Aug. 15, 1961 W. M. SCHLEGEL ET AL 2,996,001

LABEL PRINTING AND CUTTING APPARATUS

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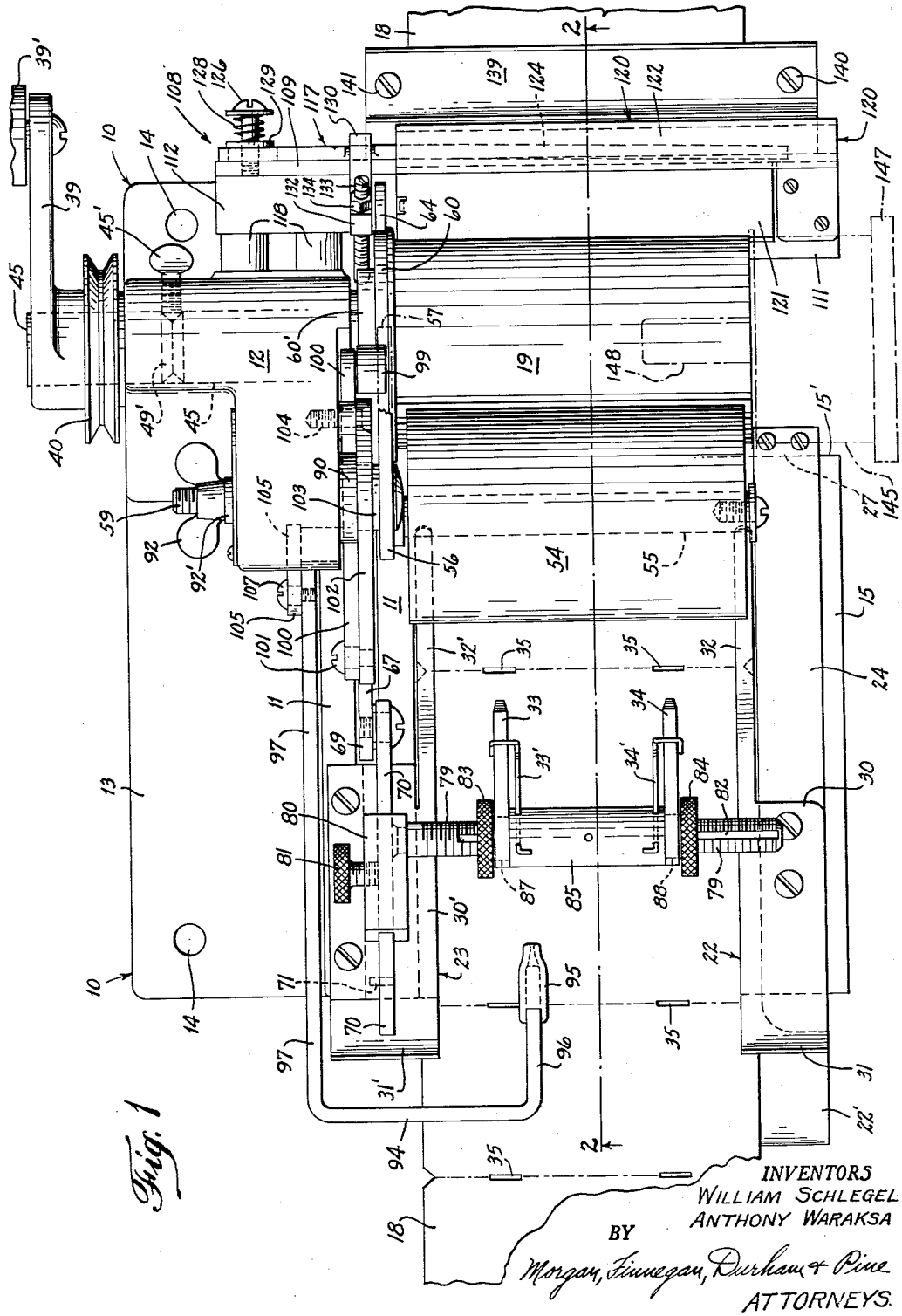


Fig. 1

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LABEL PRINTING AND CUTTING APPARATUS

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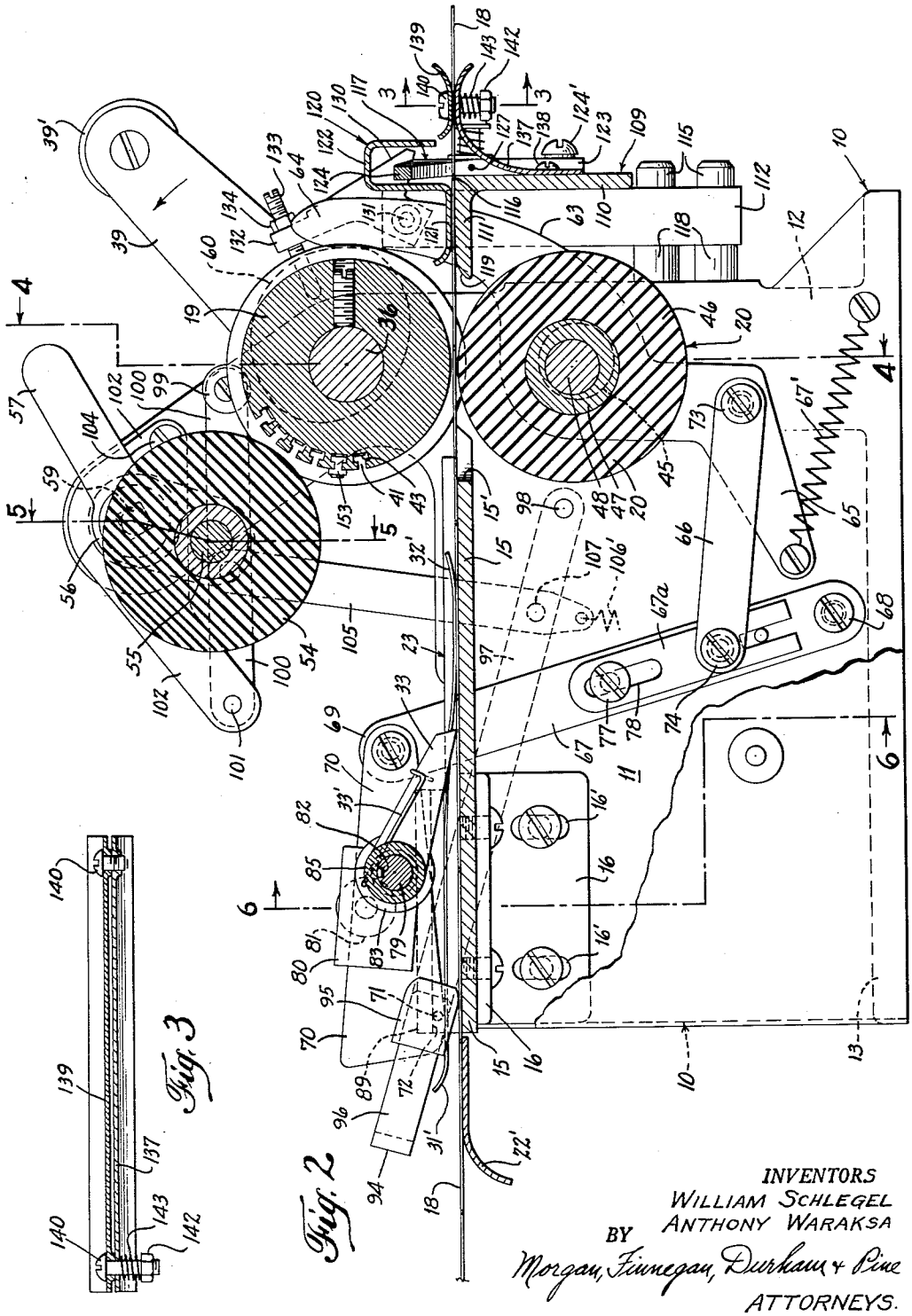


