United States Patent [19]

Woods

[11] **3,769,139**

[45] **Oct. 30, 1973**

[54] **LABELER**

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[73] Assignee: **Litton Business Systems, Inc.**, Belleville, N.J.

[22] Filed: **June 18, 1971**

[21] Appl. No.: **154,687**

Related U.S. Application Data

[63] Continuation of Ser. No. 597,585, Nov. 29, 1966, abandoned.

[52] **U.S. Cl.**..... **156/358,** 156/361, 156/363, 156/364, 156/366, 156/367, 156/384, 156/541, 156/542, 156/566

[51] **Int. Cl.**..... **B65c 9/02,** B65c 9/18, B65c 9/42

[58] **Field of Search**..... 156/358, 361, 363, 156/364, 384, 540, 541, 542, 566

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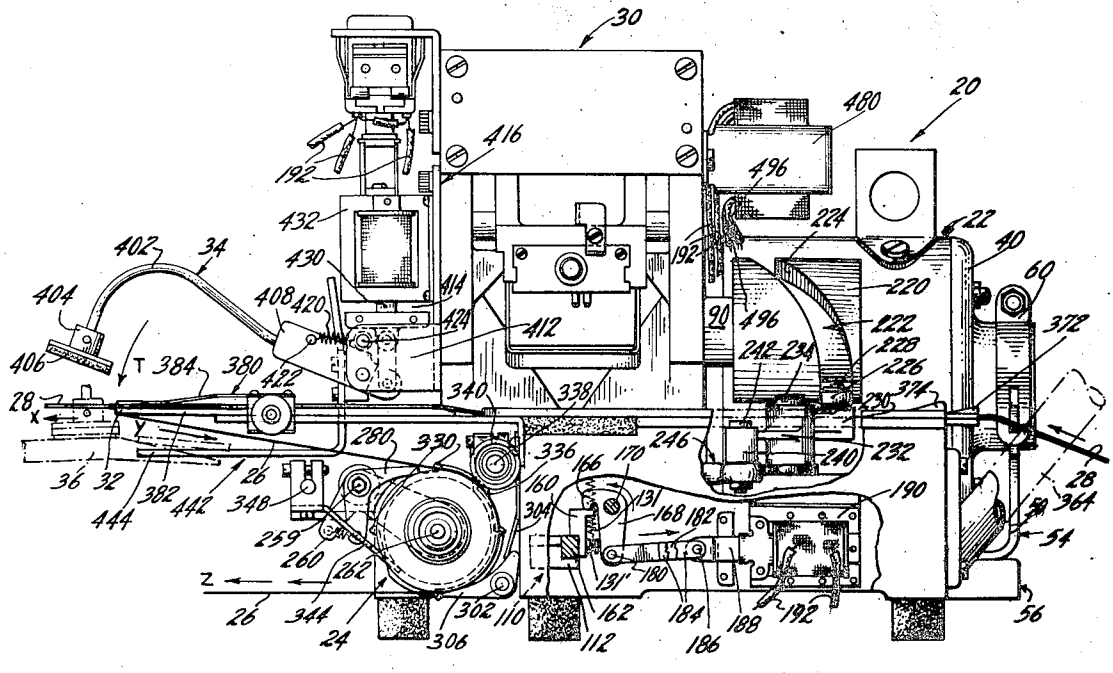
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[57] **ABSTRACT**

Labels, coated with pressure sensitive adhesive and carried by a web of release paper having formed therein feed sprocket holes, are drawn along a predetermined path through a print station and about a sharp reverse bend by a feed drum having disposed about the periphery thereof drive pins spaced to correspond to the spacing of the feed sprocket holes in the web of release paper. The feed drum is in turn driven by a solenoid actuated ratchet feed and may be readily replaced by other feed drums having drive pins spaced to correspond with the feed holes on webs of other sizes of labels. As the release paper is drawn about the sharp reverse bend the label projects outwardly and a hammer, solenoid actuated in timed relationship with the label feed, is driven against the label to slap the label against an article.

16 Claims, 12 Drawing Figures



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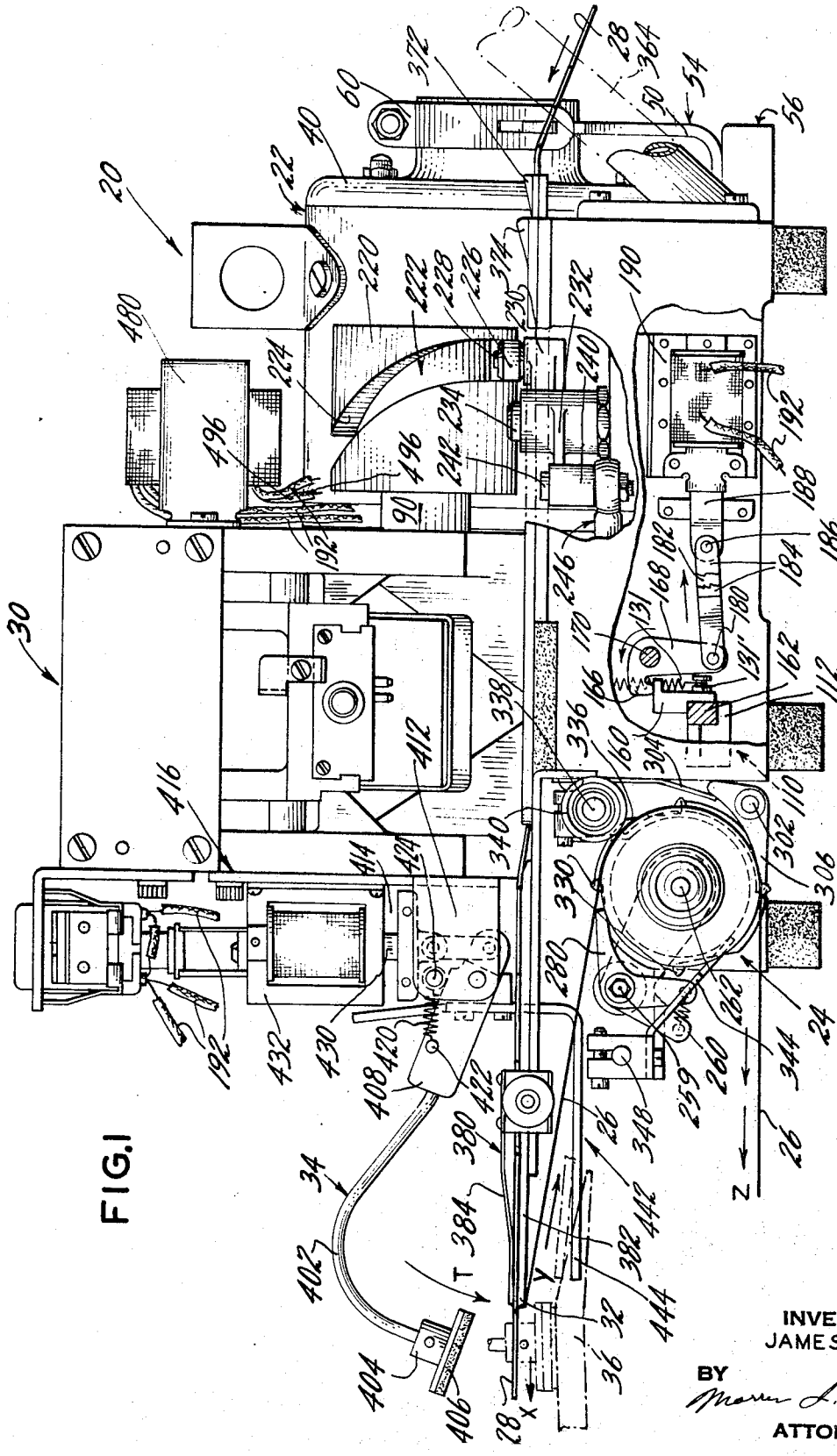


FIG. 1

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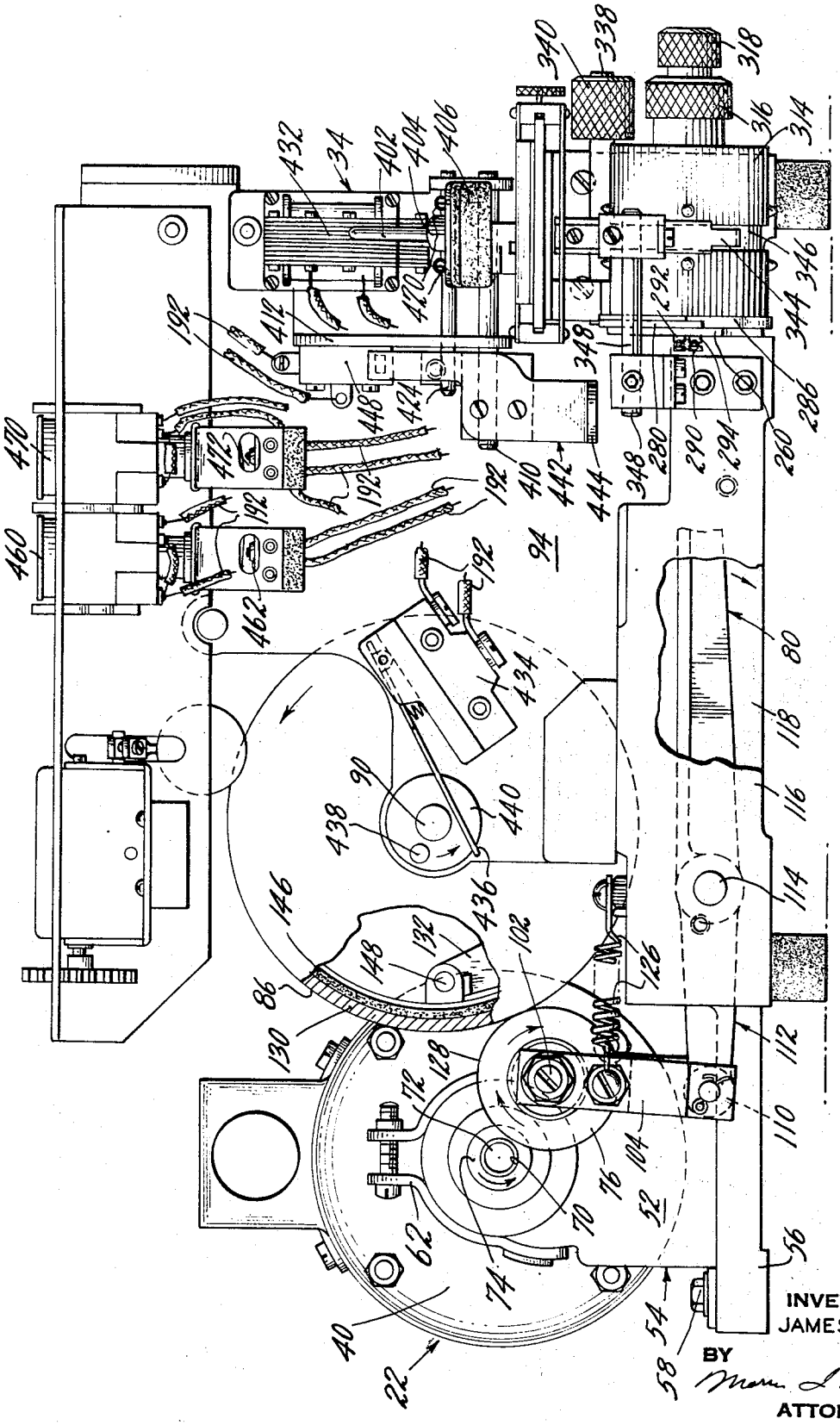


