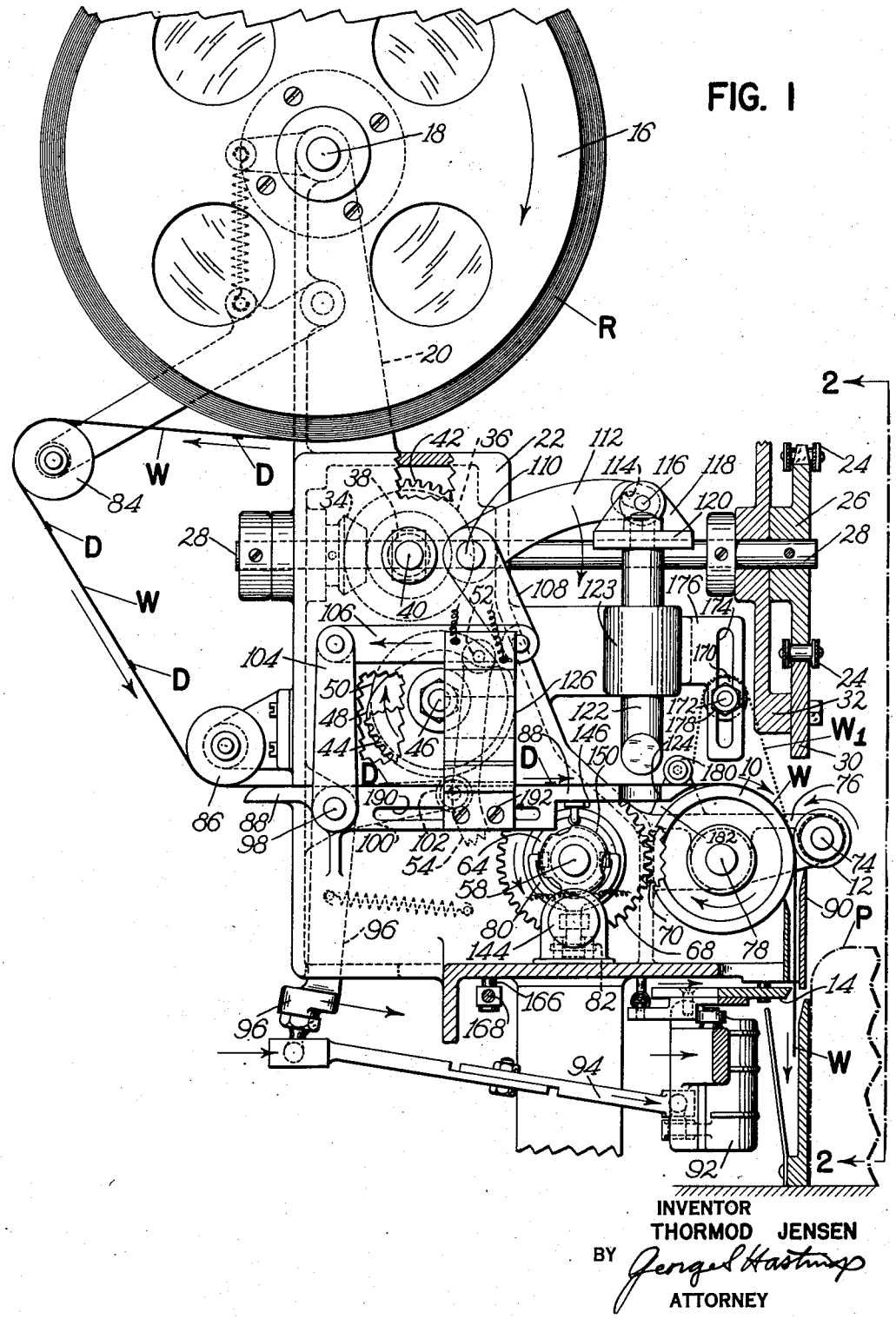
Sept. 20, 1949. T. JENSEN 2,482,711

END-LABELING ATTACHMENT

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