Fig. 2

Fig. 3

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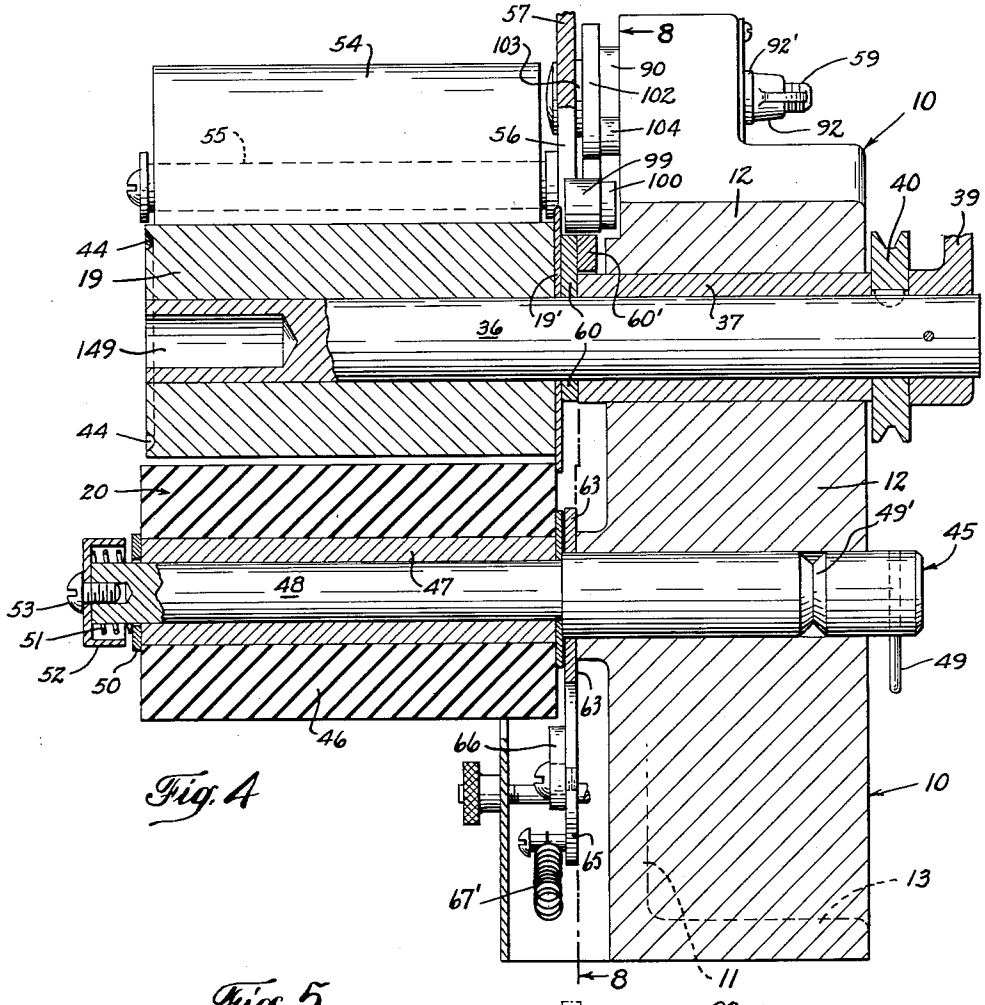
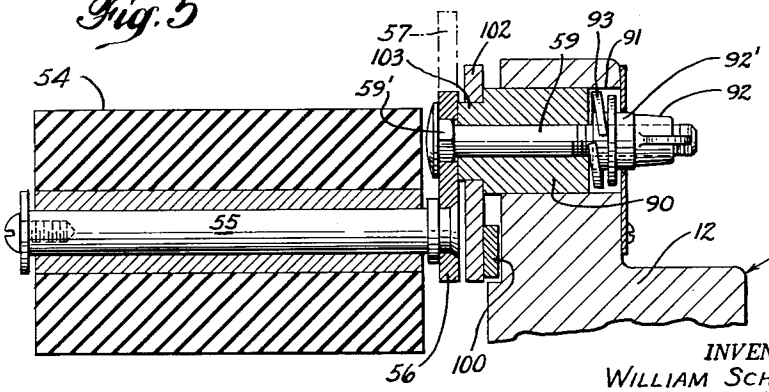


Fig. 4

Fig. 5



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LABEL PRINTING AND CUTTING APPARATUS

