Nov. 6, 1962 W. W. DEIGHTON 3,062,134

SELECTIVE PRINTER WITH ELECTRICAL READOUT MEANS

Filed March 23, 1960 4 Sheets-Sheet 1

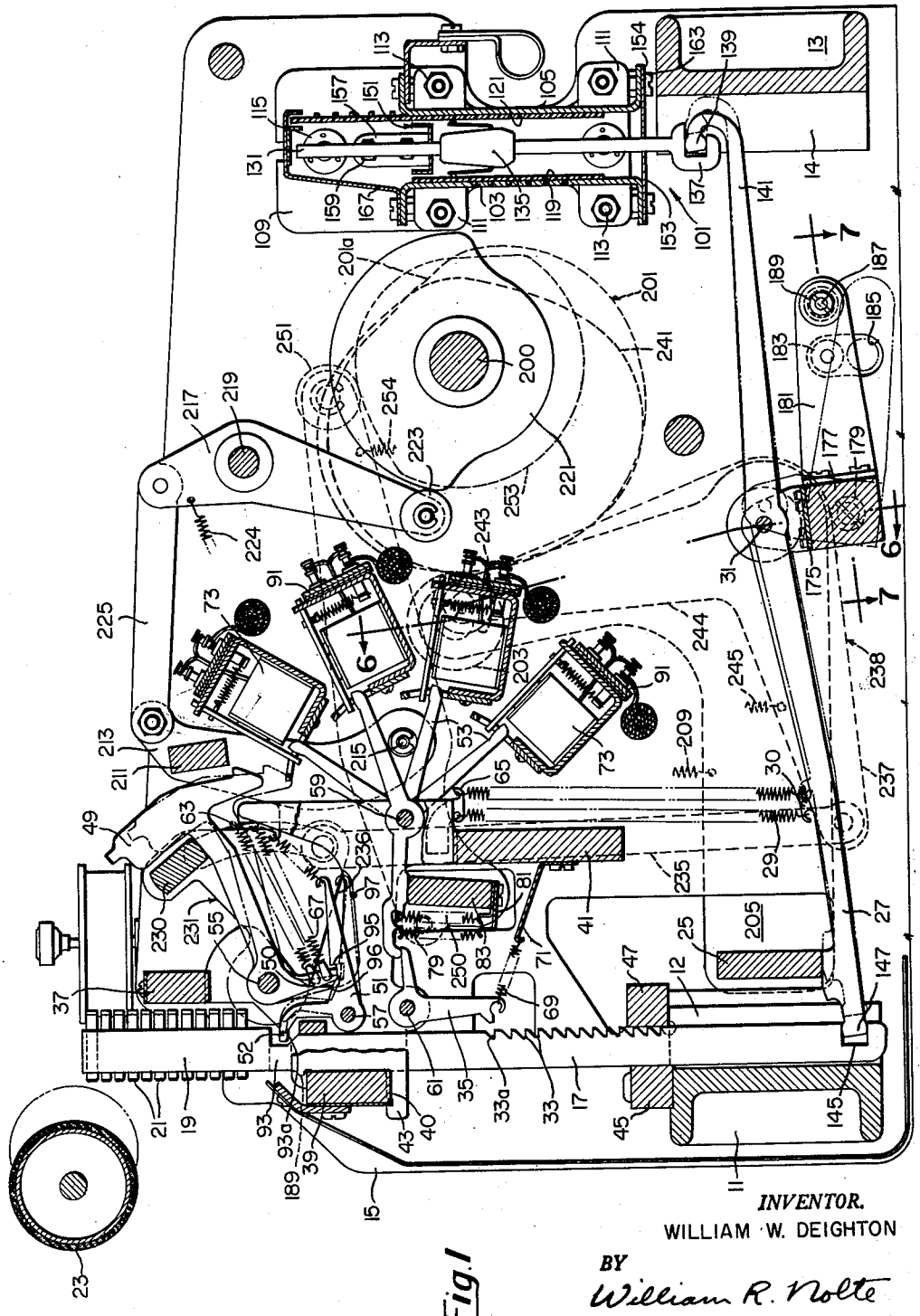


Fig. 1

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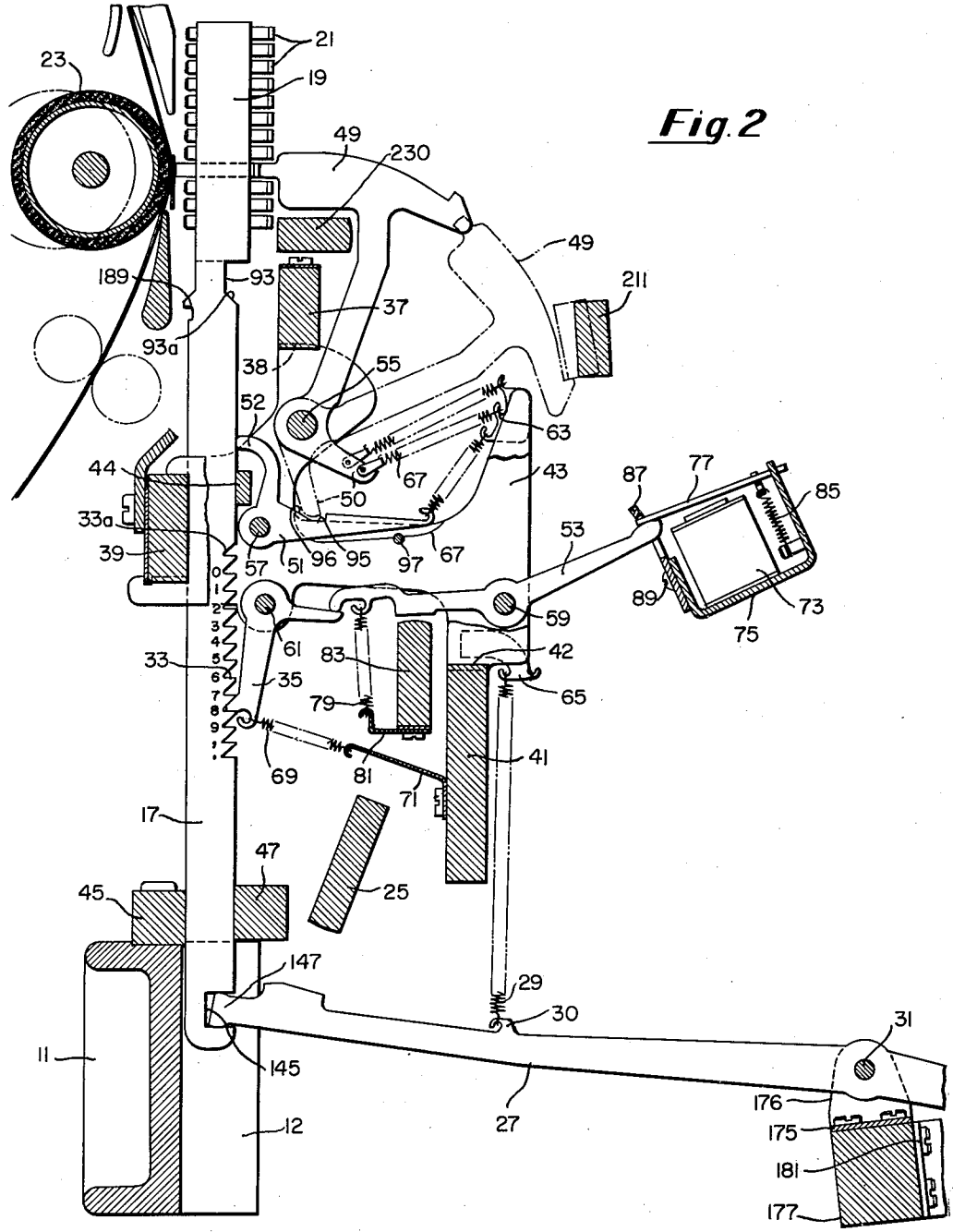


Fig. 2

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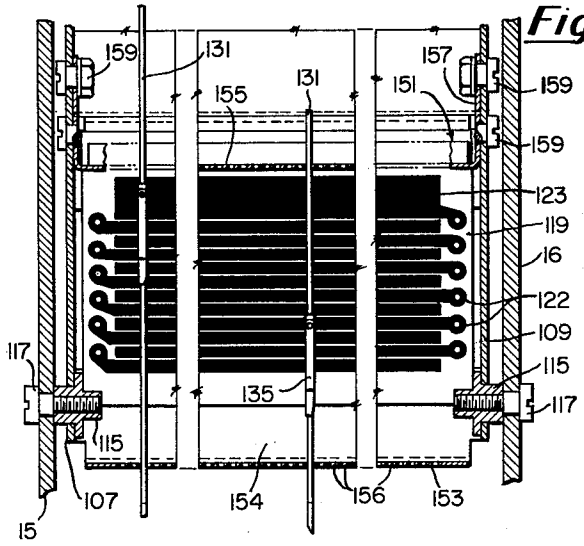
