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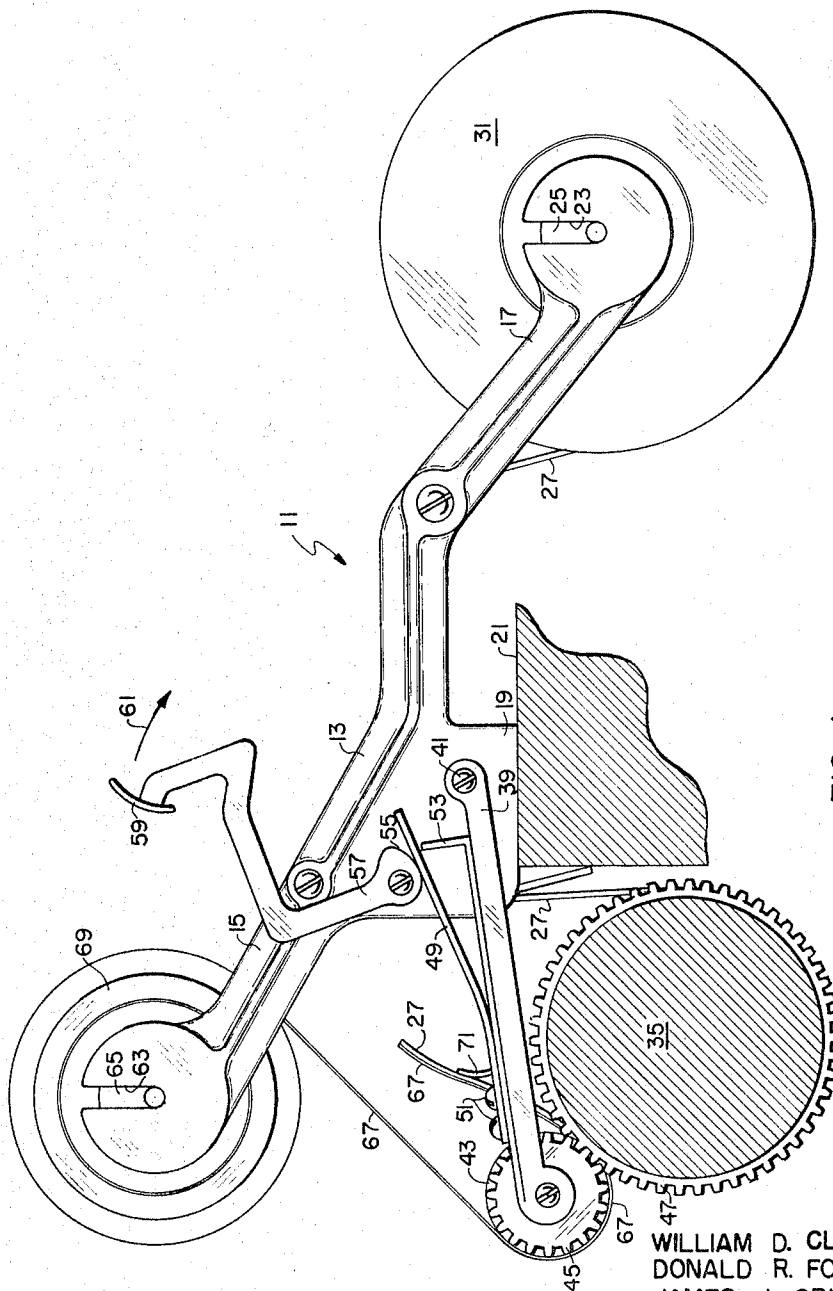
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**3,295,654**

# APPARATUS FOR PRODUCING LABELS

Filed Aug. 20, 1963

3 Sheets-Sheet 1



**FIG. 1**

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APPARATUS FOR PRODUCING LABELS