FIG. 1



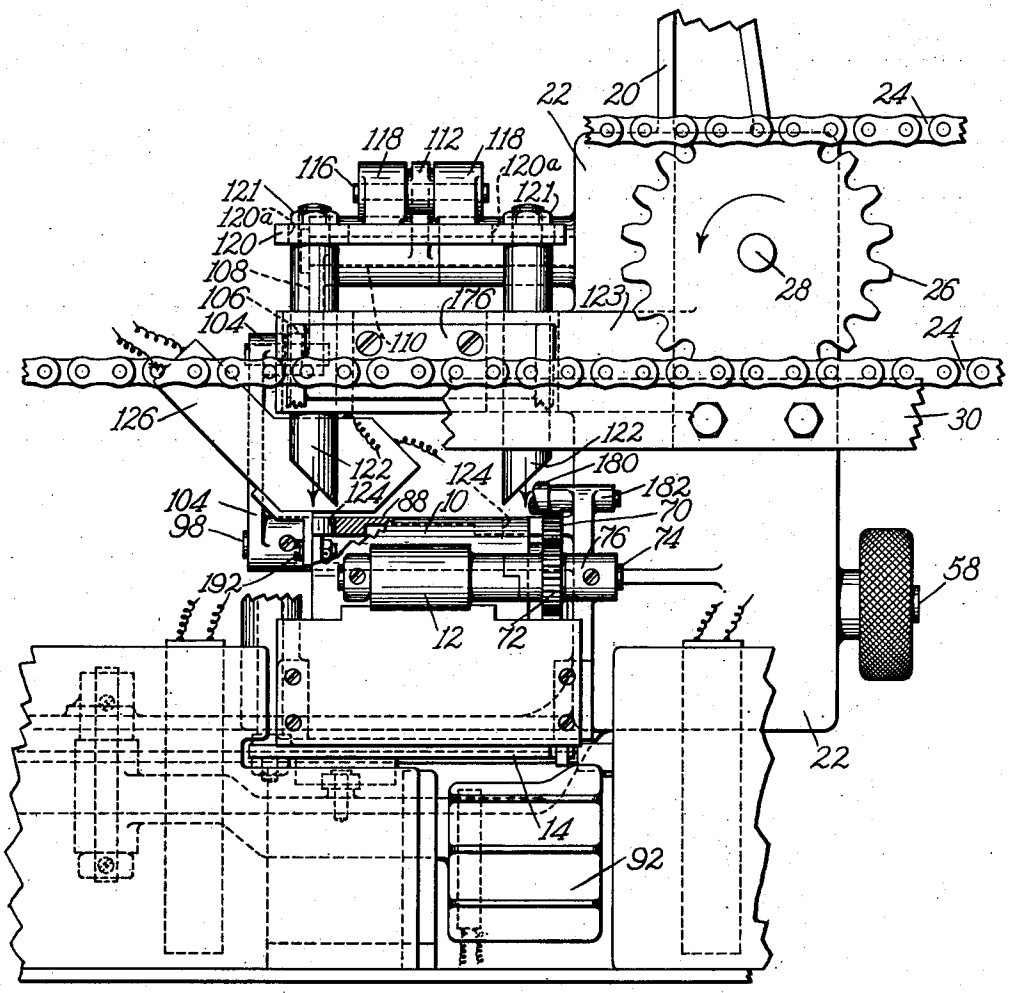
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FIG. 2