FIG. 2

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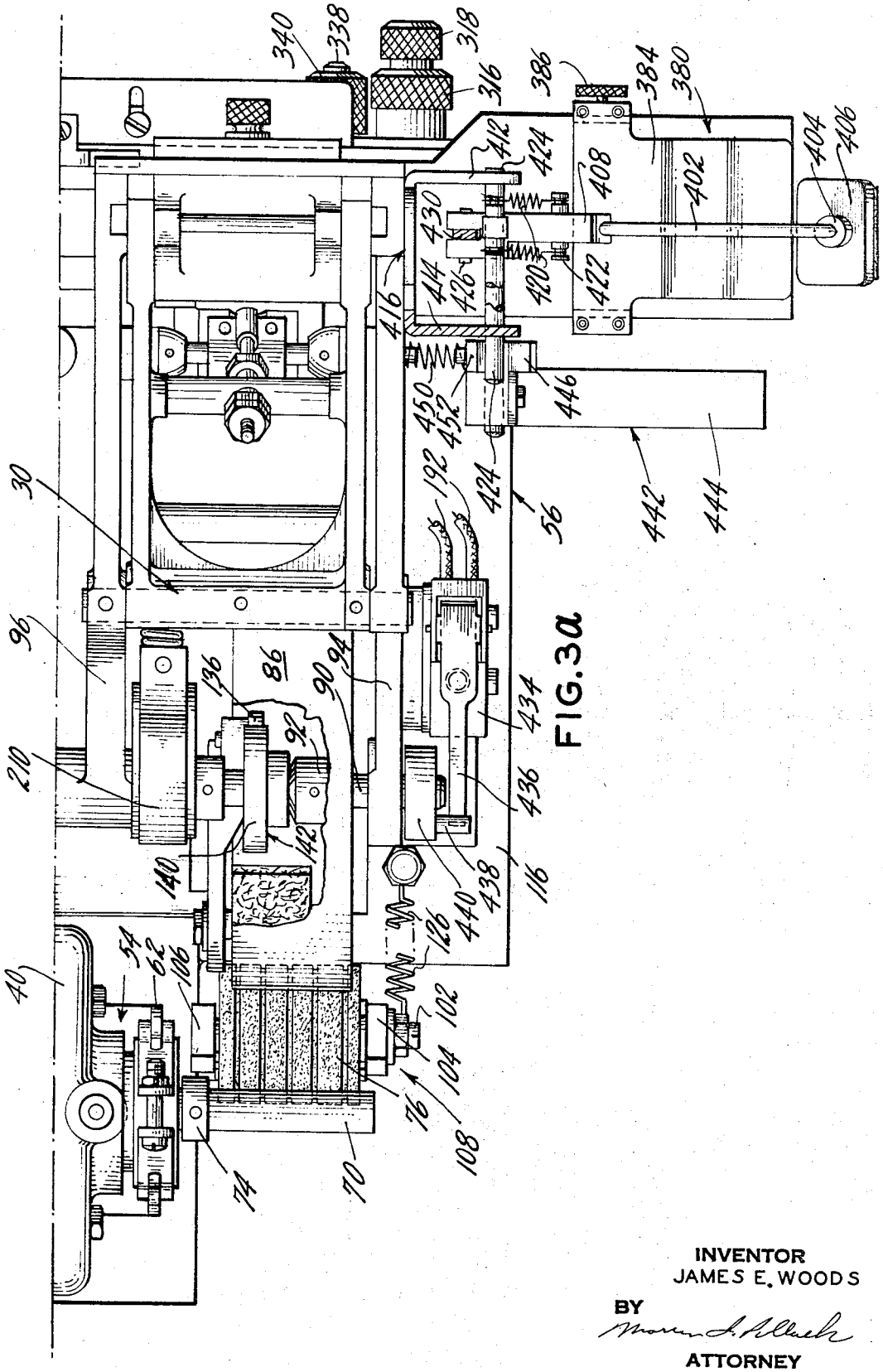


FIG. 3a

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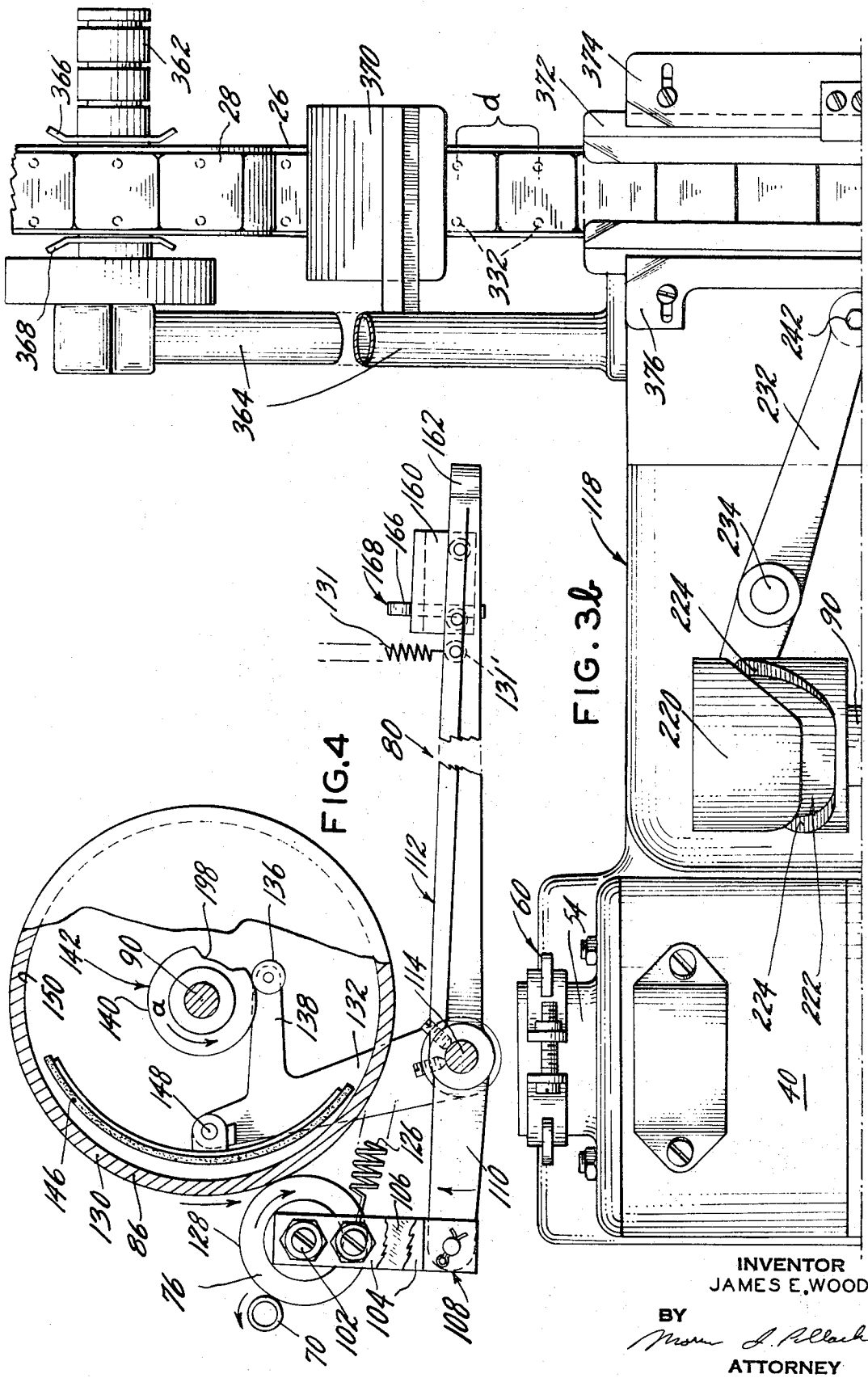


FIG. 4

FIG. 3b

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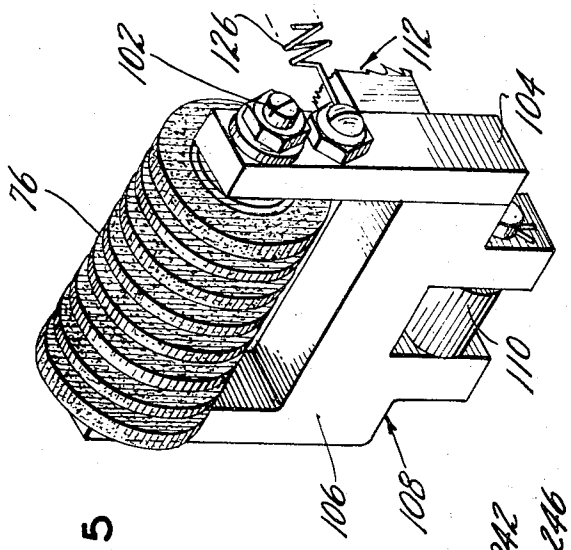