Filed June 26, 1953 6 Sheets-Sheet 4

Fig. 6

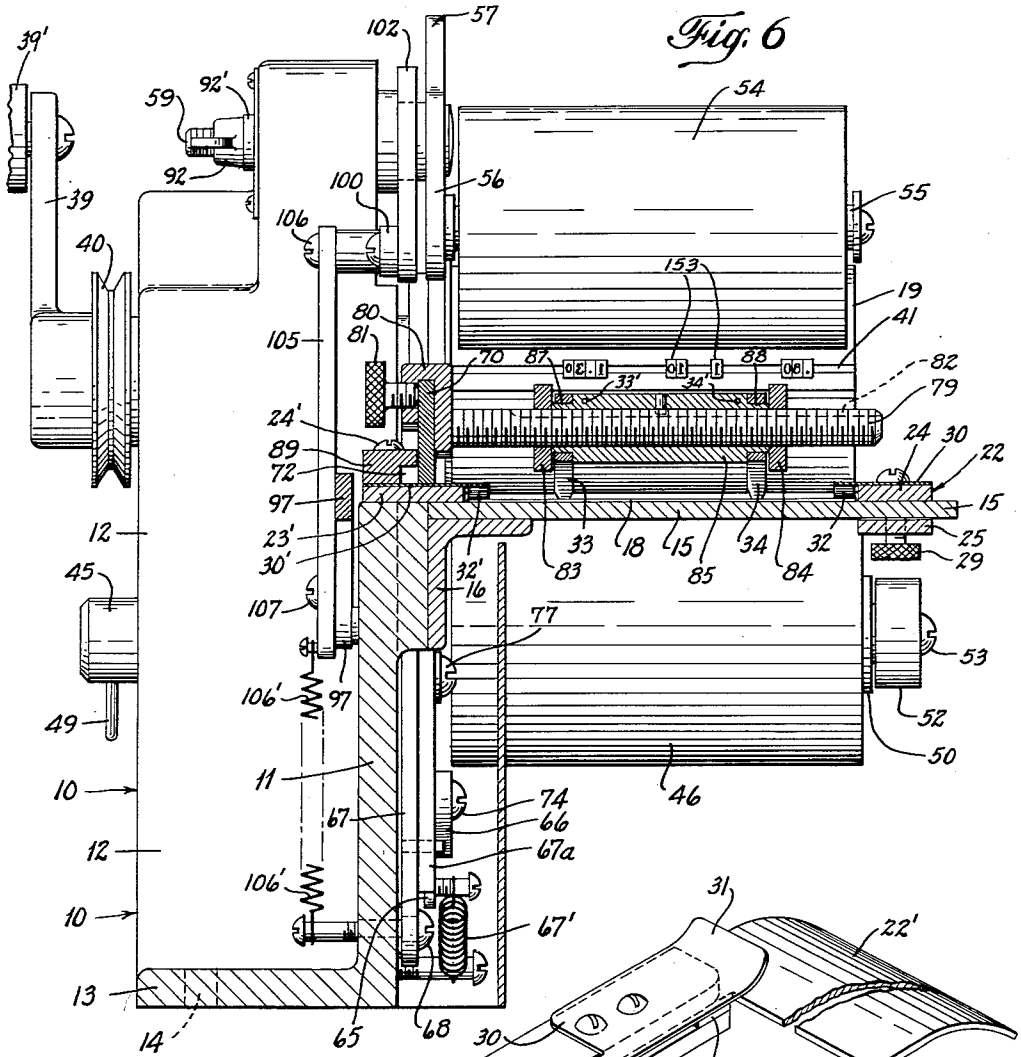


Fig. 7

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LABEL PRINTING AND CUTTING APPARATUS

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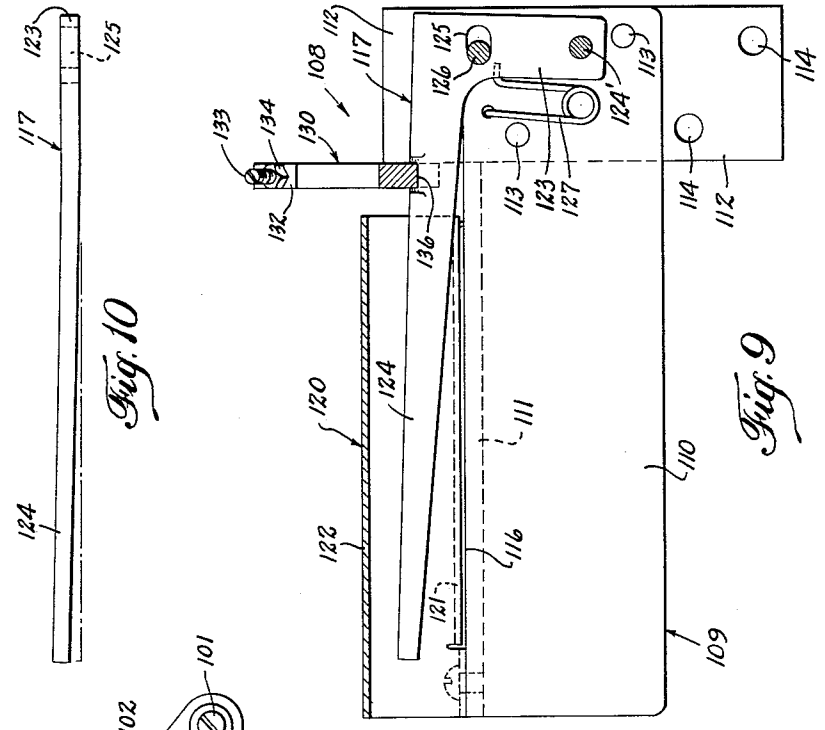


Fig. 10

Fig. 9

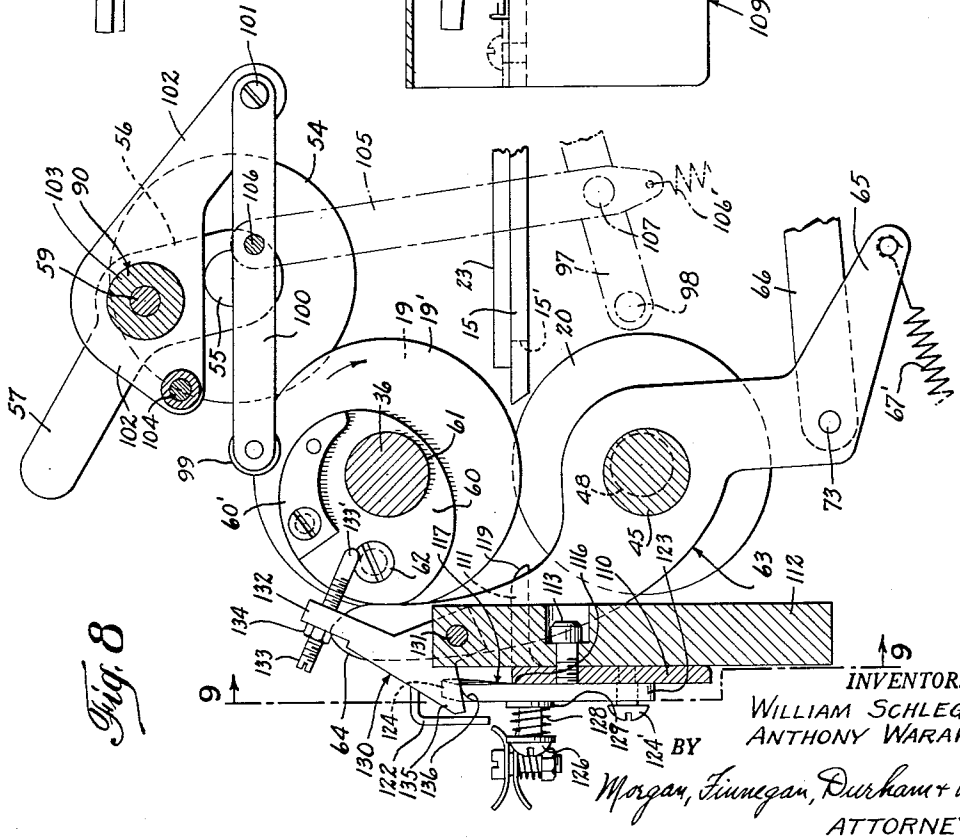


Fig. 8

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LABEL PRINTING AND CUTTING APPARATUS

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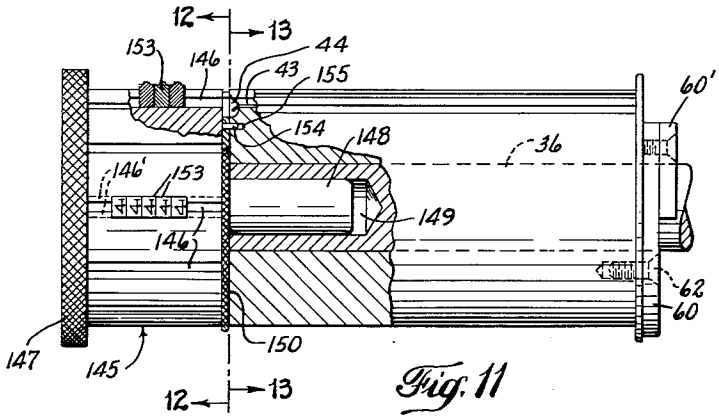


