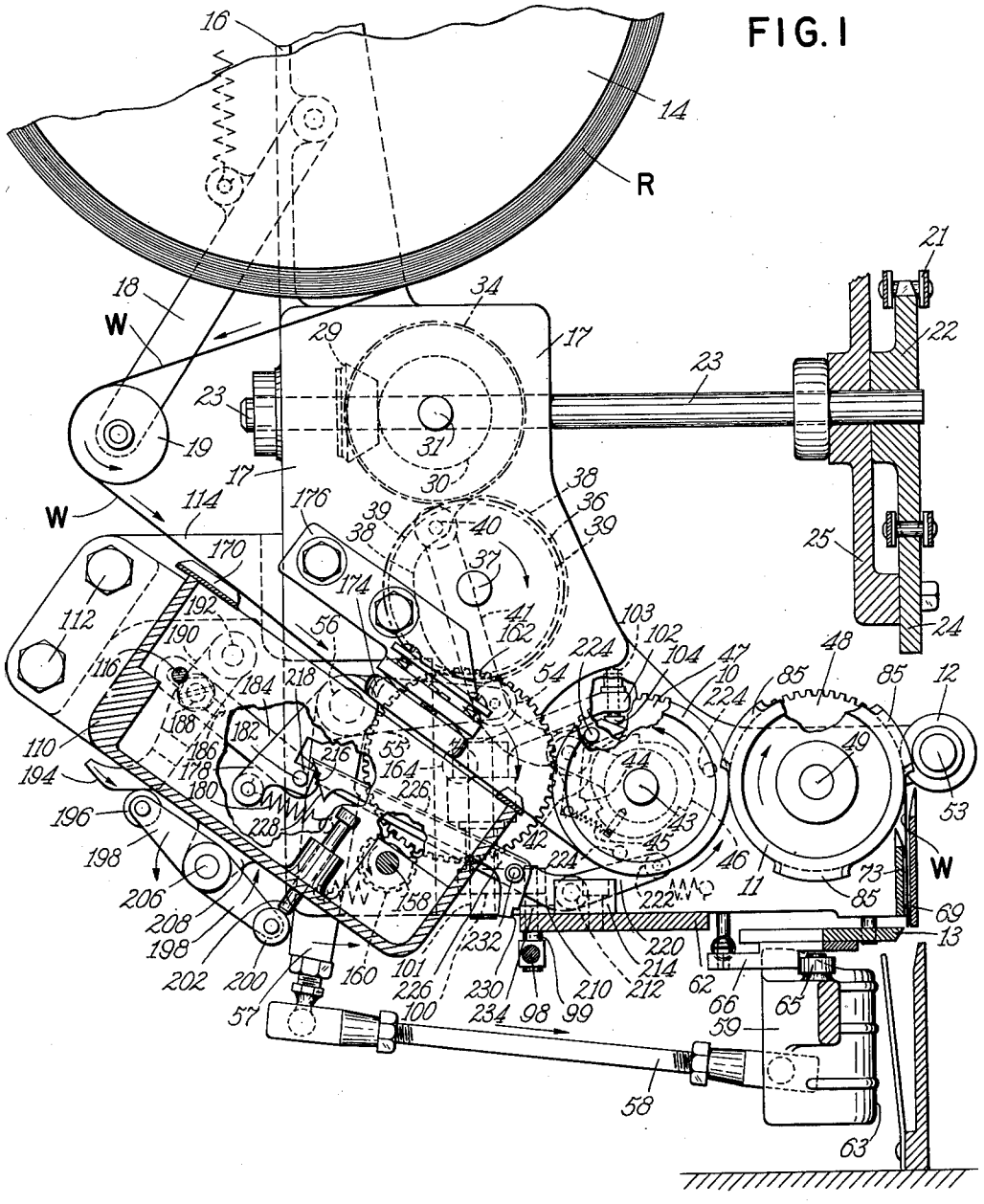
April 29, 1952 E. E. POHL 2,594,679

CODE MARKING DEVICE FOR LABELS

Filed Feb. 26, 1949 4 Sheets-Sheet 1

FIG. 1




INVENTOR
ERNEST E. POHL
BY Tennes J. Cristel
ATTORNEY

April 29, 1952 E. E. POHL 2,594,679

CODE MARKING DEVICE FOR LABELS

Filed Feb. 26, 1949 4 Sheets-Sheet 2