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3 Sheets-Sheet 2

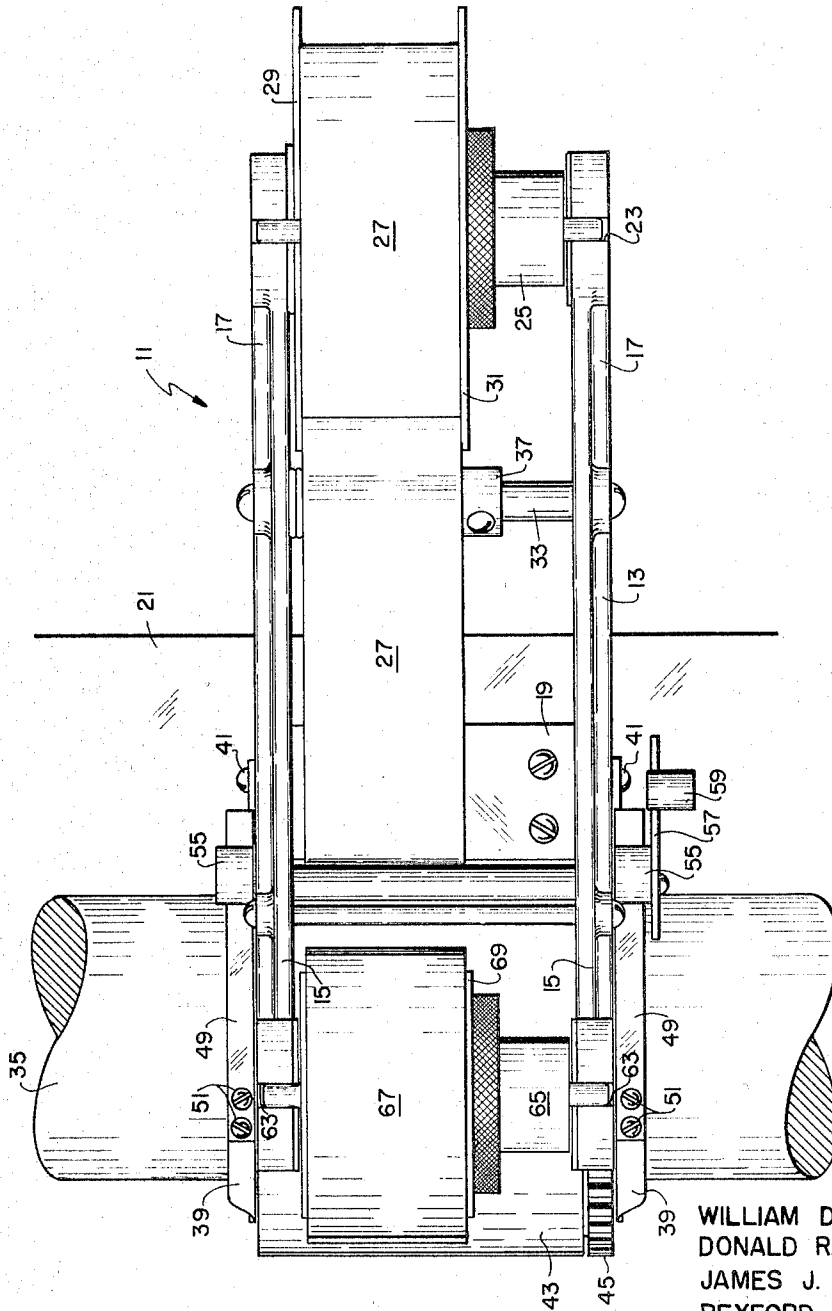


FIG. 2

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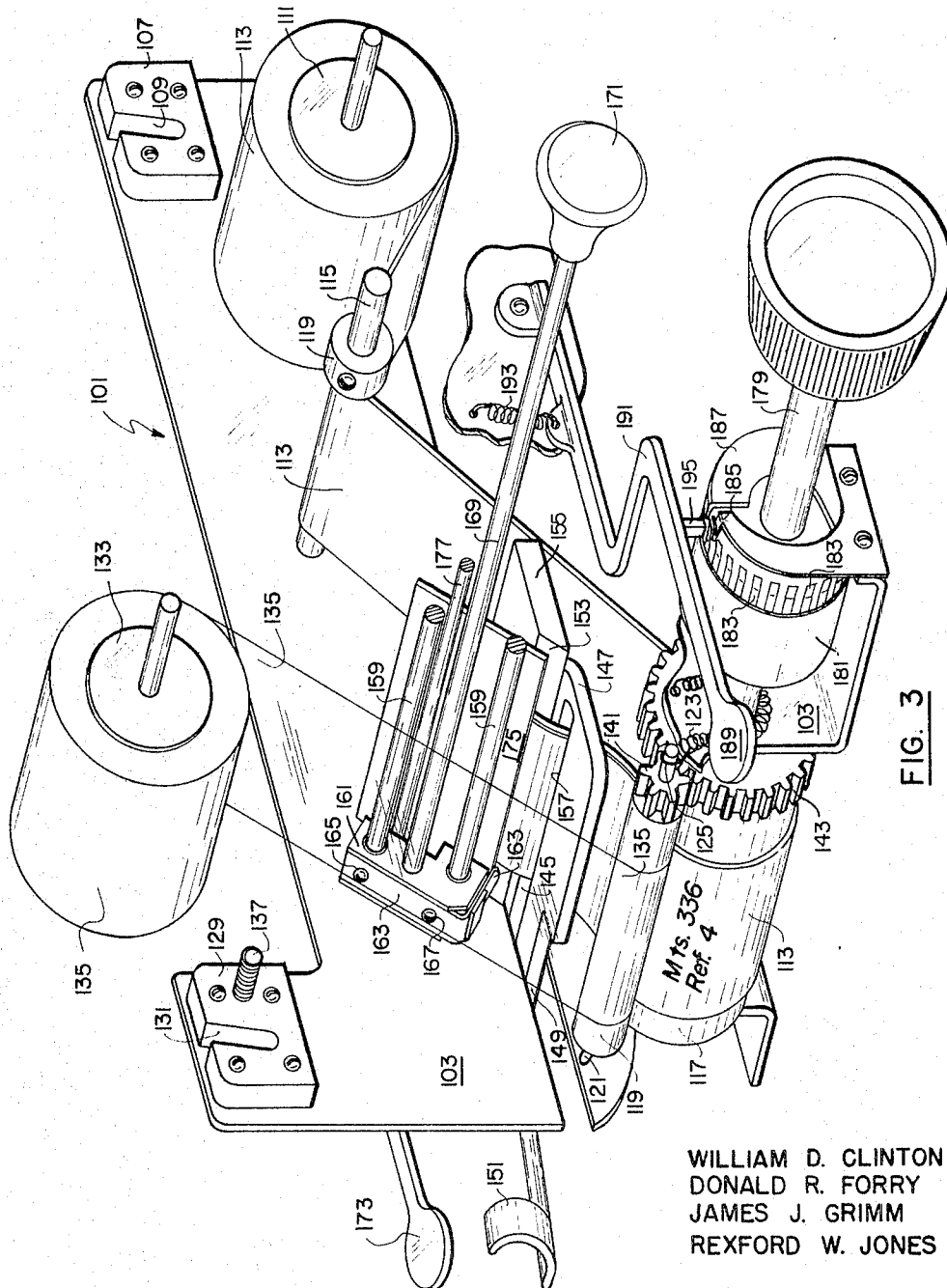
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# APPARATUS FOR PRODUCING LABELS

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3 Sheets-Sheet 3



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## APPARATUS FOR PRODUCING LABELS

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4 Claims. (Cl. 197-133)

This invention relates to a method and apparatus for producing durable labels. More particularly, it concerns a laminated label that has the printed indicia protected by a transparent cover.

The labels produced by the method and apparatus herein described have many uses, the most advantageous uses being those where a great degree of permanence is desired. The labels are useful for marking any property and especially where each label is different from the others as contrasted with labels for marking merchandise in department stores where a number of identical labels are produced for marking a group of similar items. However, there are some uses for this invention where many permanent, identical labels are required. The labels produced by this invention are particularly useful for marking library books with call letters. In the description that follows, the discussion of the invention is discussed mainly with reference to the problems involved in marking library books.

