June 9, 1959 M. A. GOODBAR ET AL 2,889,769

FEED CONTROL MECHANISM FOR RECORD MATERIAL

Filed Sept. 30, 1955

2 Sheets-Sheet 1

FIG. 2

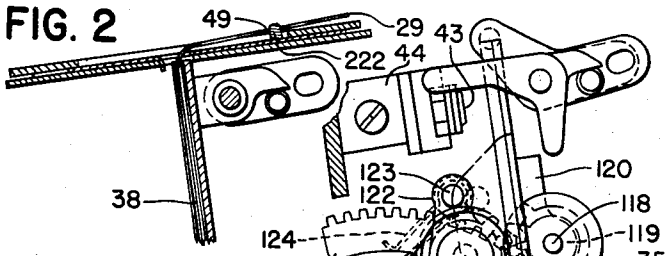


FIG. 1

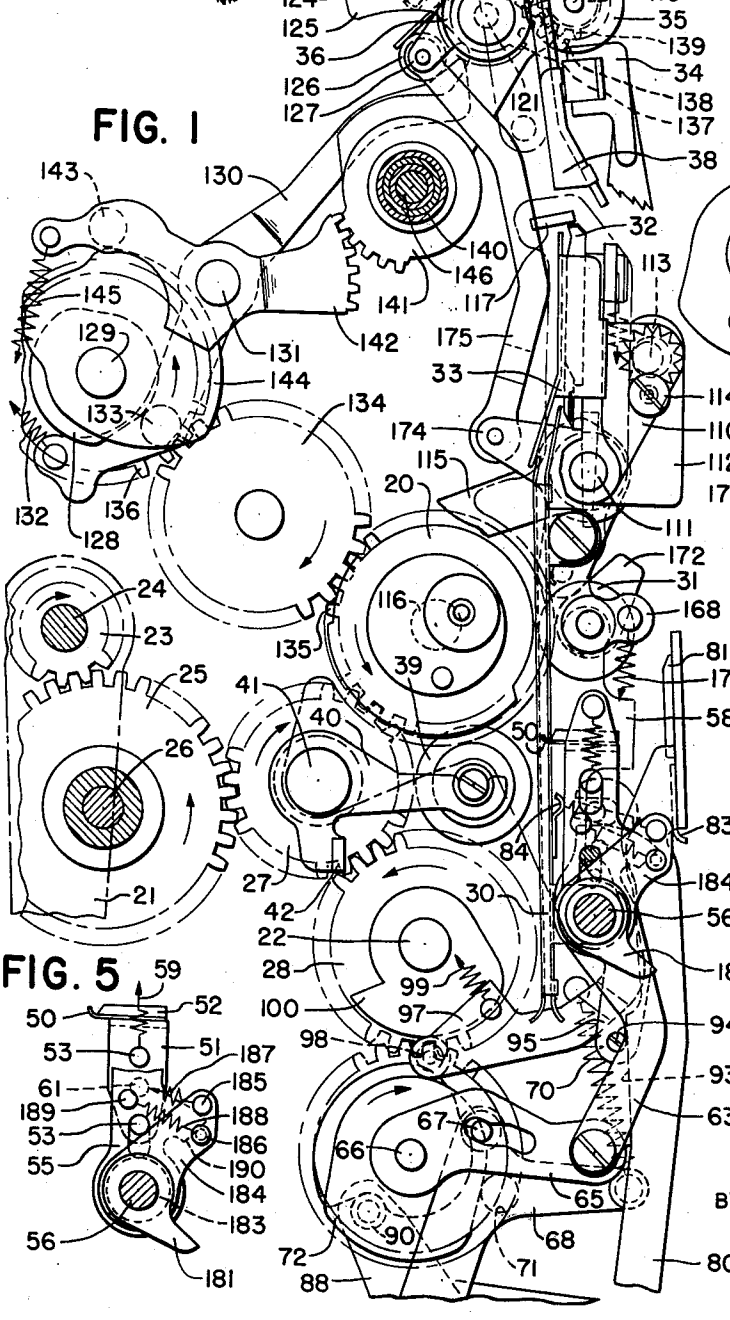


FIG. 3

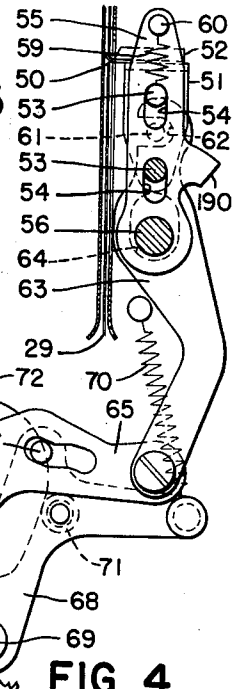


FIG. 4

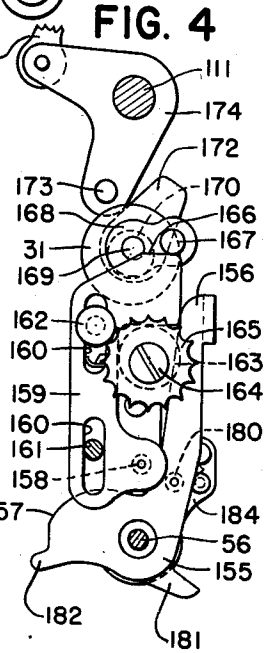


FIG. 5

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FIG. 6

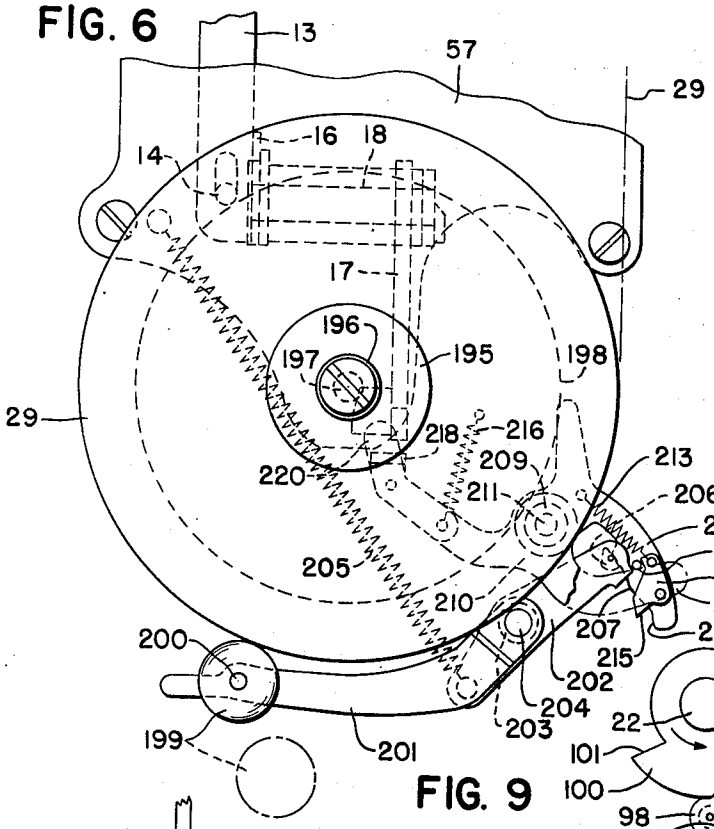


FIG. 8

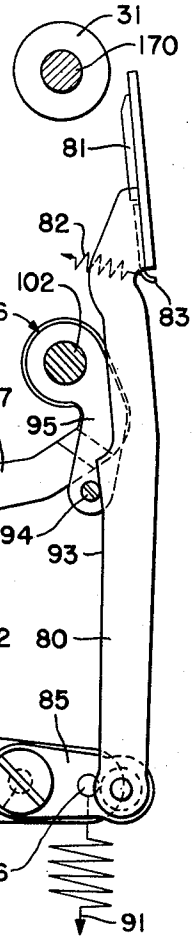


FIG. 9



FIG. 7

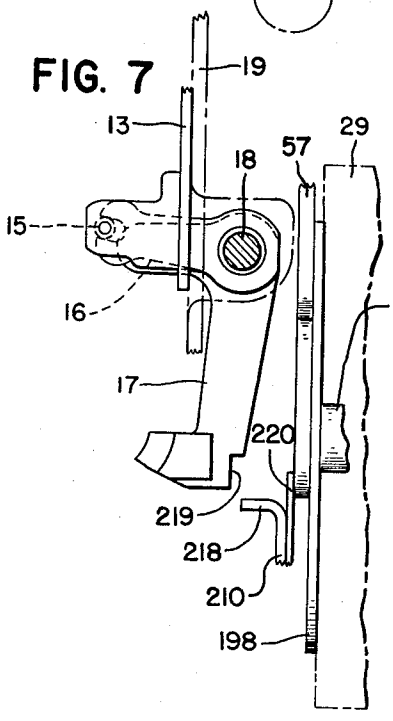




FIG. 10

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2,889,769

FEED CONTROL MECHANISM FOR RECORD MATERIAL

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Application September 30, 1955, Serial No. 537,842

8 Claims. (Cl. 101—66)

This invention relates to cash registers and analogous machines, and is particularly directed to improvements in the label or receipt printing and issuing mechanism of such machines.

An object of the present invention is to provide a compact and efficient machine of small dimensions for printings and issuing labels or receipts on record material which has been previously printed in part.

Another object of the present invention is to provide a machine having a label or receipt feed control mechanism capable of feeding previously printed label or receipt supply material to an exact position, to be severed at the proper dividing line and to receive printing impressions in the proper spaces.

Still another object of the present invention is to provide a machine adapted to use label or receipt supply material having apertures or recesses at regular intervals therein, and having means adapted to coact with said apertures or recesses to precisely position the supply material for label or receipt printing and severing operations.

A further object of the present invention is to provide a machine having means to feed the label or receipt supply material an approximately equal distance in one direction during each cycle of machine operation, and then to feed the supply material in the opposite direction a lesser amount during the same cycle of machine operation for the precise positioning thereof.

Still a further object of the present invention is to provide a machine having a feed tension release mechanism, whereby the feeding and control means which normally coact with the label or receipt supply material may be moved to an ineffective position to permit the insertion into or removal from the machine of label or receipt supply material.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of the specification.

In the drawings:

Fig. 1 is a right side elevation showing the label or receipt feeding, printing, severing and ejecting mechanism.

Fig. 2 is a cross-sectional view showing a portion of the upper guide chute, the aperture in the machine cabinet which is alined with the upper end of said chute, and through which the label or receipt is ejected, and the means for locating the strip of label or receipt supply material in proper position relative to the feeding, printing, and severing mechanism when introducing a new supply of label or receipt material into the machine.