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SELECTIVE PRINTER WITH ELECTRICAL READOUT MEANS

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Fig. 4



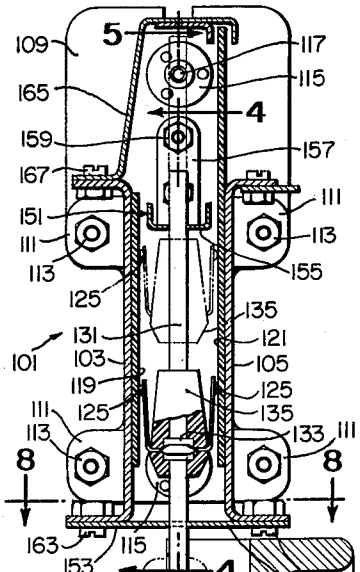


Fig. 3

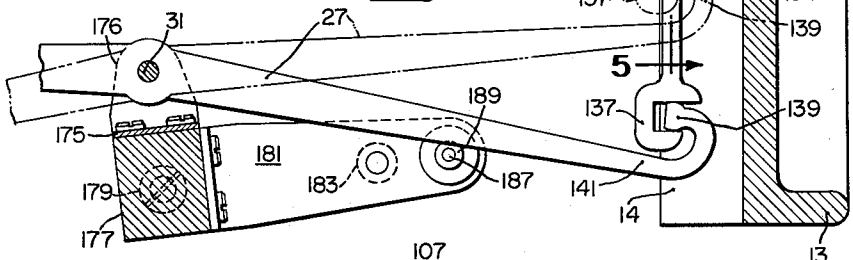
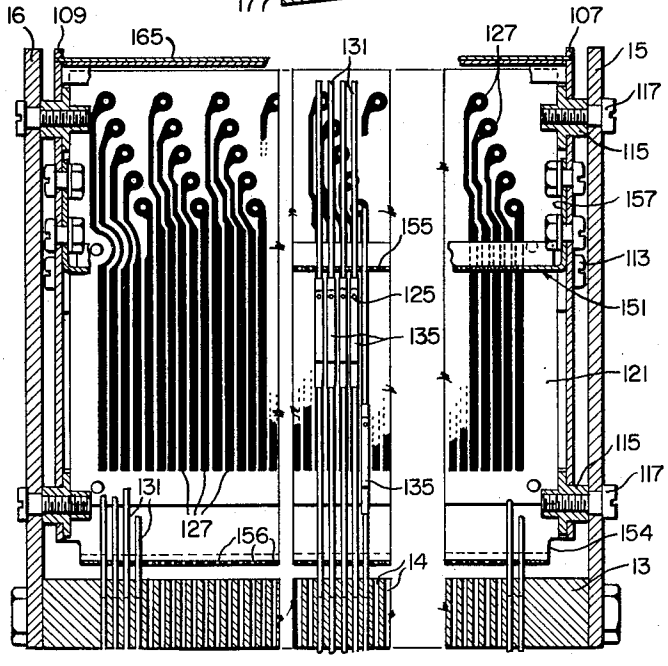