In the past, the majority of libraries have hand lettered the call letters onto the book fabric and then covered the lettering with a protective lacquer. In the labeling of many materials, including library books, the label is printed or stamped onto the article. This procedure is often difficult because of the type of material, which is often ink-resistant, and surface irregularities, such as texture and contour.

Briefly described, this invention includes a method of producing laminated labels from a strip of base material having an adhesive coating on one surface with a protective backing strip in apposite relationship with the adhesive coating and a strip of transparent material having an adhesive coating on one surface, comprising the steps of printing the desired material onto the surface of the strip of base material, placing the strip of transparent material onto the strip of base material with the adhesive coating adjacent to the printed indicia, cutting the label from the combined strips of base material and transparent material, and removing the protective backing strip of the base material.

Additionally, this invention includes apparatus for producing laminated labels, comprising, a frame adapted for mounting on the carriage of a typewriter, a roller mounted on the frame and positioned to contact and apply pressure to the platen of the typewriter, first means mounted on the frame for paying out a supply of base tape material with the base tape material passing around the platen of the typewriter in position to receive printed indicia therefrom and then threaded between the platen and the roller, and second means mounted on the frame for paying out a supply of transparent adhesive tape material, with the transparent tape passing around the roller onto the base tape whereby the pressure of the roller presses the adhesive tape onto the base tape after the base tape has received the printed indicia.

When the labels of this invention are used to mark library books, a number of advantages are realized. The labeled books have a general appearance of neatness and uniformity. The labels are more legible since they are typewritten instead of hand lettered. The marking is more durable and soil resistant, for example sweaty hands do

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not affect the label. Once marked with the laminated label, the books are available for immediate shelving or use without having to wait for ink or lacquer to dry.

Other advantages are: the selection of a label material that is more durable than cloth and paper labels, more durable than roll leaf material applied with a hot iron, and more durable than ink applied directly to the spine of the book; a uniformly legible imprinting mechanism which is also smudgeproof; a superior adhesive system; and efficiency equal to or greater than present labeling methods.

Still other advantages will be apparent from the description of the process and apparatus, the drawings, and the claims that follow:

In the drawings:

FIG. 1 is a side elevational view of an embodiment of the apparatus of this invention;

FIG. 2 is a plan view of the apparatus shown in FIG. 1; and

FIG. 3 is a perspective view, with one side of the frame broken away, of another embodiment of the apparatus of this invention.

Referring to FIGS. 1 and 2, the apparatus 11, which is referred to as imprinter-laminator, has a frame 13 with two pairs of projecting arms 15-15 and 17-17. The frame 13 has a base 19 that is adapted for mounting on a typewriter carriage 21 of any desired manufacture.

Each of the projecting arms 17-17 has a slot 23 near the end for receiving a spool 25 upon which is mounted a supply of base tape material 27. Preferably, the base tape material, or base label 27 consists of white, opaque plastic about 0.002 inch thick. The back side of this label tape 27 is coated with a thermoplastic adhesive and has a treated paper backing sheet in apposite relationship with the thermoplastic adhesive. The purpose of the release sheet or backing sheet is to protect the adhesive and to support the label tape 27 as it passes through the imprinter-laminator 11. The finished label is removed from the release sheet just prior to application of the label to a book or article. The release sheet then is discarded. A flange 29 mounted on one of the projecting arms 17 holds and guides the base tape material 27 on one side and a second adjustable flange 31 is slidably mounted on the spool 25 so that it can be adjusted for various widths of the base label material.

A base label material 27 passes from the spool 25 over a base tape guide roll 33 and from the base tape guide roll 33 around the platen 35 of the typewriter and is positioned to receive printed indicia from the typewriter. The base tape guide roll 33 has a guide 37 which is slidably mounted on the guide roll 33 and is adjustable for various widths of tape.