Fig. 3 is a detail view showing the reverse feed stop mechanism and its operating means.

Fig. 4 is a detail view showing a portion of the feed tension release mechanism.

Fig. 5 is a detail view, partly broken away, of the reverse feed stop mechanism and the means by which

it is positioned in accordance with the position of the feed tension release mechanism.

Fig. 6 is a fragmentary detail view, as observed from the right of the machine, showing in particular the supply roll of label or receipt material, and mechanism coacting with the periphery of said supply roll to automatically lock the machine against operation when the supply of label or receipt material is nearly exhausted.

Fig. 7 is a detail view of the clutch control lever, shown also in Fig. 6, and a portion of the mechanism associated therewith, for obstructing machine-releasing movement of said control lever when the supply of label material is substantially exhausted.

Fig. 8 is a detail view of the reverse feed pitman, and its operating and control mechanisms.

Fig. 9 is a facsimile of one side of a label issued by the machine, in which a portion of the indicia has previously been printed on the supply material.

Fig. 10 is a facsimile of a section of the supply material from which the label of Fig. 9 is produced, showing previously printed indicia on the opposite side of the strip.

GENERAL DESCRIPTION

This invention is embodied in a well known type of accounting machine or cash register, which is efficient, compact, light-weight and of small dimensions. Such a machine is ideal for use where space is limited, or where it is desirable to transport said machine from one position of use to another, which is often required in certain business systems. While the machine is comparatively light and small in overall dimensions, still it is complete in every way and has many of the features found in larger and more costly machines.

The present invention is concerned with printing mechanisms in general, and is more particularly directed to an efficient mechanism for enabling the use of a supply roll of record material, upon which a printed impression has been previously made to enhance the appearance thereof, or to place certain data thereon for use in preparing labels which are to be attached to or placed within pre-packaged commodities, such as packages of meats, cheeses, etc., said labels being used principally for identifying the contents, weight, price per pound, and total price of such packages. In the present disclosure, the machine is arranged to print and issue labels for use in connection with packaged meats. However, this is but one use for such labels, and is intended only as an example, as, with minor adjustments and alterations the machine may be arranged to prepare labels for use in connection with many other merchandising systems involving the sale of prepackaged merchandise, and may also be arranged to issue receipts, tickets, and other forms of printed records, for use in various business applications.