Fig. 5



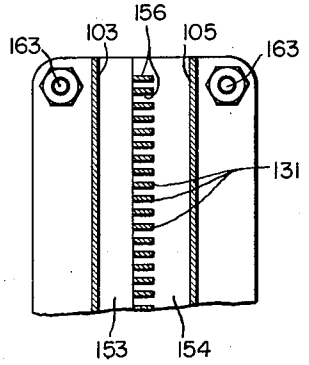


Fig. 8

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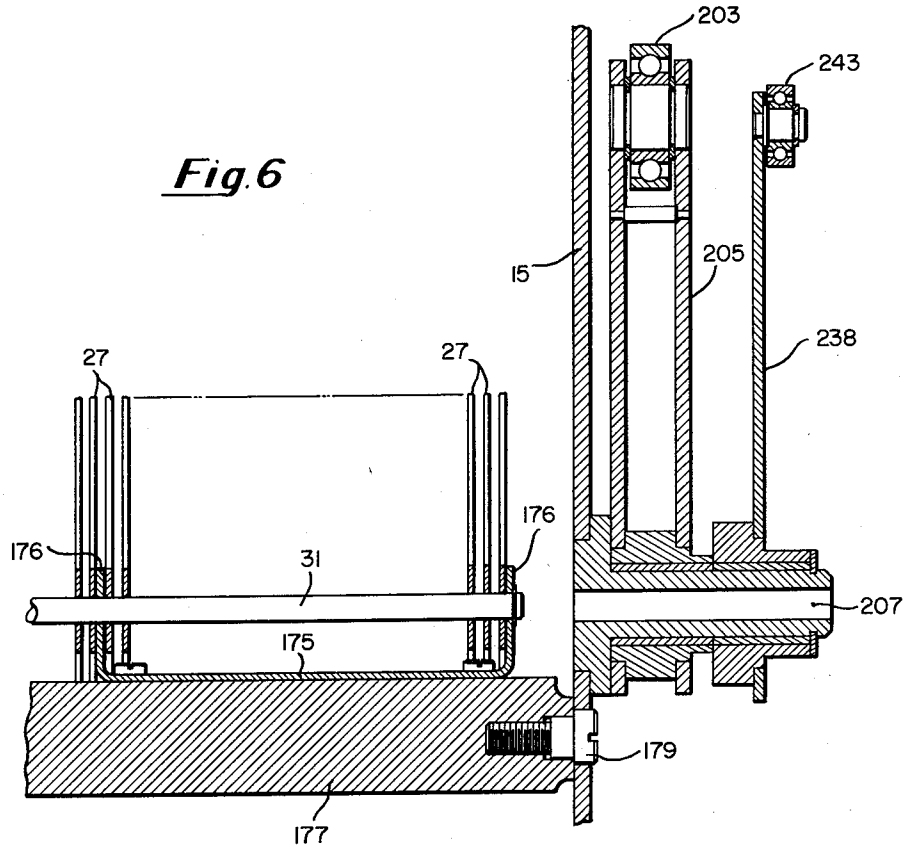
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SELECTIVE PRINTER WITH ELECTRICAL READOUT MEANS

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Fig. 6



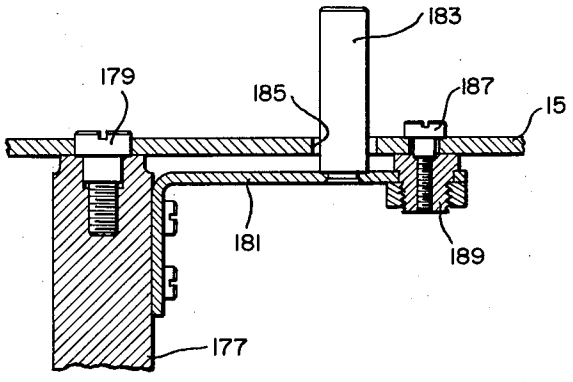


Fig. 7

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United States Patent Office

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SELECTIVE PRINTER WITH ELECTRICAL READOUT MEANS

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Filed Mar. 23, 1960, Ser. No. 17,200
11 Claims. (Cl. 101—93)

This invention relates to record controlled mechanism in general and more particularly to a printing mechanism for such machines.

The broad object of this invention is to provide an improved printing mechanism which is simpler and capable of more divergent uses than former printing mechanisms.

A more specific object of the invention is to provide improved print checking instrumentalities in which electrical signals are available from the printer during a cycle of its operation, which indicates the position of each type bar at the time of printing for comparison with input information received by the printer.

Another important object of the invention is to provide a printer mechanism having easily removable type carriers so that the printing format thereof can be readily changed.

Other objects of the invention will be pointed out in the following description and claims illustrated in the accompanying drawings, which disclose by way of example, the principle of the invention and the best mode, which has been contemplated of applying that principle.

In the drawings:

FIG. 1 is a central section through the printing mechanism showing the essential elements thereof;

FIG. 2 is a greatly enlarged view of a portion of that shown in FIG. 1;

FIG. 3 is a greatly enlarged view of the readout component shown in FIG. 1;

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 3;

FIG. 5 is a sectional view taken along the line 5—5 of FIG. 3;

FIG. 6 is a sectional view taken along the line 6—6 of FIG. 1;

FIG. 7 is a sectional view taken along the line 7—7 of FIG. 1;

FIG. 8 is a sectional view taken along the line 8—8 of FIG. 3.