FIG.5

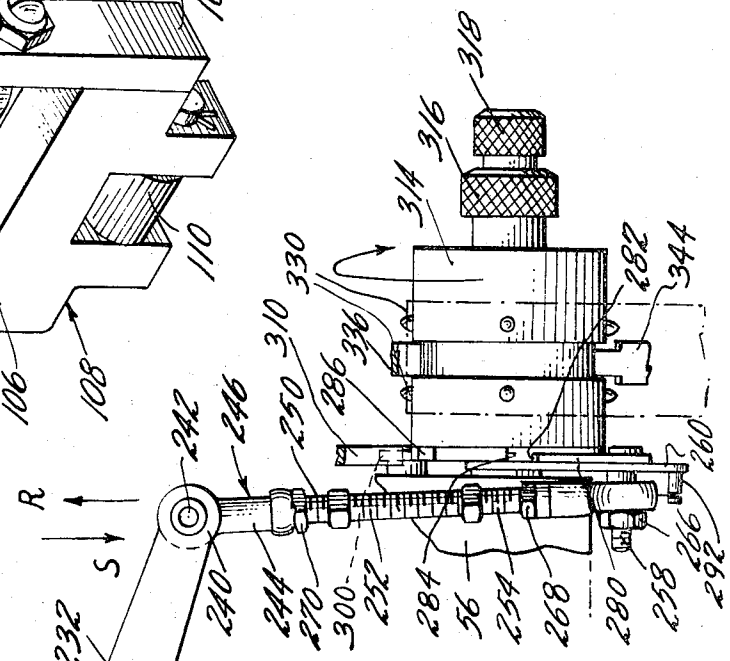


FIG.7

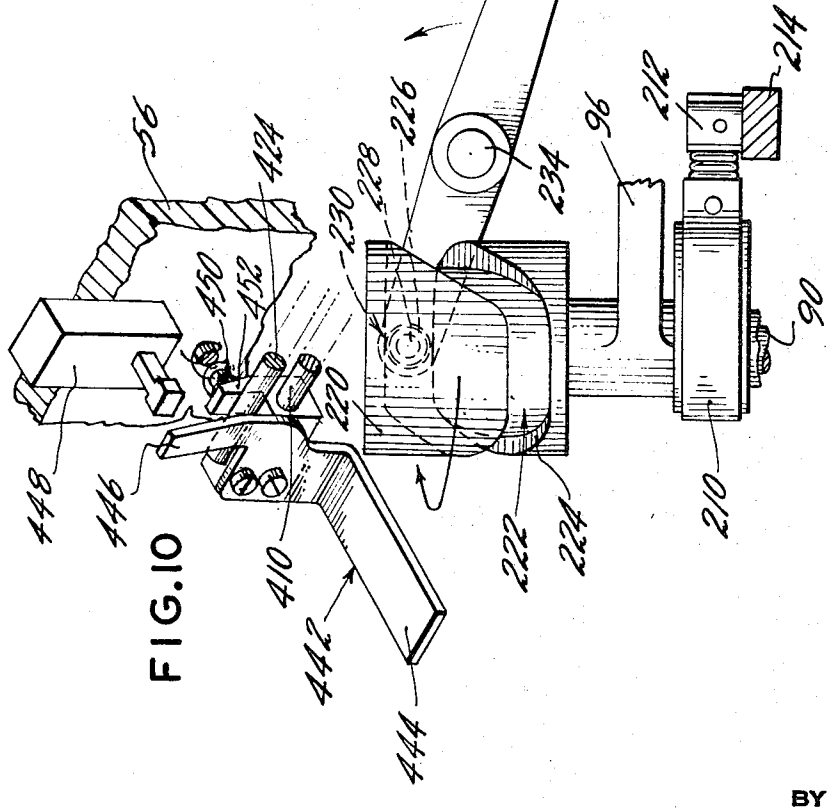


FIG.10

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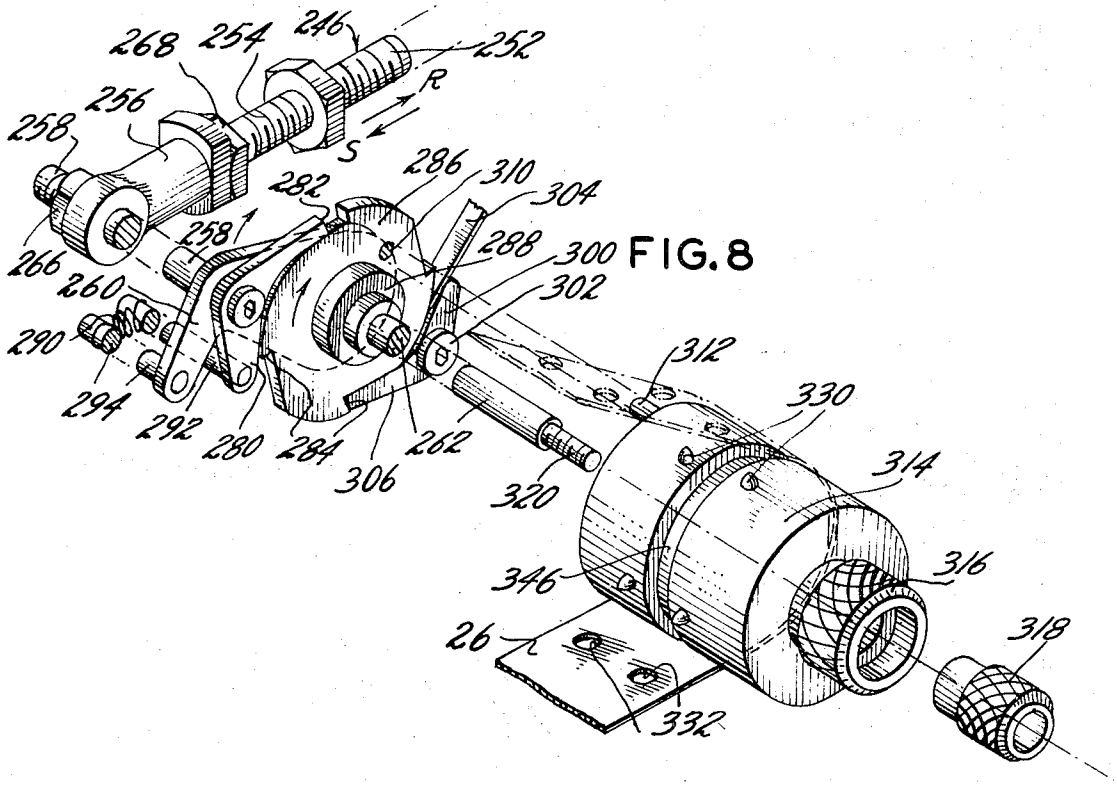


FIG. 8

FIG. 9

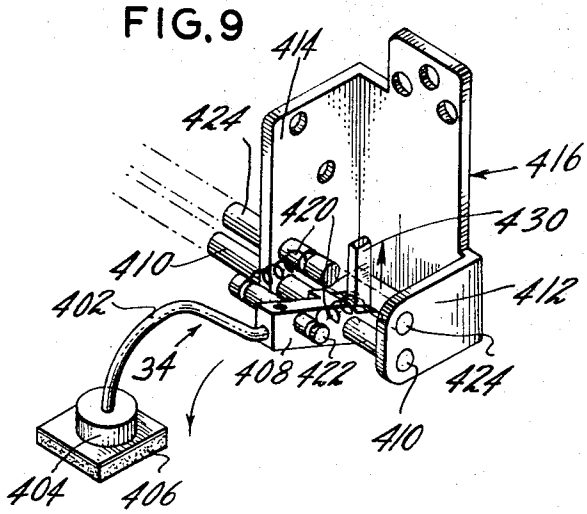
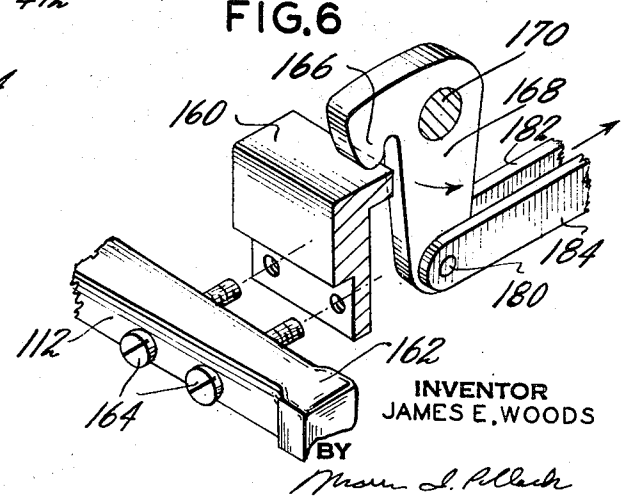


FIG. 6



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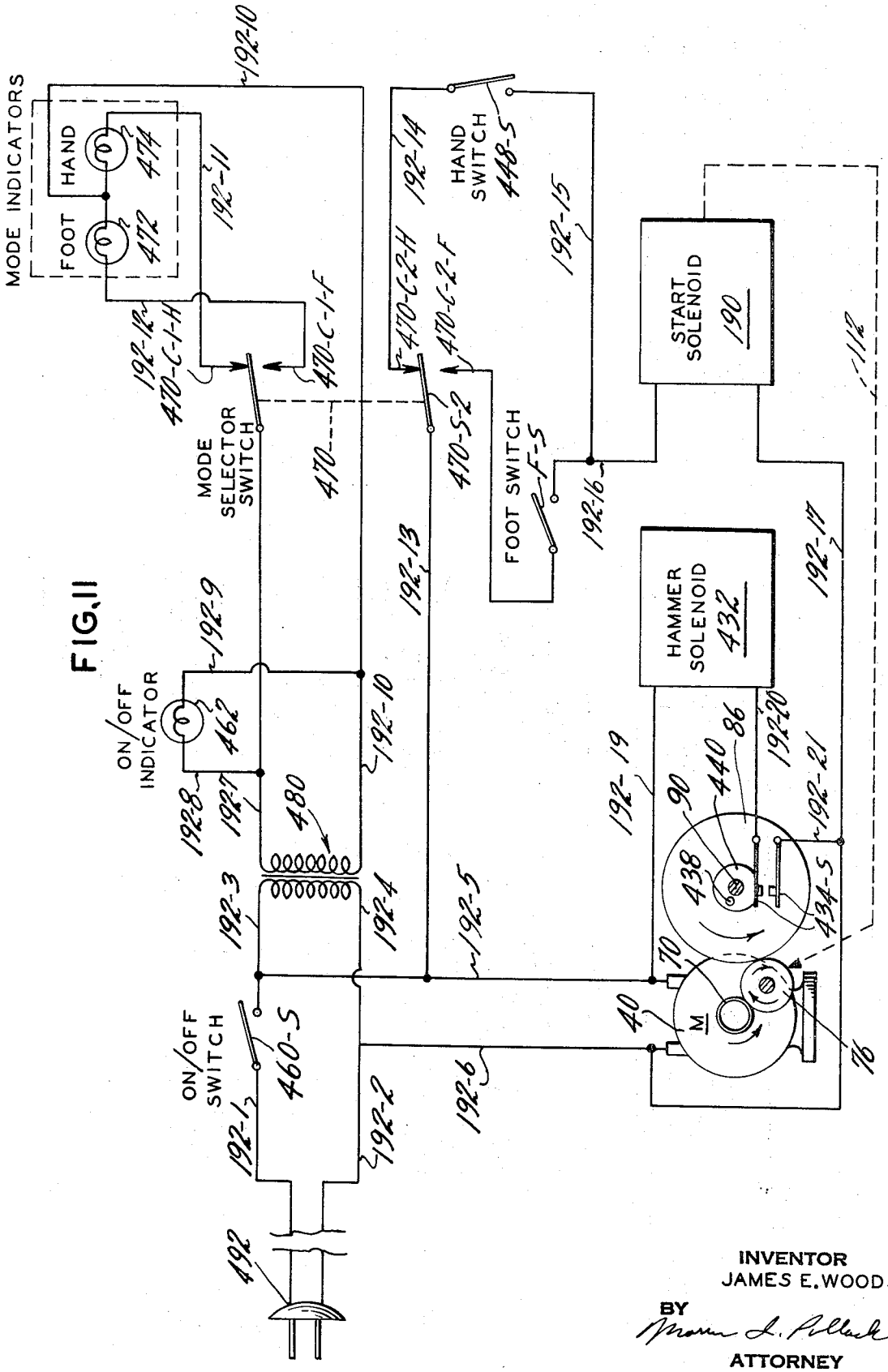