The use of a previously printed supply roll of record material, from which labels are produced, introduces problems not heretofore present in this type of machine. It will be seen that on each label, the printing done by the machine must appear in the same relative position, so that it will not be superimposed upon printing or decorative matter previously printed on the supply roll during production of the same, since the label will otherwise be rendered illegible, or at best unattractive. Similarly, the knife which severs each successive label from the record material must cut in the right position relative to the previously printed material, in order that each label will contain the desired previously printed indicia, properly positioned thereon.

It is therefore essential, in the use of previously printed supply material to produce labels, that the initial positioning of the supply material wtih respect to the printing and severing mechanisms be correct, and that each successive feeding of the supply material be of exactly the

same amount in order to insure a continuing proper registry of the previously printed material with the severing and printing mechanisms of the machine. It should also be noted with regard to the feeding of the record material, that too long or too short a feed will result in an error which is cumulative; that is, even a small difference between the required feed and the actual feed will be multiplied by successive operations so that, for example, the third or fourth label printed will be much further out of registry than the first one printed, and so on.

In the present invention, this problem has been overcome by the use of regularly spaced apertures in a supply roll which cooperate with a positioning stud for initial positioning of the supply material and with the feed mechanism of the machine to cause the supply material to be positioned precisely during each cycle of operation of the machine.

The present disclosure will be principally confined or limited to the subject matter of the present invention. For a full disclosure of other mechanism of the machine, not pertinent to the present invention, reference may be had to United States Patent No. 1,816,263, issued July 28, 1931, to William H. Robertson; to United States Patent Nos. 2,056,485 and 2,056,486, issued October 6, 1936, to William H. Robertson; and to the co-pending application for United States Letters Patent, Serial No. 278,063, filed March 22, 1952, by Mayo A. Goodbar and Russell G. Pratt, now U.S. Patent No. 2,730,038.

Framework

The machine chosen to illustrate the present invention includes left and right frames, secured in properly spaced relationship to each other by a base plate and by various cross frames, rods and bars, the base plate in turn being secured to a machine sub-base. The mechanism of the machine is enclosed in a suitable case or cabinet which is secured to the base plate by suitable screws. The above construction is fully disclosed in the previously mentioned application, Serial No. 278,063, taken with the previously mentioned patents to Robertson, to which reference may be had for a complete description thereof.

Keyboard and printing mechanism

The machine is provided with a keyboard having various types of keys and a starting bar. In this embodiment it is contemplated that weight keys and price or amount keys will be included. Control means for setting up the price per pound to be printed on the label is provided at the side of the machine. A removable stamp key **43** (Fig. 1) for printing the name of the contents of the packaged commodity on the label is also provided, as is a printing cylinder **20** for printing other data on the label. After the proper weight and amount keys have been depressed to set up the weight in pounds and ounces, and the price in dollars and cents, of the package to be labeled, the starting bar is depressed to release the machine for operation. The data set up by the depressed keys on corresponding type wheels, the price per pound, and the name of the contents are printed upon a section of the record material, which is then severed from the supply roll and ejected from the machine as a label of the form shown in Fig. 9. The data set up on the printing cylinder **20** has been printed upon this label during previous machine operations. The construction and operation of the keyboard and printing mechanism are fully disclosed in the previously mentioned application, Serial No. 278,063, taken with the previously mentioned patents to Robertson, to which reference may be had for a complete description thereof.

Operating means

Power for operation of the machine may be derived from an electric motor (not shown), or from a hand crank **21** (Fig. 1). The starting bar for releasing the machine for operation is connected by mechanism which is not shown

herein, but which is fully disclosed in the previously mentioned application, Serial No. 278,063, to a pitman **13** (Figs. 6 and 7), which is mounted for vertical shifting movement by means of a cooperating slot and stud in its upper end (not shown) and by means of a similar slot in its lower end, in cooperation with a stud **14**, secured in the right side frame **19**. The right-angled extension on the lower end of the pitman **14** carries a stud **15** which engages a slot in the end of a crank **16** secured to the hub of a clutch control lever **17** free on a stud **18** supported by two ears bent outwardly from the right side frame **19**. A spring (not shown) urges the clutch control lever **17** (Fig. 7) counter-clockwise to shift the pitman **13** downwardly at the instant said pitman is released for downward movement by depression of the starting bar. Counter-clockwise movement of the clutch control lever **17** permits the clutch mechanism, which connects the operating motor to a main cam shaft **22** (Fig. 1) journaled in the machine framework, to become engaged and simultaneously operates a switch which closes the electric circuit to the operating motor to cause the machine to operate.

When the machine is operated by means of the motor, the main cam shaft **22** receives one complete rotation, which will operate the machine, by means of a train of mechanism between the motor and the shaft **22**, which is not shown here, but which is fully disclosed in the previously mentioned patents to Robertson.

When the machine is operated by means of the crank **21**, the main cam shaft **22** is given one complete rotation by means of the following train of gears. The crank **21** is clutched to a pinion **23** mounted on a stud **24** carried by the right side frame **19**. The pinion **23** meshes with a gear **25**, loosely mounted on a stud **26**. The gear **25** meshes with an idler gear **27**, which in turn meshes with a gear **28** on the main cam shaft **22**. The ratio of gears in this train is such that in order to give the cam shaft **22** one complete rotation, as required for each operation of the machine, it is necessary to give the crank **21** two complete rotations.

DETAILED DESCRIPTION

Label supply feed mechanism

The label supply material is fed from a supply roll **29** on which has been previously printed for each label a decorative border and the name of the store using the label on one side, and an acknowledgment and the name and address of the store on the other side (Figs. 6, 7, 9 and 10), upwardly through a lower guide chute **30** (Fig. 1) between the serrated feed rails of the printing cylinder **20** and a rubber tension roller **31**, which coacts with said rails to feed said supply material upwardly past a knife **32** and through an intermediate chute **33**, connected to said knife, thence into coacting relationship with type wheels (not shown) and a cooperating hammer **34**, a stamp key **43** and a cooperating printing block **44**, and a label-ejecting mechanism comprising two pairs of rollers **35** and **36**, which eject the upwardly disposed edge of a label **37** (Fig. 9) out of an upper chute **38** after it has been severed from the supply material **29** by the knife **32**. A light spring finger (not shown) located in the upper paper chute **38** grips the completed label **37** sufficiently to prevent it from dropping down said chute, and holds said label in a position where it is conveniently accessible for removal by the operator.