Fig. 11

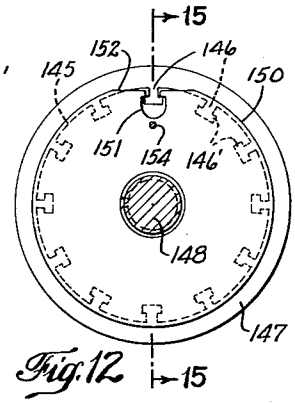


Fig. 12

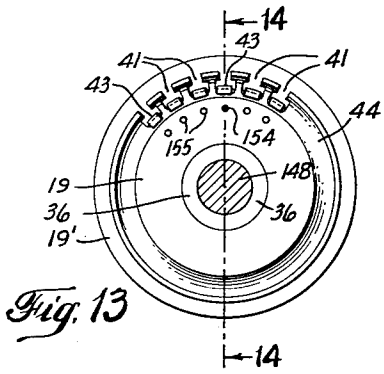


Fig. 13

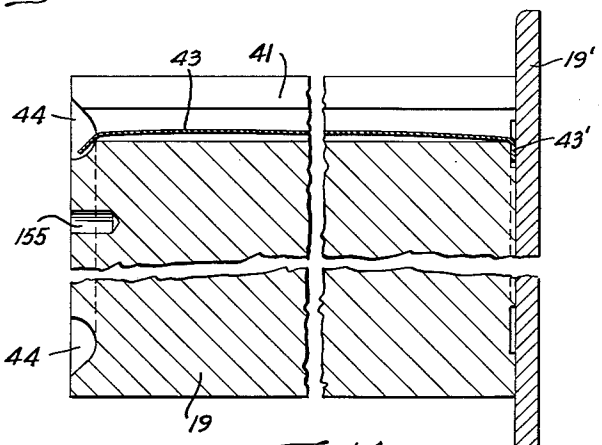


Fig. 14

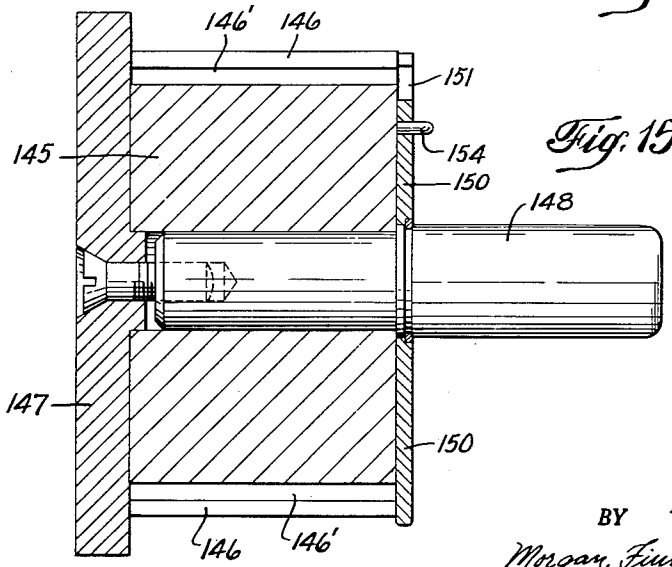


Fig. 15

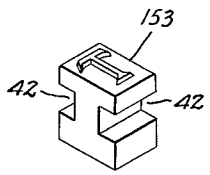


Fig. 13A

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2,996,001

LABEL PRINTING AND CUTTING APPARATUS

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Filed June 26, 1953, Ser. No. 364,330
6 Claims. (Cl. 101—227)

This invention relates to printing apparatus and more particularly to a new and improved device for printing labels of the general type usually used in connection with articles of merchandise and carrying such indicia as the nature of the merchandise, size, cost, weight and other similar markings.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

Printing apparatus has heretofore been used for printing labels for clothing, food and other types of merchandise, but these devices have to our knowledge presented a number of difficulties which have made the process both time consuming and expensive. For instance, the type was difficult to change, the apparatus was generally limited to certain types of labels such as those of given lengths or widths and the alignment of the indicia with the label was often difficult to maintain. Accordingly, one object of the invention is the provision of a simple and dependable structure that is readily adapted to print a wide variety of labels and provides positive co-ordination between the labels or tags to be printed and the printing apparatus which carries the intelligence or indicia to be printed thereon. Another object is the provision of highly accurate synchronizing means with vernier adjustment that is a simple, inexpensive structure and stable so that an operator can rely on each of the printed labels carrying properly aligned indicia in clear, well-defined print.

The importance in this new and improved apparatus becomes readily apparent particularly when considered in connection with the packaging and labeling of meats as in the case of super-markets and the like. Each package of food for instance must contain a label indicating the type of food, weight, cost per pound and total cost and other markings which may be printed on the label at one time or may be accomplished by successive operations. In any case, the indicia often must be changed for each successive label or several labels depending on the nature of the goods. In the light of these conditions, it is quite evident that altering the indicia constitutes an important element of time and cost which have been substantially minimized through a new and improved indicia changing device in accordance with the invention.

Another object of the invention is a new and improved cutter for severing the printed labels one from the other and holding the severed label in a position readily accessible to the operator for immediate attachment to a product. This cutter is co-ordinated with the printing apparatus so that it automatically and completely severs each ticket or label along a predetermined line and at the same time is provided with means for adjusting it relative to the machine to sever labels of a wide variety of lengths and widths. This improved structure is positive in its action and as a result avoids considerable loss of time on the part of the operator in removing improperly severed tickets from the apparatus.

Another object of the invention is a new and improved

translating means that provides positive and definite engagement with the labels to be printed and is readily and quickly adjustable to compensate for various sized labels. This feature of the invention is in part attained through a simple and effective means for accurately adjusting the horizontal motion of the ticket engaging apparatus so that both the amplitude of its horizontal motion as well as the position of said horizontal motion relative to the printing apparatus is precisely co-ordinated with the ticket or label being printed. For instance, means are provided for moving the ticket transporting means forwardly and backwardly in order to align the indicia carried by the printing rolls with the spaces on the label provided for receiving such indicia. In addition an adjustment is also provided to compensate for the size of the tickets so that the length of the feed for each cycle of the machine will exactly correspond to the size of the labels being printed. In this way an absolute adjustment can be made to assure that all labels are accurately and uniformly marked.

Another object of the invention is a new and improved means for placing or setting the type in proper position on the printing drum. With this arrangement the type or indicia such as weight, price or other information are carried on a device which cooperates directly with the printing drum so that the type can be readily and quickly transferred from the device to the drum and vice versa with little loss of time. This arrangement is particularly important in cases where a number of different labels must be printed in sequence as previously pointed out in the case of super markets and other similar stores.

The above and other objects of this invention will become more apparent from the following description and accompanying drawings forming part of this application.

In the drawings,

FIG. 1 is a plan view of one embodiment of the invention;

FIG. 2 is a cross-sectional view taken along the line 2—2 of FIG. 1;

FIG. 3 is a cross-sectional view of the ticket or label holder taken along the line 3—3 of FIG. 2;

FIG. 4 is a cross-sectional view of the embodiment of FIG. 2 taken along the line 4—4 thereof;

FIG. 5 is a cross-sectional view of the invention taken along the line 5—5 of FIG. 2;

FIG. 6 is a cross-sectional view of the embodiment of the invention shown in FIG. 2 and taken along the line 6—6 of that figure;

FIG. 7 is a perspective view of label guiding means;

FIG. 8 is a cross-sectional view of the invention taken along the lines 8—8 of FIG. 4;

FIG. 9 is a side elevation in partial section of the label cutting means;

FIG. 10 is the top view of the blade of the cutter illustrated in FIG. 9;

FIG. 11 is a side elevation in partial section of the printing drum roller together with the indexing head arranged for cooperation with the drum;

FIG. 12 is an end view of the indexing head taken along the line of 12—12 of FIG. 11;

FIG. 13 is an end view of the printing drum taken along the lines 13—13 of FIG. 11;

FIG. 13*a* is a perspective view of one form of type for use with the invention;

FIG. 14 is a cross-sectional view of the printing drum taken along the line 14—14 of FIG. 13; and

FIG. 15 is a cross-sectional view of the indexing head taken along the line 15—15 of FIG. 12.

