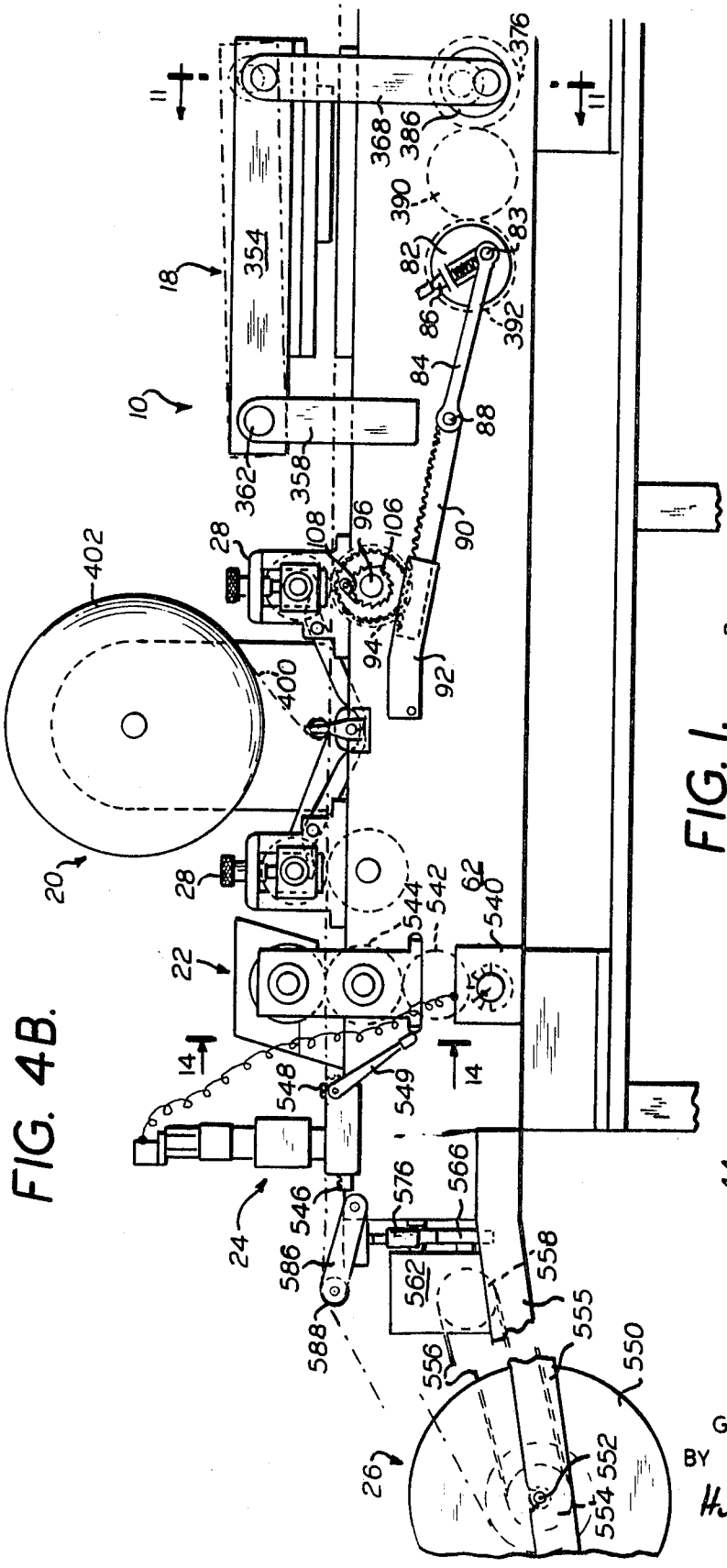
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Primary Examiner— William S. Lawson
Attorney—Hubbell, Cohen & Stiefel

ABSTRACT: A printing press especially adapted for printing pressure sensitive adhesive-backed labels, comprising a novel paper feeding mechanism having means for maintaining constant tension including a self-adjusting brake and tension indicating means, a printing press head having two parallel ink feeds to permit the inking roller to move across the printing plate in either direction in order to ink the plate, a novel die-stamp or die-cut mechanism which assures a uniform application of cutting force over the entire peripheral edge of the label by virtue of a slightly resilient platen and a twin link arrangement for moving the movable die up and down, out of and into cutting relation with the label paper, a novel stripper having a slip clutch for driving a drum that pulls the unwanted material from the printed label at a substantially constant tension, a cutter of unique design not employing sheering for cutting the labels into longitudinal strips of a preselected integral number of labels and a takeup mechanism for rolling up the printed labels in lieu of cutting.





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FIG. 2.

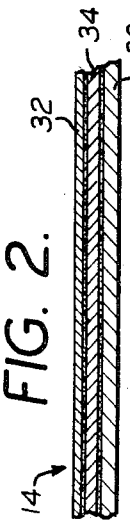


FIG. 3.

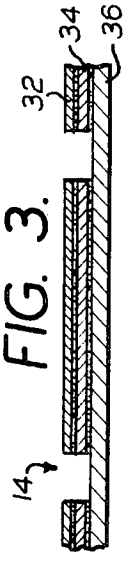


FIG. 4A.

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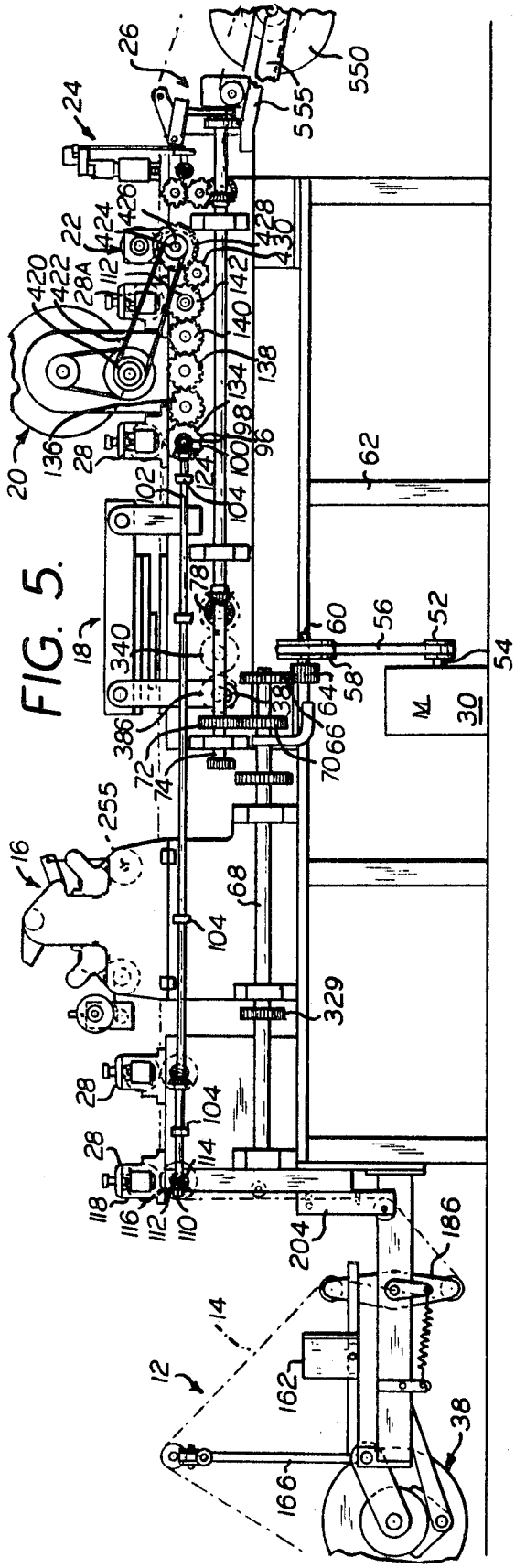


FIG. 5.

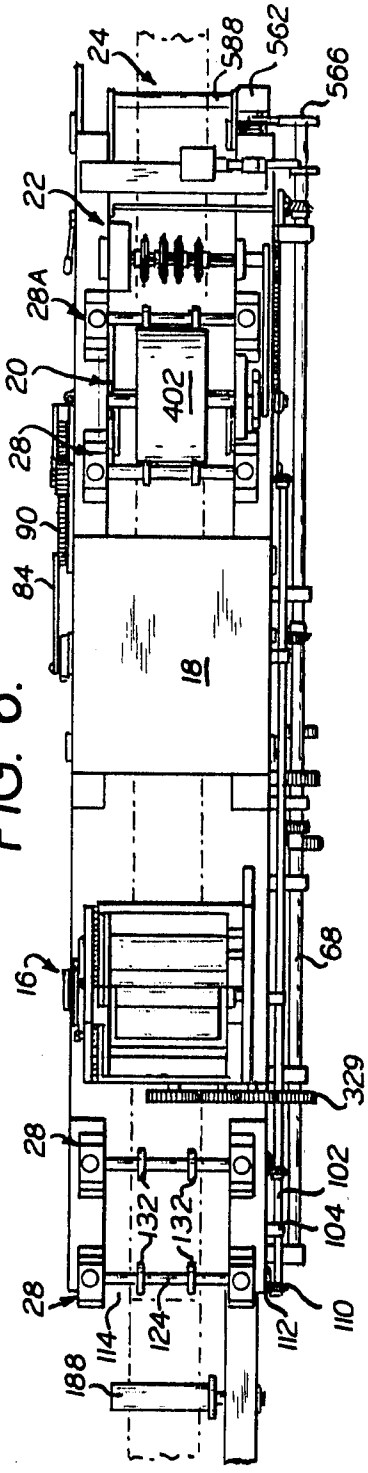


FIG. 6.

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FIG. 7.

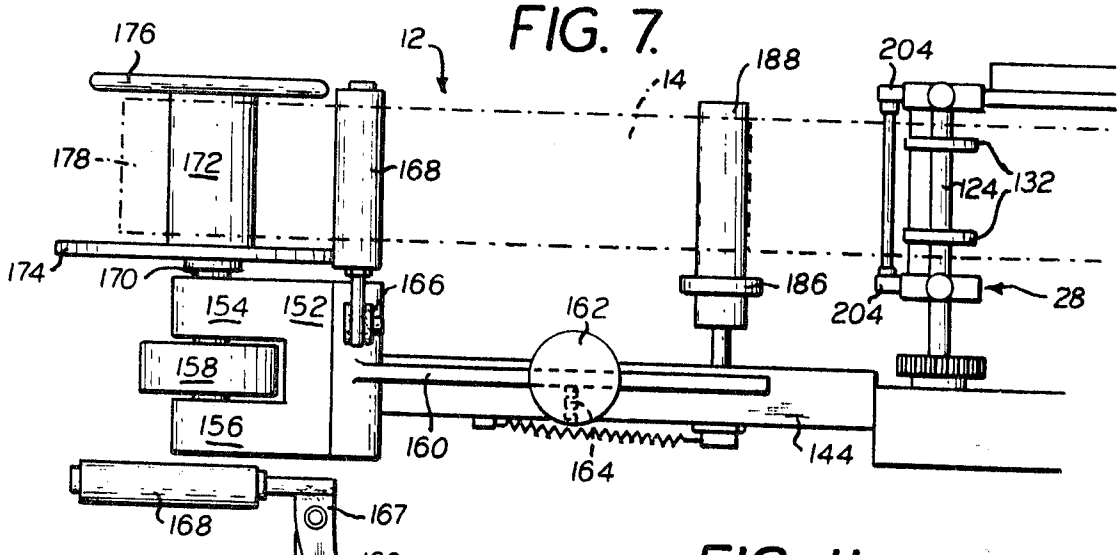


FIG. 8.