The printing cylinder **20** of the present machine is provided with printing wheels for printing the grade of meat being labeled, and also with a two-letter code denoting the date of packaging, as shown, for example, by the line "PT U.S. PRIME" in the label of Fig. 9. An ink roller **39** (Fig. 1), carried between two arms **40**, is provided for inking the printing surfaces of the printing cylinder **20**. Arms **40** are urged in a counter-clockwise direction about shaft **41**, on which they are pivotally mounted, to normally maintain roller **39** in contact with

said printing cylinder. A finger-piece 42 on one of said arms is provided for rotating said arm against the force of said spring to permit removal of roller 39 for reinking.

The printing cylinder 20 is also provided with feeding flanges, which cooperate with the tension roller 31 to feed the supply material 29, and is given one complete rotation for each operation of the machine, which causes said supply material to be fed from between said printing cylinder and the roller 31 upwardly through the intermediate paper chute 33.

Precise positioning of the label supply strip 29 in relation to the various printing elements and the knife 32 is obtained by means which will now be described. As is shown in Figs. 9 and 10, the material comprising the label supply roll 29 is provided with apertures 49 at regular intervals corresponding to the predetermined length of a label 37.

Apertures 49 are adapted to coact with a reverse feed stop 50 (Figs. 1, 3 and 5), which has an upwardly curved end portion, and which is secured between the upper surface of an arm 51 and a block 52, by any suitable means, such as a riveted connection. Arm 51 is provided with two vertically spaced studs 53, which are positioned to cooperate with corresponding slots 54 in a supporting member 55 rotatably mounted on a shaft 56 extending between machine frames 57 (Figs. 6 and 7) and 58 (Fig. 1). The upper stud 53 has attached thereto a spring 59, which is secured at its other end to a stud 60 on the supporting member 55, and which urges the studs 53 to abut the upper ends of their corresponding slots 54 in supporting member 55. Also mounted on arm 51 is an additional stud 61, which extends outwardly from the side of arm 51 opposite the side from which studs 53 extend, for cooperation with a notched portion 62 near one end of a pitman 63. The pitman 63 is provided with a slot 64 intermediate its ends for accommodation of the shaft 56 to permit free movement of said pitman with respect to said shaft, and is pivotally connected at its other end to a link 65, which is in turn pivotally mounted on a stud 66 journaled in the machine framework. Intermediate the ends of link 65 is a slot of irregular shape in which rides a stud 67 secured to a lever 68 pivotally mounted on a fixed stud 69. Lever 68 is constantly urged in a counter-clockwise direction, as viewed in Fig. 3, by a spring 70 to maintain a roller 71 on said lever against the periphery of a cam 72 secured on the stud 66.

Clockwise rotation of cam 72 will cause lever 68 to rotate in a clockwise direction, as viewed in Fig. 3. Such rotation will, through the cooperation of stud 67 with the slot in link 65, impart a clockwise rotation to link 65 and a consequent downward movement of pitman 63, arm 51, and reverse feed stop 50 against the force of spring 59. As is shown in Fig. 3, in "home" or at rest position of the machine there is a slight clearance between stud 61 and the upper edge of notched portion 62 to permit a small amount of idle motion of pitman 63 before the upper surface of said notched portion engages said stud, so that only a part of the total downward movement of pitman 63 will be transmitted to stop 50, since it is desired to move stop 50 downwardly only a very small amount. This downward movement is imparted to stop 50 at about the same time in the cycle of machine operation that the knife 32 severs the label supply strip 29 to produce a label 37. During the severing operation, the strip of material in the machine below the knife 32 is given a slight movement downward due to the slight downward inclination of the cutting stroke. The downward movement of stop 50 is of approximately the same magnitude as the downward movement of the supply strip 29 caused by the severing stroke, and is sufficient to prevent the top edge of any aperture 49 with which the stop 50 is coacting from being forced against said stop and mutilated.

It will be noted that the edge of the notched portion 62 of pitman 63 also forms a stop to limit clockwise movement, as viewed in Fig. 3, of the reverse feed stop

mechanism, due to the coaction of stud 61 with said edge.

Due to the upwardly curved shape of the reverse feed stop 50, the apertured label supply strip 29 may pass by said stop without interference when moved in an upward direction, but will be arrested when moved in a downward direction as soon as one of the apertures 49 comes into alinement with the stop 50, since the upper edge of such aperture will engage said stop. Therefore, by following the upward feeding movement of the supply strip 29 with a downward movement sufficient to engage an aperture 49 with the stop 50 during each cycle of machine operation, a net upward feed, constituting the difference between the upward feed and the downward feed, exactly equal to the distance on the supply strip 29 between adjacent apertures 49, will be given to said label supply strip.

The downward feed is imparted to the label supply strip by counter-clockwise rotation of the tension roller 31, which is actuated by a reverse feed pitman 80 (Figs. 1 and 8) provided at its upper end with a rubber friction pad 81 bonded thereto and adapted to coact with the roller 31 during upward movement of the pitman 80 to impart said counter-clockwise rotation to said roller. The pitman 80, with its associated pad 81, is urged toward engagement with roller 31 by a spring 82 secured thereto by a spring plate 83 and connected at its other end to a second spring plate 84 secured to the lower chute 30. Pivotally connected to the lower end of the pitman 80 is a link 85 connected by studs 86 and 87 to a lever 88 pivotally mounted on a stud 89 and having a roller 90 rotatably mounted at one end thereof. A spring 91 connected to stud 86 urges the lever 88 in a clockwise direction, as viewed in Fig. 8, to retain roller 90 in yielding contact with the periphery of a cam 92, secured to shaft 66. As shaft 66 and cam 92 are rotated in a clockwise direction during each cycle of machine operation, a substantially vertical movement, first upward from "home" position, and then downward, will be imparted to pitman 80.