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FIG. 3

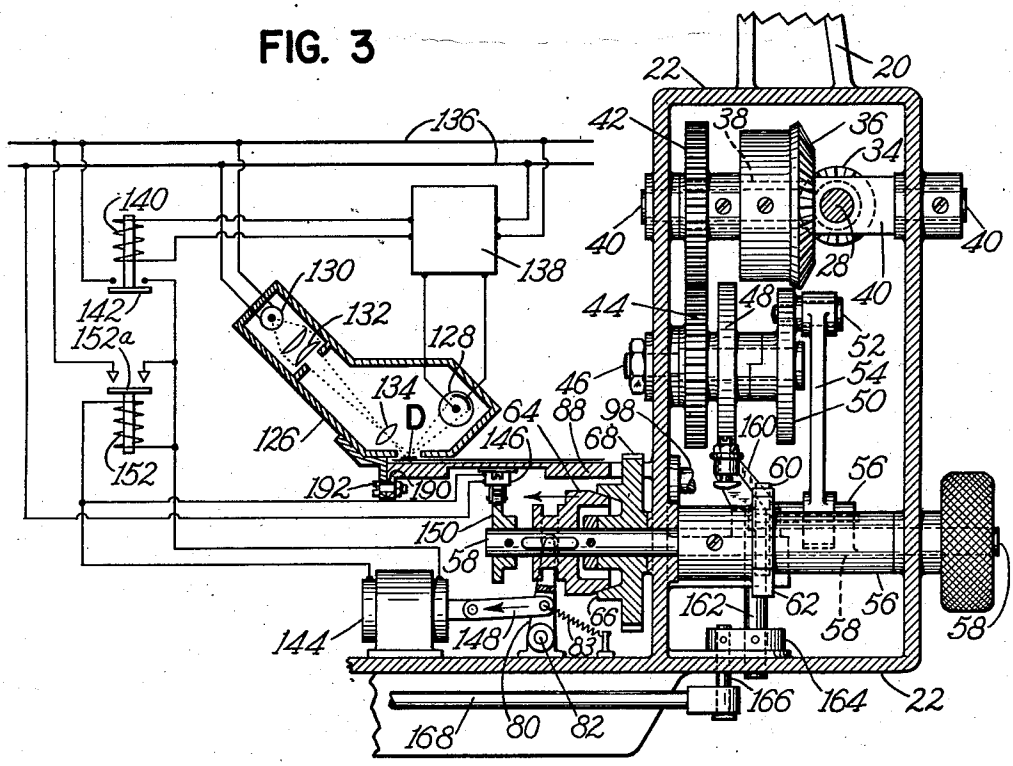
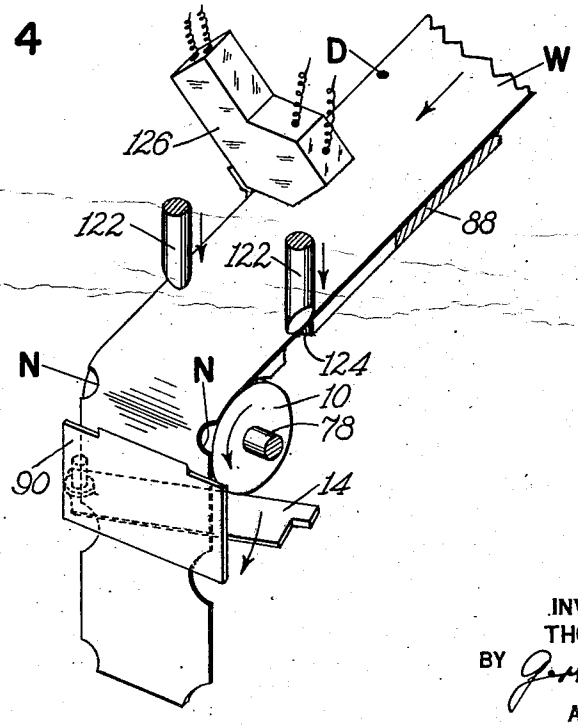


FIG. 4



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UNITED STATES PATENT OFFICE

2,482,711

END-LABELING ATTACHMENT

Thormod Jensen, Laurelton, N. Y., assignor to American Machine & Foundry Company, a corporation of New Jersey

Application December 12, 1945, Serial No. 634,524

8 Claims. (Cl. 216—30)

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This invention relates to labeling apparatus, more particularly to an end-labeling attachment for wrapping machines.

In prior end labeling attachments a pair of label webs having equally spaced notches along its lateral edges was fed into positions adjacent the end of a package, and the labels to be applied to the package were separated from the webs by cutting across the notches. The notching of the label webs was found to be desirable to obtain labels whose corners were cut away whereby curling of the corners of the labels when applied to the package was prevented. Moreover the notches in the label web were engaged by lugs on a feed drum to feed the label web to the label severing knife. Due to the equal spacing of the notches in the label web, the formation of different sizes of labels in the same end labeling attachment was not possible.