A pair of arms 39-39 are pivotally mounted, by suitable means such as the bolt 41 to each side of the frame 13. Rotatably mounted between the arms 39-39 is a roller 43. The roller 43 which rests upon the platen 35 has a gear 45 near one end and the gear 45 meshes with a gear 47 which has been specially installed on the platen 35 so that the platen 35 becomes a part of the attachment for the typewriter. The platen 35 may also be modified to support the frame 30 so that the frame 13 rests on the typewriter or carriage rather than being attached to the typewriter carriage. FIG. 2 indicates the preferred position of the frame 13 with respect to the platen 35 wherein it is seen that the platen gear 45 is spaced away from the end of the surface of the platen 35. Preferably, the gear 47 on the platen 35 has more teeth than are necessary to have the surface speed of the platen 35 and the surface speed of the roller 43 exactly equal. The preferred difference in speed is to have the surface speed of the roller 43 about 8 percent faster than the sur-

face speed of the platen 35. Thus, each time the platen 35 is rotated, the roller 43 rotates with it. A leaf spring 49 is attached near the roller 43 by suitable means such as screws 51—51 to the arm 39. The unattached end of the spring 49 rests upon a projection 53 on the arm 39. Between the attached end of the spring 49 and the projection 53 the spring 49 is contacted by a cam surface 55. The cam surface 55 is rotatably mounted on the frame 13 and attached to an arm 57. The handle 59 is attached to the arm 57 so that when the operator grasps the handle 59 and pushes the arm in the direction of the arrow 61 (FIG. 1) the cam surface applies pressure to the spring 49 and forces the roller 43 tightly against the platen 35.

The arms 15—15 of frame 13 are also provided with slots 63—63. The slots 63—63 support a spool 65 upon which is rotatably mounted a supply of overlayer tape material 67. Preferably, the overlayer tape, also supplied with an adhesive, is about  $\frac{1}{16}$  inch narrower than the respective base-label tape 27 with which it is used. This provides some leeway in the tracking of the two tapes 27 and 67 during the lamination. The overlayer tape 67 is preferably a thin transparent plastic with a matte finish to minimize the gloss reflections which might impair legibility. The overlayer tape 67 has good aging properties and is scuff and abrasion resistant. No backing sheet is required with the overlayer tape 67 because it is laminated directly to the base-label tape 27. The overlayer tape 67 passes from the spool 65 around the roller 43 and between the roller 43 and the platen 35 where it is laminated onto the base-label tape 27 after the base-label tape 27 has received the desired printed indicia. An adjustable flange 69 is slidably mounted on the spool 65 to guide the overlayer tape 67 and is adjustable for various widths of tape. After the two tapes 27 and 67 have been laminated together, they are turned away from the platen 35 by a guide plate 71 that is mounted between the arms 39—39 and close to the surface of the platen 35.

If desired, the rollers (not shown) that press against the typewriter platen 35, and which ordinarily pull paper through the typewriter, may be released so that the movement of the platen itself does not pull the base tape 27 through the typewriter. Under these circumstances, the pressure of the roller 43 on the platen 35 supplies the traction force necessary to pull the tape 27 through the typewriter. It will readily be seen that with the imprinter-laminator constructed in this manner, so that the traction force of the typewriter platen may be disengaged, two imprinter-laminators may be mounted on one typewriter and as long as the arm 57 is positioned so that no pressure is applied to the roller 43, the imprinter-laminator will be "out of service." With two imprinter-laminators mounted on the carriage of one typewriter the operator can install two different widths of base tape in the imprinter-laminator and thus obtain two different size labels without rethreading and changing the tape as he would need to do if only one imprinter-laminator were used. The roller 43 pressure of one imprinter-laminator is simply released while the other is being used. The spring force on the roller 43 is also released when the imprinter-laminator is not in service so that the pressure of the roller 43 on the platen 35 does not leave an impression or dent due to the pressure being applied at one point over a long period of time. The return of the carriage and the advance of the platen 35 is accomplished simultaneously with the line space and carriage-return lever of the typewriter the same as with any standard typewriter.