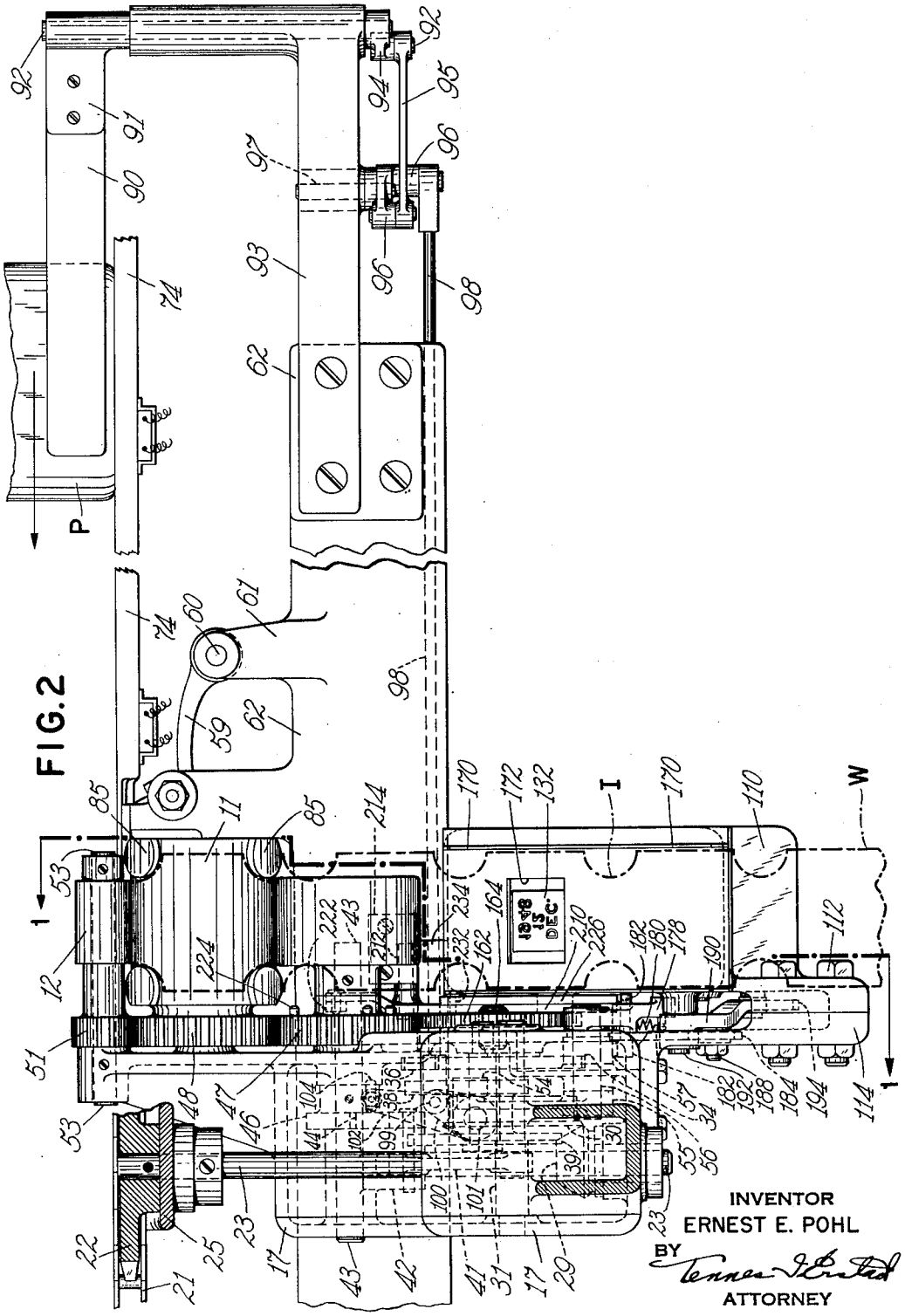



FIG. 2

INVENTOR
ERNEST E. POHL
BY Tennes J. Eustad
ATTORNEY

April 29, 1952 E. E. POHL 2,594,679

CODE MARKING DEVICE FOR LABELS

Filed Feb. 26, 1949 4 Sheets-Sheet 3

FIG. 3

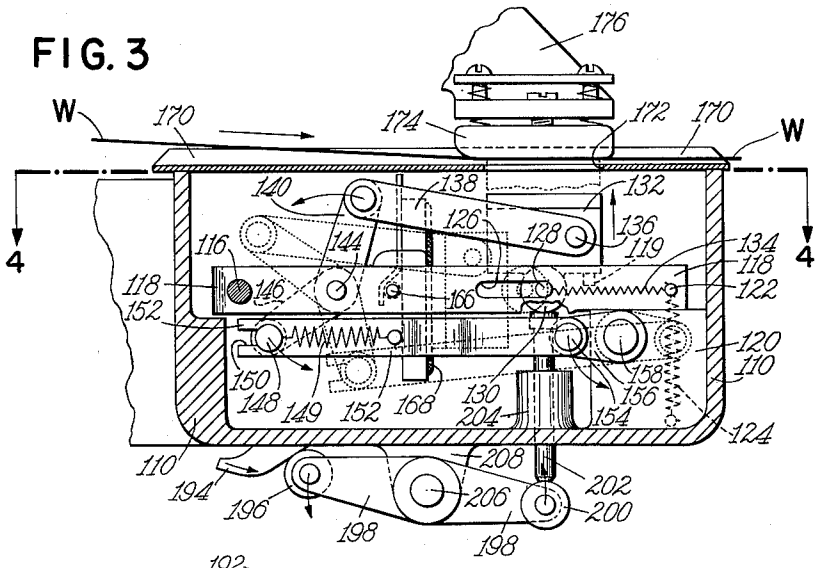



FIG. 4

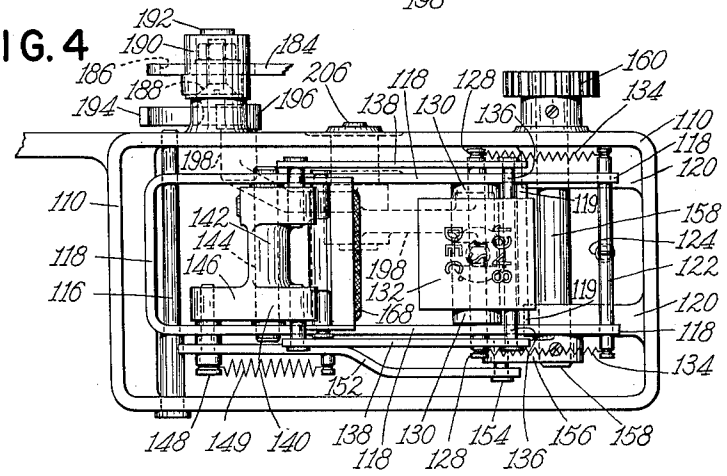
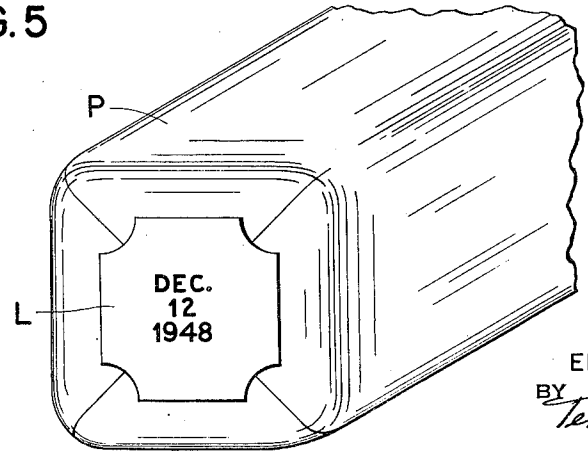