FIG. 11.

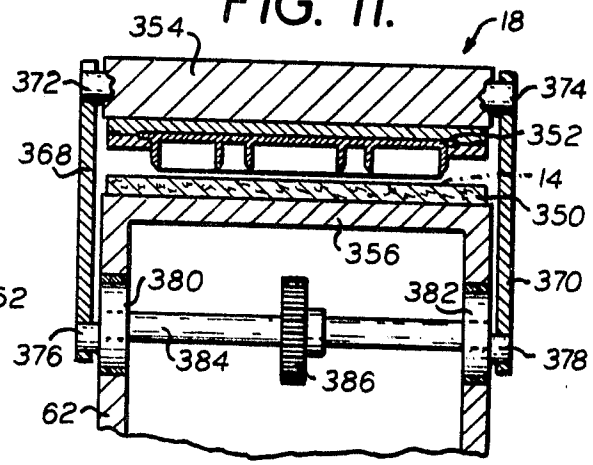
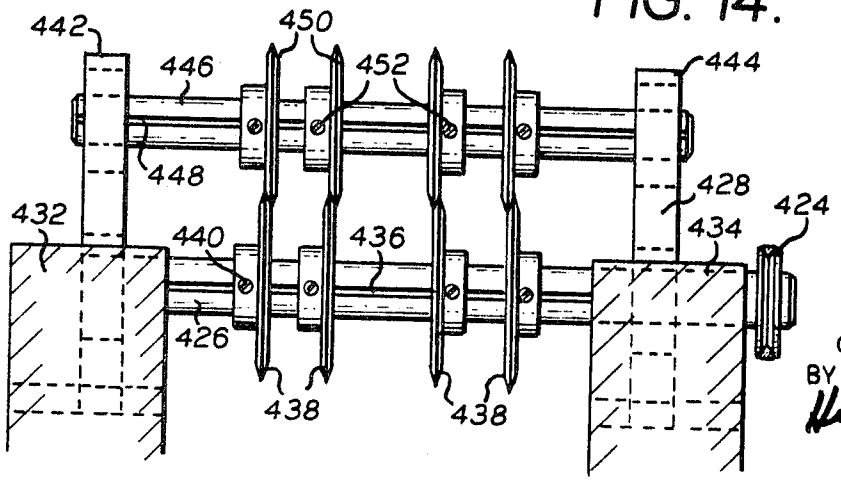


FIG. 14.



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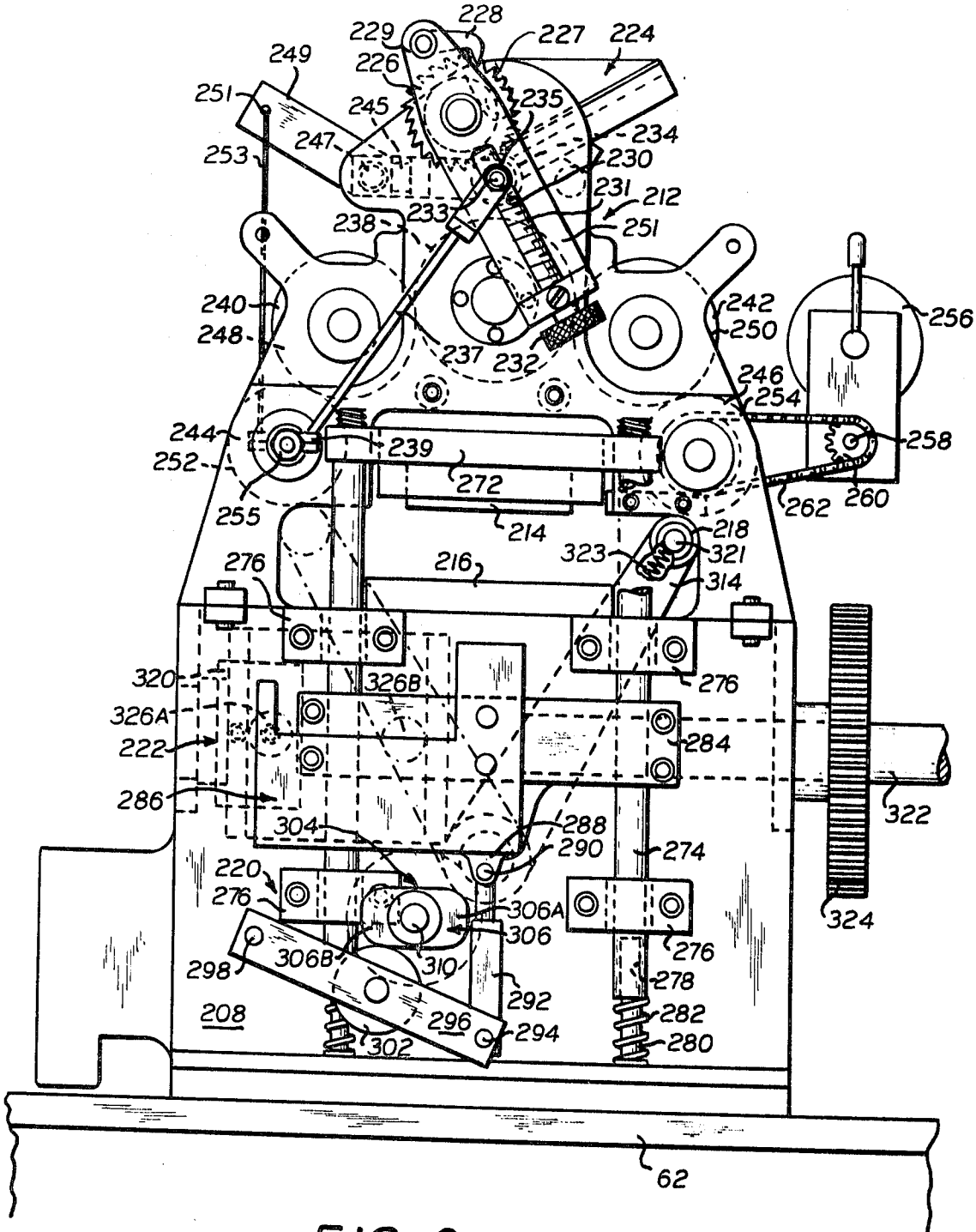


FIG. 9.

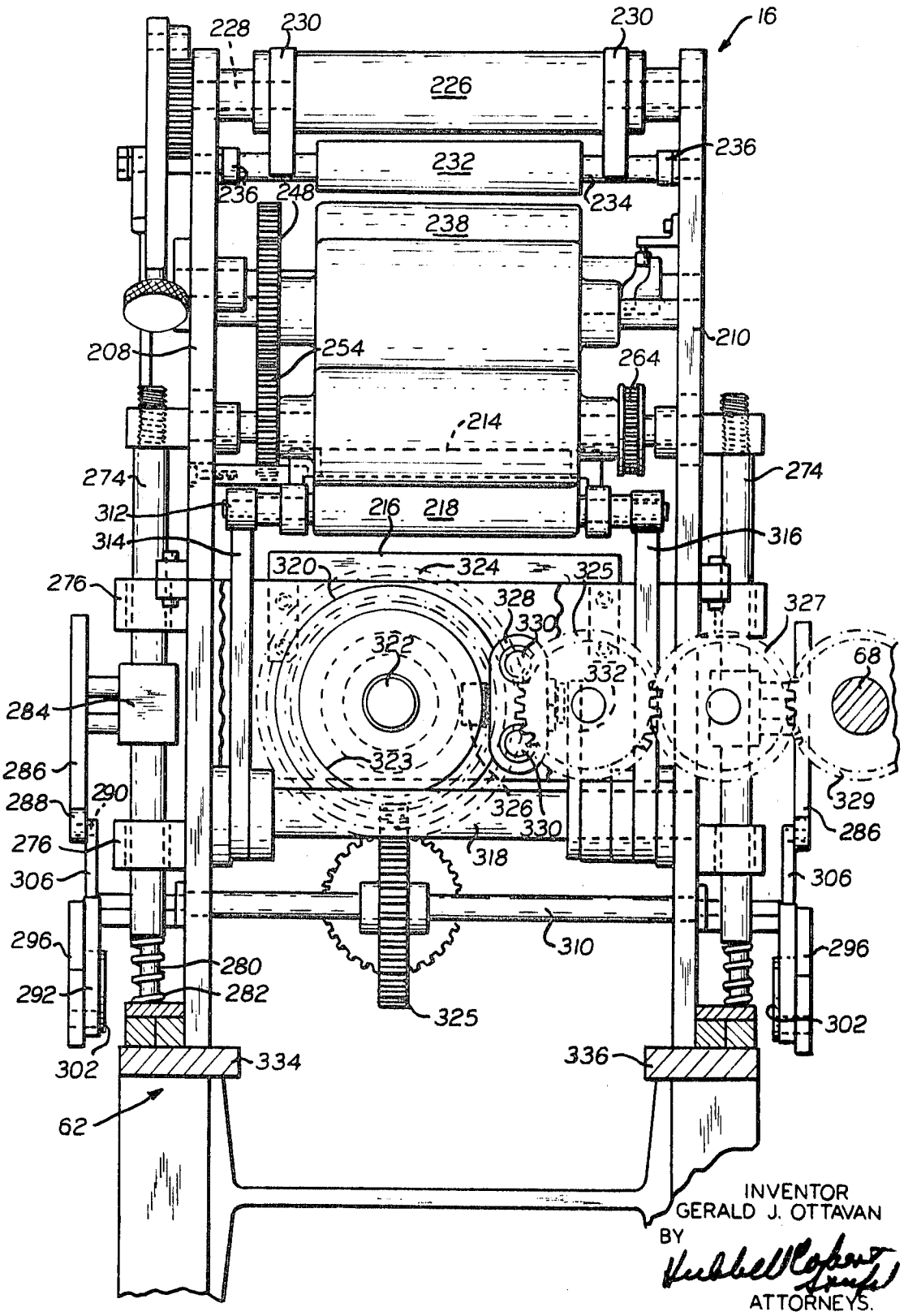
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FIG. 10.