FIG. 3 shows a second embodiment of the invention which has a number of additional features as compared with the embodiment shown in FIGS. 1 and 2. The imprinter-laminator 101 shown in FIG. 3 has two similarly shaped frame members 103—103 arranged parallel to one another. The various parts of the imprinter-lamina-

tor 101 are then mounted between the two frame members 103—103.

Near the ends of the parallel frame members 103—103 is positioned a base-tape spool holder 107 which has a slot 109 that rotatably supports the base-tape spool 111. A supply of base tape 113 is mounted on the base-tape spool 111 and is paid out over a base-tape guide roll 115 and from the base-tape guide roll 115 to the typewriter platen 117. The base-tape guide roll 115 has an adjustable shoulder 119 that is slidable on the base-tape guide roll 115 so that it can be adjusted for various widths of base tape 113.

After the base tape 113 has passed around the typewriter platen 117 in position to receive printed indicia from the typewriter, it passes beneath a laminating roll 119 that is mounted in slots 121 positioned in the frame members 103. The laminating roll 119 is held tightly against the platen 117 by a spring 123 that is attached between the ends 125—125 of the laminating roll and the frame members 103—103. A small lever (not shown) engages the end 125 of the laminating roll and lifts it from the platen when the imprinter-laminator 101 is not in service.

Overlay tape spool holders 129—129 are mounted on each of the frame members 103—103 at the end of the frame members 103—103 opposite the end where the base-tape spool holders 107—107 are mounted. The overlay-tape spool holder 129 has a slot 131 for receiving and rotatably supporting the overlay-tape spool 133. A supply of overlay tape 135 is paid out from the overlay-tape spool 133 and passes around the laminating roll 119 and between the laminating roll 119 and the platen 117 where it is applied to the base tape 113. Two adjustable overlay-tape tracking guides 137—137 are mounted on each of the frame members 103 and are adjustable to move the supply of laminating tape 135 on the overlay-tape spool thereby adjusting it properly so that it aligns with the base tape 113 when it is pressed onto the base tape 113 on the platen 117.

The laminating roll 119 has a gear 141 that meets with a gear 143 on the platen 117 and thereby assures that the platen 117 and laminating roll 119 rotate at the same rate of speed. In this embodiment of the invention, the traction facilities between the typewriter and its platen 117 may be disengaged so that the traction between the laminating roll 119 and platen 117 provides the force required to draw the base tape 113 and laminating tape 135 through the apparatus.

After the base tape 113 and the overlayer tape 135 have been laminated together, they pass through a slot 145 of a shear 147. The shear 147 is pivotally mounted on a support member 149 attached to the frame 103 and activated by a handle 151. After leaving the slot 145, the two layers of laminated tape pass over an anvil surface 153 of a plate 155. Actuation of the handle 151 brings a shear blade 157 across the anvil 153 and severs the laminated tape.

Two bars 159—159 are attached between the frame members 103—103 and slidably support a score-knife holder 161. The score knife 163 is mounted on the score-knife holder 161 and is extended to the anvil surface 153. The knife 163 is held in place by a score-knife fastening screw 165 and its position with respect to the anvil surface 153 is adjustable by a score-knife adjusting screw 167. A score-knife handle 169 extends through one of the frame members 103 and has a score-knife knob 171 attached to one end. When the knob 171 is grasped and the score knife 163 is pulled across the anvil surface 153, the knife cuts through the overlayer tape and the base tape but leaves the paper backing sheet over the adhesive layer of the base tape intact. At the same time that the knob 171 is pulled to score the laminated layers of tape the handle 173 is depressed, forcing the plate 175 against the anvil thereby holding the laminated tape tightly in place while it is scored. The handle

173 is attached to a bar 177 rotatably mounted between frame members 103—103. The bar 177 is attached to the plate 175.

