Jan. 5, 1954 E. J. JANKE 2,664,819

PRINTING MACHINE

Filed Aug. 24, 1949 9 Sheets-Sheet 1

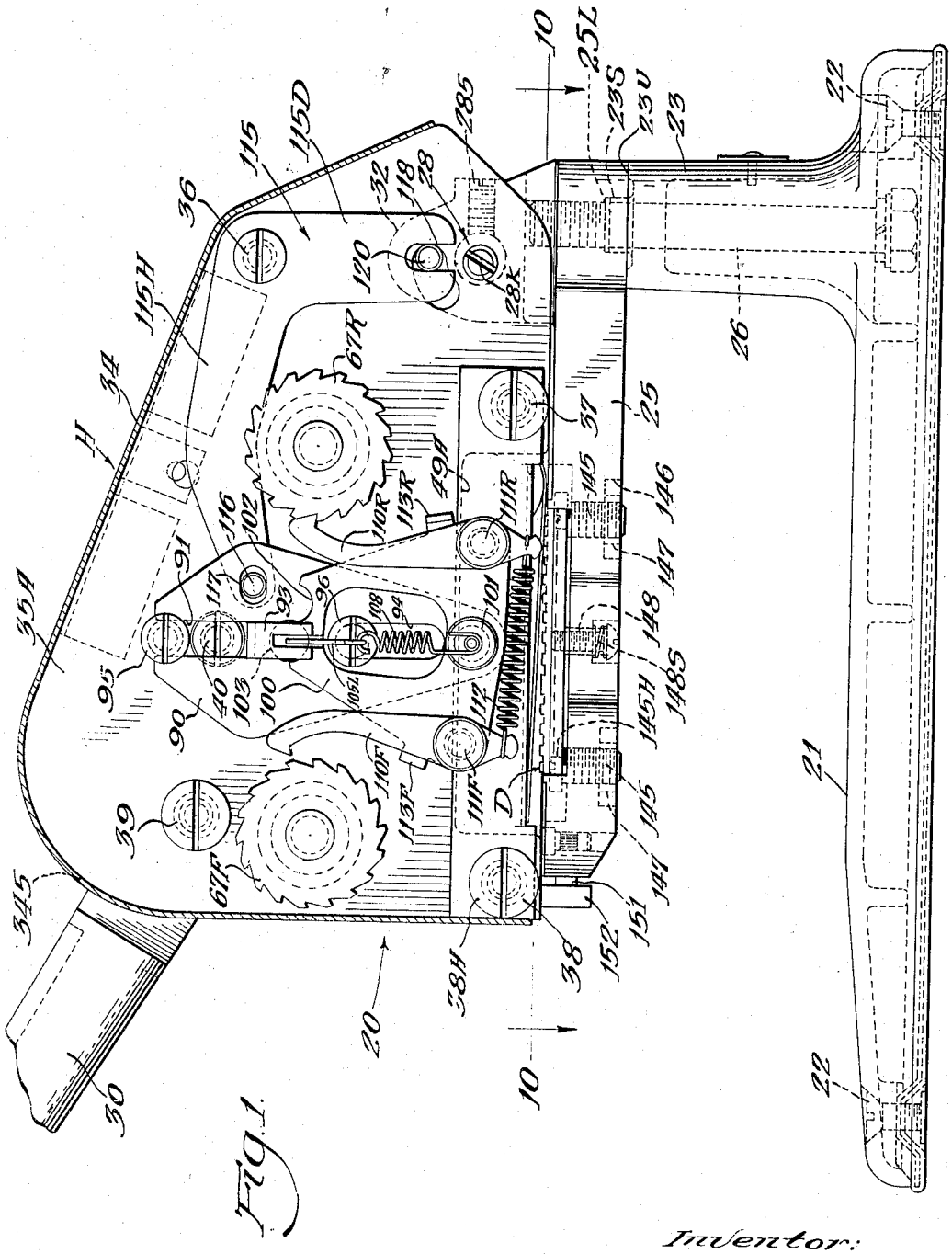


Fig. 1.

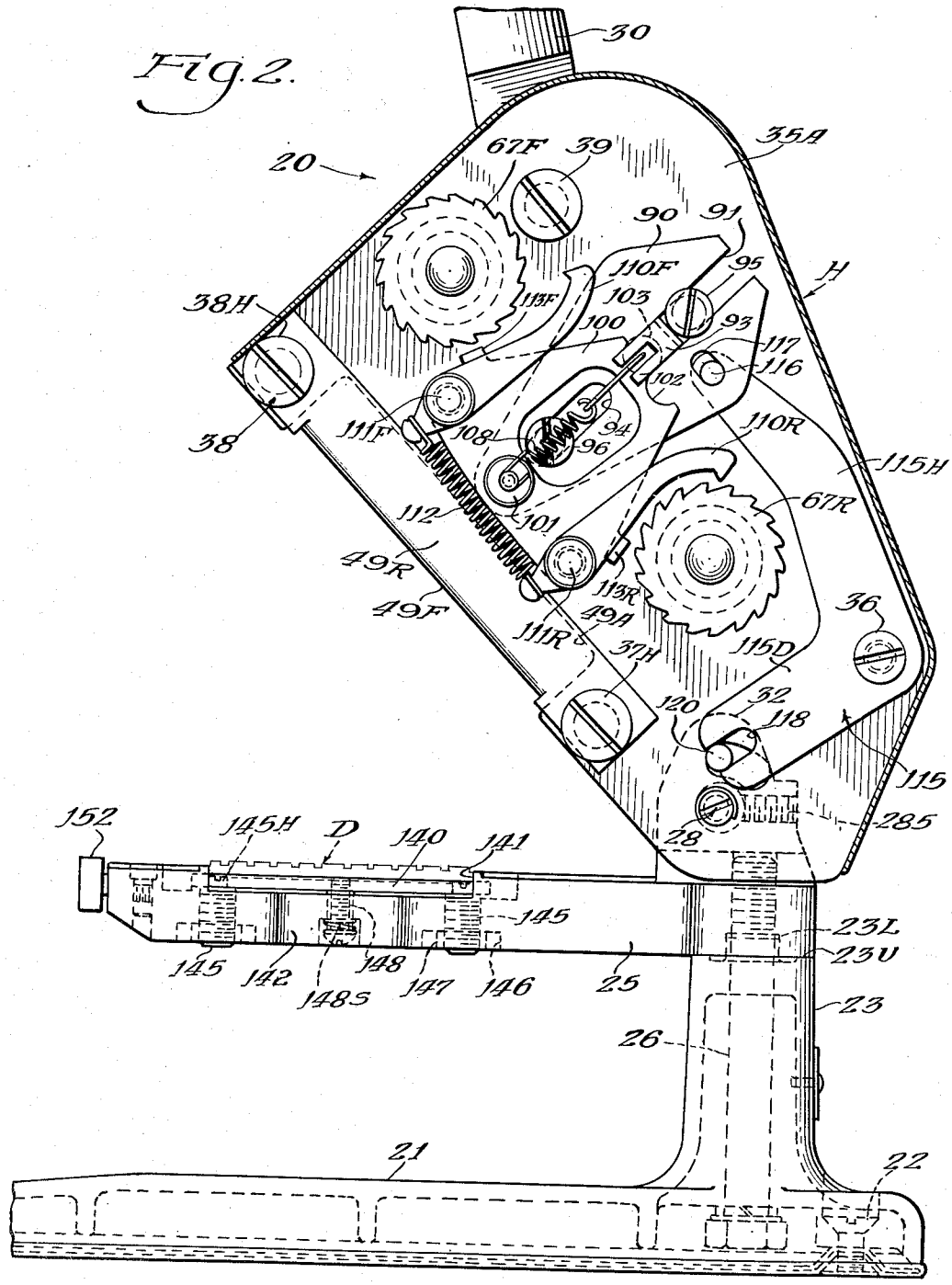
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Fig. 2.



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Fig. 3.