One of the main objects of my invention is to provide a labeler in which different lengths of labels may be severed from a label web. To obtain labels of the desired size the label web is provided with indicia imprinted at predetermined equal intervals thereon and each indicia successively stops a photoelectrically controlled mechanism for feeding the label, so that the web will be stopped at a predetermined position relative to a pair of punches which form aligned notches in the opposite edges of the web. The feeding of the web is then automatically resumed to advance the notches to a position opposite a cutter which severs the web across the notches to provide a label suitable for application to the package. When a different length of label is required, a label web having a different spacing of the indicia is used whereby the indicia on this web will stop the web feeding mechanism, so that the punches will form notches with a different spacing along the edges of the web. The distance between the punches and the label severing knife is varied to align the notches with the knife. Then, when the labels are severed along these notches, labels having a different length will be produced.

A further object of the invention is to dispense with the use of notched label webs which are more expensive than unnotched label webs. With my construction, a label web having a uniform width throughout its length may be employed to provide the desired size of label.

Still another object of the invention is to provide labels of different widths. Heretofore label webs of only one width could be employed in end labeling attachments of the type shown in the

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Weida Patent 2,349,317. In my improved labeler the notching punches may be adjusted toward and away from each other to accommodate different widths of label webs.

With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described.

In the accompanying drawings which form a part of this specification:

Fig. 1 is a side elevation of the end-label attachment;

Fig. 2 is an end elevation of the same as seen from line 2—2 of Fig. 1;

Fig. 3 is a sectional end elevation illustrating the photo-electric registering device and drive control mechanism; and

Fig. 4 is a diagrammatic illustration of the essential elements of the end-label attachment.

The end-label attachment illustrated in the accompanying drawings has a construction similar to that disclosed in Patent 2,349,317 granted to M. F. Weida, May 23, 1944. In my construction the label material is pulled from a roll R (Fig. 1) in the form of a web W by means of a pair of intermittently rotating feed rollers 10 and 12 which feed the web past an oscillating cutting knife 14 which at the proper time cuts individual labels from said web.

The roll R is supported by a reel 16 mounted on a shaft 18 which is supported by suitable bearings of a bracket 20 extending from a housing 22.

The entire labeling unit is driven by the package conveyor chain 24 of the wrapping machine. Said conveyor chain 24 engages with a sprocket 26 mounted on a horizontal shaft 28 supported in suitable bearings of housing 22. In order to assure proper engagement of chain 24 and sprocket 26, said chain is supported by a guide rail 30 attached to a bracket 32 supporting shaft 28. To the latter is also secured a bevel gear 34 which meshes with another bevel gear 36 mounted on a sleeve 38 loosely supported on a stud 40 held by housing 22. To sleeve 38 is furthermore secured a gear 42 which meshes with a gear 44 loosely mounted on a stud 46 secured to housing 22. The gear 44 has integrally formed thereon a cam 48 to the hub of which is secured a disk 50 carrying a crank pin 52 on which is pivoted one end of a connecting arm 54. The other end of said arm is pivotally connected by a pin to a crank lug 56 (Fig. 3) loosely mounted on a shaft 58 supported in suitable bearings of housing 22. On the pin connecting the crank lug 56 to the arm 54, is pivoted a pawl 60 which is held by a

tension spring (not shown) in engagement with a ratchet 62 secured to shaft 58, thus imparting intermittent rotation to shaft 58. Reference may be had to Weida Patent 2,349,317, for a complete description of the construction of pawl 60 and ratchet 62.