Intermediate the ends of pitman 80 is a surface 93, arranged to coact with a stud 94 in an arm 95 of a yoke 96 free on a shaft 102 supported by the machine framework. Mounted on a second arm 97 of the yoke 96 is a roller 98. A spring 99 secured to the arm 97 urges said arms 95 and 97 in a clockwise direction as viewed in Fig. 8, to maintain roller 98 in yielding contact with the periphery of a cam 100 secured on the shaft 22. It will be seen that in the "home" position of cam 100, as shown in Fig. 8, the pitman 80, with friction pad 81, is retained against the force of spring 82 by the engagement of stud 94 with the surface 93, in a position in which its vertical movement will not impart rotational movement to roller 31. However, as cam 100 rotates counter-clockwise during each cycle of machine operation, a shoulder 101 on said cam passes the roller 98, and arms 95 and 97 are freed to move in a clockwise direction, under the influence of spring 99, thus removing stud 94 from the position in which it blocks movement of the pitman 80, and permitting pitman 80, under the influence of spring 82, to assume a position in which vertical movement of said pitman will be effective to impart rotational movement to roller 31 by coaction of friction pad 81 with said roller.

Cams 92 and 100 are formed so that during each cycle of machine operation, stud 94 is removed from blocking position prior to the time when upward movement of the pitman 80 commences, so that upward movement of said pitman will cause counter-clockwise rotation of roller 31 to back-feed the label supply strip 29. Said cams are also formed so that pitman 80, with its associated pad 81, will be moved out of coacting relation with the roller 31 by counter-clockwise rotation of arm 95 and coaction of stud 94 with surface 93 of pitman 80, before said pitman is moved downwardly by spring 91, in returning to "home" position.

Paper severing mechanism

Knife 32 (Fig. 1) is secured to a support 110 rotatably mounted on a shaft 111 carried between the frames 57 (Fig. 6) and 58 (Fig. 1). A knife arm 112 is secured to the shaft 111. The support 110 may be adjusted to a desired position relative to the arm 112 by an eccentric connection 113. A bolt 114 is provided for securing the eccentric member in adjusted position. Also secured to the shaft 111 is an arm 115, having at its end a roller (not shown) which projects into the cam race of a cam (not shown) secured to an auxiliary cam shaft 116. Said cam is adapted to rock the knife 32, during each cycle of machine operation, first to the right, as viewed in Fig. 1, far enough to permit the label supply feeding mechanism to feed the label supply strip 29 past a stationary knife blade 117, and into the upper chute 38, as previously described, and then to the left, to cause the supply material 29 to be severed. The stationary knife blade 117 is supported at one end in a notch (not shown) in the frame 57 (Fig. 6), and at its other end in the frame 58 (Fig. 1). The intermediate paper chute 33 is secured to the support 110, and therefore this paper chute moves with the knife 32 when said knife is caused to move by its actuating cam.

Label ejecting mechanism

The pair of ejector rollers 35 is mounted on a short shaft 118 (Fig. 1) which is mounted in a pair of flanges 119 on a member 120, secured to the upper paper chute 38. The upper chute 38 is secured to the frame 57, and to another frame (not shown). The pair of ejector rollers 36 is secured to a shaft 121 carried in the arms of a bail 122 pivoted on a shaft 123 supported by the machine framework. The bail 122 is held in the position shown in Fig. 1 with the rollers 36 held in coacting relationship with the rollers 35 by a spring 124, which is wrapped around the shaft 123 and which tends to rock the bail 122 in a counter-clockwise direction. One end of the spring 124 bears against a segment 125, and the other end bears against a roller 126 on the rearwardly extending arm 127 of the bail 122.

At the beginning of each cycle of operation of the machine, a cam 128 mounted on a shaft 129 journaled in the machine framework, causes the bail 122 to be rocked in a clockwise direction to separate the rollers 36 from the rollers 35, thereby permitting the label supply material 29 to be fed into position between said rollers. The cam 128 is adapted to rock an arm 130, loosely mounted on a stud 131, and underlying the roller 126. When the arm 130 is rocked, its upper end engages the roller 126, thereby rocking the bail 122 clockwise to separate the rollers 36 from the rollers 35. A spring 132 holds a roller 133 on the arm 130 in yielding contact with the cam 128.

The shaft 129 is given one counter-clockwise (Fig. 1) rotation by means of a gear 136 fast thereon, which meshes with an idler gear 134 in turn meshing with a gear 135 which meshes with and is driven by the gear 27.

After the paper has been fed into position between the rollers 35 and 36, and just before the knife 32 is operated to sever the label from the strip 29, the cam 128 permits the arm 130 to be rocked back to its normal position by the spring 132, thereby permitting the spring 124 to move the rollers 36 against the rollers 35 for firmly gripping the supply material strip 29. After the rollers 36 have thus been moved into gripping position, the knife 32 is operated and the label is severed from the strip 29.

After the label has thus been severed, the rollers 36 are given a rapid counterclockwise rotation, thereby partially ejecting the severed label from the paper chute 38. This rapid rotation is obtained by means of a pinion 137 secured to the shaft 121 and meshing with a pinion 138 secured to a companion pinion 139, both of which are loosely mounted on a fixed stud (not shown) in axial alinement with the shaft 118. The pinion 139 meshes with the gear segment 125, which is rotatably mounted on the largest one of a telescopic nest of sleeves 140 supported by a shaft 146 journaled in the machine framework. The segment 125 is integral with a gear segment 141, which meshes with a segment 142 mounted on the stud 131.

The segment 142 is provided with a roller 143, which is urged by a spring 145 into yielding engagement with a cam 144 secured to the cam 128, and therefore rotating in unison with it. The segment 125 is first rocked in a clockwise direction and then in a counterclockwise direction, by the cam 144 and the segments 142 and 141. Clockwise movement of the segment 125 takes place during the time that the rollers 36 are separated from the rollers 35, and therefore is an idle one. However, the return or counterclockwise movement of the segment 125 takes place after the rollers 36 have been moved into contact with the rollers 35, and therefore, during this counterclockwise movement, the rollers 36 will also be given a counterclockwise movement through the medium of the pinions 137, 138 and 139. Since the label was severed from the strip 29 before the latter movement of the segment 125, the counterclockwise rotation of the rollers will eject the label to a position where it is retained by the previously mentioned light spring finger, conveniently accessible for removal by the operator.

Feed tension release mechanism

Means is provided for moving the rollers 31 and 36, and the stop 50 to an ineffective position to permit insertion into or removal from the machine of label supply material.