FIG. 11

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LABELER

This application is a continuation of Ser. No. 597,585, filed Nov. 29, 1966 and now abandoned.

BACKGROUND OF INVENTION — FIELD OF APPLICATION

This invention relates to labeling apparatus and more particularly to apparatus for imprinting, dispensing, and applying labels to articles.

BACKGROUND OF INVENTION — PRIOR ART

Modern business practices dictate that many articles have labels affixed thereto; articles on display for sale, articles stored in warehouses, articles moving through various stages of processing, and a host of other articles required by present day society for its day to day operation.

While many labels have applied thereto a water responsive adhesive, and others utilize a heat responsive adhesive, a large number of the labels used today are of the pressure sensitive adhesive type and are disposed one after the other along a strip of release backing paper, formulated to permit the labels to be readily separated therefrom; with the strip and attached labels usually distributed in roll form.

The typical labeling operation entails printing certain information on a predetermined number of labels and then applying the labels so printed to a like number of articles.

To print the labels on one machine and then apply same with another machine requires an expenditure for two machines with possible duplication of elements (such as motors, etc.) as well as a waste of valuable time in rereeling the printed labels and transferring same to the applying machine; while the utilization of a single machine for both printing and applying guide often involves problems of synchronizing the printing and labeling operations to obtain a smooth running system especially when labeling discrete articles.

In some labelers the label is printed, stripped, and then disposed in a position where a passing article by making contact with the label has the label affixed thereto. The problems presented by the inherent need for costly article transport equipment and the possibility of articles passing unlabeled because of the speed at which the article is moving and/or the type of adhesive used are very apparent.

In other labelers the printed label must be picked up by a vacuum head which then applies same to the article, thus necessitating the need for costly and complex vacuum producing equipment and the controls therefor.

In many labelers the cyclic operation of the machine is accomplished by the provision of an arm which rides upon the surface of the labels and drops into a space which must be provided between successive labels to control said cyclic operation. However, the arm quite often damages the edges or other portions of the labels as it moves thereover, and in some instances smears or otherwise distorts the printed matter which has been disposed thereon. In some labelers photoresponsive cells are used to sense the space between the labels; however, the circuitry which must be provided to sense the difference between the opacity of the web and label, and the opacity of the web alone is expensive, complex, and highly susceptible to differences in the label and web stock as well as dirt, color and other conditions. In both instances the labels must be disposed along the web so as to provide the required space therebetween thus limiting the number of labels that can be placed on a web of a given size.

OBJECT OF INVENTION

It is therefore an object of this invention to provide a novel labeling apparatus.

It is a further object to provide an improved labeling apparatus capable of dispensing labels disposed one after the other on a web and applying same to articles disposed at a predetermined position with respect thereto; the label applying apparatus involving simple and efficient elements operative, without the provision of vacuum means, to engage the labels and apply same to the articles.

It is another object to provide improved labeling apparatus with positive means for feeding labels, disposed one after the other on a web, to a print station, a stripping station, and into a position wherein each of such labels may be applied to an article.

It is still another object of this invention to provide an improved labeling apparatus for printing, dispensing, and applying labels, disposed on a web, to successive articles, which apparatus is cycled independently of the position of the labels on the web and therefore can accept labels disposed one adjacent the other on the web.

It is yet another object of this invention to provide an improved labeling apparatus for imprinting, dispensing and applying pressure sensitive labels, from a web of such labels, and which is capable of accepting labels of various sizes in a simple and efficient manner.

This invention involves labeling apparatus of the type which utilizes labels having a pressure sensitive adhesive thereon and which are disposed one after the other along a web of paper formulated to release the labels without damaging the adhesive; the apparatus first feeding the web along a path to move the labels to and through a print station, and then feeding the web about a sharp reverse bend which is effective to peel the labels off of the paper; and contemplates the provision of a hammer adapted to engage each label as it is peeled from the paper and apply each label to an article when disposed in proximity to the sharp reverse bend as well as a web feed, operative through a fixed cycle of operation, to positively move the web a distance corresponding to the size of the label independently of the presence or absence of a label on the web, and which is selectively adjustable to accommodate labels of different size. The labeling apparatus further including positive type controls for initiating and terminating the fixed cycle of operation of the web feed and of the label applying hammer in timed relationship to the beginning of the fixed cycle of operation of the web feed so that the hammer engages a label and moves same against an article at the proper time regardless of the label size and without retaining the label in proximity to the hammer (as by vacuum or other means) for a length of time longer than that required to move the label against the article.

In carrying out the invention, according to a preferred embodiment thereof, the labeler is provided with a cyclically driven feed drum having disposed about the periphery thereof a plurality of pairs of drive pins adapted to coact with corresponding pairs of feed sprocket holes formed in the web upon which the labels

are disposed. The feed drum draws the web and labels from a roll to and through a printing station and then, by drawing the web about a sharp reverse bend, effects a separation of the web from the labels in such a manner that each label extends out into a position permitting a hammer, reciprocated through a labeling path, to merely engage the label and press same against an article disposed in said labeling path. The hammer, which is solenoid operated, is actuated, at that point in time during the cycle of operation of the feed drum when the label is extending into the labeling path, by a cam driven by the same drive train which cycles the feed drum thus insuring a synchronized relationship between the operations of the hammer and feed drum. The feed drum is driven through an arc proportionate to the label size during each cycle of its operation and is removably disposed on the labeler to permit ready replacement thereof by other feed drums having differently disposed drive pins adapted to coact with webs having corresponding pairs of sprocket feed holes to thus accommodate different labels.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features, and advantages of the invention and its details of construction and arrangement of parts will be seen from the above, from the following description of the preferred embodiment when considered in conjunction with the drawings, and from the appended claims.

In the drawings:

FIG. 1 is a right side elevational view of a labeler (looking at the front thereof) cut away in part to better show the details thereof and which embodies the present invention;

FIG. 2 is a front elevational view of the labeler of FIG. 1 with parts thereof cut away to better show the details thereof;

FIG. 3*a* and FIG. 3*b*, when combined, make up a plan view of the labeler of FIG. 1 cut away in part to better show the details thereof;

FIG. 4 is an elevational view, in partial section, of the main drive train and operating structure therefor of the labeler of FIG. 1 showing same in the clutched condition thereof;

FIG. 5 is a fragmentary isometric view showing the mounting of one of the elements of the main drive train of FIG. 4;

FIG. 6 is a fragmentary isometric view of some of the elements of the operating structure for the main drive train of FIG. 4 partially exploded to better show the details thereof;

FIG. 7 is a plan view of the printer operating mechanism and the web drive and feed mechanism of the labeler of FIG. 1 removed therefrom to better show the details thereof;

FIG. 8 is an isometric view of a portion of the web drive and feed mechanism of FIG. 7 partially exploded to better show the details thereof;

FIG. 9 is a fragmentary isometric view of the label applying hammer and mounting structure therefor of the labeler of FIG. 1;

FIG. 10 is a fragmentary isometric view of the cycle initiating mechanism for the labeler of FIG. 1; and

FIG. 11 is a schematic diagram of the electrical control circuit, including some mechanical elements which cooperate therewith, for the labeler of FIG. 1.

DESCRIPTION OF PREFERRED EMBODIMENT

For convenience the invention will be described as applied to a labeler adapted to imprint, dispense, and apply to discrete articles in seriatim fashion, successive ones of pressure sensitive labels carried by a roll of release paper; it being understood nevertheless that without departing from the scope of this invention that subject labeler does not necessarily require the printing mechanism; may be utilized with labels applied by water, heat, and other means as well as pressure sensitive adhesives, and that the web and labels need not be in roll form.

With reference to FIG. 1 there is generally shown at **20** a labeler comprising a main power supply and drive assembly **22** providing motive power to a cyclically operated web drive and feed assembly **24** for drawing a web **26** along a web feed path X, Y, Z to thus move in incremental fashion a plurality of labels **28**, attached to web **26** by a pressure sensitive adhesive, to and through a print mechanism **30** and then, by drawing web **26** about a sharp reverse bend **32**, to move each label **28** successively into a web applying path T of a hammer assembly **34**, cyclically operated in timed relationship with web drive and feed assembly **24**, to engage a label **28** when so disposed and press same against an article **36**.

A motor **40** (FIGS. 1 and 2) of main power supply and drive assembly **22** is carried by a pair of upstanding brackets **50** (FIG. 1) and **52** (FIG. 2) of a motor mount **54** (FIGS. 1, 2, and 3) secured to a main frame **56** by appropriate means such as bolts **58** (FIG. 2) and is secured in place on brackets **50** and **52** by clamping means **60** (FIGS. 1 and 3*b*) and **62** (FIGS. 2 and 3*a*) respectively.

A substantially hollow and cylindrical motor drive stub **70** (FIGS. 2 and 3*a*), secured to output shaft **72** (FIG. 2) of motor **40** by a collar **74** (FIGS. 2 and 3*a*) is disposed for coaction with an intermediate drive pulley **76** (FIGS. 2 and 3*a*) carried by a start lever assembly **80** (FIGS. 2 and 4) for movement into (FIG. 4) and out of (FIG. 2) engagement with stub **70**, to transmit the drive from motor drive stub **70** to a main drive pulley **86** (FIGS. 2, 3*a*, and 4) and thereby to a main drive shaft **90**; interconnected to main drive pulley **86** by a hub **92** (FIG. 3*a*) and journalled for rotation between a vertical frame member **94** (FIGS. 2 and 3*a*) and a vertical frame member **96** (FIG. 3*a*) of main frame **56**.