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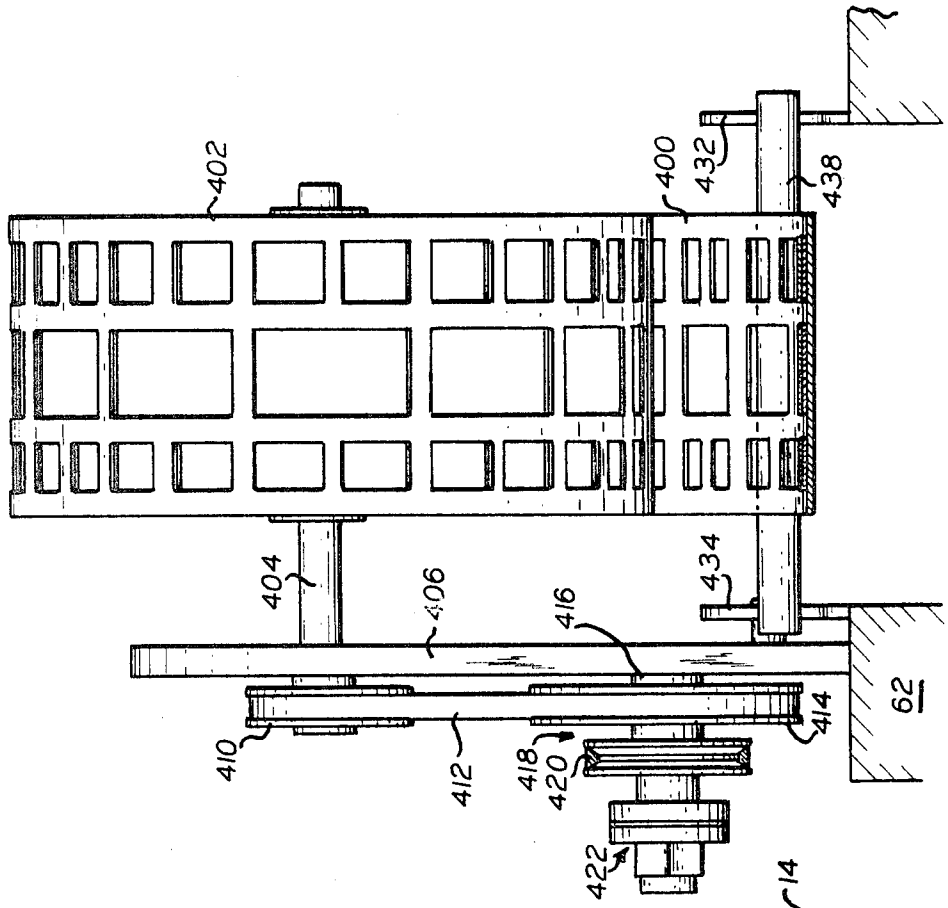


FIG. 13.

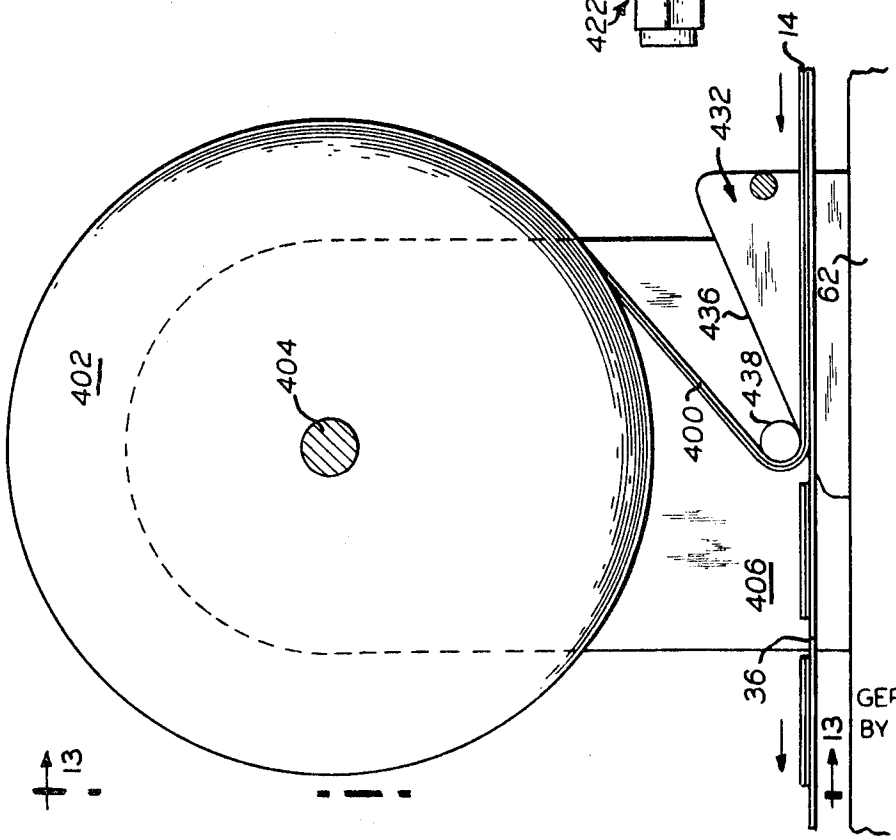


FIG. 12.

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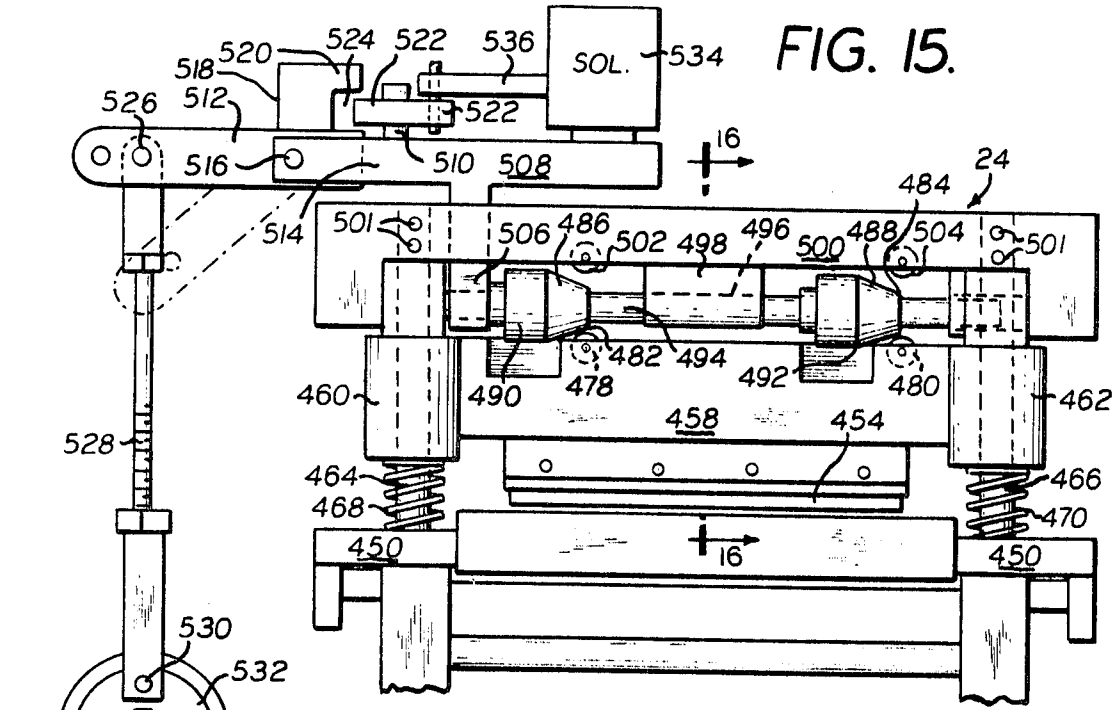


FIG. 15.

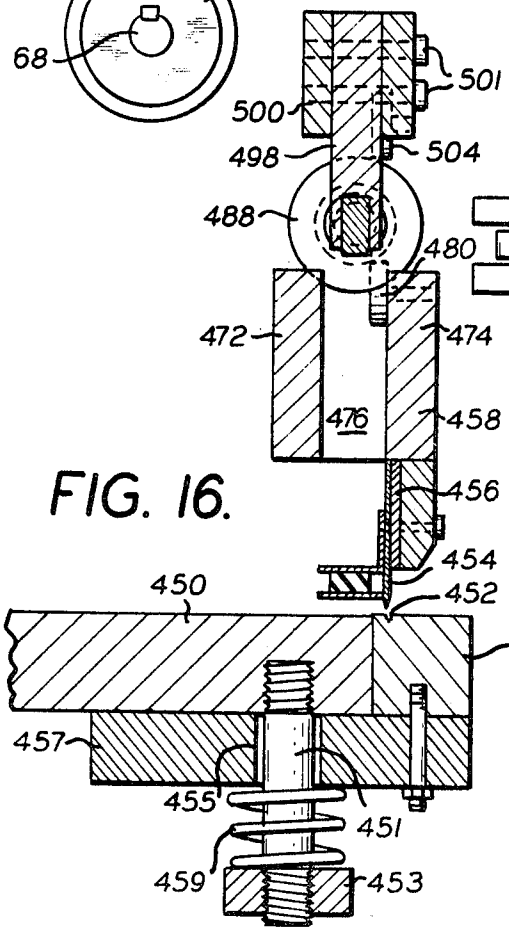


FIG. 16.

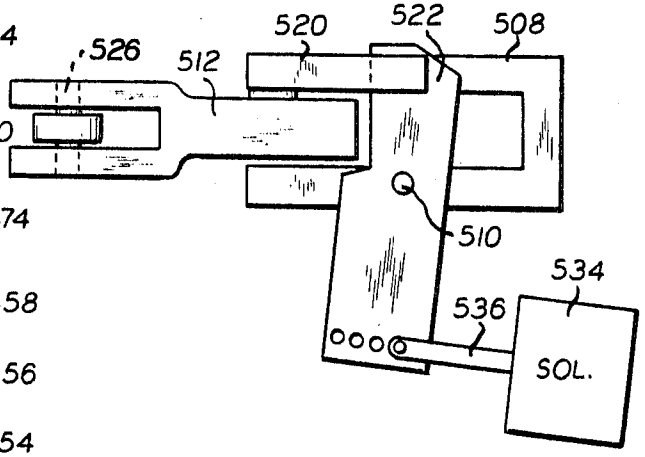


FIG. 17.