Rotatably mounted on shaft 56 is a lever 155 (Fig. 4) having at one end a finger-piece 156 to facilitate manual operation thereof, and also being provided with a cam surface 157 arranged to coact with a stud 158 secured in a plate 159 which is mounted on the frame 58 for guided vertical sliding movement by means of slots 160 in said plate, which cooperate with a headed stud 161 and a headed bolt 162, secured in the frame 58.

An eccentric 163, adjustably mounted on frame 58 by means of a bolt 164, and having an adjusting head 165, coacts with a shoulder on the plate 159 to adjustably limit the extent of downward movement of said plate. The bolt 162 cooperates with the scalloped edge of the head 165 to retain the eccentric 163 in adjusted position.

An upper edge 166 of plate 159 is arranged to coact with a stud 167 secured in an arm 168, which is in turn secured to the outer one of two axially alined trunnions 169 of a shaft 170, on which roller 31 is rotatably mounted. The arm 168 is urged in a clockwise direction, as viewed in Figs. 1 and 4, by a spring 171 (Fig. 1), secured to said arm and connected at its other end to the shaft 56. Shaft 170 is eccentric to its trunnions 169, which are mounted in frames 57 and 58. Secured to the trunnion on the inner end of the shaft 170 is an arm 172, which coacts with a stud 173 in one arm of a bell crank 174 rotatably mounted on shaft 111. A link 175 is pivotally secured at its lower end to the other arm of bell crank 174, said link being pivotally secured at its upper end to the arm 127 of bail 122.

Secured intermediate the ends of the lever 155 is a stud 180, which is positioned to engage an arm 181 (Figs. 4 and 5) when lever 155 is moved clockwise to the full extent of its movement, said movement being limited by contact of a projection 182 on said lever with the stud 158. The arm 181 is rotatably mounted on the shaft 56, and is connected by a sleeve 183 to an arm 184. Two studs 185 and 186 are secured in the arm 184. A spring 187, connected to stud 185 and to a hook on the spring plate 84 (Fig. 1), urges arm 184, in a counterclockwise direction, as viewed in Fig. 5, and

normally maintains the stop 50 in yielding engagement with the record material 29. A spring 188, connected to stud 186 and to a stud 189 on support member 55, urges a surface 190 (Figs. 3 and 4) on the member 55 into engagement with a portion of stud 186, which extends through arm 184 and projects outwardly from the opposite side of said arm.

When lever 155 is rotated clockwise, as viewed in Fig. 4, to the full extent of its movement, surface 157 of said lever coacts with stud 158 of the plate 159 to impart an upward movement thereto. This movement is transmitted by surface 166 of plate 159 to the stud 167 on arm 168, and causes arm 168 to rotate in a counterclockwise direction against the force of spring 171. Since roller 31 is mounted on the shaft 170, which in turn is eccentric to the trunnions 169, counterclockwise rotation of the arm 168 causes a movement of roller 31 to the right as viewed in Fig. 4, and out of a position in which it would interfere with the feeding of the label supply strip 29 upward through the lower chute 30.

Counterclockwise rotation of arm 168 will impart a corresponding counterclockwise rotation to the arm 172, since said arm is secured to one of the trunnions 169. Such a rotation of arm 172 causes said arm to engage the stud 173 on bell crank 174 and to thus impart a clockwise movement to said bell crank about the shaft 111. Clockwise rotation of the bell crank 174 imparts an upward movement to link 175, which in turn imparts a clockwise rotation to the bail 122. This rotation of the bail 122 is effective to move rollers 36, which are supported by said bail on shaft 121, out of engagement with the rollers 35 so as not to interfere with the feeding of the label supply strip 29 through the upper chute 38.

Clockwise rotation of the lever 155 also causes the stud 180 to engage the arm 181 and to rotate said arm, the sleeve 183 and the arm 184, in a clockwise direction about the shaft 56, against the force of the spring 187. The spring 188 connecting arm 184 with support member 55 causes said support member to follow the movement of arm 184 in a clockwise direction to move the stop 50 out of the chute 30 to permit feeding of the label supply strip 29 upwardly through said chute. Clockwise movement of the support member 55 and the stop 50 is limited by engagement of the stud 61 with the rightmost edge of the notched portion 62 of the pitman 63.

Thus it will be seen that clockwise rotation of lever 155 moves roller 31, rollers 36, and stop 50, to an ineffective position to permit the insertion into or removal from the machine of the label supply strip 29.

Interlock between label supply roll and machine releasing mechanism

Mechanism coacting with the supply roll of label material 29 (Fig. 6) is provided for automatically locking the machine against operation when the supply of label material nears exhaustion to inform the operator of this fact so that the delay and inconvenience caused by unexpectedly running out of label material will be eliminated.

The supply of label material 29 (Figs. 6 and 7) is contained in a comparatively large roll wound onto a core 195 composed of compressed paper or wood and having a central bore, which is a slip fit on the circumference of a sleeve 196 rotatably supported on a stud 197 secured in the printer plate 57. Diametrically opposed teeth (not shown), protruding from the circumference of the sleeve 196, cut their way into the bore in the core 195 as the supply roll is pushed onto said sleeve to anchor said parts for unitary rotation. A spring (not shown) wound around the stud 197 and coacting with an enlarged portion of the bore in the sleeve 196 creates frictional drag between said stud and said sleeve to prevent overrunning of the supply roll 29 when the label material is unwound therefrom. A large disk 198 freely supported by the stud 197 between the outer face of the frame 57 and the inner end of the sleeve 196 coacts with the inner surface of the supply roll 29 to provide essential support therefor.

The periphery of the supply roll 29 (Fig. 6) is yieldingly engaged by a sensing roller 199 rotatably mounted on a stud 200 in the lower end of a sensing arm 201 fixedly connected to a lever 202 by a sleeve 203 rotatably supported on a stud 204 secured in the frame 19. A spring 205, one end of which is fixed and the other end of which is connected to the lever 202, urges said lever and the sensing arm 201 clockwise about the stud 204, as viewed in Fig. 6, to normally maintain the roller 199 in yielding contact with the periphery of the supply roll 29. The upper arm of the lever 202 carries a stud 206, which coacts with a control surface 207 on a control arm 208 fixedly connected by a hub 209 to a companion lever 210, said hub being turnably supported by a stud 211 secured in the frame 19. An extension of the control surface 207 is formed by a portion of a pawl 212 freely mounted on a stud in the arm 208. A spring 213 urges the pawl 212 counter-clockwise (Fig. 6) to normally maintain a finished surface on an upward extension of said pawl in contact with a stop stud 214 in the arm 208.