Intermediate drive pulley **76** (FIGS. 2, 3*a*, and 5) is rotatably journalled on a shaft **102** (FIGS. 3*a* and 5) carried by an arm **104** (FIGS. 4 and 5) and an arm **106** of a substantially U-shaped pulley carrier **108** mounted for limited rotation upon the left end **110** of a start lever **112** (FIGS. 2 and 4) secured for rotation with and upon a start shaft **114** rotatably journalled between a side frame **116** (FIGS. 2 and 3*a*) and a side frame **118** (FIGS. 2 and 3*b*) of main frame **56**.

A start lever spring **126** (FIGS. 2 and 4) secured at one of its ends to main frame **56** (FIG. 2) and at the other of its ends to carrier **108** (FIGS. 2 and 4) urges carrier **108** to the right and down (FIGS. 2 and 4) to maintain a surface **128** of intermediate drive pulley **76** in engagement with a surface **130** of main drive pulley **86**. A spring **131** (FIGS. 1 and 4) secured at one of its ends to a stud **131'** carried by start lever **112** and at the other of its ends to frame **56** urges start lever **112**, start lever shaft **114**, and a brake lever **132**, carried by start

lever shaft 114, in a counterclockwise direction about the axis of rotation of start lever shaft 114 to maintain a cam follower roller 136 (FIGS. 3*a* and 4), carried by a follower arm 138 (FIG. 4) of brake lever 132, in engagement with cam surface 140 of a start cam 142 carried by main drive shaft 90. This action of spring 131 also maintains a brake shoe 146, pivotally mounted on brake lever 132 by a pin 148, in engagement with an inner surface 150 of main drive pulley 86. Spring 126 assists the action of spring 131.

A press plate 160 (FIGS. 1, 4, and 6) secured to a right end 162 of start lever 112 by a pair of threaded members 164 (FIG. 6) is urged into engagement with a nose 166 (FIGS. 1, 4, and 6) of a start solenoid bell crank 168, pivotally disposed on a pin 170 (FIGS. 1 and 4) carried by frame 56, by springs 131 and 126.

A pin 180 (FIGS. 1 and 6) carried by start solenoid bell crank 168 serves to interconnect a start solenoid bracket 182 and a start solenoid bracket 184 thereto. A pin 186 (FIG. 1) interconnects the other ends of start solenoid brackets 182 and 184 to a plunger 188 of a start solenoid 190 suitably mounted on frame 56 and electrically interconnected by wires 192 into the electrical circuit for labeler 20 as will be hereinafter described.

When labeler 20 is not cycling but with motor 40 thereof operating drive stub 70 of motor 40 will be rotating in the counterclockwise direction (FIGS. 2 and 4) about the axis of rotation of output shaft 72 of motor 40. Such rotation will not however be transmitted to intermediate drive pulley 76 because it is in the declutched condition (FIG. 2) and as such outer surface 128 thereof, while engaged with outer surface 130 of main drive pulley 86, is spaced from motor drive stub 70. When intermediate drive pulley 76 is declutched cam follower 136 is disposed in a notch 198 of cam 142 and brake shoe 146 is urged by spring 131 against inner surface 150 of main drive pulley 86 with sufficient force to restrain rotation thereof and of main drive shaft 90 connected thereto.

Energization of solenoid 190 (FIG. 1), through circuitry to be hereinafter described, draws plunger 188, solenoid brackets 182 and 184, and pin 180 to the right, pivoting solenoid bell crank 168 in the counterclockwise direction (FIG. 1) about pin 170, moving nose 166 thereof against press plate 160 disposed on right end 162 of start lever 112, and thereby moving right end 162 of start lever 112 down (FIGS. 1 and 4) against the action of springs 126 and 131. Downward movement of right end 162 of start lever 112 and the resulting upward movement of left end 110 thereof (FIGS. 2 and 4) is effective to move intermediate drive pulley 76 from its declutched condition (FIG. 2) to its clutched condition (FIG. 4) with surface 128 thereof in engagement with rotating motor drive stub 70. Such movement also rotates lever shaft 114, and brake lever 132 carried thereby, in the clockwise direction (FIGS. 2 and 4) about the axis of rotation of shaft 114 moving brake shoe 146 from its braking position (FIG. 2) engaged with inner surface 150 of main drive pulley 86, to its unbraked position (FIG. 4) spaced from inner surface 150, and moving cam follower roller 136 out of notch 198 of cam 142 releasing cam 142 and main drive shaft 90 secured thereto for rotation. With brake 146 in its unbraked position and surface 128 of intermediate drive pulley in engagement with both motor drive stub 70 and outer surface of main drive pulley 86 the rotation of motor output shaft 72 is transmitted through motor drive stub 70 to intermediate drive pulley 76 and thereby to main drive pulley 86 and main drive shaft 90 connected thereto to rotate main drive shaft 90 in the counterclockwise direction (FIG. 4) abouts its own axis of rotation.

Subsequent deenergization of solenoid 190, as will be hereinafter described, releases plunger 188, start solenoid brackets 182 and 184, and pin 180 for movement to the left (FIG. 1) and bell crank 168 for clockwise rotation about pin 170. However, as long as cam follower roller 136 rides on cam surface 140 of cam 142 springs 126 and 131 are ineffective to rock start lever 112 in the counterclockwise direction (FIG. 4) about the axis of rotation of shaft 114 to provide the motive force for effecting such movement.

When cam follower roller 136 moves into notch 198 of cam 142 springs 126 and 131 rock start lever 112, shaft 114, and brake lever 132 in the counterclockwise direction (FIG. 4) about the axis of rotation of shaft 114. As right end 162 of the rocking start lever 112 moves up (FIGS. 1 and 4) press plate 160 thereof moves against nose 166 of solenoid bell crank 168 pivoting same in the clockwise direction (FIG. 1) about pin 170 and moving pin 180, brackets 182 and 184, and solenoid plunger 188 to the left. As left end 110 of the rocking start lever 112 moves down (FIGS. 2 and 4) intermediate drive pulley 76 moves to its declutched condition (FIG. 2) with surface 128 thereof spaced from rotating motor drive stub 70, but engaged with outer surface 130 of main drive pulley 86. As brake lever 132 is rocked in the counterclockwise direction by rocking lever 112 brake shoe 146 thereof moves into engagement with inner surface 150 of main drive pulley 86 to arrest the rotation thereof and of main drive shaft 90 connected thereto at a precise location for purposes to be hereinafter described.

During the cycle of rotation of main drive shaft 90 (FIGS. 3*a* and 7) the rotation thereof is imparted to an eccentric mechanism 210 interconnected by a pin 212 (FIG. 7) to an arm 214 of printing mechanism 30 to operate printing mechanism 30 in a well-known manner to print selected information upon labels 28 when disposed for cooperation therewith.

Rotation of main drive shaft 90 is also imparted to a web drive cam 220 (FIGS. 1, 3*b* and 7), connected to main drive shaft 90, and having formed therein a cam track 222 with side walls 224 coacting with a web drive cam follower roller 226 (FIGS. 1 and 7) rotatably disposed on a pin 228 carried at an end 230 of a web drive lever 232 (FIGS. 1, 3*b* and 7) journalled for reciprocatory motion on a vertical stub shaft 234 secured to frame 56 of labeler 20. The other end 240 of web drive lever 232 is rotatably journalled on a pin 242 carried by an internally threaded collar 244 (FIGS. 1 and 7) of a feed rod assembly 246. An externally threaded end 250 (FIG. 7) of a feed rod 252 is received within internally threaded collar 246 and an externally threaded end 254 (FIGS. 7 and 8) of feed rod 252 is received within an internally threaded collar 256 journalled on a pin 258 carried by a feed arm 260 rotatably disposed on a feed stub shaft 262 (FIGS. 1 and 8) fixedly secured to frame 56. An internally threaded nut 266 (FIGS. 7 and 8) is threaded onto the end of pin 258 to retain collar 256 thereon while a pair of internally threaded nuts 268 (FIGS. 7 and 8) and 270 (FIG. 7)

serve to facilitate the adjustability of rod 250 in collars 246 and 256 respectively.

A feed pawl 280 (FIGS. 1, 7, and 8), rotatably carried on pin 258 of feed arm 260, has an end 282 thereof (FIG. 8) disposed for coaction with shoulders 284 of a web feed ratchet 286 rotatably journalled on a hub 288 carried by feed arm 260. A spring 290 having one end thereof hooked over a pin 292 carried by feed pawl 280 and the other end thereof hooked over a pin 294 carried by feed arm 260 tends to urge feed pawl 280 in the clockwise direction about pin 258 and nose 282 thereof against the edge surface of web feed ratchet 286. A feed detent 300 (FIGS. 1 and 8) rotatably disposed on a pin 302 carried by frame 56 of labeler 20 is biased by a spring 304, also carried by frame 56, in the clockwise direction (FIG. 8) about pin 302 to urge nose 306 thereof against the edge surface of web feed ratchet 286 to thus prevent counterclockwise (FIG. 8) rotation of feed ratchet 286.

An aperture 310 (FIG. 8) is formed in web feed ratchet 286 to receive a roll pin 312 carried by a web feed drum 324 (FIGS. 1, 7, and 8). A knurled collar 316 (FIGS. 3*a*, 7 and 8) is formed on feed drum 314 to facilitate the disposition thereof on, and removal thereof from, feed stub shaft 262, and the positioning of roll pin 312 of feed drum 314 in aperture 310 of web feed ratchet 286. Feed drum 314 is secured in place on feed stub shaft 262 by an internally threaded and externally knurled knob 318 adapted to be threaded onto an externally threaded end 320 (FIG. 8) of feed stub shaft 262.

A plurality of drive pins 330 (FIGS. 1, 7 and 8) are disposed about feed drum 314 for coaction with feed sprocket holes 332 (FIGS. 3*b* and 8) formed in web 28 so that rotation of feed drum 314 in the clockwise direction (FIG. 8) about feed stub shaft 262 results in a corresponding feed movement of web 28 along feed path X, Y, Z.