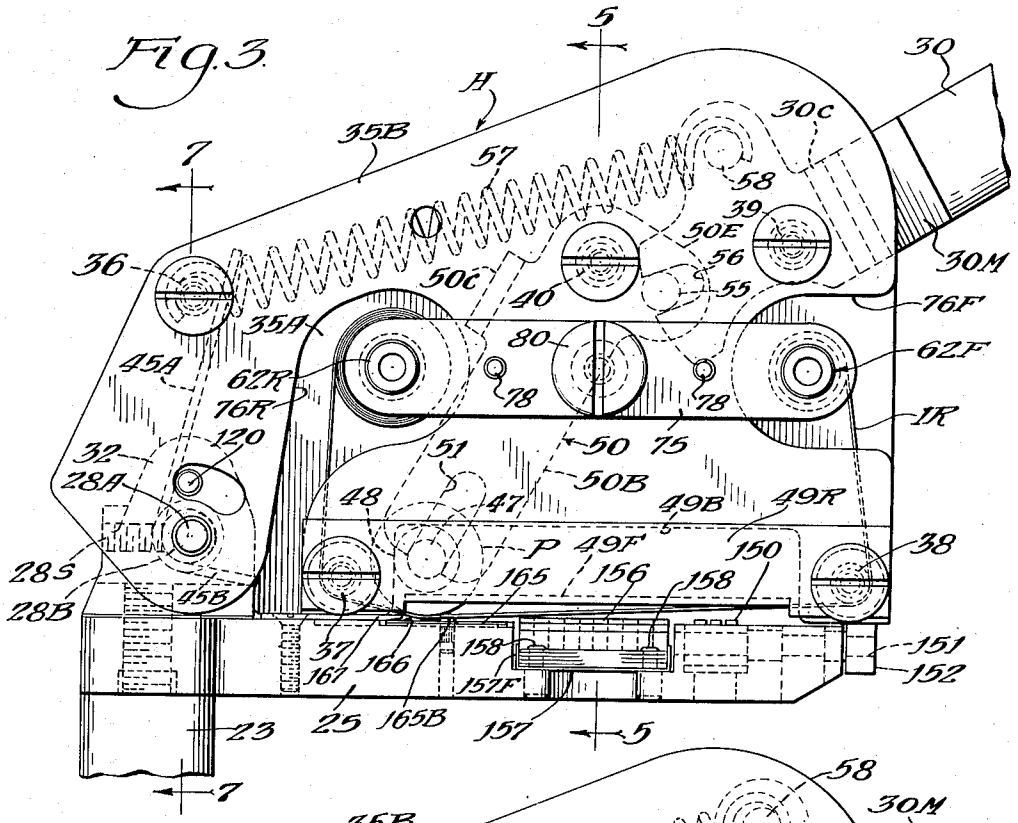
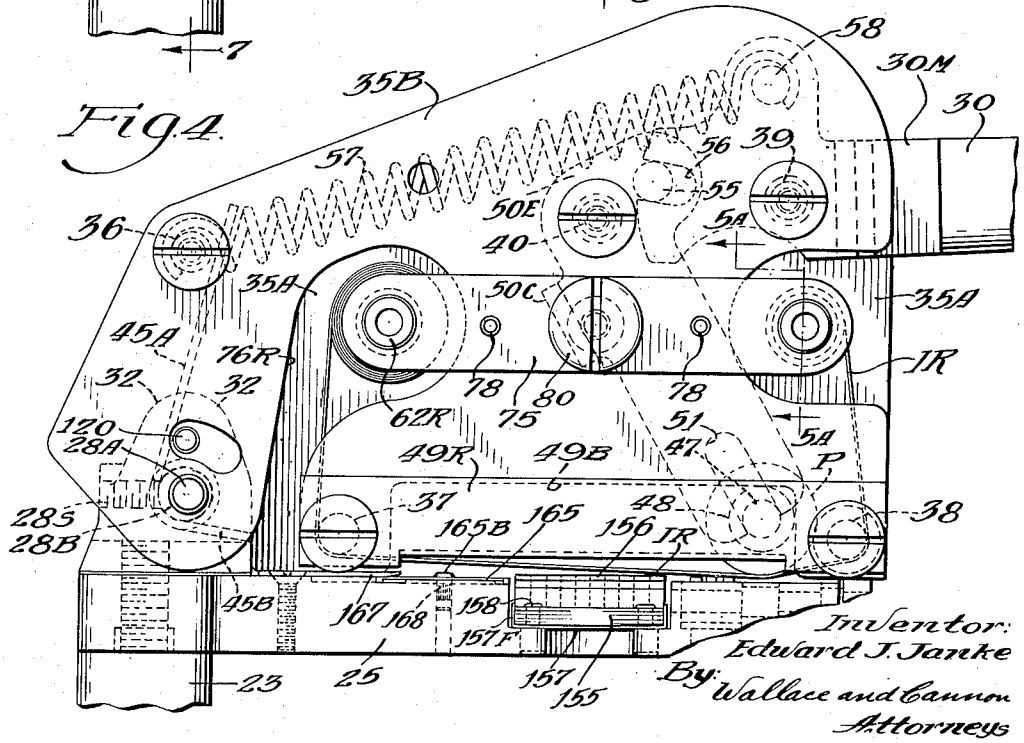


Fig. 4.



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Fig. 5.

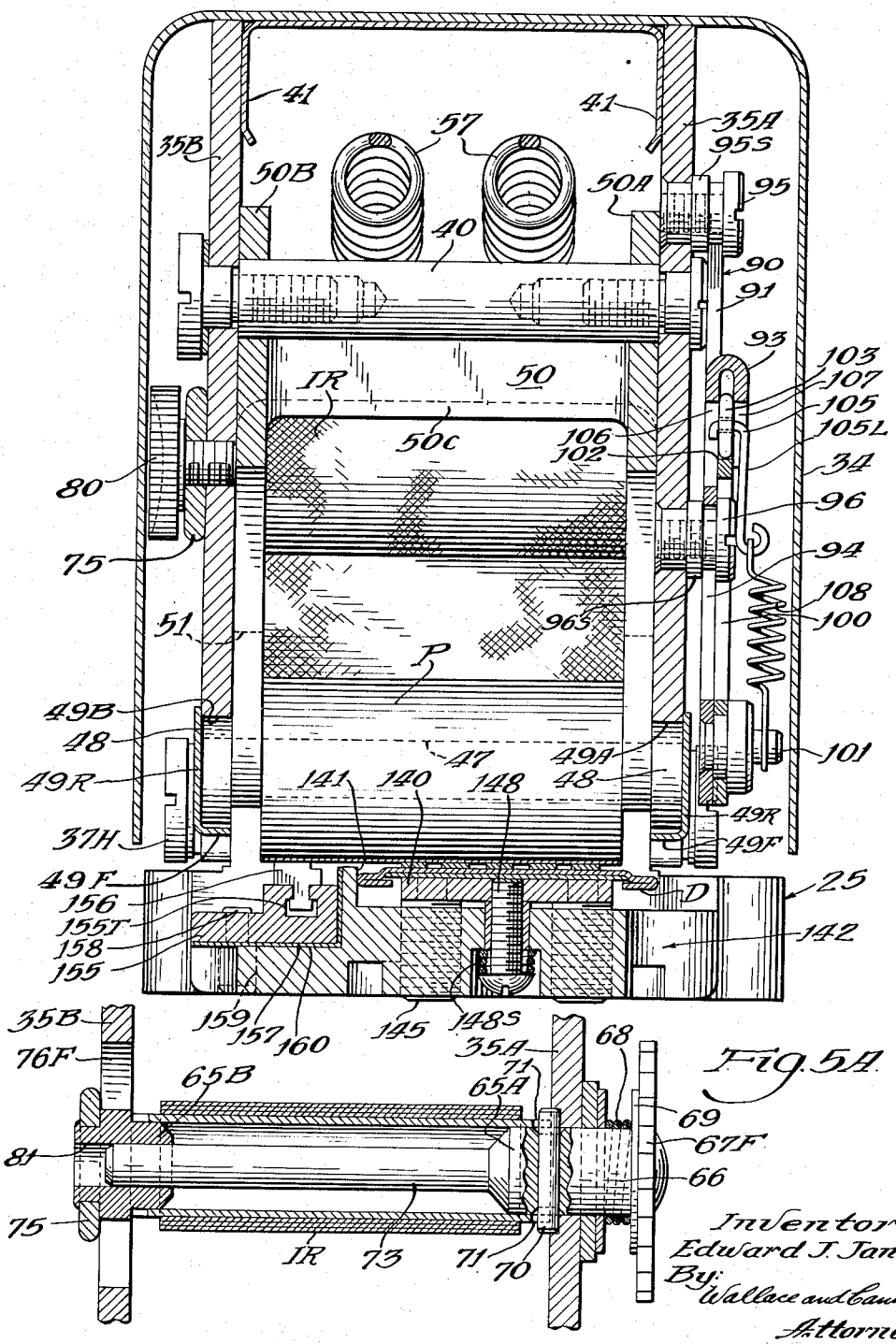


Fig. 5A.