This invention comprises an arrangement of elements for guiding a series of conected labels between a pair of rollers one of which carries type or other printing means for marking the labels. The apparatus is ar-

ranged to automatically feed, print and sever one label upon actuation by the operator which may be either manual or automatic. In other words upon actuation of the machine by any suitable device, it will function to print one complete label, sever the printed label from the strip and hold that label in a position that is easily accessible to the operator. In addition the machine is arranged to provide extremely rapid change of the type or printing means held by printing roller or impression roller so that successive labels may be printed with different nomenclature or indicia and with little loss of time in effecting the necessary changes in type.

With reference to the figures and more particularly FIGS. 1 and 2 the apparatus comprises a frame 10 consisting of an upright wall 11 having a bottom flange or base 13 provided with one or more openings 14 therein for securing it to a table or other surface adapted to hold the device during its operation. A vertically disposed column 12 for holding certain of the operating elements of the apparatus is formed integrally with the wall 11 and flanged base part 13. This column 12 with the wall 11 in effect forms an L-shaped frame. Extending outwardly from the upper end of the wall 11 is a bed or plate 15 that is secured to the wall 11 and aligned with the upper edge thereof by means of an angle member 16 having one face fastened to the wall 11 and the other face to the bed 15. As shown in FIG. 2 the bed 15 is adjustable vertically relative to the wall 11 by means of elongated holes 16' in the vertical face of the bracket 16. With this arrangement the strip of labels 18 which are guided over the plate 15 can be adjusted to feed directly between the printing roller 19 and the cooperating pressure roller 20 directly beneath the printing roller 19.

The labels 18 are guided over the bed 15 by means of a pair of guides 22 and 23. The outer guide 22 is shown in perspective in FIG. 7 and comprises a pair of spaced plates 24 and 25 held in alignment by means of a pair of spacers 26 and 27. The spacer 27 at the forward end of the plates 24 and 25 extends beyond the plates and engages the forward edge 15' of the bed 15 as shown in FIG. 1 to fix the position of the guide relative to the bed. The longitudinal edge of the bed 15 extends through the space between the plates 24 and 25 and is held therein by means of a pair of thumb screws 28 and 29 that are threaded into the under side of the plate 25. Overlying a portion of the plate 24 is a guiding member 30 fastened to the upper side of the plate 24 and having its outer end 31 flared upwardly to facilitate the insertion of the labels. A portion of this member 30 extends forwardly in the form of a thin finger 32 which is biased to a downward position to contact the labels 18 and hold them firmly against the bed 15. A downwardly flared member 22' is carried by the guide 22 and has a width approximately equivalent to the width of bed 15. The upper surface of this flared member is arranged to coincide with the upper surface of the bed 15 when the guide 22 is in place and provides a smooth approach for the labels 18 devoid of any sharp corners that may fray or otherwise damage the labels. The corresponding guiding member 23 which may be observed in FIGS. 1 and 2 is similarly arranged with a guiding member 30' having an upwardly flared part 31' and spring finger 32' to guide the other edge of the strip of labels or tickets 18. This guiding member is vertically spaced from the bed 15 by a spacer 23' and secured to the upper edge of the wall 11 of the frame 10 by a pair of screws 24' passing through a longitudinally disposed block 89, the guide 30' and spacer 23'. In this way the labels 18 are guided over the bed 15 in alignment with the rollers and are held in close contact with the bed by means of the spring fingers 32 and 32'. As will be described, the forward motion of the labels is governed in part by a pair of pawls 33 and 34 which engage cooperating openings 35 between successive labels. During the operation of the machine the pawls 33 and 34 engage the openings 35 and carry the labels in a forwardly direction through a distance equal to the length of one complete label. On the next cycle the pawls are retracted to engage the openings 35 between the next successive pair of labels.

The printing roller 19 is carried by a shaft 36 rotatably mounted within a bushing or journal 37 carried by a frame member 12. The shaft 36 constitutes the basic drive means for the device and may be hand operated by means of a lever arm 39 and handle 39' secured to the outer end of the shaft 36 or may be automatically driven as by means of a belt (not shown) engaging the V-pulley 40. In the case of an automatic drive, the driving means which may take any desirable form is preferably arranged to rotate the printing drum or roller 19 one or more times depending upon the number of labels desired for each actuation of the driving means. The printing roller 19 which is more clearly illustrated in FIGS. 13 and 14 is essentially a solid cylinder of metal or other suitable material having a plurality of grooves 41 in the surface thereof that are arranged to receive type carrying the indica to be printed on the labels. The type is shaped to conform with these grooves and is essentially in the form of an "I" as shown in FIG. 13*a*. Each individual piece of type which may carry one or more figures or letters is provided with a pair of longitudinal slots 42 which cooperate with the narrow openings of the slots 41 in the periphery of the roller 19. The type is held in position within the slots 41 by means of a bowed spring 43 that lies in the bottom of the slot 41 and is held in position therein by an L-shaped end part 43' engaging a corresponding opening at the inner end of each slot adjacent to the end plate 19' of the roller 19. This leaf spring is curved upwardly at its central portion and tends to hold the type firmly in position within the slot to prevent any sliding motion once the type is properly positioned. In order to facilitate the insertion of type into the slots 41 the end of the roller is grooved as indicated at 44.

The pressure roller 20 is supported directly beneath the printing roller 19 and is carried by a shaft 45 mounted in the frame part 12. This roller which preferably has an outer layer 46 of rubber or other resilient material has a rigid concentric metallic inner member or bearing 47 rotatably mounted on a shaft 48 which compirses part of the main supporting shaft 45. The shaft section 48 is formed eccentrically to the shaft section 45 so that as the latter is rotated by means of a pin 49 the shaft 48 and consequently the roller 20 will be moved toward and away from the printing roller 19 so thta the proper printing pressure can be obtained. The pressure roller 20 is held in place on the eccentric shaft 48 by means of a washer 50, a pressure spring 51 and a cup 52 held on the end of the shaft part 48 by means of a screw 53. The spring 51 is confined within the cup and presses against the washer 50 and roller 20 to hold the latter in position upon the shaft 48. The roller 20 is held in alignment with the roller 19 by engagement with the end plate 19' on the roller 19 under the action of the spring 51 as shown more clearly in FIG. 4. A thumb screw 45' is threaded in the frame part 12 and engages a peripheral groove 49' in the shaft 45 to retain the shaft 45 in position in the frame part 12 and when the pressure roller 20 is properly adjusted it can be tightened to maintain that adjustment.