A web retainer 336 (FIGS. 1 and 7) adopted to retain web 28 in engagement with the surface of feed drum 314 is rockably carried on a pin 338 (FIGS. 1 and 2) and provided with a knob 340 to facilitate the rotation thereof towards and away from the surface of feed drum 314.

A stripper blade 344 (FIGS. 1 and 2) with an end thereof adapted to ride in a groove 346 (FIGS. 2 and 8) formed in feed drum 314 to facilitate the stripping of web 28 therefrom is rotatably disposed on a pin 348 carried by main frame 56.

It will thus be seen that with each revolution of web drive cam 220 web drive lever 232 will rock first in the counterclockwise direction (FIG. 7) about vertical stub shaft 234 then in the clockwise direction about vertical stub shaft 234, thus reciprocating feed rod 252 first in the direction of arrow R (FIGS. 7 and 8) and then in the direction of arrow S. Movement of feed rod 252 in the direction of arrow R (FIGS. 7 and 8) moves pin 258, feed arm 260, and feed pawl 280 in the clockwise direction about feed stub shaft 262 (FIG. 8). Engagement of nose 282 of rotating feed pawl 280 with a shoulder 284 of feed ratchet 286 effects a corresponding clockwise rotation (FIG. 8) of feed ratchet 286 about feed stub shaft 262 and, since roll pin 312 of feed rum 314 is disposed in aperture 310 of feed ratchet 286 of feed drum 314 in the clockwise direction about feed stub shaft 262. The extent of movement of feed rod 252 in the direction of arrow R (FIG. 8) is sufficient to effect a 90° revolution of feed ratchet 286 and feed drum 314; with retrograde movement thereof in the counterclockwise direction (FIG. 8) prevented by the engagement of nose 306 of detent 300 with a shoulder 284 of feed ratchet 286. Thus on movement of feed rod 252 in the direction of arrow S (FIGS. 7 and 8) nose 282 of feed pawl 280 merely rides on the edge surface of feed ratchet 286 until feed rod 252 returns to its home position when nose 282 of feed pawl 280 drops behind the next shoulder 284 on feed ratchet 286.

The spacing of drive pins 330 on feed drum 314 corresponds to the spacing *d* (FIG. 3*b*) between adjacent sprocket holes 332 of web 26; it being understood that by merely unthreading knob 318 (FIG. 8) from thread 320 of feed stub shaft 262 and removing feed drum 314 therefrom that another feed drum 314 with appropriately spaced drive pins 330 may be easily disposed upon feed stub shaft 262 for coaction with a web 26 having a different spacing *d* between its sprocket hole 332.

Web 26, carrying labels 28, and formed into a roll 360, is rotatably disposed on a spool shaft 362 carried by a spool arm 364 (FIGS. 1 and 3*b*) which is in turn carried by main frame 56. A pair of spool guide plates 366 and 368 (FIG. 3*b*) guide web 26 for movement about a leaf type take-up spring 370 and into a substantially conventional web guide 372 (FIGS. 1 and 3*b*) disposed between adjustable web guide plates 374 and 376 carried by frame 56. The relative disposition of plates 374 and 376 depends on the particular web guide 372 disposed therebetween, with the configuration of web guide 372 depending upon the size of the particular web 26 and labels 28 to be utilized by labeler 20.

Web 26 and labels 28 follow path X (FIG. 1) from web guide 372 through printing mechanism 30 and then onto a stripper plate assembly 380 (FIG. 1) which includes a bed plate 382 formed with relatively sharp reverse bend 32 and a leaf spring 384 mounted on a carrier 386 for adjustable disposition on bed plate 382; spring 384 being formed with a configuration to urge labels 28 and web 26 against bed plate 382. Web 26 then follows path Y about reverse bend 32, of bed plate 382, and then around feed drum 314 with drive pins 330 thereof appropriately disposed in sprocket holes 332 of web 26 and with web retainer 336 urging web 26 against the surface of feed 314. Stripper blade 344 riding in groove 346 of feed drum 314 directs web 26 away from the surface of feed drum 314 and into path Z from which web 26 may be disposed of in any convenient manner.

As web 26 moves about reverse bend 32 (FIG. 1) and into path Y labels 28, due to their comparative rigidity with respect to web 26 and due to the adhesion characteristics therebetween, continue to follow path X moving beyond reverse bend 32 and into label applying path T of hammer mechanism 34 where it can be pressed into contact with an article 36.

A hammer rod 402 (FIGS. 1, 2 and 9), of hammer mechanism 34, having secured to one end thereof a hammer pad 404 with a resilient contact surface 406, is mounted on a hammer arm 408 (FIGS. 1, 3*a* and 9) rotatably journalled on a hammer pivot shaft 410 carried by spaced walls 412 and 414 of a hammer bracket 416 appropriately mounted on main frame 56. A pair of springs 420 (FIGS. 1 and 3*a*) each connected at one of their ends to a pin 422 carried by hammer arm 408

and at the other of their ends to a stop rod 424 also carried by walls 412 and 414 of hammer bracket 416 urge hammer rod 402 and hammer arm 408 in the clockwise direction (FIG. 1) about hammer pivot shaft 410 into an unactuated position. A pivot pin 426 (FIGS. 1 and 3*a*) spanning a forked end 428 of hammer arm 408 pivotally interconnects a solenoid plunger 430 (FIGS. 3*a* and 9) of a hammer solenoid 432 (FIG. 1) thereto. Hammer solenoid 432 is suitably mounted on hammer bracket 416 and interconnected by wires 192 into the electrical circuit and with a microswitch 434 (FIGS. 2 and 3*a*) as will be hereinafter described. A switch operating lever 436 carried by microswitch 434 to operate same has a portion thereof disposed in the path of movement of a timing pin 438 carried by a timing cam 440 secured to main drive shaft 90.

It will thus be seen that during rotation of main drive shaft 90 that timing pin 438 (FIG. 2) of timing cam 440 will engage switch operating lever 436 and operate microswitch 436 to energize hammer solenoid 432. Upward movement of hammer solenoid plunger 430 (FIG. 9), upon energization of hammer solenoid 432, effects a counterclockwise rotation (FIG. 1) of hammer arm 408 and hammer rod 402 about hammer pivot shaft 410 moving hammer pad through label applying path T to its actuated position (in dashed lines, FIG. 1) to engage a label 28 when disposed therewithin and move same against an article 36.

As timing pin 438 moves away from switch operating lever 436, upon continued rotation of main drive shaft 90 and timing cam 440, microswitch 434 is operated to deenergize hammer solenoid 432. Upon deenergization of hammer solenoid 432 springs 420 are permitted to rock hammer arm 408, hammer rod 402, and hammer pad 404 in the clockwise direction (FIG. 1) about hammer pivot shaft 410 to return same to their unactuated condition (FIG. 1).

A cycle initiating lever 442 (FIGS. 2, 3*a*, and 10) pivotally carried by hammer pivot shaft 410 is formed with an actuating arm 444 (FIGS. 1 and 10) disposed for coaction with article 36 (FIG. 1) and a switch operating arm 446 (FIGS. 1 and 10) disposed for coaction with a cycle initiating microswitch 448 carried by wall 414 of hammer bracket 416. A spring 450 (FIGS. 3*a* and 10) having one end thereof in engagement with frame 56 and the other end thereof engaged with a stop block 452 carried by switch operating arm 446 of cycle initiating lever 442 biases cycle initiating lever 442 in the counterclockwise direction (FIG. 10) about hammer pivot shaft 410 and into engagement with stop rod 424. Wires 192 interconnect cycle initiating microswitch 448 and start solenoid 190 into the electrical circuit as will be hereinafter described.

An on/off switch 460 (FIG. 2) provided with an indicator in the form of a light 462, a mode selector switch 470 and a pair of indicators in the form of lights 472 and 474 for hand and foot operation respectively, and a transformer 480, of suitable electrical characteristics, are all interconnected into the electrical circuit by conductive wires 192 as will be hereinafter described.

The control circuit for labeling machine 20, shown in FIG. 11, comprises a pair of input wires 192-1, 192-2 connectable by a conventional supply cord 492 to a suitable power supply such as 110 volts 60 cycle.

Transformer 480 is connected directly across the power supply through wire 192-1, on/off switch blade 460-S, wires 192-3, wires 192-4 and 192-2 respectively.

Motor 40 is also connected directly across the power supply through wire 192-1, on/off switch blade 460-S, wires 192-3, 192-5, 192-6, and 192-2, respectively.

On/off indicator 462 is connected across transformer 480 through wires 192-7, 192-8, 192-9, and 192-10.

Hand/foot mode indicators 472, 474 respectively are connected across transformer 480 through wires 192-7, 192-11, 192-12, and 192-10; the particular indicator to be operated depending upon whether mode selector switch blade 470-S-1 is in engagement with the contacts 470-C-1-F or 470-C-1-H.

During the hand switch mode of operation start solenoid 190 is connectable across the power supply through wire 192-1, on/off switch blade 460-S, wires 192-5 and 192-13, mode selector switch blade 470-S-2, contact 470-C-2-H, wire 192-14, hand switch blade 448-S, wires 192-15, 192-16, 192-17, 192-6, and 192-2. For the foot switch mode of operation, wherein mode selector switch blade 470-S-2 is in engagement with contact 470-C-2-F, clutch solenoid 190 is connectable across the power supply through wire 192-1, on/off switch blade 460-S, wires 192-5 and 192-13, mode selector switch blade 470-S-2, contact 470-C-2-F, wire 192-8, foot switch blade F-S, wires 192-16, 192-17, 192-6 and 192-1.

Hammer solenoid 432 is connectable to the power supply through wire 192-1, on/off switch blade 460-S, wires 192-3, 192-5, 192-19, 192-20, switch blade 434-S of microswitch 434, wires 192-21, 192-17, 192-6 and 192-2.

With the appropriate type for printing the desired information on labels 28 disposed in printing mechanism 30, with the appropriate web guide 372 (FIG. 1) disposed between guide plates 374 and 376, and with the appropriate feed drum 314 disposed on feed drum stub shaft 262 a roll of labels 28 may be disposed upon spool shaft 362 (FIG. 3*b*) between guide plates 366 and 368.

Web 26 is then positioned around take-up spring 370 (FIG. 3*b*), threaded into web guide 372, through printing station 30 (FIG. 1) across bed plate 382 of stripper plate assembly 380 and about sharp reverse bend 32 thereof, and then around feed drum 314 being careful to position drive pins 330 thereof in sprocket holes 332 of web 26. After making sure that pressure spring 384 has been properly set to maintain web 26 and labeler 28 against stripper bed plate 382, that web retainer 336 has been set to urge web 26 against the surface of feed drum 314, and that stripper blade 344 is appropriately set in groove 346 (FIG. 8) of feed drum 314, power cord 492 (FIG. 11) may be electrically connected to a suitable source of power and on/off switch 460 may be operated to close contact blade 470-S thereof.