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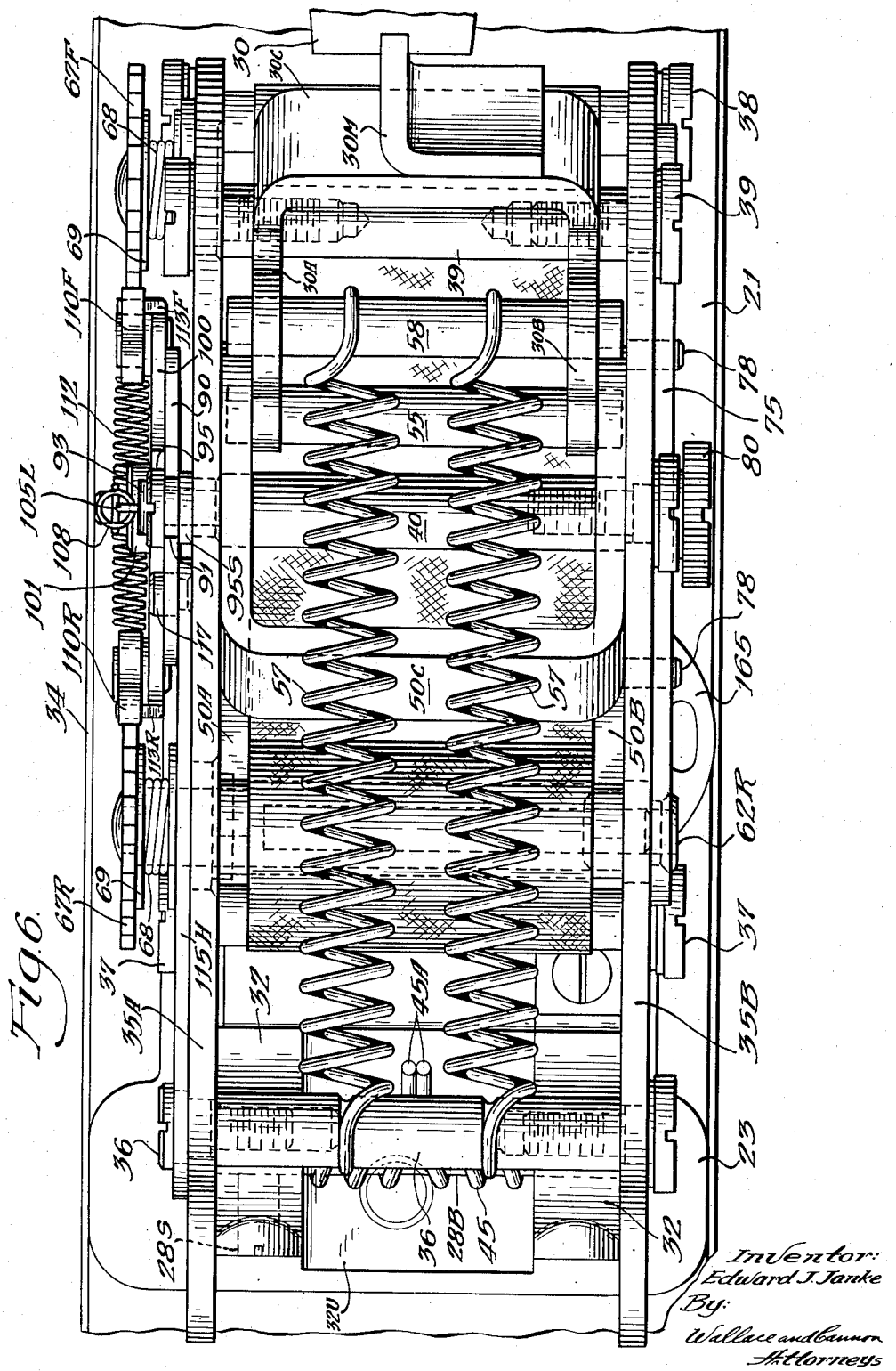


Fig. 6.

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Fig. 7

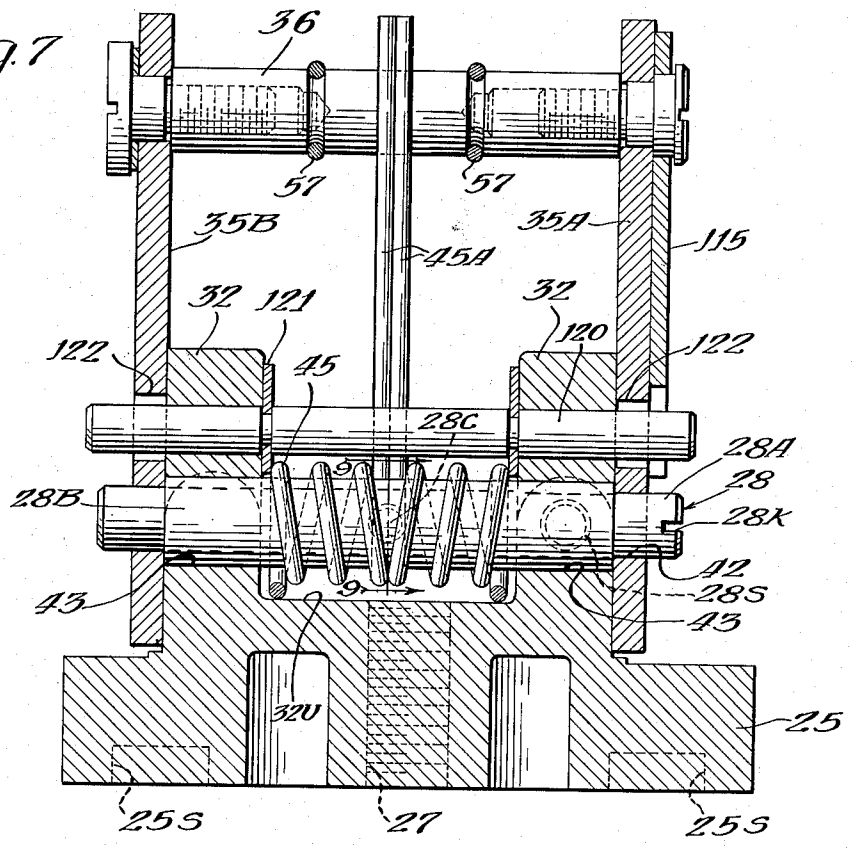


Fig. 8.

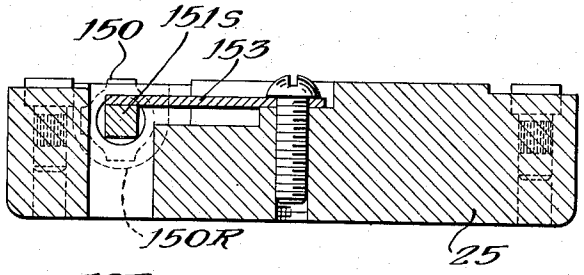
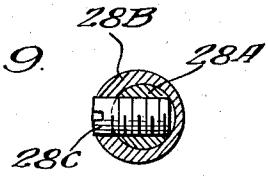


Fig. 9.



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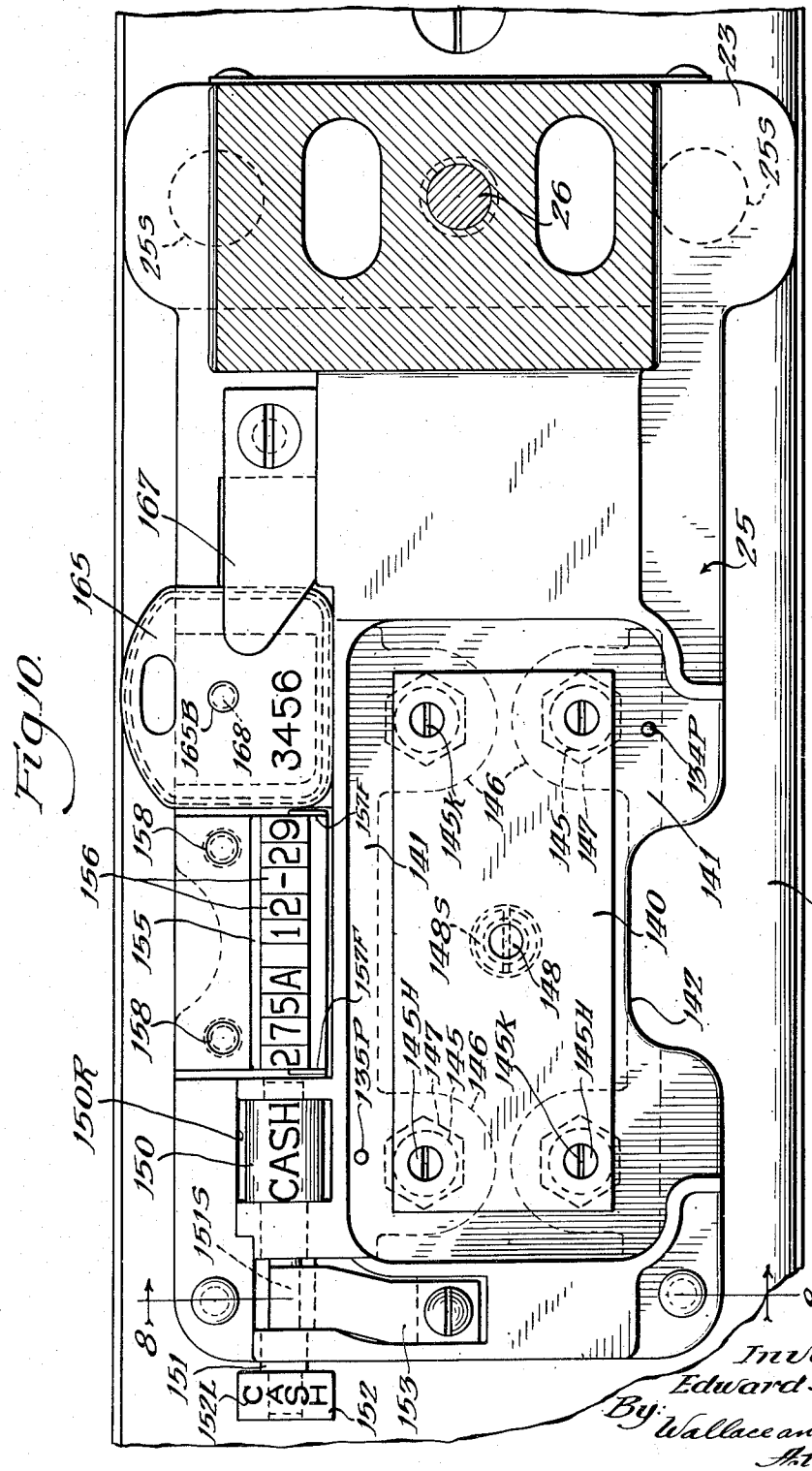


Fig. 10.