Briefly described the illustrated embodiment of the invention comprises a multi-column rack type printing mechanism adapted to effect a line of printing with each cycle of operation thereof. The racks or type carriers are differentially movable and each has mounted on its upper end a plurality of type elements such as letters, numerals or other symbols. Printing is accomplished by moving one or more of the type carriers to determined positions to present designated characters opposite the platen, then arresting the type carriers, and thereafter causing an impression from all of the moved type carriers to be made at once. Individual to each type carrier is a read-out carrier having brush contacts which extend between a pair of opposed printed circuit boards and is simultaneously movable therebetween when its associated type carrier is moved. A spring powered actuator arm interconnects each type carrier with its associated brush contact carrier in a manner that when vertical movement is imparted to the type carrier a corresponding counter vertical movement is imparted to the brush carrier. In this manner check signals may be obtained to indicate whether or not each type bar stopped at the character it was supposed to print. The interconnections between the type carriers with their associated actuator arms permit the same to be quickly disassembled thus permitting

the type format to be readily changed, while similar interconnections with the read-out carriers permit quick disassembly of the read-out assembly.

Referring to FIGS. 1 and 2, a printing mechanism is provided with a frame having enlarged transverse channel guide members 11 and 13 supported between upright side plate 15 and a second side plate 16 shown in FIGS. 4 and 5. A plurality of type bars 17 are mounted on the left side of the machine as seen in FIG. 1. Each type bar is mounted for vertical reciprocation and is provided with a head portion 19 in which type elements or slugs 21 are positioned for suitable horizontal movement into engagement with platen 23 so that a line which is printed may be visible to an operator, but it should be understood that the printer mechanism receives all of its input information in the form of electrical signals which may originate from a suitable source, not shown. During the operation of the mechanism, bail 25 at the lower left hand corner of FIG. 1, is oscillated between those positions shown in FIGS. 1 and 2. The actuator arm 27 has a spring 29 attached thereto urging the arm to rotate in a clockwise direction about pivot 31. When the bail 25 moves upwardly to the position shown in FIG. 2, spring 29 urges the arm in the same direction so that the type bar 17 is elevated to move the type elements 21 past the platen in succession. When the bail is returned to the position shown in FIG. 1, the type bars are restored to their non print positions. The springs are alternately staggered and facilitate relatively close column spacings of the mechanism on the order of 1/10 inch.

The lower part of each type bar is provided with thirteen stopping teeth 33 numbered 0–9 to represent the ten digits and also two additional punctuation symbols such as a comma (,) and a period (.). The topmost tooth 33*a* is utilized as will be described later in a non-print operation of the type bar. As a type bar is elevated, the teeth 33 thereon successively pass the toe of pawl 35 which upon receipt of a timed electrical signal functions to stop the bar at the desired digit position. The stop pawl moves against tooth 33*a* to hold the type bar in its normal down position if it is not to print.

A type bar and an associated stopping pawl is provided for each of the columnar positions of the printer and all are supported therein by three main mounting bars 37, 39 and 41 which extend between the side plates. Each of the bars include a plurality of shallow slots 38, 40 and 42 respectively, which serve to precisely locate a plurality of separator plates 43, see FIG. 2, across the printer. The upper portion of each type bar slides between and is guided by a pair of the separator plates 43 and by transverse bar 40 and guide bar 44. The lower portion of type bar 17 and end of actuator arm 27 are also guided in vertical slots 12 and guide blocks 45 and 47. It is observed that bar 41 carries the load or force of the type bar drive springs 29 and that the bar 39 assists in locating the separator plates vertically and also provides lateral positioning of the plates 43.

Each adjacent pair of separator plates acts to guide and pivotally support a print hammer 49, a non-print latch 51, a solenoid sensing lever 53, and the previously mentioned stop pawl or stop dog 35, by means of pivot rods 55, 57, 59 and 61 respectively which pass through all of the separator plates. Suitably affixed to a face of each of the separator plates is an upper hook plate 63, and a lower hook plate 65 each having a number of hooks for spring attachment, and which also function to provide accurate spacing between the adjacent separator plates.

The upper or head portion of the hammer 49 coincides with the type head centerline and a spring 67 is connected at one end thereof to an arm 50 extending to the right from the lower portion of the hammer, FIG. 2, and

the opposite end thereof is engaged in a hook extremity of upper hook plate 63. Alternate springs connected to alternate hammers are staggered to provide sufficient clearance between adjacent springs. The locations of the spring extremities on the hammer ends and on the hooks of plate 63 may be selected in a manner so that all of the hammers strike the platen with approximately the same force. The springs 29 which drive the type bars upwardly are also staggered, each being connected at its upper end to one of the hooks on plate 65 and at its lower end to a hook 30 integral with the actuator arm. A stop dog spring 69 for urging the step dog 35 in a counterclockwise direction is engaged at one of its ends to the lower hooked extremity of the stop dog and is secured at its other end to a spring bracket 71 which is suitably fixed to lower transverse bar 41.