Electrical power thus flows through power cord 492 (FIG. 11), wire 192-1, closed switch blade 460-S, wires 192-3 and 192-5, motor 40, wires 192-6, and 192-2 to provide electrical power for motor 40 to initiate rotation thereof and to motor drive stub 70 (FIGS. 2 and 4) connected thereto. Rotation of motor drive stub 70 will not however be transmitted to main drive pulley 86 through intermediate drive pulley 76 because at this time it is in its declutched condition (FIG. 2) with surface 128 thereof spaced from motor drive stub 70. Power also flows from transformer 480 through wires 192-7, 192-8, 192-9, and 192-10 to energize on/off indicator 462 to show the operator that the power is turned on and motor 40 is operating.

With hand/foot selector switch 470 set to the hand mode of operation and with mode indicator 474 having power supplied thereto from transformer 480 through wires 192-7, mode selector switch blade 470-S-1, contact C-1-H, wires 192-11, and 192-10 to indicate that labeler 20 is set for hand operation; labeler 20 is prepared for use.

The movement of an article 36 (FIG. 1) to be labeled under and against actuating arm 444 of cycle initiating lever 442 to move same from its unactuated position (full lines, FIG. 1) to its actuated position (dot and dash, FIG. 1) results in a clockwise rotation (FIG. 10) of cycle initiating lever 442 about hammer pivot shaft 410, moving switch operating arm 446 thereof against microswitch 448 to close switch blade 448-S thereof (FIG. 11). Electrical power is then provided to start solenoid 190 through wire 192-1, and/off switch blade 460-S (now closed) wires 192-3, 192-5, and 192-13, switch blade 470-S-2 and contact 470-C-2-H, wire 112-14, switch blade 448-S of closed switch 448, wires 192-15, 192-16, 192-17, 192-6 and 192-2.

Energization of start solenoid 190 (FIGS. 1 and 11) draws plunger 188 thereof to the right (FIG. 1) carrying with it start solenoid brackets 182 and 184 and pin 180 to rotate start solenoid bell crank 168 in the counterclockwise direction (FIG. 1) about pin 170 moving nose 166 of start solenoid bell crank 168 against press plate 160 to move same in a downward direction (FIGS. 1 and 4) against the action of spring 131. Downward movement of press plate 160 effects a corresponding downward movement of right end 162 of start lever 112 to rock start lever 112, start shaft 114, brake lever 132, and carrier 108 in a clockwise direction (FIGS. 1 and 4) about the axis of rotation of start lever shaft 114 thus moving intermediate drive pulley 76 from its declutched position (FIG. 2) to its clutched position (FIG. 4) with surface 128 thereof engaged with the surface of motor drive stub 70. Clockwise rotation of brake lever 132 moves brake shoe 146 carried thereby from its braking position (FIG. 2) in engagement with inner surface 150 of main drive pulley 86 its released position (FIG. 4) spaced from inner surface 150 of main drive pulley 86 (FIG. 4) and also moves cam follower roller 136 carried by arm 138 thereof out of notch 198 of cam 142 thus releasing cam 140, main drive shaft 90, and main drive pulley 86 for rotation. Rotation of motor output shaft 72 is therefore transmitted through motor drive stub 70 to intermediate drive pulley 76 and main drive pulley 86 and thereby to main drive shaft 90.

Rotation of main drive shaft 90, through eccentric mechanism 210 (FIG. 7), pin 212, and arm 214 (FIG. 7) operates printing mechanism 30 in a conventional and well-known manner to print the desired information upon label 28.

Rotation of main drive shaft 90 also rotates web drive cam 220 and through web drive cam follower 226, coacting therewith, oscillates web drive lever 232 first in a counterclockwise direction (FIG. 7) about vertical stub shaft 234 and then in a clockwise direction about vertical stub shaft 234. Counterclockwise rotation of web drive lever 232 effects a movement of feed rod 250 in the direction of arrow R (FIGS. 7 and 8) and thereby of pin 258, feed arm 260, and feed pawl 280 in the clockwise direction (FIG. 8) about feed stub shaft 262. On engagement of nose 282 (FIGS. 1 and 8) of feed pawl 280 with shoulder 284 of web feed ratchet 286, ratchet 286 is also rotated in the clockwise direction about feed stub shaft 262 and, through roll pin 312 of feed drum 314 seated in aperture 310 of web feed ratchet 286 the rotation of ratchet 286 is imparted to feed drum 314 to rotate feed drum 314 in the clockwise direction about feed stub shaft 262 (FIGS. 1 and 8).

Clockwise rotation of feed drum 314 through its drive pins 330 and cooperating feed sprocket holes 332 of web 26 produces a movement of web 26 in the direction of arrows X, Y and Z (FIG. 1). As web 26 moves about sharp reverse bend 32 and into path Y the adhesion characteristics of web 26 and label 28 effect a stripping movement of label 28 from web 26 so that label 28 continues to move in the direction of arrow X into the path of movement T of hammer mechanism 34.

During the counterclockwise rotation of main drive shaft 90 (FIG. 2) timing pin 438 of timing cam 440 approaches and then engages blade 436 of microswitch 434 and at approximately the time that label 28 is extended into the path of movement T of hammer mechanism 34 timing pin 438 operates microswitch 434 to close switch blades 434 thereof and energize hammer solenoid 432 through wire 192-1, on/off switch blade 460-S, wires 192-3, 192-5, 192-19 and 192-20, closed switch blades 434-S of microswitch 434, wires 192-21, 192-17, 192-6 and 192-2.

Energization of hammer solenoid 432 (FIG. 1) draws plunger 430 thereof upwardly rotating hammer arm 408, hammer rod 402, and hammer pad 404 in the counterclockwise direction (FIG. 1) about pivot shaft 410 and against the action of spring 420. As hammer pad 404 moves from its unactuated position (full lines — FIG. 1) to the actuated position (dot-dash lines — FIG. 1) resilient contact surface 406 thereof engages label 28 separating same from web 26 and moving same against article 36 with sufficient pressure to affix label 28 thereto but not in such a manner as to damage article 36.

Continued rotation of main drive shaft 90 and timing cam 440 carried thereby moves timing pin 438 away from blade 436 operating microswitch 434 to open switch blades 434-S thereof (FIG. 11) and thereby the circuit to hammer solenoid 432. Deenergization of hammer solenoid 432 permits springs 420 to rock hammer arm 408, hammer rod 402 and hammer pad 404 in the clockwise direction (FIG. 1) about hammer pivot shaft 410 to move same back into their unactuated positions as shown in full lines in FIG. 1.

Removal of article 36 from its position of engagement with actuating arm 444 of cycle initiating lever 442 (FIG. 1) permits spring 450 (FIGS. 3*a* and 10) to rock cycle initiating lever 442 in the counterclockwise direction (FIG. 10) about hammer pivot shaft 410 moving switch operating arm 446 of lever 442 away from microswitch 448 and into engagement with stop rod 424. As arm 446 moves away from microswitch 448 switch blade 448-S thereof opens the circuit to start solenoid 190 to deenergizing same.

The action of spring 126 (FIG. 4) and spring 131 upon start lever 112 tends to rock start lever 112, brake lever 132, and start lever shaft 114 in the counterclockwise direction of the axis rotation of shaft 114; however, until main drive pulley 86 is returned to its home position (as shown in FIG. 2) cam follower roller 136 riding on cam surface 140 of cam 142 prevents such counterclockwise rotation thus maintaining the drive

engagement between motor stub shaft **70**, intermediate drive pulley **76**, and main drive pulley **86**. Movement of cam follower **136** into notch **198** (FIG. 4) of cam **142** thus permits the counterclockwise rotation of start lever **112** and the resulting engagement of brake shoe **146** with inner surface **150** of main drive pulley **86** (FIG. 2) and movement of surface **128** of intermediate drive pulley **76** away from motor drive stub **70** to terminate the cycle of operation of labeler **20** of its home position.

Should it be desired to change labeler **20** from hand operation to operation by foot switch hand/foot selector switch **470** is operated to move movable contacts **470-S-1** and **470-S-2** from their positions of engagement with stationary contacts **470-C-1-H** and **470-C-2-H** into positions of engagement with stationary contacts **470-C-1-F** and **470-C-2-F** thus illuminating mode indicator **472** to indicate that the machine is set for foot operation, through circuitry previously described, and preparing the machine for operation by foot switch F-S.

To change labeler **20** to accept labels of different size the operator merely needs to rotate retainer **336** (FIG. 1) in the counterclockwise direction away from the surface of feed drum **314** and remove retainer **336** from labeler **20**. Web **26** may then be withdrawn from its position as shown in FIGS. 1 and *3b* on bed plate **382** and within web guide **372**, rewind web **26** back upon the roll and take same off of spool shaft **362**. Feed drum **314** may then be removed by merely rotating stripper blade **344** in the clockwise direction (FIG. 1) about pin **348**, removing knob **318** (FIG. 8) from end **320** of feed stub shaft **262**, and the removing feed drum **314** from feed stub shaft **262**. Another feed drum **314** of appropriate size with appropriately spaced drive pins **330**, is then set upon feed stub shaft **262** and its roll pin **312** seated in aperture **310** of web feed ratchet **286**. Knob **318** is then tightened upon end **320** of feed stub shaft **262** and stripper blade **344** rotated in the counterclockwise direction about pin **348** and reseated within groove **346** of feed drum **314**.

The new roll of labels **28** is then mounted upon spool shaft **362** (FIG. *3a*) between guides **366** and **368**. Web **26** is reeled therefrom, threaded through web guide **372** across plate **382** (FIG. 1) about sharp reverse bend **32** and around feed drum **314** so that drive pins **330** thereof are disposed in sprocket holes **332** of web **26**. A proper web retainer **336** is then placed back into position in contact with web **26** to press same against the surface of feed drum **314** and labeler **20** is again ready for operation.

It should be understood that although web **26** has been shown with labeler **28** disposed one adjacent the other and with feed sprocket holes **332** disposed thereunder that the construction of labeler **20** and the operation thereof does not necessitate such a label and web construction but that in fact labels **28** may be disposed with their edges spaced one from the other and with sprocket holes **332** disposed therebetween to the sides thereof or in any other position to facilitate feed of the web **26**; it being remembered that when web **26** is disposed about feed drum **314** that labels **28** are no longer positioned thereon.