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Fig. 11.

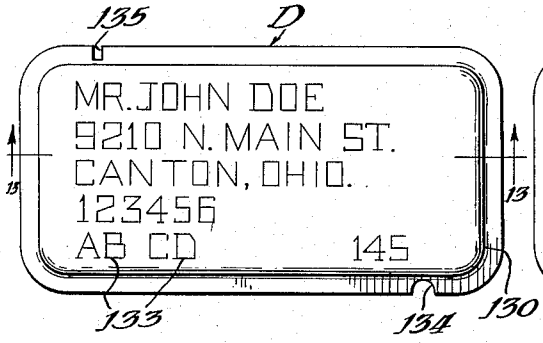


Fig. 12.

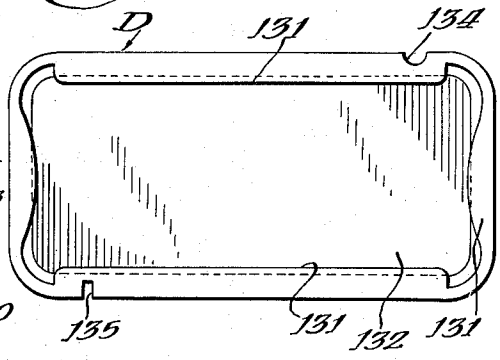


Fig. 13.

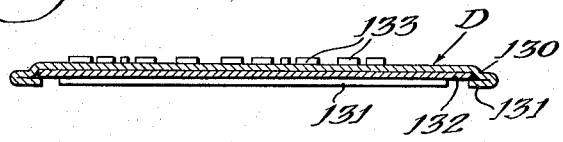
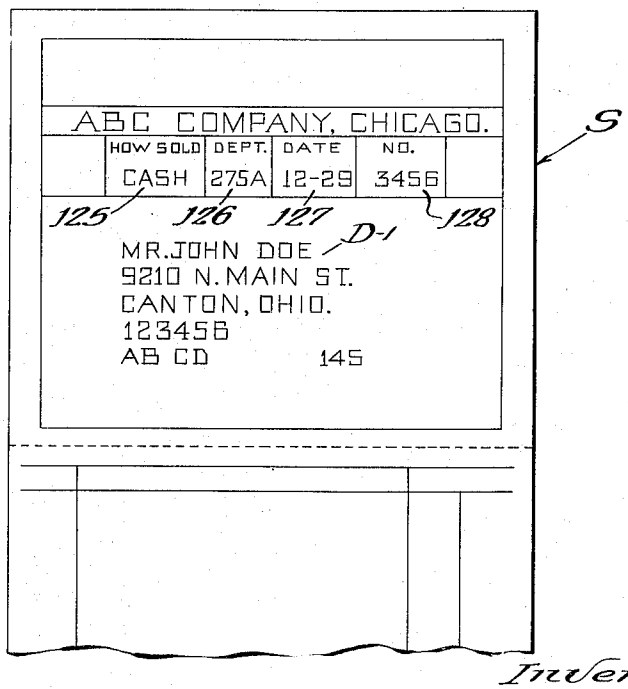


Fig. 14.



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Fig. 15.

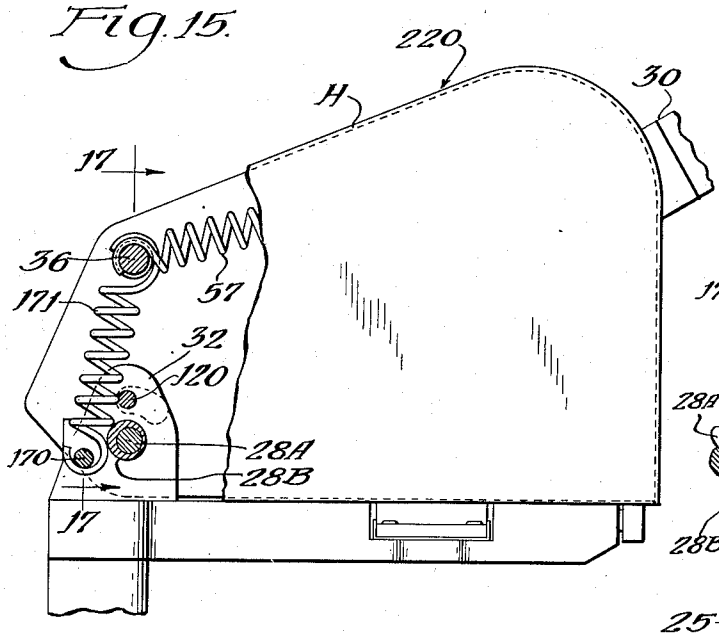


Fig. 17.

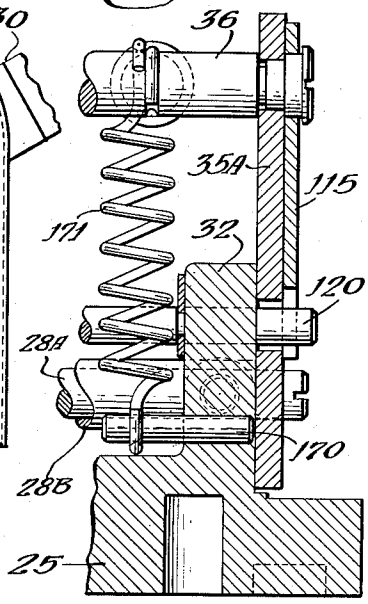


Fig. 16.

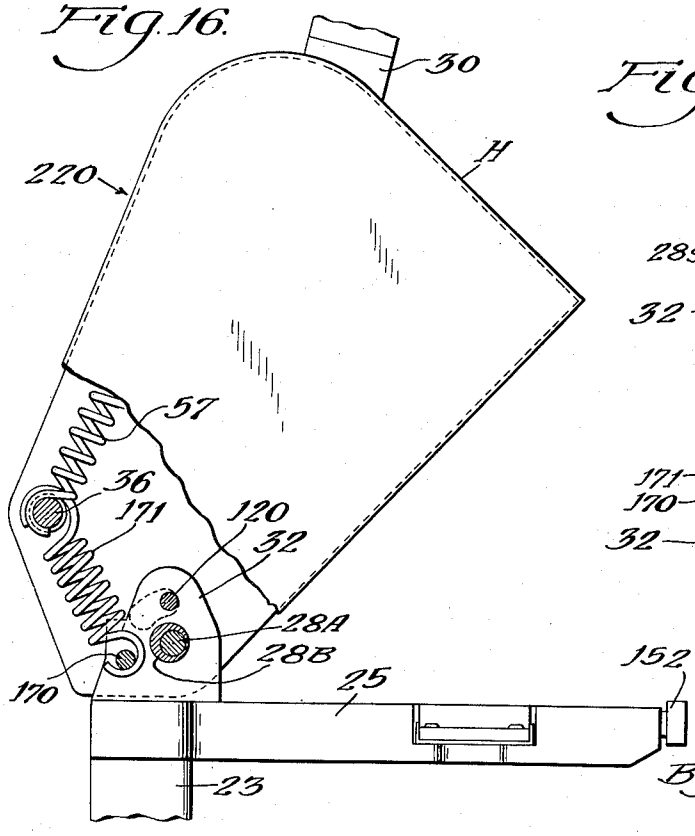
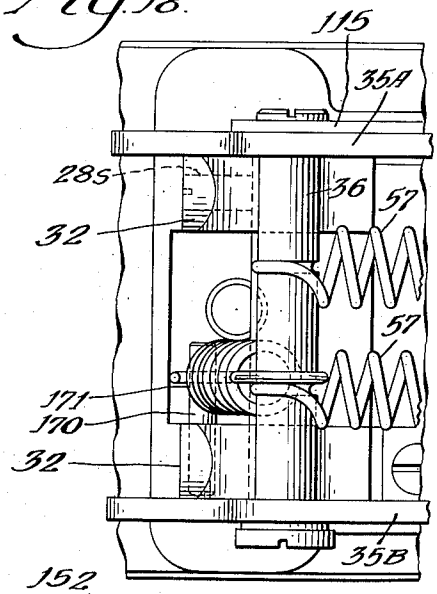


Fig. 18.