FIG. 5




INVENTOR
ERNEST E. POHL
BY Tennes J. Erstad
ATTORNEY

April 29, 1952 E. E. POHL 2,594,679

CODE MARKING DEVICE FOR LABELS

Filed Feb. 26, 1949 4 Sheets-Sheet 4

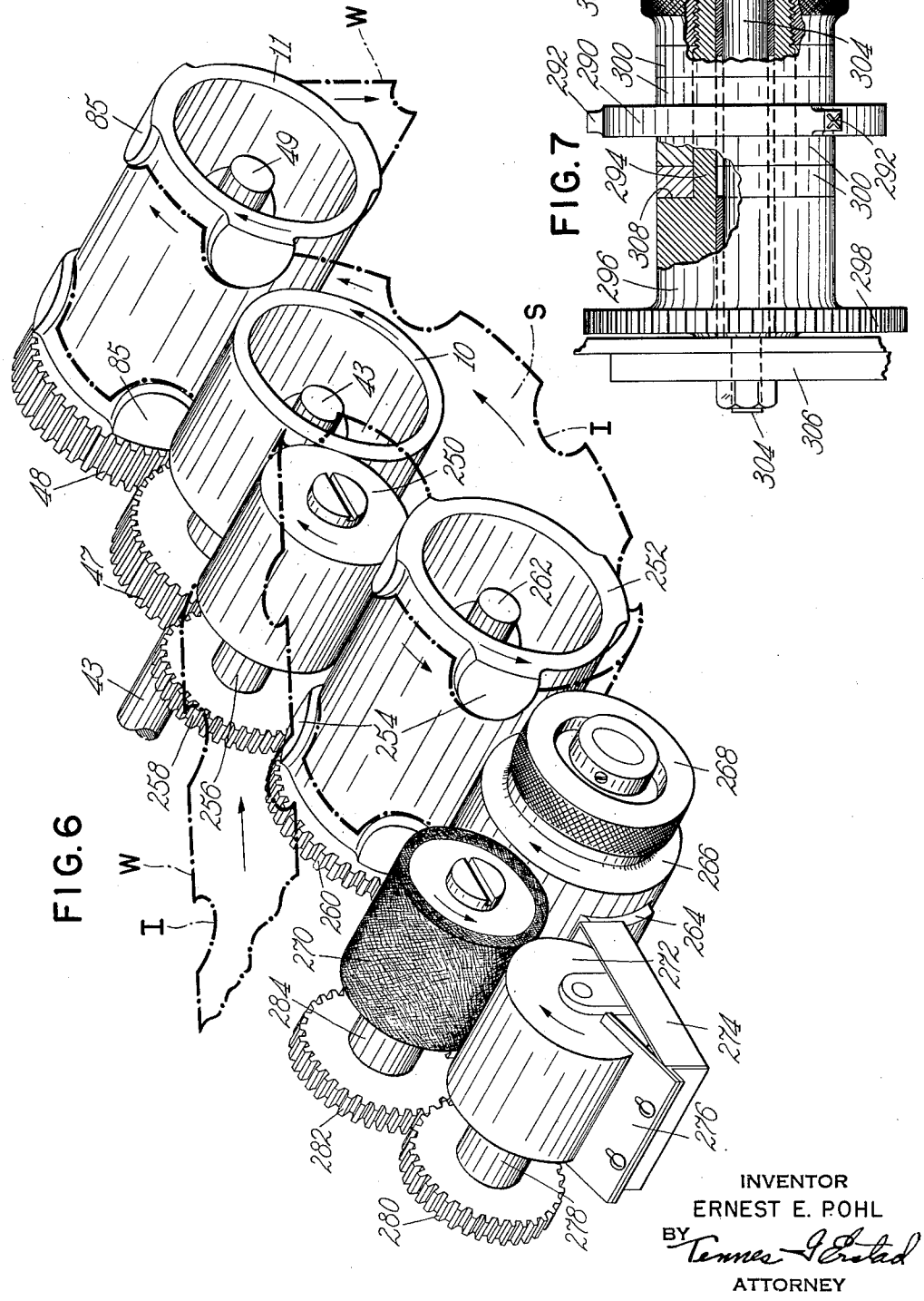



FIG. 6




FIG. 7

INVENTOR
ERNEST E. POHL
BY Tennes J. Erstad
ATTORNEY

Patented Apr. 29, 1952 2,594,679

# UNITED STATES PATENT OFFICE

2,594,679

## CODE MARKING DEVICE FOR LABELS

Ernest E. Pohl, Elmhurst, N. Y., assignor to American Machine and Foundry Company, a corporation of New Jersey

Application Febraury 26, 1949, Serial No. 78,510

2 Claims. (Cl. 101—228)

1

This invention relates to code-dating apparatus and more particularly to a device which is particularly well suited for use with an end label attaching machine of the type commonly employed with bread wrapping machines.

The practice of attaching labels to the ends of packages such as loaves of bread for example is now well established. In order to determine how old or how long a particular package has been on a shelf in a grocery store for example, it is desirable to mark the package at the time of wrapping either with a code mark or a date. If this code or date mark is placed on the end label it may be quickly seen because the ends of bread loaves are usually visible without having to handle each package individually.

It is the purpose of this invention to provide a code-dater which may be readily employed with end labeling apparatus now commonly used with bread wrapping and packaging machines which will be reliable in operation and of relatively simple construction to facilitate cleaning and inspecting the unit. Another advantage of the code-dating device is that it utilizes the same drive as that which operates the wrapping machine and the label applier.

In this connection it is also an object of my invention to provide a printer for use with an end label applier which will be maintained free from printing on an end label when no packages are present to which end labels are to be attached.

It is also an object to provide a code-dating and printing apparatus which will maintain the printer free from being respeatedly inked when no package is present to which a label is to be applied.

A further object is to provide a code-dating device which will be adaptable for operation by the same drives which operate the end label attaching mechanism with which the code-dating device is to be used.