There are provided a plurality of control solenoids 73 one for each column of the printer. Consequently there is one control wire for each type bar. As seen in FIG. 1, the solenoids are arranged in four separate and identical units, with each unit including a long channel-like frame 75 which extends between the side plates of the printer and each of which carries one fourth of the total number of the solenoids. One end of each of the solenoid levers 53 senses on the clappers 77 of its associated solenoid as urged by a spring 79 secured to the opposite ends of the lever. When the solenoids 73 are deenergized, as shown in FIG. 2, spring 79 drives the lever 53 in a counterclockwise direction to move stop lever into engagement with a tooth 33 to stop the bar in a selected print position. The springs 79 are similarly staggered for clearance and are secured at the lower ends to a spring bracket 81 which in turn is suitably affixed to the lower surface of a solenoid reset bail 83, the operation of which will be later described. As best seen in FIG. 1 the ends of the solenoid sensing levers 53 which contact the clappers 77 are fanned out in four directions to permit a very close center to center spacing of the solenoids 73. These solenoids may be of the drop out type and each provided with a light spring 85 fixed at one end to a hook on channel 75 and at its other end to the clapper to urge the clappers toward the core of the solenoid. Each clapper may be suitably constructed to minimize variations in drop out time with large variations in coil ampere turns. A non-magnetic comb member 87 is suitably attached to the channel member 75 as at 89 and serves to prevent overthrow of the clapper and damage to its hinge connection. Also attached to frame 75, as seen in FIG. 1, is a terminal board 91 for the wires leading to the solenoids.

The upper extremity 52 of the aforementioned non-print latch 51 is received in notch 93 when all of the print bars are down at the start of the print cycle, as seen in FIG. 1, and thereby permitting the lower extremity of arm 50 of the hammer 45 to rest in notch 95 of the non-print latch 51, thus to prevent movement of those hammers which are not to print. When a type bar which is to print starts to move up to a printing position its non-print latch is immediately cammed back by the inclined edge 93*a* of the type bar in a clockwise direction thereby to retract the latch from the path of movement of the lower tip 50 of the hammer to thus permit a later hammer operation. A rod 97 is provided to limit the clockwise travel of the non-print latch. The notch 95 of the non-print latch 51 includes a cam surface 96 which cooperates with the lower end of arm 50 of the hammer 49, so that upon depression of the hammer in a clockwise direction to its lower dotted line position as shown in FIG. 1, the non-print latch abuts rod 97 and when in this position the upper arm 52 is withdrawn out of notch 93 of the type bar.

A readout component generally designated by reference character 101 is located in the front of the printer as shown in the extreme right hand portion of FIG. 1. The readout functions to provide a check signal to indicate whether or not each type bar was stopped so that a selected type slug is in position along the printing line of the printer and opposite to the platen. The readout 101 is operated by the opposite ends of the actuator arms 27 from that of the type bars.

The readout is of such a construction that it can be easily assembled into or removed from the printer by means of simple attachments connecting the same to the main side plates of the printer, see also FIG. 3, 4, 5. Two support channels 103 and 105 extend substantially the full distance between the side plates being secured at their ends between the side plates by a pair of end plates 107 and 109. The channel members each include a pair of ears 111 secured to the end plates 107 and 109 by means of bolts 113. Threaded busings 115 extending through the end plates 107 and 109 engage inner surfaces portions of side plates 15 and 16 and are secured thereto by bolts 117. The two support channels provide a mounting for a pair of printed circuit boards 119 and 121, the former being suitably affixed to channel member 103 and the latter to channel member 105. Circuit board 119 constitutes a digit circuit board and has twelve horizontal stripes thereon, FIG. 4, the first eleven thereof bearing reference character 122 and the topmost thereof identified by reference character 123. The topmost stripe is wider, being of double thickness so as to combine the "non-print" and the "zero" positions. Each stripe has one numeric position or level associated with it which corresponds to the individual levels or characters in the type bar. The circuit board may be of conventional construction such as melamine with flush-nickel-rhodium circuitry. U-shaped brush contacts 125 move perpendicular across the stripes and in order to resist contact wear it has been found desirable to construct the board of hard material, while the stripes corresponding to the circuitry have been formed flush with the surface of the board to provide smooth movement of the contact as it goes from conductor to insulator and back again.

The complemental printed circuit board 121 may be referred to as the column circuit board and includes a plurality of vertical stripes 127, FIG. 5, there being one associated with each individual type bar in the printer and each being electrically isolated from all of the remaining stripes. The circuit board in this instance may for example be paper base phenolic while the stripes may be raised copper-nickel-rhodium circuits. In each column the contact 125 moves parallel to the stripes and always remains on the stripe. The contacts, as best seen in FIG. 3, are generally U-shaped such that the extremities of the upright arm portions thereof engage the opposing faces of the printed circuit boards 119 and 121. Each contact is fastened at its base portion to an elongated flat rod 131 approximately midway along the length of the latter and is electrically isolated from the rod by means of an insulating tape 133 wrapped around the rod and separating the same from the base of the U-shaped contact. The contact 125 may be supported integral with the rod by means of a molded nylon body 135 which may be suitably tapered so as to minimize the possibility of adjacent bodies 135 from snagging in operation. The lower end of rod 131 includes a bifurcated socket portion 137 which matingly receives a rounded or ball-like portion 139 integral with hooked end portion 141 of actuator arm or lever 27. The joint or connection formed by socket portion 137 and ball 139 is guided for vertical movement by means of slots 14 which may be suitably formed or milled in transverse channel member 13, see FIG. 3. In a similar manner the lower end of type bar 17 is notched as at 145 to form a socket connection and receives the rounded end 147 of the actuator arm. As seen in FIGS. 3 and 4 the upper portion of each of the rods 131 is guided by an upper bearing plate 151 and its lower portion by a pair of lower bearing plates 153 and 154. The upper plate is generally channel shaped and includes slots 155, each of which guides a corresponding rod. The ends of the channel member are formed with upturned ears 157 which may be suitably secured to end plates 107 and 109, as by bolts 159. The lower bearing plates 153, 154 are

shown affixed to the bottom surfaces of transverse channel members 103, 105 by means of bolts 163. The bearing plate 154, FIG. 8, includes a series of separator fingers 156 which maintain the rods in approximate location when the entire readout assembly 100 is removed from the printer but are loose enough to eliminate a bearing problem when installed. The previously mentioned nylon body 135 acting in conjunction with either the upper or lower bearing plates serves to limit the extent of travel of the rod 131 in its upper and lower direction of movement. A top cover 165 fastened by means of bolts 167 serves to minimize the accumulation of dust upon the electrical contacts and circuit boards of the readout assembly 101.