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Patented Jan. 5, 1954

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UNITED STATES PATENT OFFICE

2,664,819

PRINTING MACHINE

Edward J. Janke, Cleveland, Ohio, assignor to Addressograph-Multigraph Corporation, Wilmington, Del., a corporation of Delaware

Application August 24, 1949, Serial No. 111,987

5 Claims. (Cl. 101—274)

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This invention relates to printing machines and particularly to printing machines of the kind that are adapted for imprinting sales slips in department stores from individual charge plates that are supplied by the individual customers.

In printing machines of the aforesaid character, it is desirable that the structure and operation be extremely simple and that the structure be of a rugged character, and to enable a printing machine to be produced having such characteristics is the primary object of the present invention.

Where a printing machine of the aforesaid character is to be produced with a structure that is of a simple character, it is desirable that such structure be capable of being assembled in a simple manner and that it be capable of adjustment in a simple and expeditious manner to produce printed impressions of a uniform character, and to enable this to be accomplished is a further object of the present invention.

In controlling the character of the printed impression in a printing machine of the aforesaid character, it is necessary to accurately govern the printing pressure that is applied to the printing device, and to enable this to be accomplished despite differences in the way in which the machine is operated by different users, is a further and important object of the present invention. Machines of the aforesaid character are arranged to make the impression on the first sheet of a group of sales sheets through the medium of an inked ribbon, and to simplify the operation, mounting and replacement of the ribbon in such a printing machine is a further object of the present invention. More specifically, it is an object of the present invention to afford ribbon mounting and advancing mechanism that is simple in character, and to enable the ribbon drive to be actuated in a simple manner in each operation of the printing machine.

In sales slip printing machines, it is desirable that additional impressions be made on the sales slip so as to show the nature of the transaction, the department in which the transaction takes place, the date, and the number or other identification of the sales person, and to enable this information to be printed on the sales slip in a simple manner and through the use of mechanism of a simple character is a further object of the present invention.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings, which, by way of illustration, show preferred embodiments and the principles thereof and what I now consider to be the best mode in which I have contemplated applying those principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

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Fig. 1 is a vertical sectional view through a sales slip imprinting machine embodying the features of the invention, the printing head being shown in this view in its lower or operating position;

Fig. 2 is a view similar to Fig. 1 and showing the operating or printing head in its retracted or inactive position;

Fig. 3 is an elevational view taken in the opposite direction from Fig. 1 and showing the parts of the machine in the same position;

Fig. 4 is a view similar to Fig. 3 and illustrating the machine at the end of the printing movement of the platen roller;

Fig. 5 is a vertical sectional view taken substantially along the line 5—5 of Fig. 3;

Fig. 5A is a fragmental sectional view showing details of the ribbon spool mounting, the view being taken along the line 5A—5A of Fig. 4;

Fig. 6 is a top plan view of the printing head of the machine with the casing removed;

Fig. 7 is a vertical sectional view taken substantially along the line 7—7 of Fig. 3;

Fig. 8 is a vertical sectional view taken substantially along the line 8—8 of Fig. 10;

Fig. 9 is a cross-sectional view taken substantially along the line 9—9 of Fig. 7;

Fig. 10 is a plan section taken substantially along the line 10—10 of Fig. 1;

Figs. 11 and 12 are front and rear elevational views, respectively, of one form of printing device adapted to be utilized in the present machine;

Fig. 13 is a longitudinal sectional view through the printing device of Figs. 11 and 12, the view being taken substantially along the line 13—13 of Fig. 11;

Fig. 14 is a front face view of a sales slip that has been printed on the machine of the present invention through the use of the printing device shown in Figs. 11 to 13;

Figs. 15 and 16 are side elevational views of an alternative embodiment of the invention and respectively illustrating the printing head in its operating and retracted positions;

Fig. 17 is an enlarged fragmentary vertical sectional view taken along the line 17—17 of

Fig. 15; and

Fig. 18 is a plan view of the structure shown in Fig. 15.

For purposes of disclosure, the present invention is herein illustrated as embodied in a sales slip imprinting machine 20 that is adapted, through the use of printing devices such as the printing device D shown in Figs. 11 to 13, to print sales slips such as the sales slip S shown in Fig. 14 of the drawings. The printing machine 20 is particularly adapted for use in department stores and has a mounting base 21 that is adapted to be secured by means such as fastening devices 22 to a counter or table located adjacent to the place where the sales are actually made. The base 21 has an upstanding rigid column 23 formed at what may be termed the rear end thereof, and it will be observed particularly in Fig. 1 that this column 23 terminates in a relatively flat upper surface 23U which affords a mounting surface against which the rear end of a projecting platform 25 may be secured. This platform 25 is seated against the flat upper surface 23U of the column 23 and is held in a rigid and fixed relation on the column by means including a fastening bolt 26 that extends upwardly through the base 21 and through the column 23, and is threaded into a threaded opening 27 formed in the platform 25. In addition to the fastening bolt 26, the column 23 has projecting lugs 23L that project upwardly from and beyond the flat surface 23U, and these lugs 23L are disposed in relatively widely spaced relationship on opposite sides of the bolt 26, and are arranged to extend into complemental downwardly facing sockets 25S that are formed in the lower face of the platform 25 as best shown in Fig. 7 of the drawings. Thus, the fastening bolt 26 and the cooperation of the lugs 23L with the sockets 25S affords a rigid interconnection between the platform 25 and the column 23.

The platform 25 has a printing head H mounted thereon by means of a supporting pivot structure 28 that is located in a transverse horizontal position near the rear end of the platform 25 and substantially over the forward edge of the column 23. The printing head H is arranged for movement about the pivot 28 between the retracted or ineffective position of Fig. 2 and the lower or operating position of Fig. 1, and impression means are mounted within the head H so that the impression means may be operated by means including a handle 30 to produce a printed impression from printing means such as embossed type characters that are mounted in a common horizontal printing plane upon the platform 25, as will hereinafter be described.

In affording a mounting for the printing head H, it will be observed as shown in Figs. 1 and 7 of the drawings that the platform 25 is provided at its rear end with a pair of upstanding lugs 32 that are spaced laterally apart a considerable distance to afford clearance space within which certain elements of the mechanism are mounted, as will hereinafter be described.

The printing head H includes an outer casing 34 that is shown in Figs. 1, 2 and 5, and this casing 34 serves to enclose the structural and operating elements of the head H. Thus the head H comprises two main side plates 35A and 35B, which are held in parallel spaced relationship by spacer rods 36, 37, 38, 39 and 40, the structure of which will be described hereinafter in some instances where the specific structure is of importance. The casing 34 is releasably held in place over and about the plates 35A and 35B by spring clips 41 that are secured interiorly of the casing in such a position as to be insertable downwardly between and in frictional engagement with the inner or adjacent faces of the plates 35A and 35B, as shown in Fig. 5. The spacing of the plates 35A and 35B is such that the rear ends of the plates may extend downwardly along the opposite outer faces of the lugs 32, and the pivot structure 28 is arranged to support the plates 35A and 35B from the lugs 32. As herein shown, such pivot structure comprises a central shaft 28A that extends snugly through openings 42 formed in the plates 35A and 35B. This shaft 28A is arranged as shown in Figs. 7 and 9 to extend through a sleeve 28B in an eccentric relationship with respect to the sleeve 28B, and a lock screw 28C, Fig. 9, serves to hold the shaft 28A in a predetermined rotative position with respect to the sleeve 28B. The sleeve 28B extends through the two lugs 32, enlarged openings 43 being afforded in the lugs to snugly receive the sleeve 28B. With this arrangement, the vertical location of the pivot afforded by the shaft 28A may be adjusted by rotation of the shaft 28A and the eccentric sleeve 28B, and this may readily be accomplished by engagement of a kerf 28K that is afforded in one end of the shaft 28 as shown in Figs. 1 and 7. When the vertical location of the shaft 28A has been properly adjusted, this adjustment may be maintained by a set screw 28S that is extended forwardly through one of the lugs 32 in position to engage the eccentric sleeve 28B, as will be evident in Figs. 1 and 7 of the drawings.

The printing head H is normally urged to its retracted or inactive position of Fig. 2, through the action of spring means which in the present case takes the form of a pair of torsion springs 45, Figs. 3, 4, 6 and 7, which have the coiled portions thereof surrounding the sleeve 28B between the lugs 32. Each such torsion spring 45 has an upstanding arm 45A that extends into a position forwardly of the spacer structure 36, while each torsion spring also has a second arm 45B that extends forwardly as shown in Figs. 3 and 4 so as to bear on an upper surface 32U that is afforded on the base 25 between the two lugs 32, as shown in Fig. 7. The action of the torsion springs 45 is to urge the printing head H to its retracted position of Fig. 2.