Another object is to provide a code-dating device wherein the printed indicia can be easily and quickly changed for other indicia whenever desired.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses. In the accompanying drawings, which form a part of this specification, like characters of reference have been applied to corresponding parts throughout the several views which make up the drawings.

Fig. 1 is a side elevation, partly in section, of an end labeling device in conjunction with a code-dater, taken on line 1—1 of Fig. 2.

2

Fig. 2 is a plan view of the end labeler and code-dater.

Fig. 3 is a sectional side elevation of the code-dater.

Fig. 4 is a plan view of the same.

Fig. 5 is an isometric view showing the dated label affixed to the end of a package.

Fig. 6 is an isometric view illustrating a modified form of a code-dater, and

Fig. 7 is a side elevation of a modified, interchangeable code-dating element.

The end labeling device used in conjunction with this new and novel code-dater is of similar design and construction as the one disclosed in Letters Patent 2,349,317, issued to Millard F. Weida, May 23, 1944. In the disclosed construction the label material is pulled from a roll R (Fig. 1) in the form of a web W by means of three intermittently rotating feed rollers 10, 11 and 12 which feed said web past an oscillating cutting knife 13 which at the proper time cuts individual labels from said web.

The roll R of label material, which may be provided with a suitable adhesive agent such as a thermoplastic coating consisting of crepe rubber wax composition of the general type disclosed in Patent 2,054,113 granted to A. Abrams et al. on September 15, 1936, is held upon a reel 14 which is mounted on a suitable shaft (not shown) supported by a bearing bracket 16 extending from a housing 17. To bracket 16 is also pivoted an arm 18 carrying a spring tensioned take-up roller 19 over which the web W is guided to prevent any slack or looping, of said web.

A wrapping machine is usually equipped with two end labeling units to take care of the two ends of every package wrapped by said machine. Each labeling unit is driven in synchronism with the wrapping machine by one of the package conveyor chains 21. The latter engages with a sprocket 22 mounted on the end label unit drive shaft 23 which is supported by a suitable bearing of housing 17 and a bearing in a bracket 25 which is secured to the frame of the wrapping machine (not shown). To assure proper engagement of chain 21 and sprocket 22, said chain is supported by a suitable guide rail 24 attached to the lower portion of bracket 25.