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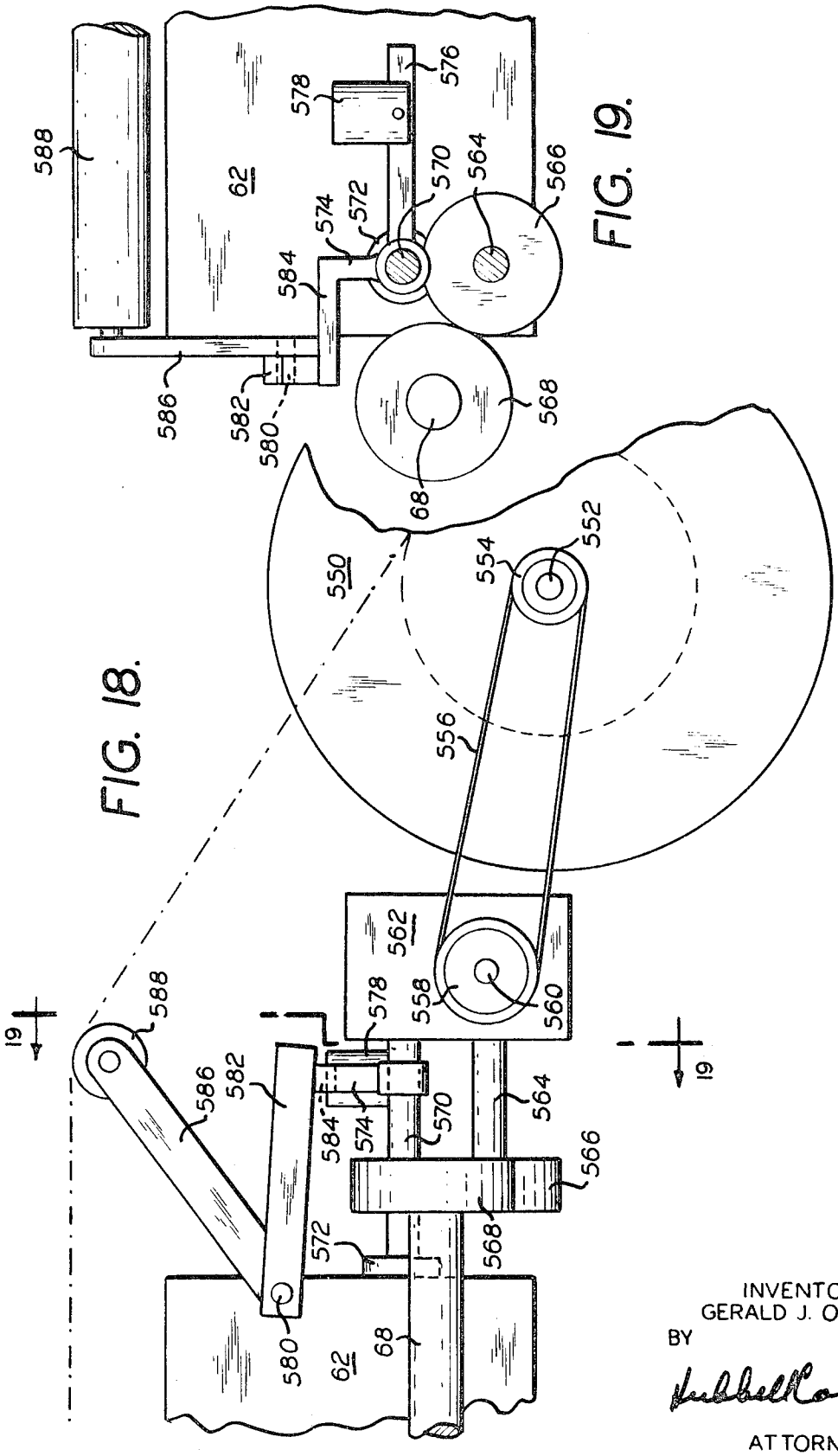


FIG. 18.

FIG. 19.

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DIECUTTER

This is a division of application, Ser. No. 736,768 filed June 13, 1968.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to printing presses and especially to printing presses for printing pressure sensitive adhesive-backed label paper.

2. Description of the Prior Art

Printing presses for printing labels on pressure sensitive adhesive-backed paper are known. However, they tend to be very slow and require a good deal of manual supervision, especially in stripping away that portion of the paper not forming a part of the label being printed.

SUMMARY OF THE INVENTION

The invention lies in a novel combination of improved elements in a label printing press. Specifically, the invention resides in the combination of a new and improved feeding mechanism having a self-adjusting brake which maintains substantially constant the tension on the label paper being fed by reducing the braking force on the paper concomitantly with the reduction in the inertia of the paper reel from which the paper is supplied, and further including a novel printing press having a stationary platen over which the paper passes and a movable printing plate which is inked by an inking roller that moves horizontally over the printing plate when it is in its raised position. In accordance with one feature of the invention twin inking paths are provided in the printing press head for inking the main inking roller at each end of its path of movement whereby to obviate the necessity for making a full back and forth cycle of movement on each inking step and requiring only either a forward movement or a reverse movement to thereby speed up the action of the printing press substantially. The novel printing press further includes an improved diecutter for separating the label from unwanted material surrounding it which die cutter has a movable die that is moved up and down into and out of cutting relation with the label paper by a pair of eccentrically actuated links whereby to apply uniform cutting pressure over the entire head of the movable die. Further, a novel transverse cutter is employed in the printing press which does not rely on a sheering-type cutting, but instead, utilizes a cleaving action which gives a clean cut and which cutter is easily adjustable and long wearing. Lastly, an improved takeup reel mechanism is included in the present invention in the event that the labels are not to be transversely cut by the cutter above described.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a top plan view of label paper as it progresses through the printing press of the present invention;

FIG. 2 is a sectional view taken along the line 2–2 of FIG. 1;

FIG. 3 is a sectional view taken along the line 3–3 of FIG. 1;

FIGS. 4A and 4B, when placed end to end with FIG. 4A on the right, make up a side elevational view of the printing press of the present invention;

FIG. 5 is an elevational view of the opposite side of the printing press;

FIG. 6 is a top plan view thereof;

FIG. 7 is a top plan view of the constant tension paper feed;

FIG. 8 is an end elevational view of sail constant tension paper feed;

FIG. 9 is a side elevational view of the printer;

FIG. 10 is an end view of the printer of FIG. 9;

FIG. 11 is a sectional view of the diecutter of the printing press of the present invention;

FIG. 12 is a side elevational view of the stripper of the present invention;

FIG. 13 is a sectional view taken along the line 13–13 of FIG. 12;

FIG. 14 is a sectional view taken along the line 14–14 of FIG. 4B;

FIG. 15 is an end elevational view of the cutter of the present invention;

FIG. 16 is a sectional view taken along the line 16–16 of FIG. 15;

FIG. 17 is a top plan view of the drive mechanism of the cutter;

FIG. 18 is a side view of the takeup mechanism; and

FIG. 19 is a sectional view taken along the line 19–19 of FIG. 18.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail, and particularly to FIGS. 4A, 4B and 5 thereof, the printing press 10 of the present invention includes a constant tension feed 12 for paper, here shown as label paper 14 which will be described in greater detail hereinafter, a printing head 16, a diecutter 18 for severing the printed label from the unwanted surrounding material, a stripper 20 for removing unwanted material from the label stock, a slitter 22 for cutting the backing material of the label stock, a transverse cutter 24 for cutting the printed labels in integral groupings if desired, and a takeup mechanism 26 for receiving the printed labels when it is desired to maintain them in a continuous strip. Also included in the printing press 10 are a plurality of means 28 for advancing the paper stock 14 in a step-by-step motion through the printing press 10. While any form of motive power may be employed for the printing press 10, as shown therein all of the motive power for all of the press 10 save for the ink supply of printing head 16 which will be described in detail hereinafter, is supplied by a motor 30 through belts, gears and linkages to be described hereinafter.

While the present invention can be employed for printing on various types of paper stock, it finds its greatest utility in the printing and forming of pressure sensitive adhesive-backed labels. The stock 14 for such labels commonly includes label surface paper 32 which has an undercoating or backing 34 of pressure sensitive adhesive which adhesive is protected by a relatively low adherent backing paper 36 which backing paper may be readily stripped from the adhesive 34 without pulling the adhesive 34 off the label paper 32. Sectional views of the label paper may be seen in FIGS. 2 and 3.

As may have already been inferred from this description and as illustrated in FIG. 1, the printing press 10 performs a series of interrelated functions to convert a reel 38 of label paper stock 14 into individual labels 42 or groups thereof 44. Thus, with reference to FIG. 1, it can be seen that the label stock 14 as it emerges from the reel 38 is blank, as designated by the reference character 14A. At the printing head 16 indicia to form labels are printed on the surface 32, as designated by the reference character 14B. At the diecutter 18 the label facing 32 and its adhesive backing 34 are die-cut to their final label shape as represented at the portion of strip 14 designated by the reference character 14C. Thereafter, at the stripper 20, excess label surface material 32 and its adhesive backing 34, that, is the unwanted material between the now die-cut labels, is stripped away from the backing sheet 36 and onto a reel of the stripper 20 in a manner to be described hereinafter, whereby to leave islands of labels on the backing sheet 36 as isolated and unconnected pieces, which condition can be seen in the vicinity of the reference character 14D. The now printed, die-cut and stripped labels are subsequently slitted to remove unwanted longitudinal marginal edge portions of the backing sheet 36 and, if desired, to separate the transversely spaced label strips 46, 48 and 50 from one another, as designated by the reference character 14E. Thereafter the backing sheet 36 may be cut transversely in a cutter whereby to yield a grouping of labels which may be in integral numbers, as represented at the portion by the reference character 14F. In the alternative the strips 46, 48 and 50 can be rolled as continuous strips up onto a takeup reel.

As previously mentioned, excepting for the operation of the inking rollers of the printer 16, which are driven by separate motor means to be described subsequently, all of the motive power for the various components of apparatus 10 is derived from the motor 30. Specifically, a pulley 52 is secured to the output shaft 54 of the motor 30. Extending around pulley 52 is a belt 56 which also extends around a pulley 58 which is fixed to a shaft 60 that is journaled in bearings secured to the main frame 62 for the printing press 10. Also secured to shaft 60 is a pinion 64 which is in meshed relation with a gear 66 that is secured to one of the main power shafts 68. Also fixed to power shaft 68 is a gear 70 that is in meshed relation with a gear 72 carried by a shaft 74 that is journaled to the frame 62. Secured to shaft 74 to the right of gear 72, as viewed in FIG. 5, is a bevel gear 76 that is in meshed relation with a bevel gear 78 that is carried by a transversely extending shaft 80. The shaft 80 extends the full width of the frame 62 and carries at its other end, as best viewed in FIG. 4B, a gear 82.