Within the space between the two side plates 35A and 35B, means are afforded for mounting, guiding and actuating a platen roller P, and under and in accordance with the present invention, such platen roller P is guided along the desired horizontal path by guide means that are afforded along the lower edges of the side plates 35A and 35B. Thus, the platen roller P is mounted on a supporting shaft 47 which has guide wheels 48 at its opposite ends and in the same spaced relationship as the side plates 35A and 35B. These guide wheels 48 are arranged to be disposed beneath and run against elongated straight guide surfaces 49A and 49B that are formed on the side plates 35A and 35B, respectively, so as to face downwardly. It will be observed to Fig. 1 of the drawings that such guide surfaces 49A and 49B terminate just to the left and just to the right, respectively, of the connecting structures 37 and 38, and means supported by these connecting structures 37 and 38 are effective to engage the lower sides of the guide wheels 48 to hold the platen roller 47 against downward displacement when the printing head H is elevated. Such re-

taining means under the present invention are quite simple in character, as will be evident in Figs. 1 to 5, each such retaining structure being afforded by a sheet metal member 49R, the main body of which is disposed in a vertical plane and which in each instance has an inwardly extending lower flange 49F that is arranged to underlie the adjacent guide wheel 48. The retaining members 49R are arranged to extend beyond the two spacing structures 37 and 38 and, as will be evident in Figs. 1 and 6, each end of each of these spacing structures embodies a headed cap screw such as the cap screw 38H, shown in Fig. 1 of the drawings. This cap screw extends through a suitable hole in each instance in the vertical element of the retaining member 49R so that when the several cap screws, such as the cap screw 38H, are in place, the retaining means 49R are held in position on the respective side plates 35A and 35B.

The platen roller P that is thus guided along a rectilinear path by the guide surfaces just described is arranged for actuation by means that are operated by the handle 30. In providing for such actuation of the platen roller P along its path, a rocker structure 50 is mounted between two side plates 35A and 35B for pivotal movement on and about the spacer member 40. This rocker structure 50 is formed from sheet metal to afford a pair of bell crank arms 50A and 50B which are connected by an integral cross bar 50C that affords a rigid connection between the two arms 50A and 50B. At their lower ends, the arms 50A and 50B have longitudinally extending slots 51 formed therein that are arranged respectively to embrace the mounting shaft 47 of the platen roller P between the ends of the platen roller P and the adjacent guide wheels 48. Thus, upon rocking movement of the rocker structure 50, the platen roller P is moved along its guideways that are afforded along the lower edges of the side plates 35A and 35B. Such rocking movement is imparted to the rocker structure 50 by operation of the handle 30. Thus, as will be evident in Figs. 3, 4 and 6, the handle 30 is mounted upon an angle bracket 30M, which is secured to a rocker structure that is mounted for rocking movement on the spacer structure 39, and the angle bracket extends outwardly through an elongated slot 34S formed in the forward wall of the casing so as to extend upwardly from the lower edge of such wall. This rocker structure is formed as a stamping of sheet metal to afford a pair of spaced arms 30A and 30B that are connected by an integral cross arm 30C to which the angle bracket 30M is secured, as by means of welding. The arms 30A and 30B are so spaced that they may extend into the space between the opposite side members of the rocker structure 50, and, as will be evident in Figs. 3 and 6, these side members of the rocker structure 50 have forward extensions 50E formed thereon which are connected by a cross pin 55. The arms 30A and 30B have slots 56 formed therein which embrace the cross pin 55 so that upon rocking movement of the handle 30 relative to the side plates 35A and 35B, a corresponding rocking movement will be imparted to the rocker structure 50. The parts are normally urged to the relationship shown in Fig. 3 of the drawings by a pair of relatively strong tension springs 57 that are connected at their rear ends to the spacer structure 36 as shown in Figs. 3 and 6 of the drawings, and these springs 57 are connected at their forward ends to a cross pin 58 that extends between the arms 30A and 30B above the pivotal axis that is afforded by the spacer structure 39.

With the structure that has thus far been described, the parts normally tend to assume the position illustrated in Fig. 2 of the drawings, and when the upwardly projecting handle 30 is actuated in a forward and downward direction, the torsion springs 45 are first overcome by such force and the printing head H is moved downwardly to the position shown in Fig. 3. In the course of this initial actuation of the handle 30, the springs 57 serve to maintain the handle 30 and the associated platen-operating mechanisms in their normal positions so that when the printing head H reaches its lower or operating position, the platen roller P will be disposed in its rearward position as shown in Fig. 3. Then, upon continued downward actuation of the handle 30, the parts are moved from the positions shown in Fig. 3 to the positions shown in Fig. 4, and the platen roller P moves forwardly along its guideways and through a printing stroke which terminates when the guide wheels 48 reach the forward ends of their guideways. The handle 30 is then allowed to return toward its upper position, and as this movement progresses, the platen P moves through a rearward printing stroke until it reaches the position shown in Fig. 3 of the drawings, and thereafter, the torsion springs 45 cause the printing head H to return to its upper or retracted position of Fig. 2.

The present machine is provided with an inking means in the form of an inked ribbon IR that is disposed so as to extend beneath the platen roller P throughout its entire range of printing movement, and means are afforded for supporting and advancing such inked ribbon. Thus, it will be evident that the lower or operative portion of the inked ribbon IR is guided and held in position by the spacer structures 37 and 38, and at opposite ends of this working portion of the ribbon IR, such ribbon is extended upwardly and is connected to a pair of ribbon spools 62F and 62R. These ribbon spools 62F and 62R are removably mounted on similar supporting structures that are best illustrated in Figs. 1, 5A and 6 of the drawings. Thus, in the plate 35A, a supporting and centering hub 65A is rotatably mounted by means including a projecting bearing structure 66, as will be evident in Fig. 5A. This hub 65A extends outwardly and has an operating ratchet wheel 67F mounted thereon, and between the ratchet wheel 67F and the bearing 66, an expansive coil spring 68 is mounted in surrounding relation to the hub 65A. This expansion spring has a friction washer 69 disposed between its outer end and the ratchet wheel 67F so as to act as a brake to prevent undesired rotative movement of the ratchet wheel and hub. At its inner end, the hub 65A has a transverse pin 70 that is arranged so that it may engage slots 71 that are formed in a conventional manner in the end edges of the ribbon spool. The hub 65A has an axial shaft 73 extended therefrom, and this axial shaft is arranged to extend to substantially the plane of the opposite side plate 35B so that a second supporting hub 65B may surround this end of the shaft 73 and enter into the opposite end of the spool so as to center such end of the spool. In accordance with the present invention, the hubs 65B are removably disposed in a spool supporting position, and are carried in a fixed relation on opposite ends of a supporting bar 75. As will be evident in Figs. 3 and 4, the side plate 35B is cut away at its forward end as indicated at 76F to afford clearance space for the forward hub 65B, and the plate 35B

is similarly cut away near its rear end as indicated at 76R to afford similar clearance for the rear supporting hub 65B. Thus, when the hubs 65B are removed, by removal of their supporting bar 75, the two ribbon supporting spools 62F and 62R may be withdrawn axially from their positions about the shafts 73, and this enables such ribbon spools to be replaced when required. The supporting bar 75 is arranged to be located by a pair of spaced locating pins 78 that project from the side plate 35B and into complemental openings in the supporting bar 75, and when the parts are in this position, they may be held in place by a removable thumb screw 80 that extends through the bar 75 and is threaded into the side frame 35B. It will be noted in Fig. 5A of the drawings that the hubs 65B are of sleeve-like form so as to afford a central passage 81 into which the end of the related shaft 73 may enter.

Means are afforded for actuating the ribbon spools 62F and 62R selectively in opposite directions, and for reversing the direction of actuation, and it will be noted in this regard that the ratchet wheels 67F and 67R have the teeth thereof disposed in an opposite relationship, as shown in Fig. 1 of the drawings. The means afforded under the present invention for actuating the ribbon mechanism is afforded by a reciprocable drive plate 90 that is mounted and guided for movement on the outer face of the side plate 35A. Thus, it will be observed that the drive plate 90 has a longitudinally extending slot 91 formed adjacent its upper end, and in the present instance this is accomplished by appropriately slitting the metal and bending the portion between such slits so as to extend outwardly and then downwardly to afford a lug 93, the function of which will become apparent hereinafter. Downwardly of the slot 91, and in alignment therewith, a second guide slot 94 is provided, and a pair of guiding and retaining studs 95 and 96 are engaged with these slots 91 and 94 to guide the plate 90 for longitudinal movement parallel to the side plate 35A and perpendicular to the guide surfaces 49A. It will be observed in this connection that the guide studs 95 and 96 have spacer elements 95S and 96S, Fig. 5, associated therewith to maintain the actuating plate 90 in the proper spaced relationship with respect to the side plate 35A. The actuating plate 90 is thus guided for what may be termed vertical reciprocation, and in such reciprocation the plate 90 is arranged to actuate one or the other of the ratchet wheels 67F or 67R. For this purpose, a plate 100 is mounted on the outer face of the plate 90 by means including a mounting stud 101, so that the plate 100 may be rocked on the plate 90 from the position shown in Fig. 1 to a second position displaced in a counter-clockwise direction from the position shown in Fig. 1. These two positions are determined by detent means that engage a pair of spaced notches 102 in the upper edge of the plate 100, and such means in the present instance take the form of a detent wheel 103 that is disposed between the plate 90 and the downwardly extended lug 93 that has been heretofore described. This detent wheel 103 has a central opening through which a bent wire axle 105 is extended, and, as will be evident in Figs. 1 and 5, the ends of this axle 105 are guided by engagement with relatively narrow guide slots 106 and 107 that are formed, respectively, in the plate 90 and the lug 93. The detent wheel 103 is urged yieldingly in a downward direction by a tension spring 108 that is connected at its upper end to the lower end of a link 105L that is formed as an integral part of the axle 105. At its lower end, the spring 108 is connected to a reduced extension of the mounting stud 101. Thus, the detent wheel 103 is urged in a downward direction so as to tend to maintain the rocking plate 100 in one or the other of its two positions.