As to the portions of the imprinter-laminator 101 that have been described thus far, the operation is as follows: Base-label tape 113 is fed from the roller 111 over the guide roller 115 and around the platen 117. As the base tape passes around the platen, the printed indicia are applied from the typewriter. The base tape is then covered by the transparent overlay tape 135 supplied from the roll 133 and pressed into position by the laminating roll 119. After passing from the platen 117 and laminating roll 119, the tape is threaded through the shear 147 and over an anvil surface 153. At this point, the tape may either be cut or scored. The usual procedure is to score between a series of printed indicia groupings or labels that have been typed and when the series of labels are finished, the tape is then cut so that a series of individual labels have been produced that are held together by the paper backing. Each label is then peeled from the protective backing and applied to the desired article.

After the printed indicia are applied to the base tape and it passes beneath the laminating roll, it is usually hidden from the view of the operator. In order for the operator to complete a number of labels in a minimum amount of time, it is necessary to remove the duty to carefully watch the tape in order to determine exactly when to score between labels. This duty can be performed by the imprinter-laminator. Mounted on the rod 179 that supports the platen 117 is a bell 181; mounted within the bell 181 are a number of flexible fingers 183—183. The bell 181 and flexible fingers 183—183 rotate with the rod 179 as the platen rotates. Normally the fingers 183—183 are positioned around the outside of a spring tab 185 and a cam surface 187. However, at the end of each label the operator depresses a key 189 which is attached to an arm 191 pivotally mounted on the typewriter carriage and held upward by suitable means such as a spring 193. Depressing the key 189 forces a punch 195 mounted on the arm 191 against one of the fingers 183 and the spring tab 185. Continued depression of the key 189 forces the spring tab inward (away from the bell 181) and pushes the finger 183 beneath the spring tab 185 and the flexible finger is then spaced away from the bell 181. Then, as the platen rotates, the spring finger passes to the cam 187 and rides around the inside of the cam 187. The cam 187 is constructed to be of a size sufficient so that the spring finger 183 is released against the bell 181 when the laminated tape is in position for scoring between two of the labels. Thus, when it is time to score between two of the labels, the bell rings and the operator pulls the score knife across the laminated tape. Upon completion of the last label, the operator simply turns the platen until the bell rings for the last time and cuts off the tape.

It will be understood, of course, while the forms of the invention herein shown and described constitute preferred embodiments of the invention, it is not intended to illustrate all possible forms of the invention. It will also be understood that the words used are words of description rather than of limitation and that various changes in shape, size, and arrangement of parts may be made without departing from the spirit and the scope of the invention herein disclosed.

What is claimed is:

1. Apparatus, in combination with a typewriter, for producing laminated labels, comprising:

- (a) a typewriter having a platen and a carriage;
- (b) a frame adapted for mounting on the carriage of said typewriter;
- (c) a first gear around the surface of said platen;
- (d) a roller rotatably mounted on said frame and having resilient means urging said roller against said platen;
- (e) a second gear on said roller meshing with said first

gear, said first and second gears having a ratio such that the surface speed of said roller is greater than the surface speed of said platen as said platen is rotated;