The end label unit illustrated in the accompanying drawings is driven in the same manner as that disclosed in the above mentioned Patent 2,349,317. A bevel gear 29 mounted on shaft 23 drives a bevel gear 30 which in turn is connected

with a gear 34 meshing with a gear 36 mounted on a shaft 37 to which is also secured a disc 39. The latter carries a crank pin 40 to which is pivoted the upper portion of a crank arm 41. The lower portion of the latter is pivoted to a crank lug 42 loosely mounted on a shaft 43 supported by suitable bearings of housing 17. Gear 34 is an integral part of bevel gear 30 and both gears are loosely mounted on a stud or shaft 31.

Crank lug 42 carries a pawl 44 which, by means of a suitable tension spring 45 is held in engagement with a ratchet 46 mounted on the shaft 43, thus transmitting intermittent motion to shaft 43 to which the feed roller 10, mentioned heretofore, is fastened. Keyed to shaft 43 is a gear 47 meshing with a gear 48 which is attached to feed roller 11. The gear 48, as well as the feed roller 11, are loosely mounted on a stud 49 held by a suitable bearing bracket extending from housing 17. Gear 48 meshes with a gear 51 (Fig. 2), which is an integral part of feed roller 12 and loosely mounted on a stud 53, held by the heretofore mentioned bearing bracket.

Loosely mounted on stud 37 and attached to gear 36 is a cam 38. Said cam 38 rotates continuously with gear 36 and engages with a cam roller 54 pivoted to a cam lever 55 which is mounted on a shaft 56 supported by a suitable bearing in housing 17. To shaft 56 is secured an operating lever 57 (Fig. 1) which by means of a connecting rod 58 is connected to the label applier arm 59 suitably pivoted to a vertical stud 60 (Fig. 2). The latter is supported by a suitable bearing lug 61 of a horizontal supporting bracket 62 extending from housing 17.

In the same manner as illustrated in the heretofore mentioned Patent 2,349,317 the applier cam 59 is equipped with a label applier head 63 and also carries a cam roller 65 (Fig. 1) which in connection with a cam lug 66 actuates the cutting knife 13. The latter in conjunction with the stationary ledger plate 69 performs the cutting of the individual labels L from the web W as disclosed in said Patent 2,349,317. The ledger plate 69 together with a guide plate 73 form a guide channel for the leading end of web W from which the individual label L is to be cut.

The packages P emerging from a wrapping machine (not shown) are propelled through a delivery runway consisting of a pair of side guide plates 74 and a suitable bottom plate (not shown) by a series of pusher arms (not shown) equally spaced and swingably attached to a pair of conveyor chains 21. As mentioned heretofore, each of the conveyor chains 21 drives its respective end labeling unit which are placed opposite each other at the end of each side guide plate 74. Since the manner in which the end labels are applied to each end fold of package when passing the end labeling unit is fully disclosed in Patent 2,349,317 further description thereof is deemed unnecessary.

In order to prevent slippage of the web and loss of registration of the printed matter on the labels, the edges of the web are provided with properly spaced cut-outs or identations I which register with correspondingly spaced, raised portions 85 of the feeding drum 11. The stroke of crank arm 41 actuating the pawl 44 as well as the ratchet 46 with which said pawl engages are set for proper registration as well as the proper timing with relation to the operating arm 57 which actuates and controls the label applying as well as the label cutting means.

Since it is desirable to stop the label feed in case of a missing package, the labeling unit is provided with a feeler plate 90 (Fig. 2) which is located in the path of the traveling packages ahead of the labeling units of the machine. Said feeler plate is fastened to a lever 91 mounted on a shaft 92 supported by a bearing bracket 93 held by bracket 62. To shaft 92 is secured an arm 94 which through a link 95 is connected to the upper end of a double lever 96 loosely mounted on a stud 97 held by bracket 93. The lower end of double lever 96 is connected by rod 98 to a stud 99 mounted on a lever 100 which is secured to a vertical shaft 101 supported by suitable bearing lugs within the housing 17. To the upper portion of shaft 101 is fastened an arm 102 carrying an adjustable stud 103, the lower portion of which is equipped with a shoe 104.

The action of the no-package no-label device is as follows:

When no package is in the delivery runway, feeler plate 90, hangs in its lowermost position, causing, through the hook-up and linkage just described, the shoe 104 to press pawl 44 out of engagement with ratchet 46, thus arresting the intermittent motion imparted to shaft 43 by crank arm 41 and pawl 44. As soon as a package encounters the feeler plate 90 the latter is lifted by the former causing arm 102 to swing the shoe 104 out of the path of the pawl 44 permitting the engagement of the same with ratchet 46, thereby permitting the feed of one label length of web W past the now open knife 13.

The code-dating device used in conjunction with the end labeling device just described is employed for the purpose of providing the end labels with a date, code or other identification marks by which the manufacturer or dealer can readily identify the date of manufacturing of the article wrapped, its serial number or any other data which may be marked or printed on the end label.