Eccentrically mounted on the gear 82 is a connecting rod 84, the amount of eccentricity thereof being adjustable by a conventional screw adjustment 86. Pivotally mounted on the free end of connecting rod 84 as at pivot 88 is a rack 90 which is slidably disposed in a bracket 92 secured to the frame 62. A pinion 94 which is in meshed relation with rack 92 is secured to a transversely extending shaft 96 that extends the width of the machine 10 and has fixed to its opposite end (FIG. 5) a bevel gear 98 that is in meshed relation with a bevel gear 100 that is carried by a power shaft 102 that is rotatably journaled in a plurality of spaced bearings 104. Each of the feed mechanisms 28 is powered directly or indirectly off the power shaft 102.

It will be obvious to anyone skilled in the art that all of the moving elements in the power train described in the preceding paragraph from motor output shaft 54 through pinion 82 are rotating continuously. However, it will further be obvious to those skilled in the art that through the eccentric mounting 83 of connecting rod 84 and through the rack and pinion arrangement 94 associated therewith, shaft 96 does not rotate continuously but rotates only intermittently. Thus, as rack 90 moves to the right during its reciprocating motion, it will move pinion 94 in a counterclockwise direction. Through a one-way clutching arrangement for securing pinion 94 to shaft 96, when rack 90 moves to the left as viewed in FIG. 4B to rotate pinion 94 clockwise, shaft 96 will be held stationary. To assure no clockwise rotation of shaft 96 as viewed in FIG. 4B, a ratchet is fixed to shaft 96 and cooperates with a dog 108 to prevent such clockwise rotation. Thus, shaft 106 rotates counterclockwise intermittently during the rotation of gear 82 and the intermittent rotation of shaft 96 is imparted through gears 98 and 100 to shaft 102 which also rotates intermittently to actuate, in a manner to be described hereinafter, the feeding mechanisms 28 intermittently whereby to advance the label paper 14 in a step-by-step movement through the machine 10. Except for a proportioning of the feed rollers, each of the feed mechanisms 28 is constructed substantially identically.

Excepting for the rightmost paper feed device 28, which device shall hereinafter be referred to as paper feed device 28A, each of the paper feed devices obtains power from power shaft 102 by virtue of a bevel gear 110 secured thereto which bevel gear is in meshed relation with a companion bevel gear 112 secured to a roller shaft 114. Mounted on the roller shaft 114 is a feed or power roller 116 which rotates intermittently in response to rotation of the power shaft 102. The roller shaft 114 extends transversely of the frame 62 and is rotatably mounted thereon. Secured to the sides of the frame 62 are a pair of upstanding supports 118 which supports are U-shaped in elevational view. Slidably mounted between the legs 120 and 122 of U-shaped support 118 is a bearing block 122 on which is rotatably mounted an idler or pressure roller shaft 124. Extending across the tops of the legs 120 and 122 and secured thereto is a bar 126 having a threaded aperture 128 extending vertically therethrough. Threadedly mounted in the threaded aperture 128 is a manually adjustable screw 130 the bottom of which is in engagement with the bearing block 123. Mounted on the idler roller shafts 124 are a pair of idler or pressure discs 132 of substantially identical diameter to the drive roller 116. The amount of pressure applied by the pressure discs 132 to the drive rollers 116 is adjustable by rotation of the adjustment screws 130 which move the idler shaft 124 vertically to move the idler discs 132 into tighter or less tight engagement.

With the structure of the feed mechanisms 28 as described, it will be obvious that each time drive shaft 102 rotates, each of the drive mechanisms 28 will operate to advance paper sandwiched between the drive rollers 116 and the pressure discs 132 a predetermined amount which is adjustable by adjustment of the amount of linear movement of the rack 90 by virtue of the eccentric adjusting means 86.

As already indicated, each of the paper feeding devices 28 is substantially identical in construction save for the proportioning of parts. Specifically, the feed rollers 112 of each of the feed mechanisms 28 are increasingly larger as the feeding device is located more remotely from the paper supply mechanism 12. Thus, as viewed in FIG. 5, the power roller 112 of the leftmost mechanism 28 is slightly less in diameter than the power roller 112 of the mechanism 28 to the right thereof, etc. The slight variation in the diameters of the power rollers 112 of the feed mechanisms 28 is for the purpose of assuring that the label paper 14 is under tension at all times as the paper advances from the supply mechanism 12 through the printing head 16 and the portions of the press 10 therebeyond.

As indicated earlier, the power train for supplying the rotational power to the drive roller 112 of the feed mechanism 28A is somewhat different from the mechanisms for powering the other feed rollers 112 of the other drive mechanisms 28. Specifically, and as best seen in FIG. 5, a spur gear 134 is secured to the pressure roller shaft 124 of the rightmost feed mechanism 28 of FIG. 5, which spur gear is in meshed relation with the first gear 136 of a spur gear train including gears 138, 140 and 142, the latter being secured to the shaft of drive roller 112 of the feed mechanism 28A. In this manner power is taken off the power shaft 102 and supplied to the drive roller 112 of feed mechanism 28A.

PAPER SUPPLY MECHANISM

Referring now especially to FIGS. 4A, 7 and 8, the paper supply mechanism 12 is shown in detail. The mechanism 12 is primarily mounted on a horizontally extending cantilever beam 144 that is secured to the base 62 of machine 10. Secured to the upper surface 146 of beam 144 is a bearing block 148 in which is pivotally or rotatably mounted a shaft 150 to which is fixed a U-shaped member or lever 152 that carries between its arms 154 and 156 a brakedrum or roller 158. Fixed to U-shaped member 152 as by welding or suitable securing elements is a horizontally extending counterbalance arm 160 on which is disposed a counterbalance 162 which may be moved longitudinally of the counterbalance arm 160 and then releasably secured in a preferred position as by a setscrew 164. Also fixed to U-shaped member 152 as by welding or by suitable securing elements is an upstanding arm 166. Pivotally mounted at the upper end of the upstanding arm 166 is a bell crank-shaped member 167 the horizontal portion of which is a roller 168. Threadedly secured to the vertical portion 169 of member 167 is a thumbscrew 171 which is adjustably threadedly secured to the upstanding arm 166. The horizontal positioning of roller 168 may be adjusted by operating the thumbscrew 171 whereby to insure that there will be no side or lateral movement of the paper 14 as it moves off the reel and into the remainder of the machine 10. In addition, the member 167 and its associated parts play an important role in maintaining tension on the paper as it comes off the reel as will be described hereinafter. Cantilevered outwardly of the arm 154 of U-shaped member 152 is a rotatable shaft 170 on which is mounted a spool comprising a hub 172, a first side disc 174 and a removable second side disc 176, the roll of paper 178 being disposed on the spool 172 between the side

discs 174 and 176. Connected by a bracket 178 to cantilever 144 is a brake member 180, preferably made of wood although other friction material may be employed, which brake member is provided with an arcuate braking surface 182 complementary to the brakedrum 158 for reception thereof.

With the described brake, the amount of braking force applied between the brakedrum 158 and the brake member 182 is a function of the weight of the reel of paper 178 and of the weight of the counterweight 162 and the position of the counterweight on the lever 160. Accordingly by adjusting the position of the counterweight 162 on lever 160 at the outset of a run, the amount of tension on the paper can be established, as this will be a function of the braking force on the braking drum 158, and of the inertia of the paper reel 178. It will be seen that as paper is consumed from the reel 178, the amount of inertia of the reel will decrease. Concomitantly, the amount of braking force, which is dependent upon the weight of the reel, will also decrease and it has been found that these decreases tend to offset one another thereby to maintain a constant tension on the paper 14. In addition, it will be seen that if there is undue tension on the paper as it moves off the reel 178, this tension will tend to act in a horizontal direction on the roller 168 whereby to pivot the arm 166 clockwise as it is viewed in FIG. 5. This pivotal movement of arm 166 will tend to release the brake 158—180 whereby to reduce the tension on the paper in order to maintain a substantially constant tension thereon.

Mounted on cantilever 144 by a rotatable pin 184 is a lever 186 having a pair of rollers 188 and 190 on its free ends. Also secured to the rotatable pin 184 is a crank 192 the free end of which is secured to a tension spring 194 which is anchored at its other end to a fixed anchor 196 that is secured to the cantilever 144. Thus the spring 194 tends to rotate the crank 192 and hence the lever 186 in a counterclockwise direction. It will be seen that the tension on the paper 14 as it passes about rollers 188 and 190 will tend to rotate the lever 186 in a clockwise direction. By adjusting the tension of spring 194 as well as from braking force between breakdown 158 and brake 182, the lever 186 can be positioned substantially vertically. The substantially vertical positioning of lever 186 thereafter will indicate that the appropriate amount of tension is applied to paper 14.

In use, a reel 178 of label paper 14 is positioned on the spool 182 and is held there as by the affixing of the removable sideplate 176. The paper is then lifted off the reel to cause the reel to rotate either clockwise or counterclockwise, (the supply mechanism 12 works just as well irrespective of the direction of removal of the paper 14) and thence over roller 168 and about roller 188 and roller 190, and then to an upward directional guide means comprising a roller 198 and two pairs of rollers 200 and 202 which are secured between a pair of brackets 204 fixed to the frame 62, and thence in tangential contact with a guide roller 206 and finally into the first feed mechanism 28 as described above. As the feed mechanism operates to advance paper 14 the paper will be stripped off the reel 172 and advance along the described path moving in the direction of the printer head 16.

THE PRINTER HEAD

Referring now particularly to FIGS. 9 and 10, the printer head 16 comprises a pair of side members 208 and 210 which are mounted on the sides of frame 62. Printer head 16 includes between its side members 208 and 210 an ink supply means 212, a vertically movable printing platen 214, preferably made of steel or other highly durable material, a stationary resilient platen 216, a main inking roller 218 for inking the printing platen 214 before each impression thereby, means for moving the printing platen 214 downward and upward, which means are generally designated by the reference character 220, and means for moving the main inking roller 218 back and forth in a horizontal movement across the printing platen 214, which means are generally designated by the reference numeral 222.

Ink supply means 212 includes an ink well 224 which supplies ink to an intermittently operable rotatable main feed roller 226. Main feed roller 226 is journaled in sideplates 208 and 210. Fixed to the shaft of main feed roller 226 is a ratchet 227. Engageable with the ratchet 227 is a pawl 228 that is carried by the end of a connecting member 229. Member 229 is pivotally mounted on the roller shaft for roller 226 and is provided with a slot 230 through which extends a threaded element 231 that is adjustable by means of a knurled head 232. Disposed on the threaded member 231 is a nut 233 which is pivotally connected as at 235 to the end of a link 237, the other end of which is eccentrically mounted as at 239 on a member 241 which is secured to the shaft of a roller 244 which rotates in a manner to be described hereinafter.

When the roller 244 rotates a reciprocating movement will be imparted to the link 237 which movement will in turn impart an oscillating motion to the member 229 and the oscillating motion thereof being converted into an intermittent rotating motion of the ratchet 227 by virtue of engagement by the pawl 228. Thus the roller 226 will advance intermittently.