The format or the particular layout of the type bars of the printer of the present invention is capable of being varied in a simple manner and without the aid of expensive tools or equipment. A change in format arises because at certain columns of the printer the digit type pieces or slugs may carry not only a numeral but also punctuation such as commas or periods. Thus in printing the word 81,295,000 the type slugs in the fourth column from the right are fabricated so that the punctuation is integral with the digit type piece and appears in the instant example as "5," while the seventh column from the right appears as "1,". The apparatus of the present invention facilitates the easy removal and rearrangement of the type bars to change the format thereof.

The previously mentioned pivot 31, which mounts the actuator arms 27 for pivotal movement constitutes an elongated rod which is threaded through all of the actuator arms 27 and is supported by a pair of U-shaped brackets 175, one each adjacent an inner surface of the plates 15 and 16 of the printer, FIGS. 1, 6. The upright arms 176 of the brackets are also threaded by pivot rod 31 and the base of the bracket is suitably secured to the top surface of rectangular bar 177 which in turn is secured for pivotal movement between the side plates by shoulder screws 179. An actuator arm bracket 181 extending forwardly and to the right as seen in FIG. 1 from the actuator supporting bar 177, includes a handle 183 which extends through and is movable in elongated slot 185 in side plate 15. When it is desired to lock the bracket 181 in its full line position, as shown in FIG. 1, a bracket shoulder screw 187 may be passed through the side plate and screwed into bushing 189 suitably fixed to bracket 181.

The type bars may be easily removed from the printer when the type bars are in their neutral position as shown in FIG. 1 by loosening and removing the actuator arm bracket shoulder screws 187. The handle 183 may then be manually depressed to rotate the bracket 181 and bar 177 to their broken line positions, as shown in FIG. 1, about the axis of shoulder screws 179. Such rotation of the shaft will move the actuator arms 27 bodily in a clockwise direction so that their rounded ends 147 are removed from sockets 145 at the lower ends of the type bars, while the opposite rounded ends 139 are disengaged from sockets 137 of the readout sticks or rods 131. The type bars are now free to be lifted straight up and out of the printer.

Replacement of the type bars 17 may be accomplished by dropping each type bar between a pair of separator plates 43 and then depressing or rotating the type hammer 49 in a clockwise direction in the particular column past its normal latched position to thereby cause the extremity of arm 50 of the hammer to engage the previously described inclined cam surface 96 of the non-print latch out of the way so that the extremity 52 of the upright finger of the latch is likewise rotated in a clockwise direction to the dotted line position shown in FIG. 1 and wherein the extremity 52 is out of the path of downward movement of the type bar. Thus the type bar may be dropped into place until the lug 189 on the left edge of the type bar, as seen in FIG. 1, bottoms on the top surface of transverse bar 39. Thereafter when all type bars are back in place the actuator arms are rotated counterclockwise to the full line position shown in FIG. 1, in which all of the actuator arms or levers are reengaged with their respective type bars. When so reengaged, they are locked in position by replacing shoulder screws 187, FIG. 7.

As seen in FIG. 1 the main cam shaft 200 of the machine rotates constantly while the machine is printing at the rate of one revolution for each line of printing. A cam 201 affixed to the shaft coacts with a roller 203 mounted upon the upper arm of bellcrank 205, the latter being mounted upon stub shaft 207 which extends outwardly from printer plate 15. The previously mentioned actuator bail 25 is suitably fixed to the horizontal arm 208 of the bellcrank and extends transversely across the machine to a like bellcrank, not shown, and fixed to the opposite printer plate 16. Plate 15 as shown in FIG. 1 is apertured to permit upward movement of the bail 25 to the position shown in FIG. 2. As cam shaft 200 rotates, the low surface 201*a* of cam 201 approaches roller 203 and as urged by spring 201 bellcrank 205 pivots to raise the bail 25 freeing all the actuator arms 27 for pivotal movement in a clockwise direction through the action of springs 29. Thus type carriers 17 may be elevated to successively bring each type element 21 into printing position with respect to platen 23 and at the same time lowering each readout stick 131 to select a corresponding electrical circuit.

Still referring to FIG. 1, the hammer latch bail 211 is shown fixed near the upper extremity of vertical link 213 which is pivoted at 215 to printer side plate 15. A corresponding vertically disposed lever 217 pivoted to side plate 15 at 219 is rocked by cam 221 fixed to shaft 200, through roller 223 journalled for rotation on the lower extremity of the lever, and urged against cam 221 by spring 224. A generally horizontally disposed interconnecting link 225 is suitably pivotally connected to the upper extremities of link 213 and lever 217. Rotation of cam 221 will, through the above-described linkage, move the latch bail 211 from its dotted line position to its full line position as shown in FIG. 2, thereby releasing all of the hammers except those in the non print columns which will be restrained by their respective non print latches 51.

Very shortly after the printing has been accomplished, the hammer-restore bail 230 restores the hammers to their normal latched positions as now to be described. As seen in FIG. 1, the hammer-restore bail 230 is fixed to the upper portion of a triangular link 231 which is pivoted at 55 to printer side plate 15. An elongated link 235 is pivotally secured at its upper end to the horizontal arm 236 of the link 231, and at its lower end to the outer end of one arm 237 of a cam follower bellcrank 238 pivotally mounted at 207 to plate 15. Rocking or pivotal motion of link 231 is imparted through the linkage just described by cam 241 fixed to shaft 200 and which engages follower roller 243 fixed to the upper extremity of the vertical arm 244 of the bellcrank 238 and urged against cam 241 by spring 245.