The rocking plate 100 serves as a carrier for a pair of pawls 110R and 110F that are adapted, respectively, for engagement with the ratchet wheels 67R and 67F. The pawls 110R and 110F are pivoted intermediate their ends on pivot members 111R and 111F on the lower corners of the rocking plate 100, and a tension spring 112, acting between the downwardly extended lower ends of the pawls, serves to urge the pawls toward the ratchet wheels with which they are to be associated. The spring 112 tends to move the pawls 110R and 110F into engagement with stop lugs 113R and 113F that are extended outwardly from edge portions of the rocking plate 100, and the relationship is such that one or the other of the two pawls is always maintained in such a position that it can not cooperate with its related ratchet wheel. Thus, as shown in Fig. 1 of the drawings, when the rocking plate is in its most clockwise position, the lug 113F engages the pawl 110F so as to hold the same in an inactive position, while the lug 113R is in such a relation that the pawl 110R is free to move into operative engagement with the ratchet wheel 67R. The ends of the ribbon are anchored to the respective spools in the conventional manner, and when operation of the pawl 110R has completely unwound the ribbon IR from the spool 62F, the rear ratchet wheel 67R will, of course, be held against further advancing movement. When this occurs, the pawl 110R will be held against downward movement when the plate 90 is actuated, and hence the plate 100 will be rocked in a counter-clockwise direction to its other position so as to thereby cause reversal of the ribbon feed.

The desired reciprocating movements of the actuating plate 90 are in the present invention imparted thereto by means that are mounted on the frame plate 35A. Such means constitute a bell crank lever 115 that is pivoted upon the spacer structure 36 on the outer face of the frame plate 35A. This bell crank lever has a horizontal arm 115H that extends forwardly and has a pin 116 thereon that extends through a generally horizontal slot 117 formed in the actuating plate 90. Thus, by rocking movement of the bell crank lever 115, the plate 90 may be reciprocated, and such rocking movement of the bell crank 115 is imparted thereto as an incident to the movement of the printing head H from its position of Fig. 2 to the position of Fig. 1. Thus, the bell crank lever 115 has a downwardly extending arm 115D which has a slot 118 in its lower end. This slot is arranged to embrace a cross pin 120 that is mounted in the two lugs 32, as shown in Fig. 7 of the drawings. This pin 120 is held in position by spring retaining clips 121, and the pin extends through arcuate slots 122 formed in the side plates 35A and 35B. These arcuate slots 122 thus cooperate with the pin 120 to afford limiting stops for limiting the movements of the printing head H, these stops being effective primarily in limiting the upward movement of the printing head.

When the platen roller P is actuated as hereinbefore described, it rolls across the top of the platform 25 so as to thereby produce printed impressions from the printing means that are dis-

posed in a common printing plane on the top of the platform 25. Such printed impressions include an impression D–1, Fig. 14, that is made on the sheet S from the particular charge plate or printing device D that is in position on the platform 25, and in addition, printing means are provided on the platform 25 for producing a printed impression 125 showing the nature of the transaction, or, in other words, whether it is a cash, C. O. D., charge or will-call transaction. Adjacent to the impression 125, means on the platform 25 are arranged to produce an impression 126 on the sheet indicating the department in which the sale has been made. Just to the right of the impression 126, means on the platform 25 also produce an impression 127 showing the date upon which the transaction was recorded. Finally, just to the right of the date 127, another impression 128 is made by means carried on the platform 25.

The printing device D that is utilized to make the impression D–1 may, of course, take many different forms, and in Figs. 11, 12 and 13, one commonly used form of charge plate or printing device D is illustrated. This printing device is generally rectangular in form with rounded corners, and is made from an embossable sheet metal. About its edges, the printing device is bent downwardly and outwardly as at 130, and then is reversely bent in an inward direction along its lower face as at 131 to afford card-retaining flanges that are best shown in Figs. 12 and 13. These flanges serve to hold an identification and signature card 132 in a known manner. By bending the metal of the plate down at 130, the upper surface of the printing device D is formed as an elevated panel, and the type characters are formed as raised embossures 133 that project upwardly from this panel. Along opposite edges of the printing device D, notches 134 and 135 are formed, these notches being located in particular positions in accordance with known practice to constitute an identification as to the particular store and city in which use of this printing device is proper and authorized for charge account purposes.

When the printing device D is to be used in the machine of the present invention, it is put in position on a locating and supporting anvil 140 that is extended in a front to rear direction, relatively close to the right-hand side of the platform 25. The anvil 140 is located in what might be termed a depressed recess 141 in the upper surface of the platform 25 so that when a printing device D is placed in position on the anvil 140, the lower face that is afforded by the card 132 will rest on the anvil 140, while the flange portions 131 will be disposed in locations about the edges of the anvil 140. At the right-hand side of the anvil 140, the side edge of the platform 25 is cut away as at 142 so as to facilitate insertion and removal of the printing devices. The anvil 140 is in the form of a rectangular plate, and the anvil is so mounted on the platform 25 that the anvil may readily be adjusted or leveled. In attaining this mounting, a plurality of leveling screws 145 are disposed beneath the respective corners of the anvil 140, and these leveling screws 145 are threaded downwardly through the platform and extend into sockets 146 in the lower surface of the platform. Within these sockets, lock nuts 147 are threaded onto the respective leveling screws 145. At their upper ends, the several leveling screws have reduced heads 145H which extend upwardly through openings formed in the anvil 140. These reduced heads have kerfs 145K formed therein, and the upward extent of the members 145 is such that these heads terminate below the upper surface of the anvil 140. Thus, the several leveling screws 145 may be actuated by a screw driver from the upper face of the platform 25, and the platform thus may be brought to the desired level position in which it is located by the lock nuts 147. In order to hold the anvil 140 downwardly against the leveling screws 145, a screw 148 is extended upwardly through the platform 25, and is threaded into the anvil 140 at the center thereof. A spring 148S surrounds the screw 148 and acts between the platform 25 and the head of the screw 148 to yieldingly urge the anvil 140 in a downward direction, thereby to hold the anvil in position on the leveling screws 145. It might be pointed out that in such leveling of the anvil 140, it is sometimes necessary to slightly alter the plane of printing movement of the platen P, and this may be accomplished by raising and lowering the rear end of the head H by adjustment of the eccentric mounting structure 28 that has hereinbefore been described. Within the recess 141 and adjacent to the appropriate edges of the anvil 140, code pins 134P and 135P are mounted for cooperation with the notches 134 and 135 to prevent use of improper or unauthorized printing devices.

The platform 25 also carries a settable means for producing the impression 125, and such settable means comprise a four-sided printing block 150 that is mounted on the rear end of a shaft 151. This shaft 151 extends in a front to rear direction from the front end of the platform 25, and the printing head 150 is disposed in a recess 150R that is formed in the platform 25. At its forward end, the shaft 151 has an operating head 152 which carries four legends 152L which simplify the setting of the printing block 150. The shaft 151, between the head 152 and the printing block 150, is formed with a squared portion 151S, as best shown in Fig. 8 of the drawings, and this squared portion is engaged by a spring arm 153, Figs. 8 and 10, so that the printing block 150 will be maintained in any one of its four set positions.

Just rearwardly of the printing block 150, and opposite the center portion of the anvil 140, a removable type carrier 155 is mounted in which individual type members 156 may be disposed for producing the impressions 126 and 127. This removable type carrier 155 is shown in Figs. 3, 4, 5 and 10, and comprises an elongated block having an upwardly opening T-slot 155T formed therein to receive the shanks of the type members 156. This block is mounted within a sheet metal retaining bracket 157 which has a base portion, as viewed in Fig. 5, and end flanges 157F. The block 155 is secured to the bottom portion of the member 157 by pins 158, and these pins are adapted to extend downwardly into locating openings 159 that are formed in the platform 25, it being noted that by reason of its height, the type carrying assembly that includes the block 155 is set in a recess 160 formed in the upper face of the platform 25.