It will be obvious that by rotating the screw 231 by means of the knurled head 232, the nut 233 will move up and down away from the center of rotation of the pivot of the member 229 whereby to adjust the length of the lever arm on which the link 237 acts on the member 229. This adjustment will result in an adjustment in the amount of rotation imparted to ratchet 227 and roller 226 during each 360° of rotation of the roller 244. In this manner the quantity of ink picked up by roller 226 from ink well 224 may be adjusted.

Ink from the roller 226 is taken therefrom by a roller 234 which roller 234 reciprocates into and out of engagement with the surface of roller 226 and out of and into engagement with the surface of a first intermediate ink supply roller 238, the reciprocating movement thereof being imparted in a manner to be subsequently described in this specification.

In accordance with one feature of the present invention, intermediate ink supply roller 238 is in ink transferring engagement with a pair of ink transfer rollers 240 and 242 whereby to establish two parallel paths for inking the main inking roller 218 in a manner to be described hereinafter. Intermediate ink supply rollers 240 and 242 are in ink transferring engagement with intermediate inking rollers 244 and 246, respectively, which rollers are positioned at the ends of the path of travel of the main inking roller 218 and for engagement therewith at both ends of the travel of the main inking roller 218. Fixed to the shafts which carry the intermediate rollers 240, 242, 244 and 246 are meshed gears 248, 250, 252 and 254, respectively, which gears are fixed to the shaft for rotating their respective rollers. Motor power for the rollers comes from a gear motor 256 having an output shaft 258 which is secured to a chain sprocket 260. Extending around the chain sprocket 260 is a chain 262 which also extends around a chain sprocket 264 that is secured to the shaft for the roller 246. Thus, the operation of motor 256 will provide rotational power through the chain drive to roller 246 and through meshed gears 248—254 to rollers 238—244. By controlling the speed of motor 256 it will be obvious that the rate of supply of ink from the well 224 to the rollers 244 and 246 can be controlled independently of the rate of advance of paper 14 through the machine 10.

As previously stated, the roller 234 reciprocates into and out of engagement with rollers 226 and 238. This reciprocating movement is accomplished by rotatably securing roller 234 on two spaced-apart cantilevered supports 245, each of which is fixed to a shaft 247 that is rotatably mounted on the side members 208 and 210 of the printing head 16. Fixed to the shaft 247 and extending outwardly therefrom is a cantilever member 249 which is pivotally secured as at 251 to a link 253 which link is eccentrically mounted on a member 255 that is secured to the shaft of the roller 244. Thus, when roller 244 rotates as previously described, a reciprocating movement will be imparted to link 253 which movement will cause cantilever

member 249 and shaft 247 to oscillate, and the oscillating movement thereof will cause the roller 234 to move back and forth into and out of engagement with roller 226 and out of and into engagement with the first intermediate inking roller 238.

Thus, it will be seen that all of the moving parts relating to the ink supply are controlled by and powered by the motor 256 and can be adjusted in the degree of speed of action by adjusting the speed of the shaft 258 of motor 256. Accordingly, as already indicated, the ink supply is independent of the feed of the paper and can be adjusted independently thereof.

The purpose of setting up two separate paths of inking as above described is to permit main inking roller 218 to be inked at the end of each movement across the platen 214 whereby to increase the speed of the printing head 16 by having one inking of platen 214 as the main inking roller moves from its extreme left-hand position shown in dotted lines in FIG. 9 to its extreme right-hand position shown in solid lines in FIG. 9 in which right-hand position, as will be described hereinafter, a printing impression will be made, thereafter to cause the inking roller 218, which has been resupplied with ink by roller 246, to move once again over platen 214 to reink it as the inking roller 218 moves from its extreme right-hand position to its extreme left-hand position in which extreme left-hand position another impression will be made by the printing head 16 by operation of the platen 214 in a manner to be described hereinafter. Thus at each extreme position, the roller 218 will come to rest and will be inked, depending upon position, either by roller 244 or by roller 246.

As just indicated, platen 214 moves down to print an impression on paper 14 that is resting on resilient platen 216 and then moves up to be reinked. To effect this vertical reciprocable movement of the platen 214, platen 214 is fixed to a support plate 272 that has secured thereto at its four corners vertically extending rods 274 that are slidably mounted in fixed brackets 276 for vertical movement with respect thereto. The bottoms of the rods 274 are hollowed as at 278 for receiving upwardly extending pins 280 about which are disposed compression springs 282 for biasing the rods 274 and the platen 214 upwardly. Secured to the four vertically extending rods 274 beneath platen 216 is a plate 284 that moves up and down together with the platen 214.

Plate 284 is provided along its two sides with vertically extending plates 286, each of which has a downwardly extending ear 288 which carry therebetween a pivot pin 290. Extending downwardly from both ends of the pivot pin 290 are links 292, the bottom ends of which are pivotally connected as by pins 294 to cam driven levers 296 that are pivotally mounted on the side members 209 and 209 as by pivot pins 298. Rotatably mounted on levers 296 intermediate their two ends are rotatable cam followers 302.

To move the platen 214 up and down, a pair of cams 306 both of which are approximately oval in shape are associated with the cam followers 302. Preferably, the oval form is modified by flattening the cam periphery adjacent both the major and minor axes to give dwell periods as will be described. Both cams 306 are fixed to a cam shaft 310 at opposite ends which cam shaft is driven in a manner to be described hereinafter.

Commencing with the position of the cams 306 illustrated FIG. 9 wherein low points of cams 306 are in engagement with cam followers 302 whereby to permit the printing platen 214 to be held in its raised position, as illustrated, by the urging of springs 280, when shaft 310 rotates, the high points 306A of cams 306 will move toward engagement with cam followers 302 whereby to cause the platen 214 to move downwardly against the urging of the springs. This movement will continue until the high points 306A of cams 306 are in engagement with followers 302. At this point platen 214 is fully depressed into engagement with the underlying paper on platen 216 and is held for a brief interval by the flatness of high points 306A. The printing impression resulting from the positive pulling of the platen 214 into printing engagement with paper 14 overlying platen 216 through the cam means and the links 292 acting on platen 214 will be sharp and well defined and far superior to that which can be achieved by gravity or spring bias alone, especially in any practical design wherein cam means will have to raise and lower the platen 214.

After printing has been effected by the positive application of printing pressure through cams 306 operating on levers 296, high points 306A of cams 306 will commence moving counterclockwise away from cam followers 302 whereby to remove the positive application of downward force thereon. This removal of downward force will permit the biasing of springs 280 to move the movable platen assembly upwardly to withdraw platen 214 from its printing position against paper 14. When platen 214 is returned to its raised position, it is held there for a brief time interval by the cams 306 which have flattened low points as well as flattened high points 306A and 306B. During the time the platen 214 is held stationary in its raised position the main inking roller 218 is moved from one extreme position to the other to ink platen 214. It will be obvious, viewing FIG. 9, that cams 306 effect two upward and downward movements per complete revolution of shaft 310. This is to say, the cams 306 are provided with two opposed high points 306A and 306B, each of which will move the cam followers 302 to their extreme depressed positions and thereby move platen 214 to its extreme lowered position against the bias of springs 280.

As previously mentioned, platen inking roller 218 reciprocates back and forth over the surface of the platen 214 to ink the platen upon each application of printing force on paper 14. This reciprocating movement is accomplished by journaling the shaft 312 upon which roller 218 is carried on to a pair of oscillatable arms 314 and 316 that are both fixed to an oscillatable shaft 318 which extends between and is mounted on sides 208 and 210. As shaft 318 is operated back and forth in the manner to be described hereinafter, arms 314 and 316 will swing back and forth whereby to move roller 218 back and forth in the described manner. In order to oscillate shaft 318, a suitable means for accomplishing this function must be included. As shown herein that means is a barrel cam 320 which is fixed to and rotatable with a shaft 322 that is driven by a gear 324. As best seen in FIG. 10, gear 324 is in meshed relation with a gear 325 that meshes with a gear 327 which is in turn in meshed relation with a gear 329 that is secured to main power shaft 68 as may be seen in FIG. 5. Thus as shaft 68 is rotated in the manner previously described, gear 324 will be caused to rotate through the gears 327 and 325 to rotate shaft 332 on which the barrel cam 320 is fixed whereby to rotate the barrel cam. Disposed in the track of barrel cam 320 is a cam follower 326 which is rotatably secured to a slide 328 that is slidably mounted on a pair of longitudinally extending rods 330. Pivotally mounted on slide 330 is a link 331, the other end of which is pivotally connected to the end of a crank 332 which is fixed to the shaft 318. As barrel cam 320 is rotated, follower 326 will be moved back and forth from an extreme left-hand position designated in FIG. 9 as 326A and from and to an extreme right-hand position designated in FIG. 9 as 326B, whereby to move the arms 314 and 316 from their extreme left-hand and right-hand positions shown in FIG. 9 to move the roller 218 left to right and right to left over platen 214. Barrel cam 320 is so shaped that each time platen 214 is moved to its raised position by one of the high points 306A and 306B of cam 306, inking roller 218 will be moved over the surface of platen 214 to ink the platen for the next operation.

As previously mentioned, the reciprocating movement of the platen 214 is effected by the cam means 306 which are driven by the shaft 310. The shaft 310 obtains its power from the shaft 322 and on which the barrel cam 320 is disposed. Specifically, and as best illustrated in FIG. 10, secured to shaft 322 and 310 are a pair of intermeshing helical gears 323 and 325 which cause the takeoff of power from the shaft 322 to the shaft 310. Naturally other forms of gearing could be employed. It will be obvious that these two gears have a one-to-

one gear ratio whereby to operate the shaft **310** at the same speed as the shaft **322** to ensure appropriate timing of the mechanism as already described.

It will be obvious to anyone skilled in the art that as arms **314** and **316** move back and forth to move inking roller **218** across platen **214**, they will move through a circular path. Thus, if roller **218** were fixedly rotatably mounted on the arms **214** and **316** it too would describe an arcuate path. Clearly this is undesirable in view of the flatness of platen **214**. To avoid this, main inking roller **218** is fixed to a shaft **321** which is disposed in slots **323** and **325** on arms **314** and **316**, respectively. Disposed in the slots are compression springs **327** and **329** which bias the shaft **321** and hence the roller **218** towards the extreme ends of the arms **314** and **316**. However, as the roller engages the platen **214** it will move relative to the arms **314** and **316** longitudinally thereof whereby to describe a straight horizontal path as it moves over the platen **214**.

It will be noted further that the entire printing head **16** is adjustably positionable on frame **62** by means that are well known in the art whereby to ensure proper registration of the steel printing guide on the movable platen **214** with the label paper. This is especially desirable when more than one printing head is disposed on the frame **216** as in printing a multicolor label wherein one head is used for each color. In such an arrangement registration is clearly important to secure a high quality label and this registration is effected by longitudinal movement of the entire printing head through well-known means.