The code-dating device consists of a housing 110 which by means of bolts 112 is securely attached to a flange 114 projecting from the end labeler unit housing 17. Within housing 110 on a shaft 116 (Figs. 3 and 4) is loosely mounted a U-shaped arm 118 the free ends of which resting on a pair of supporting lugs 120 which are an integral part of housing 110. The free ends of said U-shaped arm also carry a cross-pin 122 to the central portion of which is anchored a tension spring 124. The other end of the latter is suitably attached to the bottom of housing 110. Each side of the U-shaped arm 118 is provided with a horizontal slot 126 each of which engages with a stud 128 projecting from each side of the lower portion 130 of a stamp applier head 132. A pair of tension springs 134 held by cross pin 122 and anchored to each stud 128 are employed to keep studs 128 in contact with the rear end of slots 126 during stamping action.

The upper portion of stamp applier head 132 carries a cross pin 136 to each projecting end of which is pivoted one end of a link 138 while the other ends of both links are pivoted to a pair of arms 140 which form an operating member 142 which is loosely mounted on a shaft 144 (Fig. 4) held by the U-shaped bracket 118. Member 142 is furthermore equipped with an actuating lever 146, which on its free end carries a stud 148. The latter engages with a slot 150 provided in the free end of a connecting rod 152 which on its other end is pivoted to a crank pin 154 secured to a crank 156 which is mounted on a horizontal cross-shaft 158 supported in suitable bearings in lugs 120 of housing 110.

Stud 148 is held yieldingly in engagement with slot 150 by means of a suitable tension spring 149 anchored on rod 152. One end of shaft 158 protrudes through one side of housing 110 and on this projecting end is mounted a gear 160 (Figs. 1 and 4), which meshes with a gear 162 (Fig. 1) loosely mounted on a stud 164 held by housing 17. Gear 162 is driven by gear 47 on shaft 43, the intermittent drive of which was described heretofore. Therefore, when shaft 43 and feed drum 10 is arrested, shaft 158 in housing 110 is also arrested. The U-shaped arm 118 furthermore carries a cross rod 166 to which is detachably clamped a suitable inked stamp pad 168 employed for the purpose of supplying the ink to the lettering on the top surface of the stamp applier 132 every time before the latter prints a label. The ink pad 168 can readily be removed for re-inking if required.

The top of housing 110 is covered by a suitable web guide plate 170 which is provided with a cut out 172 to permit the stamp applier 132 to protrude through said cover plate during stamp applying operation. Over said cut out 172 but slightly above cover plate 170 is located a cushion 174 (Figs. 1 and 3) resiliently attached to and held by a suitable bracket 176 mounted on housing 17. As illustrated in Fig. 1 the web W is led from the reel R over the take up roller 19 and then guided between the cover plate 170 and cushion 174 into contact with feed rollers 10, 11 and 12 all of which are connected by their meshing gears 47, 48 and 51 respectively, as described heretofore.

The stamping action proper is effected by means of an arm 178 which is loosely mounted on shaft 56 and, by means of a tension spring 180 and a stud 182, yieldingly connected to the oscillating operating lever 57. The latter, as mentioned above, receives its motion through cam lever 55 on shaft 56 and cam 38. One end of a link 184 is pivoted to stud 182 while the other end of said link is provided with a slot 186 (Fig. 1) which engages with a stud 188 pivoted in the cam arm 190. Slot 186 is provided for purposes of adjustment. Cam arm 190 is loosely mounted on a stud 192 held by housing 110. The lower free end of arm 190 is provided with a cam shoe 194 (Figs. 1, 3 and 4) which engages with a roller 196 pivoted to the end of one arm of a double lever 198.

The end of the other arm of said double lever 198 carries a roller 200 which contacts the lower end of a vertical plunger 202 which protrudes through the bottom of housing 110. The upper portion of the vertical plunger 202 engages with the lower portion 130 of the stamp applier 132. Plunger 202 is slidably supported by a suitable guide lug 204 at the bottom of housing 110. Double lever 198 is loosely mounted on a stud 206 held by a suitable lug 208 projecting from housing 110.

The label code-dating device illustrated in Figs. 1, 2, 3 and 4 performs two principal operations, namely, the inking of the stamp applier head and the stamp applying operation itself. The operation of supplying ink to the stamp applier head 132 starts with the moment the feed roller 10 is set in motion and is effected through the gears 47, 54 and 160 which causes to rotate the crank 156 in the direction of the arrow shown in Fig. 3. Said crank through connecting rod 152 causes the operating member 142 and arms 140 to follow which in turn, through links 138 causes the stamp applier head 132 first to tilt



90° and then to follow said links in a horizontal direction towards the ink pad 168. During this movement, the applier head is guided by means of its two studs 128 which advance in the horizontal slots 126 of the U-shaped arm 118.

The mechanism is so designed and arranged that, when the crank has turned 180° the stamping face of the applier head 132 is in contact with the ink pad 168 as illustrated in dotted lines in Fig. 3. As crank 156 continues to turn, the applier head 132 with the aid of tension springs 134 will return to its original upright position. The gearing and drive of crank 156 is so arranged that during the feed of one label length, which in this case is one third of a revolution of feed roller 10, the crank 156 makes one revolution only. As mentioned heretofore and as also disclosed in Patent 2,349,317, the timing of the end label unit is so arranged that as soon as one label length of web is fed past the knife 13 and ledger plate 69, the label applier head 63 and knife 13 through operating lever 57 get into action and cut said label off said web and apply the same to the end of the passing package P.