On shaft 58 is splined the male portion 64 of a conventional cone clutch (Fig. 3), the female portion 66 of which is integral with a gear 68 loosely mounted on shaft 58. Gear 68 meshes with a gear 70 (Fig. 1) which in turn drives a gear 72 (Fig. 2). The latter is loosely mounted on a stud 74 held by a bearing lug 76 of housing 22. The hub of gear 72 is coupled with the hub of one of the web feeding rollers 12 which is also loosely mounted on stud 74. Gear 70 is integral with the other feed roller 10 which is loosely mounted on a stud 78 also held by bearing lug 76. The male portion 64 of the clutch is engaged with or disengaged from the female portion 66 by means of a forked lever 80 which engages with the hub of said male portion 64. Lever 80 is pivoted to a stud 82 (Fig. 3) which is held by suitable bearing lugs. Lever 80 is normally held in position to engage clutch portion 64 with clutch portion 66, by a tension spring 83. The web W is guided from the reel over a take-up roller 84 and a guide roller 86 onto a horizontal table plate 88 extending from the side wall of housing 22 and is then engaged by the co-acting feed rollers 10 and 12. Upon leaving said feed rollers the web is guided through a guide chute 90 past the oscillating cutting knife 14 (Fig. 1) which cuts a label off the end of the web W. The cut end label drops into a pocket of the same form and construction as the one disclosed in above mention Patent 2,349,317. The end label is then pressed against the end of a passing package P by an applier head 92 which is also of the same shape and construction as the one disclosed in the above mentioned patent. The cutting knife 14 is hooked up with the applier head and actuated in the same manner as disclosed in said patent, namely through an adjustable connecting rod 94 by means of which the applier head is connected with an arm 96 mounted on a short shaft 98 which is oscillated by means of a cam lever 100 (Fig. 1) carrying a roller 102 engaging with the cam 48 mentioned heretofore. Since the construction of the knife 14 and the mounting of the same to cut the label is fully described in Weida Patent 2,349,317, further description thereof is deemed unnecessary.

To shaft 98 is furthermore secured an arm 104 the free end of which by means of a link 106, is connected to a lever 108 loosely mounted on a stud 110 held by a suitable lug of housing 22. From the hub of lever 108 extends another arm 112 whose free end is provided with an elongated slot 114 (Fig. 1) which engages with a stud 116 mounted on a pair of lugs 118 of a member 120. Member 120 is provided with elongated slots 120a in which are secured the upper ends of a pair of punches or notching plungers 122. Nuts 121 are threaded on the upper ends of the plungers 122 and secure the plungers to member 120. The lower ends of punches 122 are normally above the table plate 8 and each of the punches is aligned with a corresponding notch or cut-out portion 124 at each side edge of said table plate 88, so that at each downward movement of said punches 122 the web W is provided with a pair of notches N at the opposite edges of the web. Plungers 122 are properly guided in elongated slots of a suitable lug 123 extending from housing 22. Since the notching mechanism is actuated by means of the same cam 48 as the cutting knife 14, the notching and label cutting operations take place simultaneously but at different stations.

In order to maintain the printed matter or design appearing on each end-label in proper position in relation to the notches of the label, the web feeding mechanism is provided with a photoelectric registering device which stops the web at the proper position. For this reason the web is provided with properly spaced dots or indicia D which are printed in properly spaced relation to the printed matter or designs on the web W, with the dots so arranged on the web as to coincide with the sections which are to be notched. The photoelectric registering device consists of a detector unit 126 which is mounted in such a way as to project over the table plate 88 at a distance behind one of the notching plungers equal to the length of a label, or a plurality of the labels, to be cut. The detector unit consists of a photoelectric cell 128 which is responsive to the light reflected by the passing mark or dot D on the web. A beam of light from an incandescent lamp 130 is projected on this dot by a condensing lens 132 and a focusing lens 134. The lamp 130 is supplied with electricity from a power line 136 is also connected to an amplifier 138 of conventional construction. The latter is controlled by the photoelectric cell 128 in the customary manner when the beam of light strikes the dot D on web W while the same is being advanced over table 88, since the intensity of the light cast on photoelectric cell 128 is diminished and the passage of electric current through the photoelectric cell is materially decreased or interrupted. This decrease in current through the photoelectric cell affects the flow of current through the amplifier 138 sufficiently to energize a relay 140 and thereby close a contact 142. The supply lines 136 are connected to the contact 142 so that when the latter is closed, the line current will flow through and energize a solenoid 14. The armature of solenoid 144 is connected by a link 148 to the forked clutch control arm 80. Thus when solenoid 142 is energized it causes a disengagement of the male clutch portion 64 from female clutch portion 66 and thereby stops the feeding of the web W. A switch 146 of conventional construction is connected to one of the supply lines 136 and also connected to the other supply line through the lock-in relay 152 and the lead connecting solenoid 144 to contact 142. The opening and closing of the switch 146 is controlled by a cam 150 mounted on the intermittently rotating shaft 58. The cam 150 should be so constructed and arranged as to close switch 146 shortly before the mark or dot D passes under the detector 126 so that the energization of relay 140 and closing contact 142 will also energize the lock-in relay 152 with the result of locking in contact 152a which connects the solenoid 144 directly to one of lines 136 through the wires shown. Thus the solenoid 144 will remain energized and the clutch will be held out of engagement until the switch 146 is opened again by cam 150 at the beginning of the next forward stroke of crank lug 56. The opening of switch 146 stops the current to the solenoid, deenergizes the lock-in relay 152 and breaks lock-in contact 152a. In order to properly operate this type of