The inking roller 54 formed of soft rubber or other resilient material or merely provided with resilient covering is rotatably mounted on a shaft 55 fixed to bracket member 56 which is in turn pivotally mounted on the upper part of the frame member 12 (FIG. 5). The bracket member 56 is provided with an operating handle 57 to facilitate positioning of the printing roller about the pivot member 59 to bring it into operative position with the printing roller 19. In operation it is preferable to adjust the inking roller 54 so that it will only contact the

type contained within the grooves 41 of the roller 19 and prevent the remaining portion of the roller from becoming smeared with ink. The pivot 59 for the bracket 56 is in the form of a carriage bolt having a rectangular shoulder 59' directly beneath the head. This rectangular shoulder engages a corresponding recess in the bracket 56 so that rotation or oscillation of the bracket will rotate the bolt 59 through a corresponding angle. The bolt 59 is pivotally mounted within a sleeve 90 fixedly mounted in the opening 91 of the frame part 12. A wing nut 92 is threadably mounted on the outer end of bolt 59, an annularly flanged collar 92' is slidably mounted on the bolt 59 and a spring 93 is interposed between the collar and the end of sleeve 90. This enables the roller to be locked securely in position merely by tightening the nut 92 against the resistance offered by spring 93.

The several operating components of this apparatus such as the printing roller 19 and pawls 33 and 34 are coordinated by means of an individual cam 60 which is carried on the inner end of the printing roller 19 and rotated therewith. This cam is clearly illustrated in FIG. 8 and functions to effect transportation of the labels 18 over the bed 15 and between the rollers 19 and 20 while a second cam 60' carried by the cam 60 functions to operate a cutter for severing each printed label from the strip. The cam 60 is provided with a central opening 61 that engages the shaft 36 of the printing roller 19 and a screw 62 passes through an opening therein and is threadably received by the roller 19 to prevent the cam 60 from rotating relative to the roller. The cam 60 cooperates with a cam follower 63 pivoted about the shaft 45 which carries the pressure roller 20 and has a follower arm 64 that rides on the outer periphery of the cam 60. A lower lever arm 65 is coupled with a connecting link 66 that actuates the pawls 33 as will be described. The cam follower arm 64 is held in constant contact with the periphery of the cam 60 by means of a spring 67' between the outer end of the arm 65 of the cam follower and the frame 10.

The link 66 is coupled with an upwardly extending link 67 as shown in FIG. 2 which in turn is pivoted at its bottom end 68 to the frame 10 and has its upper end 69 pivotally connected with a triangularly shaped member or plate 70 having a pin 71 (FIG. 2) on the outer end thereof engaging a groove 72 in the block or track member 89. With this arrangement rotation of the cam 60 will cause the cam follower 63 to oscillate about the pivot 45 and therefore produce a substantially longitudinal oscillation of the link 66. The link 66 being pivoted to the cam follower 63 by means of a suitable screw or rivet 73 and to the upwardly extending link 67 by means of a screw 74 will cause the link 67 to move through an arc about its lower pivot 68. The extent of the arc through which the link 67 moves is determined by the distance between the pivots 74 and 68. This arc is adjustable by shifting the position of the pivot 74 relative to the link 67 and is accomplished by means of an auxiliary link 67*a* which overlies the link 67 and is longitudinally displaceable relatively thereto. The pivot 74 of the link 66 is actually carried by the link 67*a*. The upper end of the link 67*a* is adjustably fastened to the link 67 by means of a screw 77 passing through slotted opening 78 in link 67*a* and threadably engaging the link 67.

The angle through which the link 67 is moved by action of the cam follower 63 and the intervening link 66 determines the linear translation of the pawls 33 that move the strip of labels 18 across the bed 15 and between the rollers 19 and 20. The pawls 33 and 34 are carried by the triangularly shaped carriage or plate 70 and are adjustable lengthwise of the carriage so that the action of the pawls can be precisely coordinated with the printing roller. This structure comprises a shaft 79 which extends transversely over the bed 15 and is carried by a U-shaped bracket 80 which engages the top edge of the carriage member 70. This U-shaped bracket is provided with a thumb screw 81 threaded in the outer side thereof and can be tightened to hold the U-shaped member 80 firmly on the carriage 70. The transverse shaft 79 is provided with a shallow longitudinally disposed groove 82 and has an external thread to receive a pair of knurled nuts 83 and 84. Between these nuts is a hollow cylindrical member 85 having a pin extending into the slot 82 to prevent rotation of the member 85 relative to the shaft 79. The ends of the cylindrical member 85 are undercut at 87 and 88 to provide sections of reduced diameter to rotatably receive the pawls 33 and 34. With this arrangement the pawls 33 and 34 can be shifted transversely of the bed 15 by the simple procedure of displacing the knurled nuts 83 and 84 along the shaft 79 so as to bring the pawls 33 and 34 into the desired position. Each pawl 33 and 34 is individually biased against the bed 15 by springs 33' and 34' reacting between the outer end of the pawls and the cylinder 85.

As set forth above, the pawls 33 and 34 operate during each cycle of the printer to advance the strip of labels 18 the distance of one label. At the start of a successive cycle it is apparent that the pawls must be retracted to engage the next successive set of openings 35 to advance the labels again. It is important to prevent the friction of the pawls on the strip of labels from carrying them backwardly during retraction. To do this, a friction stop in the form of a U-shaped lever 94 having a rubber sleeve 95 over one leg 96 thereof is used to engage the labels 18 during retraction of the pawls. The leg 97 of lever 94 extends along the back side of and is pivoted to the wall 11 by means of a screw 98 (see FIG. 2) and is actuated by a cam follower 99 cooperating with the outer periphery of cam 60 (FIG. 8). More specifically the cam follower 99 is carried by a lever 100 pivotally secured at 101 to a bracket 102 mounted on a shoulder 103 of the sleeve 90. This bracket is fixed against rotation on the shoulder 103 by a screw 104 extending through the bracket and threaded into the frame part 12. The lever 100 is coupled to the leg 97 of lever 94 by a link 105 pivoted to the lever 100 at 106 and to the leg 97 at 107. A spring 106' between the lower end of the link 105 and the frame 10 holds the lever 94 downwardly during retraction of the pawls 33 and 34. During forward motion of the pawls the shoe 95 on lever 94 is lifted from the labels 18.

With the arrangement of the elements of this embodiment of the invention, the pawls 33 and 34 are retracted by the positive action of the cam 60 and interposed levers and are moved forwardly to advance a label by means of the action of the spring 67'. While this arrangement is satisfactory for most applications, it may be desirable to reverse the operation especially where large rolls of labels are used. In such a case, it may not be possible to rely upon the action of spring 67' to drive the pawls forwardly and the arrangement of the levers and spring can be reversed so that the spring 67' will function to retract the pawls 33 and 34 while positive action by means of cam 60 will advance the pawls.

As the labels 18 are printed, provision is made in the form of a cutter 108, to sever each label and hold it in a readily accessible position for removal by an operator and attachment to the goods for which it is intended. This cutter is positioned adjacent to the impression roller 19 and pressure roller 20 and carried by the frame part 12 as shown in FIGS. 1 and 2. It comprises a horizontally disposed bracket member 109 having vertical leg 110 and a shorter horizontal leg or cutter bed 111. This bracket is fastened to a vertically disposed metal block 112 by a pair of screws or rivets 113 and the block in turn is fastened to the frame part 12 by a pair of screws 115 passing through openings 114 in the block and threaded in the frame part 12. The meeting edge 116 of the legs 110 and 111 cooperates with an elongated cutter blade 117 to form the shearing means. This edge 116 must be coordinated with the particular label being

printed and the operation of the pawls **33** and **34** so that each label will be properly severed from the strip. This may be accomplished by interposing spacers **118** between the block **112** and the frame part **12** of a length that will effect severance of the labels along the line of joinder. While this procedure fixes the printer for a label of specific size it is quite apparent that adjustable means can be used in place of the spacers **118** and screws **115** to facilitate adjustment for different size labels.