The solenoid lever reset bail 83 also starts to restore after printing occurs. The bail 83 is fixed to the left end of a generally horizontally disposed lever 250, as seen in FIG. 1, on pivot 215. The rightmost end of the lever carries a roller 251 urged into engagement with cam 253 by a spring 254. Rotation of the cam rocks the lever to move bail 83 between its upper position, shown in FIG. 1, and its lower position shown in FIG. 2.

A typical cycle of operation is as follows: First, power from a suitable source, such as a motor, is transmitted through a clutch both not shown to the printer cam shaft 200. After a predetermined delay the clutch will impart rotation to the shaft and during the delay, the various solenoids 73 are simultaneously energized. Only those solenoids 73 are energized which are to print. Also the hammer latch bail 211 moves to the left to engage the hammers 49. In the columns of the printer which are not to print the control solenoids are not energized. Dur-

ing energization, the clappers 77 of the selected solenoids are seated against their core elements. In the beginning of the cycle the solenoid reset bail 83 which extends transversely of the printer beneath all of the solenoid levers 53 limits the counterclockwise movement of all of the levers 53. However, as the bail 83 moves downwardly toward the lower position shown in FIG. 2, the springs 79 will urge the levers 53 in their counterclockwise direction. Where the solenoids are not energized, the stop dogs 35 will be moved into engagement with the first or non print tooth 33*a* of the type bars, thus preventing movement of the type bars which are not to print during that particular cycle. A little later in the cycle the actuator arm bail 25 starts to move upwardly and correspondingly the print bars in which the stop dogs have not entered the non print teeth commence to follow the upward motion of bail 25, being spring driven by springs 29.

In the columns where the type bars are not to print, the upper end 52 of the non print latches 51 are in notches 93 of the type bars and thereby inhibit or restrain the print hammers 49 from being fired by virtue of their engagement in notch 95 of the non print latches 51. In the columns in which printing is to occur, the type bars upon rising between the non print position and the first printing position corresponding to the first slug carried by the type bar, the non print latches are cammed in a clockwise direction and thus permit a later hammer action by disengaging hammer 49 out of notch 95 of the non print latch. As the type bars rise, the control solenoid 73 in each of the active or print columns is deenergized at the correct instant in accordance with control information received from a suitable source which operates to stop the type bars at the desired elevation in accordance with the information received.

When a particular solenoid 73 is deenergized, its corresponding sensing lever driven by means of its springs 79 forces the clapper 77 of the solenoid away from its core at one end of the lever and at the same time rotates its associated stop dog 35 into the desired notch 33 on the type bar, thus arresting the type bar so that selected type slug carried thereby is in printing position.

Also, during the early part of the print cycle, the hammer-restore bail 230 begins to move to the left to permit the print hammers 49 to be fired. The hammer latch bail 211 will move to the right to release all of the hammers 49, it being understood that the hammers in the non print columns are still restrained, as previously described, by the non print latches 51. As the hammer latch bail 211 is moved from its dotted to its full line position, as shown in FIG. 2, the hammers to effect printing fly upwardly in a counterclockwise direction under the urge of springs 67 to strike the type slugs 21.

The readout device 101 simultaneously provides check signals to indicate whether or not the printer type bars stopped at the number they were supposed to print. This follows because as previously described the readout stick assembly 131 which carried the brush contacts 125 selects a circuit when it is moved between the printed circuit boards 119 and 121 by the actuator bars 27.

After printing, the hammer-restore bail 230 picks up those hammers which have fired and rotates them in a clockwise direction to restore them to their normal latched position. The hammer-restore bail moreover overtravels to an extent so as to pick up those hammers which were not fired to provide clearance for the hammer latch bail 211 to thereby reengage all of the type hammers.

After the printing occurs, the previously referred to solenoid latch bail 83 starts to restore the solenoid levers 53 to permit the seating of the clappers 77 against the respective core elements of solenoid 73. This action disengages levers 53 from the stop dogs 35. The force exerted by springs 69 fixed to the lower extremity of the stop dog 35, however, is insufficient to disengage the stop dog from its type bar 17. The reason for this is that the force exerted by springs 29 through lever 27 exerts a thrust upwardly on type bar 17 which in turn exerts a clockwise torque applied to the stop dogs by spring 69. Hence the stop dogs will remain engaged until the actuator arm reset bail 25 picks up the actuator arms 27 and relieves the spring force exerted by springs 29. As the bail 25 travels downwardly it moves the type bars 17 downwardly and the inclined tooth surface operates to cam the stop dogs 35 in a counterclockwise direction. Thereafter the springs 69 fixed to the stop dogs complete the further rotation of the stop dogs. Thus it is seen that as the type bar bail 25 moves downwardly, it picks up each bar in turn, depending on its printing position, and near the end of its stroke the bail also picks up all those type bars which were held in the non print tooth condition and moves them all slightly further downwardly to provide non print tooth clearance. When all of the stop bars have bottomed or attained their at-rest position, the non print latch 67 is restored into its mating notch 93 in the stop bar 17.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various changes in the form and details of the device illustrated and its operation may be made by those skilled in the art without departing from the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

I claim:

1. A printing mechanism comprising in combination, a row of differentially positionable type bars each having a plurality of type elements thereon, a pair of opposed plate members of insulating material spaced from each other common to said type bars and remote from said row, the opposed faces of said plate members having electrical circuits thereon, slide members corresponding in number to said type bars and having electrical contacts mounted thereon, said contacts being movable to bridge circuits contained on one face of one plate member with circuits on the opposing face of the other member of said pair, actuator means interconnecting said type bars with said slide members, and means for moving said actuator means simultaneously to impart movement to said type bars and said slides thus to select electrical circuits on said plate members commensurate with the movement of said type bars.