registering device, a slight over-feed action is necessary.

The same type of no-package no-label control shown in Welda Patent No. 2,349,317 may be provided including a pawl knock-out as illustrated in said Patent No. 2,349,317 by moving an arm 160 (Fig. 3) into the path of the oscillating pawl 60. The latter is thus prevented from engaging with ratchet 62 on feed shaft 58, thus stopping the intermittent rotation of shaft 58. Arm 160 is actuated by means of a vertical shaft 162 to which is also secured a lever 164 which by means of a stud 166 is connected to an adjustable rod 168 leading to a feeler mechanism of the same type and description as disclosed in the above mentioned patent.

In the normal operation of my improved end labeling attachment a predetermined maximum length of label is severed by the knife 14. The distance from the center of the cut out portions 124 of table 88 to the knife 14 is proportioned to align the centers of each successive pair of notches with the knife 14 when the web W is intermittently advanced by feed rolls 10 and 12 when the notches have a maximum spacing. Therefore labels having a maximum length will be severed.

If a shorter length of label is required the roll R is removed from the end labeling attachment and replaced by a roll of label material having a closer spacing of the dots D. For example if the dots D on web W should have a maximum spacing at 5 inch intervals, then labels having a 5 inch length will be severed. In case the web W should be replaced by a label web having a 3 inch spacing of the dots D then labels having a 3 inch length will be severed.

However the length of the section of the label web extending between the centers of the cut out portions 124 and the knife 14 must be varied, if shorter labels are to be severed. For this purpose the label web W can be guided over a roller 170 supported on a stud 172 passing through an elongated slot 174 in extension 176 formed on lug 123. The stud 172 has threaded on one end thereof a nut 178 which secures the stud 172 to extension 176. Thus upon guiding the leading end of web W over the roller 170 a loop W1 will be formed in the web, and the leading end of the web is then inserted between the feed rolls 10 and 12 and through the guide chute 90 so that its free end will hang down below the knife 14. Upon unloosening the nut 178 and adjusting the stud 172 upwardly or downwardly in slot 174 the size of loop W_1 may be varied to align the center of a pair of notches with the knife 14. It will be understood that preferably one of the ink spots or dots on the label web should be centered with the overlying notching plunger 122 when the loop W_1 is formed to align a pair of notches with knife 14.

To retain the label web against the plate 88 when it is looped over roller 170, there is provided a roller 180 which extends across the portion of plate 88 in front of the cut out portions 124. Roller 180 is supported on an extension 182 of the bracket 76.

Preferably the distance between the notching plunger and the ink spot at the detecting device 126 should be maintained equal to or a multiple of the spacing between a pair of adjoining printed spots on one of the edges of the label web. Therefore the detecting device is adjustable toward and away from the notching plungers 122 to conform to closer or greater spacings of the printed spots on different label webs. For this purpose the plate 88 is provided with an elongated slot 190 in a vertical flange formed thereon and the detecting unit 126 is secured to said flange by a bolt 192 passing through the slot 190. Upon unloosening bolt 192 the detecting unit 126 may be adjusted toward and away from the notching plunger 122. By means of this adjustment ink spots having different spacings on different webs will be notched out of the label web. Therefore the printed design on the severed labels will have relationship to the edges of the label for different lengths.