Just rearwardly of the location of the type carrier 155, means are provided for removably mounting a type member 165 that constitutes a clerk's identification key that is effective to produce the impression 128 on the sales slip S. Such means are afforded by a mounting surface 166 onto which the clerk's key may be slipped in

a right-hand movement toward the adjacent left-hand edge of the anvil 140. A spring arm 167 secured on the platform 25 serves frictionally to retain the clerk's key 165 in its operating position on the platform 25. The clerk's key 165 has upward indentation 165B formed therein, and this indentation is adapted to be disposed in position over a round-headed pin 166 that is located so as to project slightly upwardly from the surface 166. Thus, the spring arm 167 serves additionally to hold the indentation 165B in engagement with the headed pin 166, thereby to prevent accidental displacement of the clerk's key 165.

In Figs. 15 to 18, an alternative form of the invention is illustrated as embodied in a printing machine 220 that is similar in all respects to the machine 20 except that the return spring 45 of the machine 20 has been eliminated and the head H of the machine has been so counterbalanced that it will be retained in either its upper or retracted position of Fig. 16 or in its lower position of Fig. 15. Thus, an anchoring pin 170 is extended inwardly from the left-hand mounting lug 32 just rearwardly and below the pivot structure 27A and 27B, and one end of a contractile coil spring 171 is hooked about and anchored on the pin 170. At its other end, the spring 171 is hooked about and anchored on the spacer structure 36 of the head H. The spring 171 is of such a strength that when the head H is in its lower position of Fig. 15, the spring can not raise the head from such position, and hence the head H will remain in such lower position. However, when the head H is manually lifted to its retracted position of Fig. 16, its center of gravity is shifted materially closer to the axis 28B while the effective lever arm of the spring 171 has been slightly increased, and when this relationship is established, the spring 171 is effective to maintain the head H in its elevated position. Thus, with the arrangement shown in Figs. 15 to 18, the head H may normally be left in its lower position, and yet when a sales slip is to be put in position on the platform 25, the head H will be maintained in its retracted position so as to simplify the positioning of the sales slip.

Thus, in the use of the sales slip imprinting machine of the present invention, a sales slip S, having the printed data shown in Fig. 14 of the drawings, may be quickly and easily produced, and this machine of the present invention is extremely simple in character so as to be rugged and dependable in use, and so as to be capable of economical manufacture and upkeep.

Thus, while I have illustrated and described preferred embodiments of my invention, it is to be understood that these are capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. In a sales slip printing apparatus, a base having a platform across the upper face of which a sales slip may be disposed for performance of a printing operation, means on said platform for removably receiving and positioning a customer's token constituting a printing device from which a printed impression is to be made onto a sales slip, means at one end of said platform providing a pivotal mounting axis extending transversely across and parallel to said upper face of said platform, a printing head mounted on said axis for movement from an out-of-the-way position, which exposes the upper face of said platform, to an operative position over and in an opposed relation to the upper face of said platform, said head comprising a pair of parallel, spaced side frame plates disposed perpendicular to said axis, a plurality of spacer members extended between said plates and holding the same in rigid spaced relation, torsion spring means mounted on said axis and having one arm acting on said platform and another arm acting on a first one of said spacer members of said head to urge said head to said out-of-the-way position, said plates having parallel lower guiding edges formed thereon, a platen roller having a central shaft projecting from its ends; guide wheels on the opposite ends of said shaft engaging said guiding edges, retaining rails secured in position on the respective plates by means of portions of at least two other of said spacer members and engageable with said guide wheels to hold said platen in position with said wheels opposite said guiding edges, a rocking arm structure mounted on still another one of said spacer members between said plates for rocking movement, said rocking structure having slotted elements engaging said shaft adjacent the respective rollers for imparting movement to said platen roller, an operating handle pivotally mounted between said plates on a further one of said spacing members and having a pin and slot connection with said rocking arm structure for rocking the same, and spring means acting between said handle and said first one of said spacer members to urge said handle to a retracted position.

2. In a sales slip printing apparatus, a base having an elevated platform across the upper face of which a sales slip may be disposed for performance of a printing operation, means on said platform for removably receiving and positioning a customer's token constituting a printing device from which a printed impression is to be made onto a sales slip, means at one end of said platform providing a pivotal mounting axis extending transversely across and parallel to said upper face of said platform, a printing head mounted on said axis for movement from an out-of-the-way position, which exposes the upper face of said platform, to an operative position over and in an opposed relation to the upper face of said platform, said head comprising a pair of parallel, spaced side frame plates disposed perpendicular to said axis, a plurality of spacer members extended in spaced relation to each other and between said plates and holding the same in rigid spaced relation, said plates having parallel lower guiding edges formed thereon, a platen roller having a central shaft projecting from its ends; guide wheels on the opposite ends of said shaft engaging said guiding edges, removable retaining rails secured in position on the respective plates by first and second ones of said spacer members and engageable with said guide wheels to hold said platen in position with said wheels opposite said guiding edges, an operating rocker pivotally mounted on a third one of said spacer members and operatively connected to said shaft for imparting movement to said platen roller along said guiding edges, an operating handle pivotally mounted on a fourth one of said spacer members and operatively connected to said operating rocker for imparting rocking movements thereto, a return spring for said handle acting between said handle and a fifth

one of said spacer members, and a spring for governing the idle position of said head and acting between said platform and said fifth one of said spacer members.

3. In a sales slip printing apparatus, a base having an elevated platform, an anvil on said platform for removably receiving and positioning a printing device, a printing head mounted on a transverse axis near one end of said platform for movement from an out-of-the-way position, which exposes the upper face of said platform, to an operative position over and in an opposed relation to the upper face of said platform, said head comprising a pair of parallel, spaced side frame plates disposed perpendicular to said axis, a plurality of spacer members extended between said plates and holding the same in rigid spaced relation, a platen roller having a central shaft projecting from its ends, guide wheels on the opposite ends of said shaft, means on said plates engaging said guide wheels to guide said platen roller for movement through a printing stroke, a handle on said head operable to impart movement to said platen roller through such a printing stroke, two of said spacer members being disposed adjacent to the lower edges of said plates for guiding a ribbon beneath said platen roller throughout its entire stroke, and means for supporting a ribbon comprising a pair of drive shafts rotatably mounted in one of said plates for supporting and drivingly engaging one end of each of a pair of ribbon spools, the other of said plates having cutout portions aligned with said shafts, a support bar detachably connected to said other plate and having support bearings extending through said cutout portions for engagement with the other ends of such ribbon spools, and means on said one plate for selectively driving said shafts to feed said ribbon.

4. In a sales slip printing apparatus, a base having an elevated platform, an anvil on said platform for removably receiving and positioning a printing device, a printing head mounted on a transverse axis near one end of said platform for movement from an out-of-the-way position to an operative position over and in an opposed relation to the upper face of said platform, said head comprising a pair of parallel, spaced side frame plates disposed perpendicular to said axis, a plurality of spacer members extended between said plates and holding the same in rigid spaced relation, a platen roller having a central shaft projecting from its ends, guide wheels on the opposite ends of said shaft, means on said plates engaging said guide wheels to guide said platen roller for movement through a printing stroke, a handle on said head operable to impart movement to said platen roller through such a printing stroke, two of said spacer members being disposed adjacent to the lower edges of said plates for guiding a ribbon beneath said platen roller throughout its entire stroke, and means for supporting a ribbon comprising a pair of drive shafts

rotatably mounted in one of said plates for supporting and drivingly engaging one end of each of a pair of ribbon spools, the other of said plates having cutout portions aligned with said shafts, one of said cutout portions being extended from the end of said other plate that is remote from said axis while the other of said cutout portions is extended upwardly from the lower edge of said other plate to facilitate insertion and removal of ribbon spools, a support bar detachably connected to said other plate on the outer face thereof and having support bearings extending through said cutout portions for engagement with the other ends of such ribbon spools, and means on said one plate for selectively driving said shafts to feed said ribbon.

5. In a sales slip printing apparatus, a base having an elevated platform, an anvil on said platform for removably receiving and positioning a printing device, means at one end of said platform providing a pivotal mounting axis extending transversely across and parallel to said upper face of said platform, a printing head mounted on said axis for swinging movement from a retracted out-of-the-way position, which exposes the upper face of said platform, to an operative position over and in an opposed relation to the upper face of said platform, a platen roller mounted on said head for movement through a printing stroke along the lower portion of said head, an operating handle pivotally mounted on said head and operatively connected with said platen roller for operating the same through its printing stroke, and spring means connected between anchoring points on said head and said platform, said anchoring points being so related to said axis and to each other that said spring means act through a relatively short lever arm on said head when said head is in its lower operative position and such spring means being ineffective to move said head to such retracted position, and said anchoring points being so related to said axis and to each other that said spring means act through a relatively long lever arm when said head is in its retracted position and such spring means being effective to hold said head in said retracted position.

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