2. A printing mechanism comprising in combination, a row of aligned differentially positionable type bars each having a plurality of type elements thereon, a pair of opposed plate members of insulating material spaced from each other remote from said row in face to face relationship and common to said type bars, the opposed faces of said plate members having electrical circuits thereon, slide members corresponding in number to said type bars and each having a portion interposed between said opposed faces with electrical contacts mounted thereon, said portion being movable in a manner to cause said contacts to bridge circuits contained on one face of one plate member with circuits on the opposing face of the other member of said pair, lever means interconnecting said type bars with said slide members whereby movement of said lever means simultaneously impart movement to said type bars and said slides to thus select electrical circuits commensurate with the movement of said type bars, and means for moving said lever means.

3. A printing mechanism comprising in combination, a plurality of differentially positionable type bars each having a plurality of type elements thereon, a pair of opposed plate members of insulating material having face to face electrical circuits thereon, a plurality of slide means carrying electrical brush contacts mounted for engagement with said circuits, a plurality of pivotally mounted lever means each connected at one end thereof to a type bar and at the other end to a slide means, and means for moving said lever means whereby when a given type element is presented in its printing

position said slide and brush contacts select an electrical circuit corresponding to such position.

4. A printing mechanism comprising in combination, a plurality of differentially positionable type bars each having a plurality of type elements thereon, a pair of opposed plate members of insulating material having face to face electrical circuits thereon, a plurality of slide means movable between said plates and carrying electrical brush contacts mounted for engagement with said circuits, spaced bearing means supported on said pair of plate members for guiding said slides during their movement, a plurality of pivotally mounted lever means each connected at one end thereof to a type bar and at the other end to a slide means, and means for moving said lever means whereby when a given type element is presented in its printing position said slide and brush contacts select an electrical circuit corresponding to such position.

5. A printing mechanism comprising in combination, a plurality of differentially positionable type bars each having a plurality of type elements thereon, a pair of plate members of insulating material disposed in opposed spaced relation and having electrical circuit paths on the opposed facing surfaces therof, a plurality of slide members, one for each type bar, a U-shapsd brush contact carried by each slide member and adapted to electrically connect the circuit paths of one plate with those of the other, a plurality of lever means each pivotally mounted intermediate its length and being connected at one of its ends to a type bar and at its opposite end to a corresponding member, and means for moving said lever means whereby when said type bars are moved thereby in one direction to present the type elements to their respective printing positions their corresponding slide members are moved in an opposite direction to select electrical circuits on said plate members.

6. A construction according to claim 5 wherein said plate members include a plurality of circuit elements corresponding to the plurality of type bars and wherein the selected circuits correspond to the printing positions of the type elements.

7. A printing mechanism comprising in combination, a pair of side plates, a plurality of transverse notched frame members supported between said side plates, a plurality of separator plates spaced from each other and received in the notches of said frame members, a plurality of differentially positionable type bars each having a plurality of type elements thereon, each said type bar being guided for movement between a pair of adjacent spaced separator plates, a pair of plate members of insulating material disposed in opposed spaced relation and having electrical circuit paths on the opposed facing surfaces thereof, a plurality of slide members, one for each type bar, a U-shaped brush contact carried by each slide member and adapted to electrically connect the circuit paths of one plate with those of the other, a plurality of lever means each pivotally mounted intermediate its length and being connected at one of its ends to a type bar and at its opposite end to a corresponding slide member, and means for moving said lever means whereby when said type bars are moved thereby in one direction to present the same to their respective printing positions their corresponding slide members are moved in an opposite direction to select electrical circuits corresponding to said printing positions.

8. In a printing mechanism comprising in combination, a plurality of differentially positionable type bars each having a plurality of type elements thereon, a pair of plate members of insulating material disposed in opposed spaced relation and having electrical circuit paths on the opposed facing surfaces thereof, said type bars and slide members including socket portions therein, a U-shaped brush contact carried by each slide member and adapted to electrically connect the circuit paths of one plate with those of the other, a plurality of lever means each having end portions normally received in the socket portion of a type bar and a corresponding slide member, pivot means supporting said lever means intermediate their ends, means for rotating said lever means whereby when said type bars are moved thereby in one direction to present the type elements to their respective printing positions their corresponding slide members are moved in an opposite direction to select electrical circuits on said plate members, and means for bodily moving said pivot means in a given direction of movement whereby said end portions of said lever means are withdrawn from said socket portions of said type bars and slide members.

9. A construction according to claim 8 wherein said bodily moving means supports said pivot means and includes an elongated member pivotally mounted in said mechanism, and means affixed to said elongated member for pivotally moving the latter.

10. A printing mechanism comprising in combination, a plurality of differentially positionable type bars each having a plurality of type elements thereon, a pair of plate members of insulating material disposed in opposed spaced relation, one plate of said pair having a circuit path individual to each type bar of the printing mechanism and the other plate of said pair having a circuit path individual to each of said type elements, a plurality of slide members, one for each type bar, a U-shaped brush contact carried by each slide member and adapted to electrically connect the circuit paths of one plate with those of the other, a plurality of lever means each pivotally mounted intermediate its length and being connected at one of its ends to a type bar and at its opposite end to a corresponding member, and means for moving said lever means whereby when said type bars are moved thereby in one direction to present the type elements to their respective printing positions their corresponding slide members are moved in an opposite direction to select electrical circuits on said plate members.

11. A printing device comprising in combination, an elongated type carrier mounted for movement along its axis, a plurality of type characters mounted for movement in said carrier in a direction transverse to said axis, actuator means for moving said type carrier along said axis to present each of said characters into its printing position, detachable means interconnecting said type carrier with said actuator means, and means for shifting said actuator means in a direction generally transverse to said axis to thereby disconnect said detachable means to permit movement of said type carrier along its axis independently of said moving means.

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