- (f) a first spool rotatably mounted on said frame, said first spool supporting and paying out a supply of base-tape material, said base-tape material passing around the platen in position to receive printed indicia from said typewriter and thereafter threaded between the platen and said roller;
  - (g) a second spool rotatably mounted on said frame, said second spool supporting and paying out a supply of transparent adhesive-tape material said transparent adhesive-tape material passing around said roller onto the printed surface of said base-tape material, said roller pressing the adhesive surface of said transparent adhesive-tape material into intimate contact with the printed surface of said base-tape material; and
  - (h) means for positioning each of said first and second spools whereby said said transparent adhesive-tape material and said base-tape material are maintained in alignment for pressing together.
2. A typewriter attachment for producing laminated labels, comprising:
- (a) a frame attachable to the platen of a typewriter;
  - (b) a platen having a first gear around the platen surface and being adapted to receive said frame, said platen replacing the platen of the typewriter selected to receive said typewriter attachment;
  - (c) a roller rotatably supported at each end by said frame and having resilient means urging said roller against said platen, said roller being positioned to contact said platen along a line above the printing area of said typewriter;
  - (d) a second gear on said roller meshing with said first gear on said platen, said first and second gears having a ratio such that the surface speed of said roller is greater than the surface speed of said platen as said platen is rotated;
  - (e) first means mounted on said frame for paying out a supply of base-tape material passing around said platen in position to receive printed indicia from the typewriter and then threaded between said platen and said roller; and
  - (f) second means mounted on said frame for paying out a supply of transparent adhesive-tape material, said transparent adhesive-tape material passing around said roller onto said base-tape material whereby the pressure of said roller presses the adhesive surface of said transparent adhesive-tape material onto said base-tape material after said base-tape material has received printed indicia.
3. Apparatus in combination with a typewriter, for producing laminated labels, comprising:
- (a) a typewriter having a carriage and a platen;
  - (b) a frame adapted for mounting on said carriage;
  - (c) a first gear around the surface of said platen;
  - (d) a roller rotatably supported at each end by said frame, said roller being positioned to contact said platen along a line above the printing area of said typewriter;
  - (e) resilient means between said frame and said roller urging said roller against said platen;
  - (f) a second gear on said roller, said second gear meshing with said first gear whereby rotation of said platen rotates said roller;
  - (g) a first spool rotatably mounted on said frames, said first spool supporting and paying out a base-tape material, said base-tape material passing around said platen in position to receive printed indicia from said typewriter and thereafter threaded between said platen and said roller; and
  - (h) a second spool rotatably mounted on said frame, said second spool supporting and paying out a sup-

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ply of transparent adhesive-tape material, said transparent adhesive-tape material passing around said roller onto the printed surface of said base-tape material, said roller pressing the adhesive surface of said transparent adhesive-tape material into intimate contact with the printed surface of said base-tape material. 5

4. Apparatus in combination with a typewriter for producing labels, comprising:

- (a) a typewriter having a carriage and a platen; 10
- (b) a frame adapted for mounting on the carriage of said typewriter;
- (c) a first gear around the surface of said platen;
- (d) a roller rotatably mounted on said frame and positioned to contact and supply pressure to said platen; 15
- (e) a second gear on said roller, said second gear engaging said first gear whereby rotation of said platen rotates said roller;
- (f) a first spool rotatably mounted on said frame, said first spool supporting and paying out a supply of base-tape material having an adhesive coating on one surface with said adhesive coating covered with a protective paper backing, said base-tape material passing around said platen in position to receive printed indicia from said typewriter applied to said base-tape material in groupings and thereafter threaded between said platen and said roller; 20
- (g) a second spool rotatably mounted on said frame, said second spool supporting and paying out a supply of transparent adhesive-tape material, said transparent adhesive-tape material passing around said roller onto the printed surface of said base-tape material, said roller pressing said transparent adhesive-tape material into intimate contact with the printed surface of said base-tape material; 30
- (h) a bell attached to said platen;
- (i) a plurality of spring fingers attached to and rotatable with said platen said plurality of fingers being positioned inside said bell, a punch for individually moving each one of said plurality of spring fingers inwardly toward the axis of said platen, and a cam surface inside said plurality of spring fingers, one of said plurality of spring fingers being moved inwardly by said punch to a hold position inside said cam surface upon completion of an indicia grouping and being subsequently released upon rotation of said platen to move outwardly striking said bell; and 40
- (j) means mounted on said frame for scoring between said printed indicia groupings by cutting through said transparent adhesive-tape material and said base-tape material while leaving said protective paper backing intact, said bell ringing to indicate that a printed indicia grouping is positioned for scoring of said transparent adhesive-tape material and said base-tape material.

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ually moving each one of said plurality of spring fingers inwardly toward the axis of said platen, and a cam surface inside said plurality of spring fingers, one of said plurality of spring fingers being moved inwardly by said punch to a hold position inside said cam surface upon completion of an indicia grouping and being subsequently released upon rotation of said platen to move outwardly striking said bell; and

(j) means mounted on said frame for scoring between said printed indicia groupings by cutting through said transparent adhesive-tape material and said base-tape material while leaving said protective paper backing intact, said bell ringing to indicate that a printed indicia grouping is positioned for scoring of said transparent adhesive-tape material and said base-tape material.

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