From the above description it will thus be seen that a novel and improved labeling mechanism has been provided for printing, dispensing, and applying pressure sensitive labels to articles; which labelers, by utilizing a mechanical drive and a pin and sprocket feed provides a positive step-by-step motion of the web and labels through the labeling mechanism thus greatly minimizing damage to the labels and the need for a space between each successive label upon the web. The labeler, in addition, by utilizing a mechanical hammer operated through a mechanical timing means initiated at a fixed point in the cycle of operation of the labeler by a cam arrangement provides a positive and efficient manner of applying labels to articles independent of vacuums and the complex controls normally associated therewith.

It is my understanding that although I have shown the preferred form of my invention that various modifications may be made in the details thereof without departing from its scope.

I claim:

1. A labeler for selectively dispensing and applying in serial fashion to articles to be labelled, labels disposed one after the other along a web and adhered thereto by means facilitating the ready removal of the labels from the web; comprising

a. frame means;

b. guide means adapted to guide the web and labels along a predetermined path;

c. said predetermined path including means providing a sharp reverse bend adapted to coact with the web and labels as the web passes thereabout to effect a separation of the labels from the web;

d. web advancing means adapted to draw the web along said predetermined path and about said sharp reverse bend to effect separation of the labels from the web;

e. label applying means operated in timed relationship with the operation of said web advancing means;

f. operating means coacting with said label applying means to move said label applying means so that in a single continuous movement said label applying means positively engages a label, as the label is being separated from the web, to move the label against an article when disposed adjacent thereto;

g. at least the final portion of said single continuous movement of said label applying means being in a direction generally transverse to the adjacent label-receiving surface of said article, said label applying means completely applying said label to the article to be labelled during said final portion of the movement of said label applying means;

h. the relative inertias of the moving label applying means and the label serving to hold the label against the label applying means.

2. The labeler of claim **1**; wherein the web includes a plurality of spaced sprocket holes and said web advancing means includes a web feed means carrying a plurality of spaced drive pins adapted for coaction with the sprocket holes of the web to positively move the web along said predetermined path.

3. The labeler of claim **2**; wherein the web feed means is removably disposed on said frame means to permit replacement thereof by other web feed means having drive pins disposed in different positions thereon for coaction with webs having corresponding sprocket holes.

4. A labeler of claim **3**; wherein the web feed means is in the form of a substantially cylindrical feed drum with the drive pins disposed in spaced relation about the periphery thereof.

5. The labeler of claim 4; wherein
a. said web feed means includes a roll pin; and
b. said web advancing means further includes a ratchet wheel adapted to receive said roll pin and disposed for coaction with a pawl adapted to rotate said ratchet wheel through a predetermined degree of rotation.

6. The labeler of claim 1; wherein said web advancing means includes a cam disposed for coaction with said operating means to initiate operation thereof during a predetermined point in the cycle of operation of said web advancing means.

7. A labeler for selectively dispensing and applying in serial fashion labels disposed one after the other along a web and adhered thereto by means facilitating the ready removal of the labels from the web; comprising
a. frame means;
b. guide means adapted to guide the web and labels along a predetermined path;
c. said predetermined path including means providing a sharp reverse bend adapted to coact with the web and labels as the web passes thereabout to effect a separation of the labels from the web;
d. web advancing means adapted to draw the web along said predetermined path and about said sharp reverse bend to effect separation of the labels from the web;
e. label applying means operated in timed relationship with the operation of said web advancing means;
f. operating means coacting with said label applying means to move said label applying means so that in a single continuous movement said label applying means positively engages a label, as the label is being separated from the web, to move the label against an article when disposed in proximity thereto;
g. the relative inertias of the moving label applying means and label maintaining the label and label applying means in proximity to each other and facilitating the proper affixing of the label to an article;
h. said web advancing means including a cam disposed for coaction with said operating means to initiate operation thereof during a predetermined point in the cycle of operation of said web advancing means;
i. said label applying means including hammer means disposed for movement through a predetermined label applying path;
j. said operating means including:
1. electrical solenoid means coacting with said hammer means to move same through said predetermined label applying path;
2. switch means electrically connected to said solenoid means through a suitable source of power to operate said solenoid means; and
3. return means for returning said hammer means to its initial position on deenergization of said solenoid means;
4. said switch means being also disposed for coaction with said cam means of said web advancing means to be operated thereby during a predetermined period in the cycle of operation of said web advancing means.

8. A labeler for successively removing single labels adhered by pressure sensitive adhesive to a web of release paper, the adhesive and release paper being formulated to permit ready removal of a label from said release paper, the release paper further having formed therein a plurality of spaced pairs of sprocket feed holes: comprising
a. frame means;
b. guide means adapted to guide the web along a predetermined path having a first direction and a second direction;
c. said predetermined path having dispoed therein a sharp reverse bend wherein said predetermined path changes from said first direction to said second direction;
d. cylindrical feed drum means having disposed about the circumference thereof a plurality of pairs of drive pins spaced from each other by a distance corresponding to the spacing of the sprocket holes in the web;
e. web retainer means adapted to urge the web into engagement with the surface of the said feed drum means in such a manner as to permit said drive pins of the feed drum to successively enter the sprocket holes of the web;
f. web stripping means disposed for coaction with said feed drum and the web to separate the web from said feed drum;
g. ratchet means rotatably disposed on said frame means for positive coaction with said feed drum means;
h. pawl means carried by said frame means for coaction with said ratchet means;
i. pawl operating means movably carried by said frame means for coaction with said pawl means to move said pawl means along a predetermined pawl feed path wherein said pawl cooperates with said ratchet to rotate said ratchet through a predetermined degree of rotation, said pawl operating means furthermore returning said pawl to its initial position;
j. said ratchet means during the rotation thereof through said predetermined degree of rotation positively driving said feed drum means;
k. said feed drum means when so driven moving the web through said predetermined path about said sharp reverse bend in such a manner that labels continue to move in said first direction when the web is being drawn in said second direction;
l. detent means disposed for coaction with said ratchet means to prevent retrograde rotation thereof;
m. label applying means including an element disposed for coaction with a label as it is being separated from the web to engage the label and move same against an article with disposed in proximity thereto; and
n. label applier actuating means operative in timed relationship with said web feed means to operate said label applying means.

9. The label of claim 8; wherein
a. said web advancing means includes cam means; and
b. said label applier actuating means includes cam responsive means operated by said cam means to initiate and terminate operation of said label applier actuating means and thereby said label applying means.

10. The labeler of claim 9; wherein said label applier actuating means; includes

a. electrical solenoid means;
b. said cam responsive means includes electrical switch means having contacts which are closed and reopended during coaction thereof with said cam means during the rotation thereof, and
c. electrical means interconnecting said solenoid means and said switch means to a suitable source of electrical power so that operation of said switch means will provide electrical power to said solenoid means to operate same.

11. A labeler for selectively printing, dispensing and applying labels adhered one after the other by a pressure sensitive adhesive to a web of release paper formulated to permit separation of the labels therefrom and with a plurality of feed sprocket holes, and normally disposed in roll form; comprising
a. frame means;
b. web support means disposed on said frame means and rotatably mounting the rolled web of labels;
c. printing means carried by said frame means and operative to print selected information upon each label;
d. web guide means adapted to guide the web and labels to and through said printing means to facilitate printing of the information upon the labels;
e. label stripper means disposed on said frame means and adapted to receive the web of labels after the labels have passed through said printing means;
f. said stripper means including a sharp reverse bend about which the web is directed and which, due to the characteristics thereof and of the labeler, adhesive and web, is adapted to effect a separation of the labels from the web in such a manner that the labels are projected into a label applying path;
g. hammer means carried by said frame means and including a resilient pad adapted for movement through said label applying path and to engage a label when disposed therewithin;
h. web feed means carried by said frame means and adapted to draw the web to and through said printing mechanism and about said sharp reverse bend;
i. said web feed means including a feed drum having disposed about the periphery thereof a pluraltiy of pairs of drive pins adapted for coaction with the feed sprocket holes of the web to thereby positively feed the web;
j. said web feed means further including a feed ratchet having formed therein an aperture adapted to receive a roll pin carried by said feed drum to positively interconnect said feed ratchet and said feed drum, and a feed pawl disposed for coaction with said feed ratchet to rotate same through a predetermined degree of rotation.
k. the diameter of said feed drum, the spacing of said drive pins thereabout and the spacing of the sprocket holes in the web being such that upon rotation of said feed drum through said predetermined degree of rotation a single label is projected into said label applying path;
l. a web drive means carried by said frame means for coaction with said web feed means to operate same;
m. a main drive means carried by said frame means for coaction with said web drive means to operate same and also for coaction with said printing means to operate same;
n. power supply means carried by said frame means for coaction with said main drive means to provide power therefor but normally disconnected therefrom;
o. connecting means carried by said frame means for coaction with said power supply means and said main drive means to selectively interconnect same, said connecting means including stop means coacting with said main drive means to arrest rotation thereof at a predetermined location;
p. hammer operating means carried by said frame means for coaction with said hammer means and said main drive means and adapted to operate said hammer means at a predetermined time during the operation of said main drive means so that said resilient pad of said hammer means engages a label upon movement thereof into said label applying path; and
q. cycle initiating means carried by said frame means and adapted for coaction with an article when moved thereagainst to initiate a cycle of operation of the labeler by actuating said connecting means to release said stop means and interconnect said power supply means and said main drive means to thereby operate said printing means and said web feed means to feed the web and a label carried thereby to said printing means and to project a label into said label applying path, said main drive means further coacting with said hammer operating means to operate said hammer means to engage the projected label and press same against the article when disposed in said label applying path.

12. The labeler of claim **11**: wherein the labels are disposed one adjacent the other along the web.

13. The labeler of claim **11**: wherein
a. said hammer operating mechanism includes an electrically operated solenoid and a switch to interconnect and disconnect said solenoid with a suitable source of electrical power;
b. said main drive means including switch operating means adapted to close said switch at a predetermined time during its operation and to subsequently open said switch.

14. The labeler of claim **11**: wherein
a. said feed drum is removably disposed on said frame means to facilitate replacement thereof by another feed drum having differently spaced drive pins adapted for coaction with a web having corresponding sprocket holes spacings.

15. The labeler of claim **11**: including
a. a web retainer disposed on said frame means to urge the web against said feed drum; and
b. a web stripper disposed on said frame to facilitate separation of the web from said feed drum.

16. The labeler of claim **15**: wherein said web retainer is removably disposed on said frame means and has a configuration corresponding to the configuration of said feed drum.

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