Since the arm 178 which effects the stamp applying operation is yieldingly connected to and actuated by operating lever 57, the stamp is applied to the web during the same period when a cut label is applied to the end of the passing package. The stamp applying operation takes place as lever 57 and arm 178 move forward in the direction of the arrow shown in Fig. 1. Since cam arm 190 is connected to arm 178 by the link 184, the former is also moved forward, causing cam shoe 194 to press roller 196 in a downward direction which, in turn actuates the double lever 198 in such a way that the roller 200 carried by the opposite arm moves in an upward direction. This effects a lifting of plunger 202 which, acting upon the stamp applier head 132 causes the latter to be pushed upward, through the cut out 172 in cover plate 170, into contact with web W to print a date or code on a predetermined spot on the web.

As mentioned heretofore a resiliently mounted cushion 174 aids in establishing a firm contact of the stamp applier head with the web W. During the return motion of operating lever 57, the stamp applier head 132, of course, descends again and resumes its original upright position within housing 110. To prevent cocking while resting in this position, the U-shaped arm 118 is provided with a suitable supporting bar 119 (Fig. 3). As described above the stamp face of the applier head 132 is coated with fresh ink each time before printing action.

Since the end label unit is provided with a no-package, no-label device which arrests the feed roller 10, no inking operation will take place in such case since the crank 156 is geared with said feed roller, the movement of which is arrested. However, since operating lever 57 is actuated by cam 38 and continues to oscillate, the stamp applier head 132 would ordinarily be lifted and brought into contact with web W even if there was no package and the web feeding mechanism was arrested. In such a case the stamp face would repeatedly contact the web which would result in a smudged label. To prevent such undesirable smudging, the arm 178 after each label applying operation, is arrested by a lock out lever 210 (Figs. 1 and 2) which prevents said arm from following the oscillating operating lever 57 except when the web feed is in operation and not arrested by the no-package, no-label device.

The lock-out lever 210 is pivoted to a stud 212 held by a suitable bearing block 214 secured to bracket 62 (Fig. 1). The free end of said lever 210 is provided with a suitable notch 216 which engages with a suitable cut out or tongue 218 of arm 178. Lock out lever 210 is furthermore provided with a control arm 220 which, on its free end carries a roller 222 which protrudes into the path of control pins 224 projecting from the face of gear 47. Since one third of a revolution of feed roller 10 is equal to the length of one label, gear 47 is provided with three equally spaced pins 224. To lock out lever 210 there is also pivoted a bell crank shaped trip lever 226 which on one end is provided with a slanted nose 228 while the other end is provided with a notch 230.

The operation of the lock-out arrangement may be briefly described as follows:

If, due to the presence of a package, the web feed is set in motion, shortly after starting, one of the control pins 224 will contact the roller 222 and, while passing the latter will cause a momentary downward motion of control arm 220 which will effect an upward motion of the lock out lever 210 causing the latter to raise to such an extent as to effect a disengagement of its notch 216 from the tongue 218 of arm 178. The lower edge of arm 210 will then clear the top edge of tongue 218 of arm 178 completely, thus freeing arm 178 to follow operating lever 57 at the end of the labeling cycle. Although lock out lever 210 is raised only momentarily when pin 224 contacts roller 222 it is maintained in this raised position by notch 230 of trip lever 226 engaging with the edge of a lock plate 234 due to pivot point 232 being raised sufficiently high to permit this.

As lever 57 starts to move forward, arm 178 also moves forward. The stud 182 which is carried by and projects from both sides of said arm 178 then contacts the slanted nose 228 of trip lever 226. This causes the trip lever 226 to swing upward and affect a disengagement of notch 230 from lock plate 234, thus allowing the lock out lever 210 to drop. The lower edge of the lever 210 rides on the top edge of tongue 218 permitting, during the return stroke of lever 57 and arm 178 the re-engagement of notch 216 of lever 210 with tongue 218 of arm 178.

Of course, if due to the absence of a package the web feed is arrested, the control arm 220 is not depressed by any of the pins 224 and the stamp applier is also arrested during that period. The operating lever 57, however, can continue its oscillating motion due to the yielding connection of arm 178 with lever 57 by means of spring 180.

While some prefer a reciprocating type of code dater just described, there is illustrated in Fig. 6 a modified form of my invention showing a rotary type of code-dater. Due to the simple construction and the accessibility of its component parts for cleaning and inspecting this modified form of my invention is preferred in many instances.

In this form of the invention the web W is led from the roll R around an idler roller 250 in between the latter and feed roller 10 and onto another feed roller 252. This feed roller 252 is similar to feed roller 11 in that they are both equipped with spaced raised portions 254 and 85 which engage with corresponding cut outs or indentations I of the web W. From feed roller 252 the web is led onto the feed roller 11 which feeds said web into the guide channel formed by ledger plate 69 and guide plate 73 shown in Fig. 1 and described heretofore. In order to take care of any variations in the spacing of the cut outs I of the web, the relative positions of the raised portions 254 of roller 252 to the raised portions 85 on feed roller II are such that the web W may form a loop S which assures an easy feeding of said web and eliminates any tension or stress on the same.