THE DIECUTTER

After paper **14** has been printed by print head **16**, the next element of the machine **10** which it will encounter is the diecutter **18**. The purpose of diecutter **18** is to sever the label being formed from the surrounding unwanted portions of paper **14**, without severing the underlying backing paper **36** whereby to enable the backing paper **36** to continue to transport the label so severed through the various remaining operations of the machine **10**. Thus, with reference to FIGS. **2** and **3**, it will be seen that the diecutter **18** is designed to cut the label surface material **32** and its adhesive backing **34** from the unwanted surrounding portions thereof but not the backing sheet **36**.

Referring now to FIGS. **4B** and **11**, the diecutter comprises a stationary lower platen **350** and a movable die **352** which is removably secured to a movable plate **354** which moves the die **352** into and out of diecutting relation with paper **14** disposed between the platen **350** and the die **352**.

Specifically, the stationary platen **350** is made of a slightly compressible material such as fiberboard which automatically will correct for any irregularities in the die **352** so that after a few impressions are made by that die, the die will only cut through those portions of the paper **14** designated by the reference numerals **32** and **34**. The fiberboard platen **350** is mounted on a strong substantially unyielding plate **356** which plate is secured to or possibly even a part of the frame **62**.

The movable plate **354** which carries die **352** is mounted adjacent one end by a pair of stationary links **358** and **360**, the mounting being accomplished by means of pivot pins **362** and **364** which extend through the links **358** and **360**, respectively, and into the sides of the movable plate **354**. At the opposite ends of plate **354** from links **358** and **360**, there are a pair of vertically reciprocably movable links **368** and **370** which links are pivotally connected as by pivot pins **372** and **374** at their tops to plate **354**, and are pivotally connected at their bottoms to eccentrically disposed pins **376** and **378** which are carried by rotating discs **380** and **382**, respectively. The rotating discs **380** and **382** are both fixed to a rotatable shaft **384** which has fixed centrally thereof a spur gear **386** which, as best seen in FIG. **4B**, is in meshed relation with an intermediate gear **390** that is in turn in meshed relation with a gear **392** secured to transversely extending shaft **80**.

As will be recalled from the description of the advancing means **28** and **28A**, shaft **80**, which is driven through belts and gearing by motor **30**, rotates continuously. Thus, with shaft **80** rotating continuously through the gears **390** and **392**, rotational movement will be imparted to discs **380** and **382** whereby to impart to vertically extending links **368** and **370** a vertical reciprocable movement to move the plate **354** and its attached die **352** from a raised position shown in dotted lines in FIG. **4B** to a lowered position shown in solid lines in FIG. **4B**, whereby to bring the die **352** out of and into cutting relation with paper **14**. It should be noted in this connection that when plate **354** and its underlying die **352** are in their raised or dotted line position as shown in FIG. **4B**, the plate **354** and the underlying die are disposed at a slight angle to the horizontal. This disposition enables the plate **354** to be brought into a horizontal orientation when it is in its lowest position whereby to ensure uniform cutting of the label by mechanism **18**. Moreover, with movable plate **354** connected to links **368** and **370** at both sides of the plate, a uniform application of diecutting force is secured.

The eccentric connecting pins **376** and **378** are located with respect to discs **380** and **382** so that plate **354** and its underlying die are in their raised position when the paper **14** is being advanced through machine **10** by the advancing means **28** and **28A** and are in their lowered position to cause operation of the die when the advancing means are stationary whereby to have the paper **14** stationary when the die-cutting is effected.

STRIPPER

Having now printed a label by means of printing head **16** and having die-cut the label from the remaining label material and its pressure sensitive adhesive backing (but not the supporting sheet **36** underlying both), apparatus **10** is now employed to remove that portion of label paper **14** not forming the labels being made. That is to say the stripper **20** is employed to remove those portions of layers **32** and **34** from paper **14** that are not employed in forming the actual labels being made. This is accomplished by directing the unwanted portion of the paper **14**, hereinafter designated by the reference numeral **400**, onto a drum **402** that is rotated through a slip clutch drive illustrated in one mode of use in FIG. **12** and **13** and in an alternate mode of use in FIG. **4B**.

The drum **402** is fixed to a rotatable shaft **404** that is rotatably disposed on an upstanding support plate **406**. Also fixed to shaft **404** is a pulley **410** about which extends a belt **412** which also extends about a belt **414** that is fixed to the output shaft **416** of a pulley driven slip clutch **418** the input being through a pulley wheel **420**. The slip clutch **418** may be of any well-known design and as illustrated in FIG. **18** is of a well-known type having a torque output which may be adjusted by means of adjusting means **422**. As best seen in FIG. **5**, the clutch input pulley **420** has extending thereabout a belt **422** which belt also extends about a pulley **424** that is fixed to the shaft **426** of slitter **22** to be described hereinafter. Shaft **426** also carries a gear **428** which is in meshed relation with a gear **430** which is in turn in meshed relation with a gear **142** of the paper advancing means **28A**. Accordingly, each time paper advancing power roller **112** is operated through the gear train **98—142**, pulley wheel **424** will rotate to move the belt **422** and pulley wheel **420**. This movement of pulley wheel **420** will in turn impart torque to pulley wheel **414** through the slip clutch mechanism **418**. Depending upon the amount of torque imparted to pulley wheel **414**, pulley wheel **410** will turn to thereby move some of the removed and undesired portion of label paper **14**, namely strip **400** from the base member **36**.

The success of the above stripping arrangement is dependent in part on the use of the slip clutch mechanism **418** which ensures that an appropriate amount of stripping force or tension is applied to strip **400** for separation it from its underlying supporting layer **36** and to the fact that immediately in advance of and behind the stripper **20** there is a feed mechanism **28** and **28A**, respectively, which mechanisms ensure the

proper holding of the underlying layer 36 to permit the separation of strip 400 therefrom at whatever angle is necessary to yield a separating force component of proper magnitude.

As best illustrated in FIG. 12, the control of the tension on strip 400 can include additional means not illustrated or described in connection with FIG. 4B. Specifically, additional tension regulation means may be included in the form of a pair of sideplates 432 and 434 which sideplates are secured to frame 62 in any suitable manner and present an inclined surface 436 along their respective upper edges. The surface 436 inclines downwardly in the direction of movement of the paper 14. Disposed on the inclined surfaces 436 of the plates 432 and 434 and extending transversely therebetween, is a rotatable rod 438 about which extends the strip 400. The rod 438 is relatively heavy, as it is made from steel or the like, and tends to apply tension to the strip 400 between reel 402 and rod 438. If there is insufficient stripping force to remove the layer 400 from the paper 14, the tension between rod 438 and 402 will increase whereby to cause strip 400 to move the rod 438 to the left as viewed in FIG. 12 and thereby cause the stripping of the unwanted strip 400 from paper 14 at an angle less acute than that shown in FIG. 12 whereby to make the tensile force in the strip 400 more effective for stripping the strip 400 off the layer 14. Thus means are provided for varying the stripping force in accordance with the amount of adhesion between the strip 400 and the underlying support layer 36. However, as already indicated as is illustrated in FIG. 4B, the use of the rod 438 and the inclined surface 436 can be deleted without departing from the present invention.

Another alternate form of stripper is one in which rod 438, rather than being movable, is fixed, whereby to provide for a minimum stripping angle.

TRANSVERSE CUTTER

As already indicated, transverse cutter 24 is of optional use in the machine depending on whether or not labels are to be cut in multiples of one or are to be taken up on a continuous reel of labels. If it is desired to cut the labels in multiples of one then the cutter 24 is employed.

Referring now in detail to FIGS. 15 and 17, cutter 24 includes a transverse support member of crosspiece 450 which is fixed to frame 62. Depending from member 450 is a pair of bolts having nuts 453 at their bottoms. The nuts 451 pass through apertures 455 in an underlying support plate 457 which is not connected to the crosspiece 450 but does support an aluminum block 461 which aluminum block underlies a knife blade 454. When the knife blade is moved downwardly in a manner to be disclosed hereinafter, it will cut through the paper 14 underlying it and impinge against the relative soft aluminum block 461. The shock of the engagement of the knife blade 454 with the block 461 is taken up by means of the underlying support 457 for the aluminum block 461 and the spring biasing mechanism made up of the spring 458, the nut 453 and the bolt 451. Thus the aluminum block will move downwardly under force of the knife blade 454 whereby to reduce the amount of impact of the knife blade on the aluminum block and thereby preserve the knife blade. Inclusion of the aluminum block is desirable because it is relatively soft as contrasted with the knife blade made of hard steel. After repeated operations, the knife blade will cause a slight groove or depression to appear in the aluminum block 461 whereby to yield a perfectly complementary surface for the knife blade in the aluminum block and thereby give a long lasting clean cutting mechanism which is practically maintenance free.

The knife blade 454 is removably carried in a clamp mechanism 456 that is carried by a vertically reciprocally movable plate 458. Disposed at the ends of the plate 458 are a pair of cylindrical bushings 460 and 462 each of which has passing therethrough a circular rod or shaft 464 and 466, respectively, whereby to vertically movably mount the plate 458 and its knife 454. Underlying bushings 460 and 462 in surrounding relation with the vertical shaft 464 and 466 are a pair of compression springs 468 and 470, respectively, which springs bias the bushings 460 and 462 and their intervening plate 458 upwardly for reasons to become apparent hereinafter.

As will be seen in FIG. 16, the plate 458 is actually formed of two spaced-apart plates 470 and 474 which are secured to one another by the bushings 460 and 462. Disposed in the space 476 between the plates 472 and 474 are a pair of rollers 478 and 480 which serve as cam followers in a manner to become apparent hereinafter. Specifically, it will be seen that the rollers 478 and 480 are in engagement with the high points 482 and 484 of frustoconical camming means 486 and 488, respectively, which camming means, as will be seen hereinafter, are shiftable horizontally whereby to move the low portions 490 and 492 thereof into engagement with the rollers 478 and 480, respectively, to thereby move the rollers downwardly and hence move the plate 458 and the knife 454 downwardly against the bias of the springs 468 and 470. This downward movement will cause the blade 454 to move into the groove 452 and thereby cause a cutting action as will become apparent.

Specifically, both frustoconical camming means 486 and 488 are secured to a horizontal shaft 494 which shaft is slidably disposed in a slot 496 in a central bearing piece 498 to permit the horizontal movement of the shaft 494. Bearing piece 498 depends from upper crosspiece 500 that is secured to the upper ends of the shafts 464 and 468 as by screws 502. Rotatably mounted on crosspiece 500 are a second pair of rollers 502 and 504, which rollers are also in engagement with the frustoconical camming means 486 and 488. It will be obvious to anyone skilled in the art that as the springs 468 and 470 push the plate 458 upwardly whereby to push the rollers 478 and 480 into engagement with the camming means 486 and 488, respectively, there will be a biasing force on the shaft 494 in the leftward direction as viewed in FIG. 15, whereby to hold the shaft normally in a position with the low points of the camming means in engagement with the four rollers.