The cutter **108** is adjusted relative to the rolls **19** and **20** so that the upper surface of the horizontal leg or bed **111** of the bracket **109** is in a plane coincident with the line of contact of rolls **19** and **20** and the upper surface of the bed **15**. In addition the edge of the leg **111** is preferably tapered as indicated at **119** to facilitate the entrance of a printed label into the cutter assembly. Cooperating with the cutter bed **111** is an integrally formed guide member and shield **120**. The guide **121** is spaced from the cutter bed **111** and flared outwardly along its edge to cooperate with the beveled edge **119** of bed **111** to guide the labels to the cutting position. The shield part **122** is in the shape of a U and surrounds the cutting blade **117** to prevent possible injury to the operator and damage to the blade itself. In order to effectively sever each of the labels which may be of rather thin paper stock, the blade **117** is formed to press tightly against the cutting edge **116** throughout its travel. It is in the form of an L with a short downwardly depending leg **123** loosely pivoted to the leg or skirt **110** of bracket **109** at **124'**. The movement of the blade part **124** is limited by an elongated transversely positioned notch **125** and cooperating screw **126** carried by the skirt **110**. This screw **126** includes a surrounding spring **128** and washer **129** for exerting a constant pressure against the blade and hold the cutting edge of the blade at all times in firm contact with the cooperating cutting edge **116** of the bracket **109**. A spring **127** interposed between the leg **123** of the cutter and the skirt **110** retains the blade part **124** in a normal upward position shown in FIG. 9 when it is not actuated to sever a label. If desired the blade **124** may be slightly curved to project over the cutting bed **111** so that all points of the blade will contact the cooperating cutting edge **116** with the spring **128** providing substantially uniform pressure throughout the cutting stroke.

The cutter **108** is automatically actuated at the completion of each cycle of the printer to sever the printed label. This action is accomplished by the cam **60'** carried by the cam **60** and the bell crank **130** pivoted at **131** to the cutter supporting block **112** (see FIG. 2). The arm **132** of the crank **130** includes a screw **133** threadably mounted therein with the inner end **133'** adapted to contact the outer periphery of cam **60'**. This screw provides for the adjustment of the operation of the cutter blade **124** and may be locked in the adjusted position by the nut **134**. The other arm **135** extends beyond the cutter blade **124** and slopes downwardly relative to the blade to contact a cam surface **136** on the upper side of the blade that is sloped downwardly from the inner edge thereof. Rotation of the bell crank **130** about its pivot under the action of cam **60'** moves the blade downwardly about its pivot **124'** and at the same time exerts a small force inwardly of the blade by reason of the sloped cam surface **136** to hold its cutting edge firmly against the cooperating fixed cutting edge **116**. In this way positive cutting action is attained regardless of the thickness of the labels with little or no possibility of the cutting mechanism becoming jammed.

On the outer side of the cutter assembly **108** is a label supporting device for holding the severed label in a convenient position for the operator. This support comprises a transversely positioned arcuate member **137** secured to the skirt **110** of the cutter assembly by screws **138** and having its upper surface substantially in the plane of the cutter bed **111**. Above this arcuate member **137** is a reversely positioned arcuate member or guide **139**. This member is held lightly against the arcuate member **137** by a pair of screws **140** and **141**. The screw **141** passes through the guide **139** and threadably engages the guide **137** while the screw **140** passes through both guides and is retained by a cooperating nut **142** and interposed spring **143**. This permits some flexibility between the guides to accommodate labels of different thicknesses and at the same time firmly holds each label as it is severed so that it can be easily removed by the operator.

The apparatus as described above is particularly intended for printing labels for products in instances where successive labels must be provided with different types of information. In normal instances three or four labels may bear certain nomenclature that must be changed for the next group of possibly three or four labels. This obviously dictates the need for rapid changes in type which has been provided for by the structure of the roller **19** previously described. It has been found that in a given commercial operation a limited variety of nomenclature is customarily used so that each set of nomenclature as for instance "ROAST BEEF," "LAMB CHOPS" and the like in the case of a meat market can be formed on a single type strip or stick and quickly and easily inserted in the slots **41** of the impression roller **19**. On the other hand it may be necessary as in the clothing business to insert sizes and style numbers and which because of the wide range of numbers required makes it impractical to use standard arrangements of those figures. For this purpose a new and improved type setting drum adapted to cooperate with the roller **19** has been found to enable the rapid change of nomenclature where letters or numbers must be set individually. This structure is shown in FIGS. 11 and 12 and is in the form of a drum **145** having an outside diameter equal to that of the impression roller **19**.

More specifically the drum **145** is formed with a plurality of longitudinal slots **146** having undercut slots **146'** that are identical in shape and size to the type retaining slots **41** in the impression roller **19**. A knurled disc **147** of slightly larger diameter than the drum **145** is secured to one end thereof while a center shaft **148** extends from the other end thereof for cooperation with a corresponding opening **149** axially positioned in the outer end of the roller **19**. A second disc **150** is rotatably carried by the shaft **148** in a position flat against the open face of the drum **145**. This disc **150** is preferably only slightly larger in diameter than the drum **145** and is provided with a single undercut slot **151** that may be aligned with any one of the slots **146**. The periphery of the disc **150** has a flattened part adjacent to the slot **151** as indicated at **152** so that the upper edge of slot **151** is below the surfce of the drum **145**. In this way type **153** can be readily inserted and removed from any given slot **146** with which the slot **151** of disc **150** is aligned.

In order to provide for the transfer of type **153** from the drum **145** to the roller **19**, a pin **154** on the disc **150** at a point immediately below the slot **151** cooperates with openings **155** in the end of the roller **19**. Engagement of the pin **154** with one of the openings **155** automatically aligns the slot **151** in disc **150** with the corresponding roller slot **41**. This fixes the disc **150** but permits the drum **145** to be rotated relative thereto so that any one of the slots **146** can be brought in alignment with the selected roller slot **41** to transfer type **153** from the drum to the roller and vice versa. With this structure it is quite apparent that if the slots **146** each contain different letters and numbers customarily required, a wide variety of nomenclature may be set on the roller **19** merely by sliding appropriate pieces of type from the drum **145** to the roller **19**. Upon completion of the printing operation the drum **145** can be replaced on the end of the roller **19** and the type replaced on the drum so that new and different nomenclature can be set on the roller. This provides a simple and dependable proce-

dure for quickly interchanging type in instances where it is not possible to use pre-set combinations.

The apparatus in accordance with the invention can be generally characterized by its simplicity and effectiveness and provides a highly versatile printing apparatus that will permit the type to be quickly and easily changed. By a novel and improved mechanical system, its operation may be readily adjusted to accommodate a wide variety of labels that may vary both in length and width. In addition the printed matter may be placed in any desired location on the label and the completed and severed label is held for easy access by the operator. The equipment is small and compact, can be mounted in any position and may be either manually or automatically operated. If desired counter means may be coupled with the cam 60 or shaft 36 to record the number of labels printed.

While only one embodiment of the invention has been illustrated and described it is apparent that numerous modifications, changes and alterations in the several elements and arrangements of them may be made without departing from the slope and spirit thereof as defined by the appended claims.