As the supply of label material 29 diminishes and the diameter of the supply roll decreases, the periphery of said supply roll, coacting with the roller 199, permits the spring 205 to gradually move the arm 201 and the lever 202 clockwise.

Clockwise movement of the lever 202 causes the stud 206 to ride downwardly on the control surface 207 and finally onto the extension of said control surface formed by the pawl 212. When the supply of label material 29 is practically exhausted, the stud 206 rides off of a sharp shoulder 215 (Fig. 6) formed by the extension of the control surface 207 on the pawl 212, thus releasing the arm 208 and the lever 210 to the action of a spring 216, which immediately rocks said parts clockwise until a stop surface 217 on said arm 208 contacts the stud 206 to terminate such clockwise movement. Clockwise movement of the lever 210 moves an ear 218, formed on the inner extension thereof, into the path of an undercut surface 219 (Fig. 7) on the clutch control lever 17 to obstruct counter-clockwise releasing movement of said lever and thereby prevent operation of the machine after the supply of label material has become substantially exhausted.

For the purpose of removing the core 195 from the sleeve 196 and the installation of a new supply roll 29 thereon, the arm 201 may be manually moved to an outward ineffective position, indicated by the dot and dash lines for the roller 199 in Fig. 6, during which movement the lever 202 is restored counter-clockwise, the stud 206 by-passing the shoulder 215 formed on the pawl 212, and riding over an inclined surface formed between the stop surface 217 and the control surface 207 on the arm 208. As the arm 201 is moved to its extreme counter-clockwise position, the stud 206 rides off of the surface 207 and into a depression, thus permitting the spring 216 to again rock the lever 210 and the arm 208 clockwise to move the ear 218 again into the path of the surface 219 to obstruct releasing movement of the clutch control lever 17. The shoulder formed by the depression at the inner termination of the control surface 207, coacting with the stud 206, holds the lever 202 and the arm 201 in their ineffective positions against the action of the spring 205, so that the core 195 of the exhausted supply roll 29 may be readily removed from the sleeve 196 and a new supply roll mounted thereon without any interference from said arm 201 and the roller 199. Secured on the upper end of the lever 210 (Figs. 6 and 7) is a plate 220 having an upward extension which coacts with the inner surface of the frame 57 to maintain proper side-spacing relationship between said lever 210 and said frame.

A rearward or right-hand extension 221 of the lever 210 (Fig. 6) forms a convenient finger-piece, by means of which said lever may be rocked counter-clockwise against the action of spring 216 to disengage the shoulder formed by the depression at the inner termination of the control surface 207 from the stud 206 to release the lever 202 and the arm 201 to the action of the spring 205, which immediately restores said arm clockwise to move the roller 199 into yielding contact with the periphery of the new supply roll of label material 29. This restoration of the arm 201 positions the lever 202 as shown in Fig. 6, so that the stud 206, in cooperation with the control surface 207, retains the ear 218 out of the path of the surface 219 (see also Fig. 7), so as not to interfere with normal operation of the machine.

From the supply roll 29, the label supply strip is directed upwardly, as shown in dot and dash lines in Fig. 6, through the guide chute 30 to the feeding, printing, and severing mechanisms of the machine, as has been previously explained.

OPERATION

A brief description of the operation and use of the machine will now be given.

Insertion of new supply roll

Whenever it is required to insert a new supply roll 29 to replace one which has become exhausted, lever 155 (Figs. 1 and 4) should be grasped by finger-piece 156, and rotated in a clockwise direction to the limit of its movement. As has been previously explained, this movement causes rollers 31 and 36 and stop 50 to be moved out of the positions in which they are effective to retain the strip 29 of label supply material against movement.

Also the arm 201 (Fig. 6) should be grasped and moved in a counter-clockwise direction until roller 199 assumes the position shown in dot and dash lines in Fig. 6. It will be recalled that roller 199 will be retained thusly, in a position in which it will not interfere with removal or replacement of a supply roll 29, by engagement of the stud 206 with the depression adjacent surface 207 in arm 208.

It is therefore obvious that by the aforementioned movement of lever 155 and arm 201, all parts of the mechanism which might normally interfere with removal and replacement of the supply roll 29 will be moved to positions in which no such interference is possible.

Any of the label material of exhausted roll 29 remaining in the chutes 30 and 33 is then removed therefrom by rotating the exhausted roll 29 counter-clockwise, as viewed in Fig. 6, about the stud 197. Said roll is then slid off of the sleeve 196, and a new roll is positioned thereon. The extension 221 of lever 210 is then moved upwardly, which releases the stud 206 from the depression in control arm 208 and permits the spring 205 to rock arm 201 to move roller 199 into engagement with the periphery of the new supply roll 29.

The free end of the new supply roll 29 is threaded upwardly through the chutes 30, 33 and 38, and outwardly through an aperture in the machine cabinet, as shown in Fig. 2, until an aperture 49 of the supply roll 29 is in alinement with a positioning stud 222 secured to the outer surface of the machine cabinet. Said aperture is then placed over the stud 222 to position the strip 29 with respect to the label feeding, printing and severing mechanism, the roll 29 being held to keep the strip of label material taut between said roll and the stud 222.

Lever 155 is then moved in a counter-clockwise direction to bring rollers 31 and 36 into effective relationship with their corresponding members 20 and 35, respectively, and to move the stop 50 into engagement with one of the apertures 49 in strip 29, said aperture being in alinement with stop 50 by virtue of the positioning of another of said apertures over stud 222.

The machine is now ready for operation, which is initiated by setting up the desired data to be printed, and then depressing the starting bar, as has been previously described.

It should be noted that the first operation of the machine, after replacement of the roll 29, will produce a length of label material between three and four times the length of an individual label, due to the amount of material extending from a point opposite the knife 32 to the positioning stud 222. It should further be noted that in this length of label material ejected from the machine during this first operation after repalcement of a supply roll, the data set up on the printing cylinder 20 will not appear, since the label material comprising the label issued in this operation will be positioned above the cylinder 20 by virtue of the initial positioning of said material, and therefore there is no opportunity for this data to be printed thereon. This may also be true of the second label printed after replacement of the supply roll, depending upon the location on the label of the data to be printed.