Means are provided for moving the shaft 494 in a rightward direction against the bias of the springs 468 and 470 whereby to depress the knife 454 and cause a cutting action. Specifically, a vertically extending portion 506 of a T-shaped lever 508 that is pivoted at 510 acts to shift the shaft 494 to the right when the lever 508 is pivoted in a counterclockwise direction as viewed in FIG. 15. Pivoting action is accomplished by fixing the lever 508 to an oscillating link 512 so that the lever 508 will swing with the link 512. This is accomplished in accordance with the present invention by providing at the right-hand end of the link 512, that is the end of the link 512 to the right of its fulcrum 516, an upstanding part 518 which has a horizontally cantilevered member 520 secured thereto in spaced relation with the upper surface of the right-hand end of the link 512. Pivoted on lever 508 is a member 522 having an end thereof which is movable into and out of the space 524 between the member 520 and the right-hand end of the link 514. When the member 522 is disposed between the member 520 and the upper end of the link 512, it fills the space 524 and thereby locks the lever 508 to the link 512 to cause the lever 508 to pivot with the right-hand end of the link 512. Thus motion is imparted to the member 508 and hence to its vertically extending part 506 which motion will cause the part 506 to move to the right and thereby force the shaft 494 to the right. However, when the member 522 is not disposed in the space 524, the link 512 will pivot back and forth in a manner to be described hereinafter and this pivotal movement will not be imparted to the T-shaped lever 508 and the latter will remain stationary whereby to cause the shaft 494 to remain stationary. The link 512 is oscillated by securing it in a pivotal manner as at 526 to a downwardly extending link 528 which is eccentrically connected as at 530 to a disc 532 secured to the shaft 68. Accordingly, as shaft 68 rotates link 528 will move upwardly and downwardly under the eccentric action of the connection 530 whereby to oscillate the link 512 upwardly and downwardly from its solid to its dotted line positions and

thereby to cause the right-hand end thereof to swing as previously described.

Two separate means are provided for holding the member **522** in the space **524** to cause the member **508** to oscillate in response to the oscillation of the link **512**. The first of these is a manual means wherein the member **522** is manually swung into the space **524** and a thumbscrew **525** is operated to clamp the member **522** in this position whereby to cause the T-shaped lever **508** to move up and down with each movement of the link **512**. Such an arrangement will cause the knife to operate once per rotation of the shaft **68** which rotation represents the printing of one label. Accordingly, if manual means is effected as just described, the labels will be cut in groupings of one.

A second means for operating the member **522** to cause the T-shaped member **508** to move the shaft **494** to the right is provided. This second means is arranged to permit such action on multiples of one rotation of shaft **68** whereby to cause an operation of the knife mechanism **24** on multiples of such rotation of shaft **68** to cut labels in groupings of more than one, namely two, three, four, etc. This is accomplished by means of a solenoid **534** having a normally extended armature member **536** which armature member is pivotally connected to the member **522**. When the solenoid is energized the armature member **536** will move to the right as viewed in FIG. **15** whereby to pivot the member **522** about its pivot point to cause the left-hand end thereof as viewed in FIG. **17** to move into the space **524** and thereby lock the link **512** to the T-shaped member **508** to swing the T-shaped member as previously described. However, there is no requirement that the solenoid be energized once per revolution on the shaft **68**.

In accordance with a feature of the present invention, the solenoid is operated by a switch that is disposed within a reduction gearing mechanism **540** that is driven off the main shaft **68** through gearing including a gear **542** and a gear **544** that is secured to the lower shaft of the slitter **22**. A dial and pointer on the face of the reduction gearing is calibarted so that it can be set to have an output ratio of 1:1, 1:2, up to perhaps 1:10. Fixed to the output shaft of the reduction gearing **540** is a switch operating member (not shown) which operates the switch once per revolution of the output shaft. As the output shaft can be set to operate at speeds which are integral reciprocals of the speed of the input shaft **68**, the switch will operate in multiples of rotation of the shaft **68**. Each time the switch is closed, the solenoid **534** is energized to move the member **522** into the space **524** to cause a rocking motion of the T-shaped member **508** whereby to depress the knife blade **454**. In this manner the knife blade can be caused to operate to cut the labels not only in groupings of one at a time but in groupings of two, three, four, etc., up to groups of 10 at a time.

In view of the fact that the cutter must cut in between labels, its position along the frame **62** may be critical. Accordingly, the cutter **24** is transversely adjustable on the frame **62** which adjustment is accomplished by means of a rack **546** fixed to the frame **62** and a pinion **548** fixed to the transverse support **450** but which pinion may be rotated by means of a crank **549** whereby to move the entire transverse cutter **24** forward and back to properly align it for cutting in between labels.

THE TAKEUP REEL

The takeup reel is illustrated in FIGS. **18** and **19**. The takeup reel comprises a main reel **550** which is fixed to a shaft **552** that has a pulley wheel **554** secured thereto. Shaft **552** is journaled in a pair of support arms **555** (FIG. **5**). Extending around the pulley wheel **554** is a belt **556** that also extends around a pulley wheel **558** fixed to the output shaft **560** of a reduction gearing unit **562**. The input of the reduction gearing unit is through a shaft **564** that carries thereon a friction wheel **566** that is normally in frictional engagement with a like friction wheel **568** fixed to the shaft **68**. Reduction gearing unit **562** is mounted on a shaft **570** that is rotatably mounted on a bearing **572** that is fixed to the frame **62**. Secured to the shaft **570** is an angle member **574** and a cantilever **576** carrying an adjustably positionable weight **578**. It will be obvious that the weight **578** on the cantilever **576** tends to rotate the shaft **570** in a clockwise direction which movement will swing the reduction gearing **562**, its input shaft **564** and the friction wheel **566** carried thereby into engagement with the driving friction wheel **568**. Pivotally mounted on the frame **62** as at **580** is a lever **582** which is in engagement with the horizontal portion **584** of the angle member **574**. Fixed to the pivot **580** for rotation with the lever **582** is an upstanding member **586** which has cantilevered at the upper end thereof a roller **588** over which the continuous strip of printed labels pass.

In normal operation the friction wheels **566** and **568** are held in frictional engagement by the weight **578** on the lever **576** together with the weight of reduction gearing **562** itself. Thus, friction wheel **566** will rotate to drive the reduction gearing and hence its output shaft **560** whereby to turn the pulley wheel **558** and drive the drive belt **56** to turn the pulley wheel **554** and the shaft **552** and thereby rotate the takeup reel **550** to take up the printed labels of the strip **14**.

However, in the event that the tension on the strip **14** grows excessive, the tension will tend to depress the roller **558** whereby to pivot the upstanding lever **586** and cantilever **582** and rotate them in a clockwise direction as viewed in FIG. **18**. This rotation will depress horizontal portion **584** of the angle member **574** whereby to rotate shaft **570** in a counterclockwise direction against the gravity bias of the weight **578** and thereby swing the reduction gearing unit **562** in a counterclockwise direction as viewed in FIG. **18** which will result in a swinging of the input shaft **564** and the friction wheel **566** in a counterclockwise direction to disengage the friction wheel **566** from the friction wheel **568** to thereby discontinue the rotation of the takeup reel **550**. This will relieve tension on paper **14**. When tension is relieved, roller **588** will move in a counterclockwise direction under the urging of weight **578** whereby to force the angle member **574** and the member **582** back to their initial positions to restore the mechanism to its initial condition so that it can again take up the strip **14**. In this way tension on the strip **14** during takeup operation is limited to an acceptable level well below the breaking point of the backing strip of the paper **14** so that a continuous unbroken strip is taken off the machine. In addition, the tension exerted by the takeup reel **550** through the above described mechanism is maintained at such a low level that there is a very little compression between adjacent layers of the strip **14** as it is taken up on the reel whereby to prevent a transfer of not fully dried ink from one printed label to the backing strip of the next label.

SUMMARY OF OPERATION

In summary, each time the drive rollers **112** of feeding means **28** and **28A** rotate to advance paper **14** off the spool **172** and toward the takeup reel **550**, the movable platen **214** of the printing head **16** will be out of its lowered position and the inking roller **218** will move between its two intermediate supply rollers **244** and **246** to ink platen **214**. At the same time, the movable die **352** of the die cutter will be raised so as not to interfere with the advancing of paper **14**. Simultaneously, the drum of the stripper will receive power to strip a section of unwanted label facing paper **32** from the labels and the backing strip **36**, and the slitter **22** will be operative for slitting the remaining portions of the paper **14** longitudinally, as desired. Assuming the transverse cutter is employed, the knife blade **454** will be in its raised position to permit an additional length of paper to pass thereunder for transverse cutting. Assuming the alternative in which the takeup reel is employed, torque will be applied to the takeup reel simultaneously with the operation of the advancing mechanisms **28** to take up an appropriate length of paper **14**.

Upon the advancing mechanisms **28** coming to rest, the movable platen of printing head **16** will move into impression-forming relation with paper **14** lying on platen **216**. Simultane-

ously, the diecutter 18 will operate to bring the movable die 352 into cutting relation with label surface paper 32, and the transverse cutter will operate (assuming this mode of operation to be used) to cut the stock transversely. At the same time that the paper 14 is stationary, the stripper receives no torque for stripping, the slitter is inactive for slitting and the takeup reel (assuming this mode of operation) is stationary.

While I have herein shown and described the preferred form of the present invention and have suggested modifications therein, other changes and modifications may be made rather than within the scope of the appended claims without departing from the spirit and scope of the invention.

I claim:

1. A diecutter comprising a stationary slightly deformable platen, a movable platen having a pair of spaced apart sides and including means for removably mounting a die thereon, means for mounting said movable platen for pivotal movement relative to said stationary platen from and to a first position in which said movable platen is in close confronting substantially parallel relation to said stationary platen and to and from a second position in which said movable platen is at an angle to and spaced from said stationary platen, and means for moving said movable platen to and from said first and second positions including a pair of reciprocably movable links, and means for pivotally connecting each of said links to one of said sides.

2. The diecutter of claim 1, wherein said stationary platen is made of fiberboard.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,592,091 Dated July 13, 1971

Inventor(s) Gerald J. Ottavan

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 5, line 40, "breakdown" should read --brake drum--.

Column 10,line 72, "separation" should read --separating--.

Column 11, line 20, "402" should read --reel 402--.

Column 14, line 19, "belt 56" should read --belt 556--.

Column 14, line 46, "is a" should read --is--.

Signed and sealed this 12th day of November 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

PR