Roller 250 is mounted on a stud 256 to which is secured a gear 258 which is driven from gear 47 the driving means of which has been described heretofore. Gear 258 in turn drives a gear 260 secured to the feed roller 252, both of which are loosely mounted on a stud 262. The latter as well as stud 256 are held by a suitable bracket (not shown) which it attached to housing 17. In this modification the code or date is placed on the web by means of a raised type plate 264 secured to a rotary sleeve 266 which by means of a knob 268 is clamped to the hub of a gear (not shown) which meshes with and is driven from gear 260 mentioned above. The type plate or plates 264, of course are so set and arranged and the gearing is such that it will contact and print in a predetermined space on the web. The type plate 264 is inked by means of a rotary ink transfer roller 270 which rotates in contact with an ink roller 272 partly submerged in an ink well 274. The latter is equipped with an adjustable doctor plate 276 to properly control the film of ink on roller 272. Ink roller 272 is mounted on a stud 278 to which is secured a gear 280 which meshes with a gear 282 mounted on a stud 284 to which is fastened the ink transfer roller 270. The ink transfer roller may be covered with any suitable type of flexible material such as rubber, felt etc. The gear 282 meshes with the gear which drives the sleeve 266 on which the type plate 264 is mounted.

Fig. 7 illustrates an arrangement whereby the code-dating member may readily be shifted to different horizontal positions so that, for example, the code mark may appear on any one of five different positions, each position indicating a different day of the week. In this case the code-dating member may be a disk 290 which is provided with raised code marks 292 loosely supported by a turned down portion 294 of the hub 296 of a gear 298. Portion 294 furthermore carries four other discs 300 or smaller diameter but of the same width than disk 290 and the free end of said portion 294 is provided with a standard thread which carries a threaded knob 302.

Gear 298 is driven from gear 260 and is loosely supported by a stud 304 held by a suitable bracket 306 attached to housing 17. The horizontal position of the code-dating disc 290 may readily be changed by unscrewing knob 302 and placing said disc at the end or ahead or in the middle of spacer discs 300. After the disc 290 has been positioned where it will print in the place desired, the knob 302 is then replaced and turned tight against the discs 300 so that the innermost disc sets firmly against the shoulder 308 of gear hub 296. The friction between said shoulder, discs and knob is sufficient to hold the code-dating member firmly in place during operation. Since the entire train of feed rollers and ink supply roller is controlled by the intermittent motion of shaft 43, which is driven in the same manner as the drive shaft 43 shown in Fig. 1, the entire train will be arrested when there is no package present to be labeled. This no stamping or printing feature is similar to that

described with respect to the apparatus shown in Figs. 1 and 2.

While the position of the type with relation to the spot to be printed can be set in any manner desired, the timing may be so arranged that the type will not be in contact with the label or ink transfer roller when the web W is at rest thus preventing the label from being smeared.

As will be readily appreciated, the sleeve **266** shown in Fig. 6 may be mounted in the same manner as the discs shown in Fig. 7, namely on the turned down portion of its driving gear hub which may be constructed similar to gear hub **296** shown in Fig. 7, thus providing a convenient arrangement for resetting or replacing the printing sleeve **266**.

It will also be understood that the use of ink may be undesirable in some instances, and in such a case an embosser or perforator may be substituted for the printer referred to herein.

The invention above described may be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many possible embodiments of the same. The invention, therefore is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. In a code-marker for printing notched label material in strip form, a train of parallel feeding and guiding rollers arranged generally in the same plane, said train of rollers comprising first and second spaced feeding rollers having spaced lugs on their peripheries adapted to engage the notches in said label material, a pair of strip guiding rollers, said guiding rollers being positioned between said feeding rollers so that one of said guiding rollers contacts the first of said feeding rollers and the other of said guiding rollers contacts the second of said rollers, a printing roller having marking means on the periphery thereof engaging the first of said feeding rollers in rolling contact therewith, means for supplying ink to said printing roller, all of said rollers being geared together for conjoint rotation, said label material being directed first downwardly between said guiding rollers, then between said first guiding roller and said first feeding roller, and then between said second feeding roller and said second guiding roller to thereby provide a wrap of said material around the periphery of said first feeding roller.

2. A code marker having the features provided for in claim 1 wherein said train of feeding and guiding rollers is driven intermittently.

ERNEST E. POHL.

REFERENCES CITED

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

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 86,627 | Backus | Feb. 9, 1869 |
| 318,383 | Machris | May 19, 1885 |
| 619,209 | Nathan | Feb. 7, 1899 |
| 644,298 | McAdams | Feb. 27, 1900 |
| 679,627 | Leavey et al. | July 30, 1901 |
| 1,541,476 | Businger | June 9, 1925 |
| 1,884,760 | Lake | Oct. 25, 1932 |
| 1,945,498 | Avery et al. | Jan. 30, 1934 |
| 1,952,918 | Hartley | Mar. 27, 1934 |
| 2,349,317 | Weida | May 23, 1944 |