After the above described adjustments are carried out the notches in the edge of the label web will be formed at 3 inch intervals, if the ink spots are printed on the web at 3 inch intervals, or at any other spacing of the ink spots which is shorter than the maximum spacing of the ink spots that can be handled in the normal operation of the apparatus.

To accommodate label webs of wider or narrower width, the nuts 121 are unloosened and the upper ends of the notching plungers 122 are adjusted in slots 120a of member 120 to form notches in the desired width of label web. It will be understood that the table plate 88 should be modeled to suit the particular width of label web which is to be handled. The plate 88 can be made detachable from the housing 22, so that it can be replaced by another plate having a spacing of the cut out portions 124 conforming to the desired width of label web.

What is claimed is:

1. In a labeler, the combination with means for feeding a continuous web of label material, of devices for forming spaced notches in the lateral edges of the web, a knife for severing the web across the notches to form labels whose corners are cut away, and mechanism for applying the severed label to a package.

2. In a labeler, the combination with means for intermittently feeding a continuous web of label material by constant increments, said web bearing printed indicia which are equally spaced along the length of the web at intervals which are shorter than the increments by which said web is fed by said means, of devices for forming notches in the lateral edges of the web while the movement of the web is interrupted, a photoelectric control which is connected to said web feeding means and responsive to the movement of indicia on the web into predetermined position, for stopping the web feeding means while said devices form notches in the web whereby the notches in the web will be formed at predetermined positions relative to said indicia.

3. In a labeler, the combination with means for intermittently feeding a continuous web of label material by constant increments, said web bearing printed indicia which are equally spaced along the length of the web at intervals which are shorter than the increments by which said web is fed by said means, of devices for forming notches in the lateral edges of the web while the movement of the web is interrupted, a photoelectric control which is connected to said web feeding means and responsive to the movement of indicia on the web into predetermined position, for stopping the web feeding means while said devices form notches in the web whereby the notches in the web will be formed at equal intervals, and means for varying the distance between said control and said devices to permit indicia having

different spacings on different webs to be notched out by said devices.

4. In a labeler, the combination with means for intermittently feeding a continuous web of label material by constant increments, said web bearing printed indicia which are equally spaced along the length of the web at intervals which are shorter than the increments by which said web is fed by said means, of devices for forming notches in the lateral edges of the web while the movement of the web is interrupted, a photoelectric control which is responsive to the movement of indicia on the web into predetermined position, for stopping the web feeding means while said devices form notches in the web, a knife for severing the web across the notches to form labels whose corners are cut away, and mechanism for applying the severed labels to a package.

5. In a labeler, the combination with means for intermittently feeding a continuous web of label material by constant increments, said web bearing printed indicia which are equally spaced along the length of the web at intervals which are shorter than the increments by which said web is fed by said means, of devices for forming notches in the lateral edges of the web while the movement of the web is interrupted, a photoelectric control which is responsive to the movement of indicia on the web into predetermined position, for stopping the web feeding means while said devices form notches in the web, a knife for severing the web across the notches to form labels whose corners are cut away, and means for varying the length of the section of the label web intermediate said devices and knife whereby label webs having various spacings of

indicia may be fed by said means to cause said devices to form notches at different intervals and permit said knife to sever the label web across the notches to form different lengths of labels.

6. In a labeler, the combination with means for feeding a continuous web of label material, of devices for forming spaced notches in the lateral edges of the web, a knife for severing the web across the notches to form labels whose corners are cut away, and mechanism for applying the severed label to a package, said devices being adjustable toward and away from each other to accommodate label webs of different widths.

7. In a labeler the combination with means for notching and severing a continuous label web to form labels having their corners cut away, of mechanism for applying said labels to a package.

8. In a labeler, the combination with means for notching and severing a continuous label web to form labels having their corners cut away, of mechanism for applying said labels to a package, a device for feeding said label web into the range of action of said means, said label web being provided with equally spaced indicia, of a photoelectric control which is connected to said web-feeding device and responsive to the movement of said indicia into predetermined position, for stopping the web feeding device while the label web is being notched and severed, and instrumentalities for automtically restarting said web-feeding device after a label is severed from the web.

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No references cited.