Label feeding, printing and severing operations

Each time the machine is operated with an adequate supply of label material 29, properly positioned therein, the following operations take place. Printing cylinder 20 is first rotated in a counter-clockwise direction, as viewed in Fig. 1, causing the data set up thereon to be imprinted on the label supply strip 29, and simultaneously causing said strip to be fed upward by the feed rails on said cylinder coacting with roller 31. The pitman 80 is then brought into effective relation to roller 31 to impart the necessary reverse feed to strip 29 for the exact positioning thereof, after which knife 32 is rocked counter-clockwise, as viewed in Fig. 1, to sever the label 37 from the strip 29. The severed label is held in position by rollers 35 and 36 while the hammer 34 is urged against it to imprint the data set up by the "Pounds," "Price," and "Price Per Pound" control means, and also while the stamp key 43 bearing the name of the contents of the package is urged against it by printing block 44. Rollers 35 and 36 then eject the label 37 to a position where it may be grasped by the operator.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form or embodiment disclosed herein, for it is susceptible of embodiment in various forms, all coming within the spirit and scope of this invention.

What is claimed is:

1. In a machine of the class described, constructed and arranged to perform operations in which record materials such as labels and receipts are printed and issued, the combination of a supply of record material; a feed roller for the record material; a retaining roller, said retaining roller being adapted to hold a portion of the record material in contact with the feed roller for feeding the record material in one direction; a back-feed member positioned to be engageable with said retaining roller and adapted to engage said retaining roller at a time in the cycle of machine operation subsequent to the feeding of said record material in said one direction; and means to operate the back feed member when it is in position to engage the retaining roller to rotate said retaining roller to cause said retaining roller to position said record material so that subsequent printing and issuing operations performed on said record material will be performed on previously selected portions of said record material.

2. In a machine of the class described, constructed and arranged to perform operations in which record materials such as labels and receipts are printed and issued, the combination of a supply of record material

bearing previously printed indicia thereon, and having apertures therein at regularly spaced intervals; means for printing additional data on said record material; means for severing sections of said record material from the supply roll; stop means arranged to coact with said apertures; means to feed said record material in one direction a distance each cycle of operation slightly greater than the distance between apertures; and back-feed means normally disengaged from but engageable with the feeding means after said feeding means has completed its feeding movement in said one direction to feed the record material in a direction opposite to said one direction a distance sufficient to position one of said apertures to be engaged by said stop means and thus position said record material so that the previously printed indicia will be in proper registry with said printing means and said severing means for printing and severing operations to produce a properly printed and severed label.

3. In a machine of the class described, constructed and arranged to perform operations in which record materials such as labels and receipts are printed and issued, the combination of a supply of record material bearing previously printed indicia, and having apertures therein at regularly spaced intervals; a stop positioned to coact with said apertures for positioning the record material in the machine, said stop being curved to permit the record material and apertures therein to move past it in one direction, and to prevent an aperture in the record material from moving past it in the other direction; rotatable means to feed the record material in said one direction a distance slightly greater than the distance between apertures; rotatable means to hold the record material against the feeding means; and means normally disengaged from but engageable with the holding means to rotate said holding means to feed the record material a lesser distance in said other direction to take up the over-feeding of the record material and to position one of the apertures in engagement with said stop.

4. In a machine of the class described, constructed and arranged to perform operations in which record materials such as labels and receipts are printed and issued, the combination of a supply of record material bearing previously printed indicia thereon, and having apertures therein at regularly spaced intervals; means for severing a section of said record material from the remainder of the supply of record material during each cycle of machine operation, the severing means acting in a downwardly inclined direction and thereby urging the record material downward during the severing operation; a stop-finger coacting with successive apertures in the record material for positioning the record material with respect to the severing means; and means operable to move said stop-finger downward approximately simultaneously with the downward movement of the record material by the operation of said severing means to retain said stop-finger in proper relation to the aperture in which it is positioned, and thus to prevent mutilation of the edges of said aperture.

5. In a machine of the class described, constructed and arranged to perform operations in which record materials such as labels and receipts are printed and issued, the combination of a supply of record material; a first rotatable means to feed the record material a predetermined distance in one direction; a second rotatable means to hold the record material against the feeding means; back-feed means to coact with said second rotatable means to feed the record material a lesser distance in a direction opposite to said one direction; means to retain said back-feed means out of engagement with said second rotatable means until after the first rotatable means has fed the record material in said one direction; and means to impart linear movement to said back-feed means to impart feeding movement to the second rotatable means to feed the record material in the direction opposite to said one direction.

6. In a machine of the class described, constructed and arranged to perform operations in which record materials such as labels and receipts are printed and issued, the combination of means rotatable forwardly to feed the record material in one direction; means engageable by and rotatable by the feeding means to hold the record material against said feeding means; and means normally disengaged from but engageable with the holding means and operable when so engaged to reversely rotate said holding means for moving the record material in a reverse direction for adjusting the same.

7. In a machine of the class described, constructed and arranged to perform machine operations in which record materials such as labels and receipts are printed and issued, the combination of a feed roller for feeding the record material in one direction; a retaining roller for holding the record material against the feed roller; a reverse feed pitman having a friction pad thereon; a spring urging said friction pad into contact with the retaining roller; blocking means operable to retain said pitman out of coacting relation with said retaining roller at times; and means for imparting linear, longitudinal movement to said pitman when the friction pad of said pitman is in contact with said retaining roller to impart a reverse feed to the record material for adjustment of the same.

8. In a machine of the class described, constructed and arranged to perform operations in which record materials such as labels and receipts are printed and issued, the combination of a feed roller for feeding the record material; a retaining roller eccentrically mounted in the machine and spring-urged into coacting relationship with said feed roller for holding the record material against the feed roller; a stop member spring-urged into engagement with the record material for positioning the same; cooperating ejecting rollers for ejecting labels formed of the record material from the machine; a first means to move the retaining roller to an ineffective position out of coacting relationship with said feed roller; a second means operatively connected to and shiftable with said first means for moving one of said ejecting rollers to an ineffective position out of coacting relation with its companion roller; a third means to move said stop member to an ineffective position out of engaging relation with the record material; and manually operable means operatively connected to said first and third means for simultaneously moving the retaining roller, said one of said ejecting rollers, and the stop member to their ineffective positions.

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