What is claimed is:

1. In label printing apparatus having a bed for supporting said labels, an adjustable pawl assembly for feeding said labels over said bed comprising a vertical plate disposed alongside said bed, means including a level for moving said plate through a linear path in the plane of said plate, a threaded rod adjustably carried by said plate and extending outwardly thereof over said bed, said rod having a longitudinal deformation in the surface thereof, a pair of nuts threadably engaging said rod, a tubular member slidably engaging said threaded rod between said nuts and having means engaging said deformation, a pawl rotatably mounted on each end of said tubular member and a spring between each pawl and said tubular member for urging said pawls against the surface of said bed.

2. In label printing apparatus an adjustable pawl assembly according to claim 1 wherein said moving means forcibly moves the plate in one direction to feed said labels and includes spring means for moving the plate in the other direction.

3. Printing apparatus for labels formed in a strip comprising a rotatable impression roller for printing said labels successively, said roller including means for removably holding a type member thereon, driving means for said impression roller, a pressure roller cooperating with said impression roller for the successive imprinting of said labels, an eccentric shaft rotatably carrying said pressure roller, said shaft being adjustable to move said pressure roller into and out of engagement with said impression roller, an adjustable inking roller for transferring ink to said impression roller, a bed along which the strip of labels is adapted to be fed intermittently between the impression roller and the pressure roller into a cutting station located beyond said rollers, a fixed guide at one side of said bed and a transversely adjustable guide on the other side thereof for guiding said strip of labels over the bed, said guides each having a spring finger bearing on said strip of labels to hold it on the bed, an adjustable pawl assembly mounted for reciprocation lengthwise of said bed for engaging said strip of labels including means for periodically advancing and retracting said assembly along said bed, said pawl assembly serving by each advance to move said strip forwardly along said bed, a label length at a time, between the impression roller and said pressure roller into said cutting station, friction means for engaging the label strip and holding it to said bed during retraction of the pawl assembly, a cutter at said cutting station for severing the leading printed label from said strip as it is positioned in said cutting station, said cutter including means for holding the severed label in an accessible position for removal by the operator, said cutter being adjustable lengthwise of said bed to accommodate it to different lengths of labels, and a single cam carried by said impression roller for actuating said pawl assembly, friction means and cutter in timed relation to each other.

4. Printing apparatus for labels formed in a strip comprising a rotatable impression roller for printing said labels successively, said roller including means for removably holding a type member thereon, driving means for said impression roller, a pressure roller cooperating with said impression roller, an eccentric shaft rotatably carrying said pressure roller, said shaft being adjustable to move said pressure roller into and out of engagement with said impression roller, an adjustable inking roller for transferring ink to said impression roller, a bed along which the strip of labels is adapted to be fed intermittently between the impression roller and pressure roller to a cutting station located beyond said rollers, a fixed guide on one side of said bed and a transversely adjustable guide on the other side thereof for guiding said strip of labels over the bed, said guides each having a spring finger for bearing on said strip of labels to hold it on the bed, an adjustable pawl assembly mounted for reciprocation lengthwise of said bed for engaging said strip of labels including means for periodically advancing and retracting said assembly along said bed, said pawl assembly serving by each advance to move said strip forwardly along said bed, a label length at a time, between the impression roller and said pressure roller into said cutting station, friction means for engaging the label strip and holding it to said bed during retraction of the pawl assembly, a cutter at said cutting station for severing the leading printed label from said strip as said label is positioned in said cutting station, said cutter including means for holding the severed label in an accessible position for removal by the operator, said cutter being adjustable lengthwise of said bed to accommodate it to different lengths of labels, and a single cam carried by said impression roller for actuating said pawl assembly, friction means and cutter in timed relation to each other, said pawl assembly comprising a vertical plate disposed alongside said bed, means including a lever for moving said plate through a linear path in the plane of said plate, a threaded rod adjustably carried by said plate and extending outwardly thereof, over said bed, said rod having a longitudinal groove in the surface thereof, a pair of nuts threadably engaging said rod, a tubular member slidably engaging said threaded rod between said nuts and having a pin engaging said slot, a pawl rotatably mounted on each end of said tubular member and a spring between each pawl and said tubular member for urging said pawls against the surface of said bed.

5. Printing apparatus for labels formed in a strip comprising a rotatable impression roller for printing said labels successively, said roller including means for removably holding a type member thereon, driving means for said impression roller, a pressure roller cooperating with said impression roller for the successive imprinting of said labels, an eccentric shaft rotatably carrying said pressure roller, said shaft being adjustable to move said pressure roller into and out of engagement with said impression roller, an adjustable inking roller for transferring ink to said impression roller, a bed along which the strip of labels is adapted to be fed intermittently between the impression roller and pressure roller into a cutting station located beyond said rollers, a fixed guide on one side of said bed and a transversely adjustable guide on the other side thereof for guiding said strip of labels over the bed, said guides each having a spring finger bearing on said labels to hold them on the bed, an adjustable pawl assembly mounted for reciprocation lengthwise of said bed for engaging said strip of labels including means for periodically advancing and retracting said assembly along said bed, said pawl assembly serving by each advance to move said strip forwardly along said bed, a label length at a time, between the impression

roller and said pressure roller into said cutting station, friction means mounted for reciprocation lengthwise of said bed for engaging the label strip and holding it to said bed during retraction of said pawl assembly, a cutter at said cutting station for severing the leading printed label from said strip as said label is positioned in said cutting station, said cutter being adjustable lengthwise of said bed to accomodate it to different lengths of labels, a single cam carried by said impression roller for actuating said pawl assembly, friction means and cutter in timed relation to each other, and said cutter comprising a cutter bed, a skirt depending from one edge of said cutter bed, a cutting blade disposed generally in the plane of said skirt and having a downwardly depending leg on one end thereof, means pivoting said leg to said skirt, means on said skirt for limiting the movement of said blade through a predetermined angle, spring means between said blade and skirt for yieldably holding the blade above the cutting bed, and a bell crank coupled with said blade for moving it downwardly passed and in sliding contact with that edge of said cutter bed from which said skirt depends, said crank exerting a small part of its force inwardly on said blade during its downward movement to constantly urge it into contact with the edge of the cutter bed during the cutting operation, and spring loaded holding means for receiving and holding each printed label as it is severed from the strip.

6. Printing apparatus for labels formed in a strip comprising a rotatable impression roller for printing said labels successively, said roller including means for removably holding a type member thereon, driving means for said impression roller, a pressure roller cooperating with said impression roller, an eccentric shaft rotatably carrying said pressure roller, said shaft being adjustable to move said pressure roller into and out of engagement with said impression roller, a bed along which the strip of labels is adapted to be fed intermittently between the impression roller and pressure roller into a cutting station located beyond said rollers, a fixed guide on one side of said bed and a transversely adjustable guide on the other side thereof for guiding said strip of labels over the bed, an adjustable pawl assembly on said bed mounted for reciprocation lengthwise of said bed for engaging said strip of labels, said assembly including a pawl-carrying plate adjustable longitudinally of said bed and means for periodically advancing and retracting said assembly along said bed, said pawl assembly serving by each advance to move said strip forwardly along said bed, a label length at a time, between the impression roller and said pressure roller into said cutting station, a cutter at said cutting station for severing the leading printed label from said strip as said label is advanced into said cutting station, said cutter being capable of adjustment lengthwise of said bed to accommodate it to different lengths of labels, and a cam carried by said impression roller for actuating said pawl assembly and cutter in timed relation to each other.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,996,001 August 15, 196:

William M. Schlegel et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 9, line 27, for "level" read -- lever --.

Signed and sealed this 20th day of February 1962.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents