

May 10, 1960

W. C. PRESTON ET AL

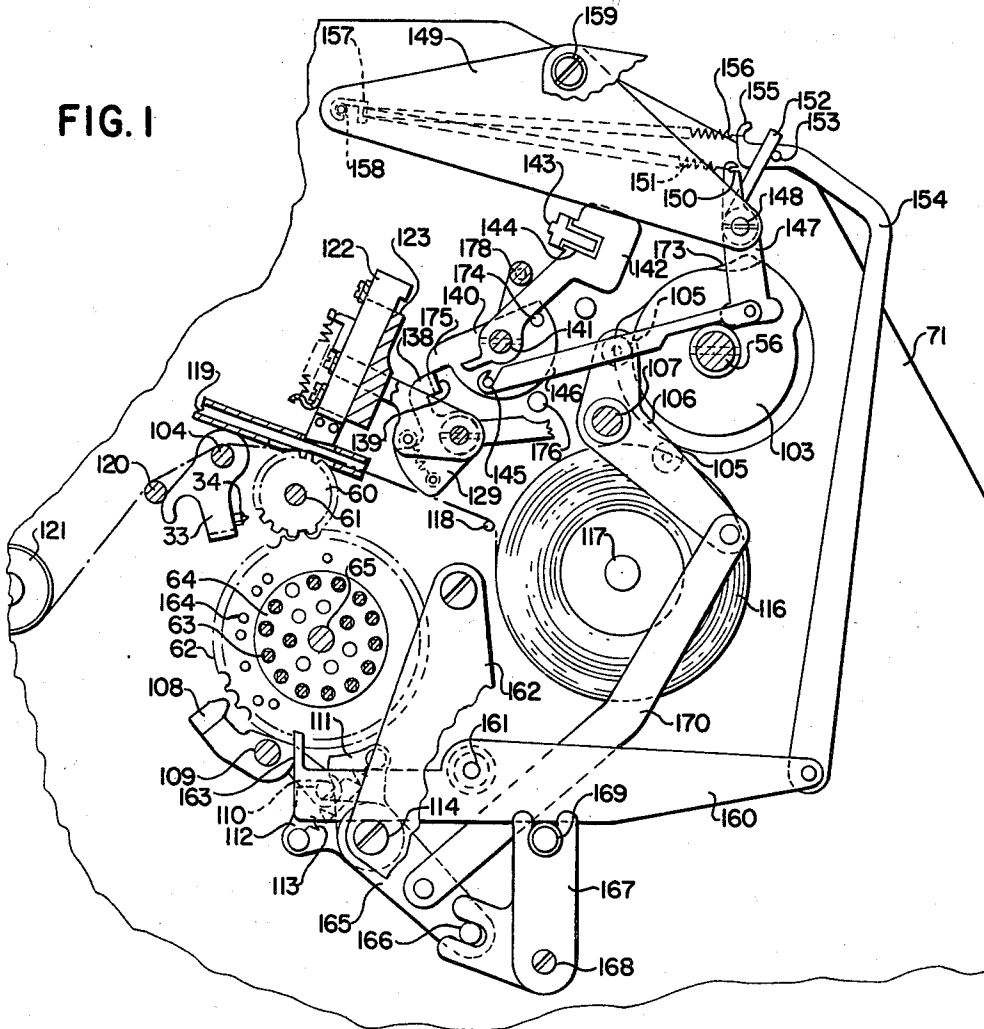
2,935,935

PRINTING MECHANISM

Filed March 19, 1959

3 Sheets-Sheet 1

FIG. 1



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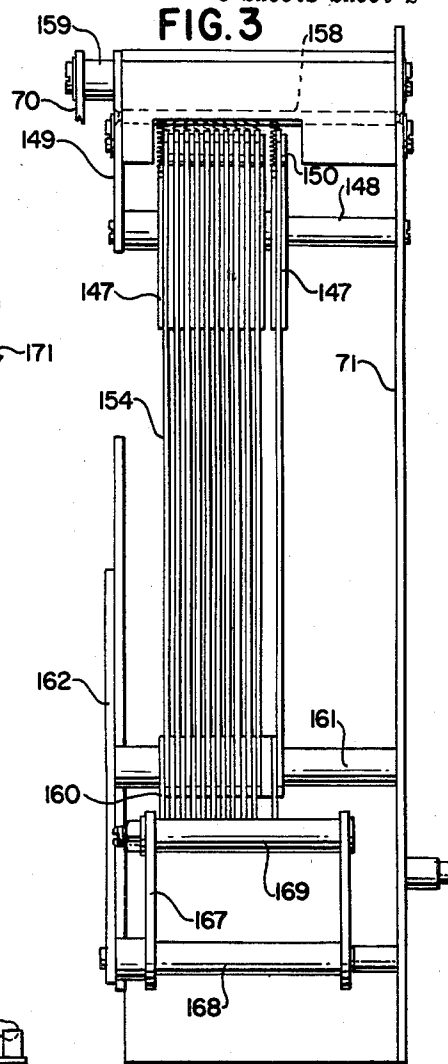
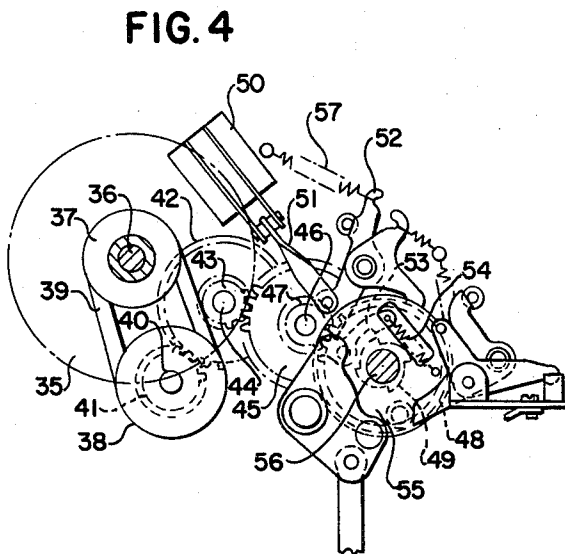
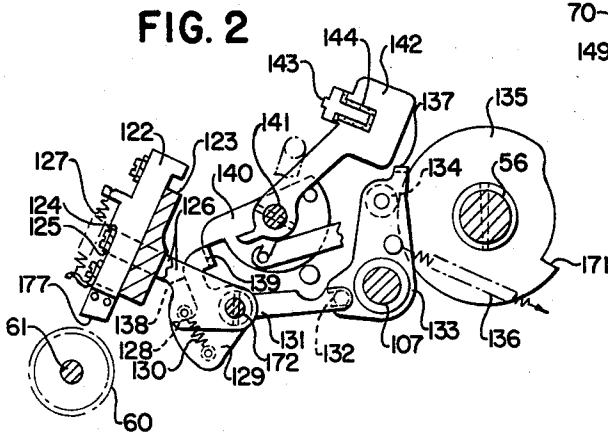
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

FIG. 5

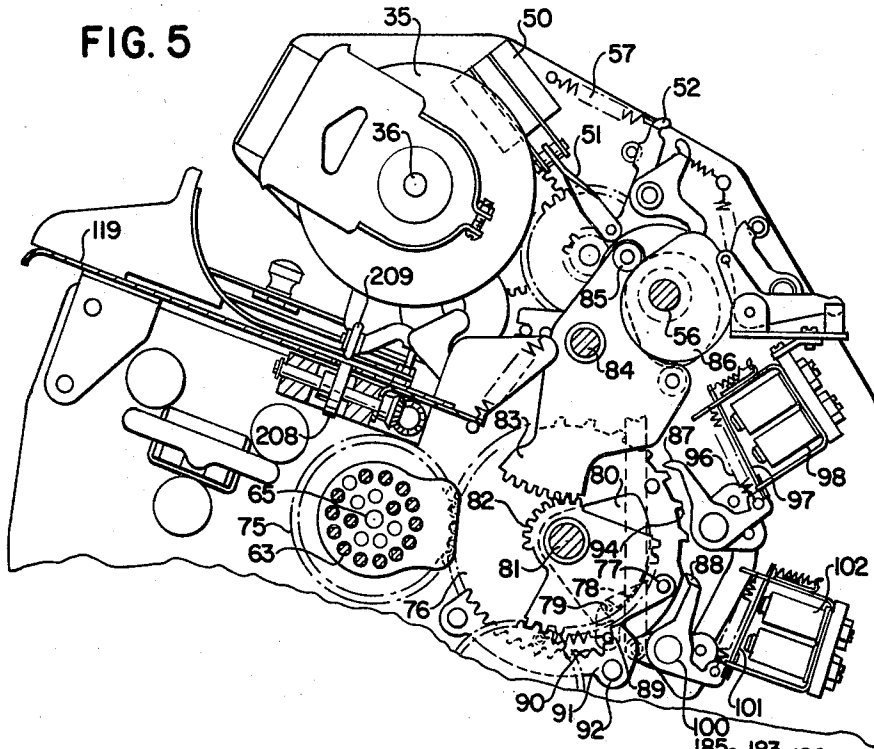
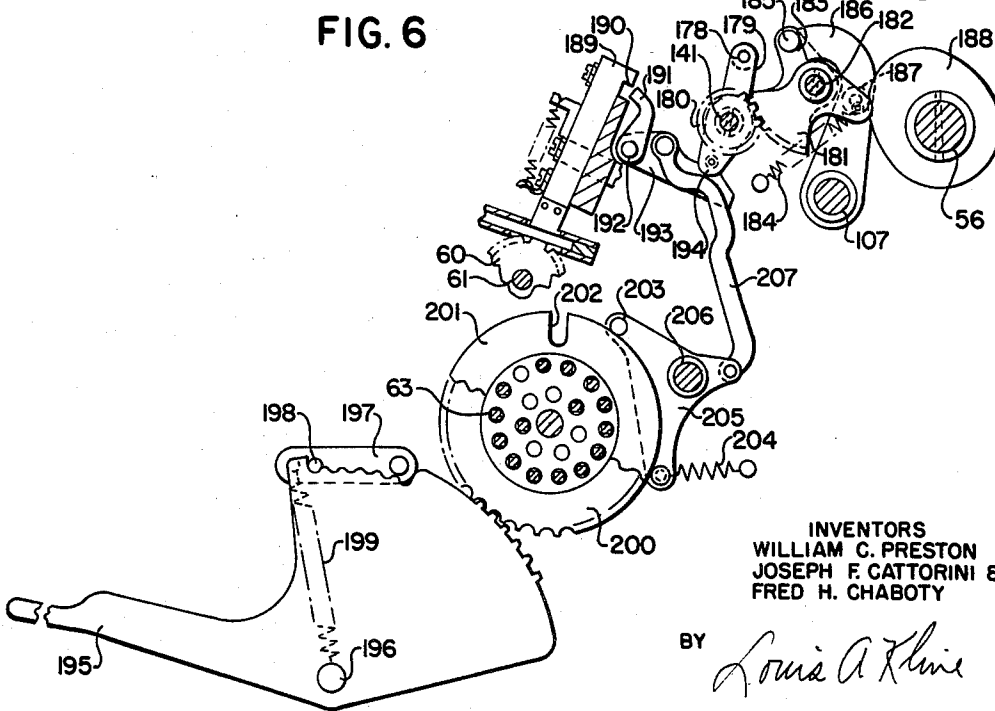


FIG. 6



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2,935,935

PRINTING MECHANISM

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Application March 19, 1959, Serial No. 800,440

5 Claims. (Cl. 101—93)

This invention relates to improvements in printing mechanisms of the type disclosed in the co-pending application of Paul H. Williams et al., Serial No. 743,842, filed June 23, 1958. More particularly, the invention is applied to a type of machine wherein printing means are used for printing off a special ribbon containing magnetic ink, whereby data can be printed on record material which is later adapted to control a magnetic pick-up device to read data from the record material.

The printing apparatus of the above-cited application provides a self-contained printing mechanism which is controlled from the differential mechanism of a machine of the type shown and described in United States Patents No. 1,865,147, issued to Bernis M. Shipley on June 28, 1932, and No. 2,625,322, issued to Frank B. Moser on January 13, 1953, and which type is controlled by electric circuits set in the machine of said patents.

The printing means as disclosed in the above-cited application comprises a series of printing platens, each platen being activated by the blow of a hammer. Movement of the platen engages the record material, impinging said record material onto a printing ribbon and a type wheel. Spring means are used to exert a uniform pressure on the hammers. Because of the physical characteristics of the various character types, it has been found that the pressure exerted by the platens will be sufficient for the printing of some of the characters, but such pressure will be insufficient or too great for the printing of other characters. Thus the type characters such as 0, 6, 8, 9 have large surface area as compared to 2, 5, 7. A hammer pressure to adequately print from those types having a large surface area will be too great for the types having small surface area, with the result that such small-area types will be driven through the record material. On the other hand, a hammer pressure which is sufficient to print from the small-area types will be insufficient to obtain a print from the large-area types. Therefore it is an object of the present invention to provide a series of printing hammers each capable of delivering a different pressure, depending on the configuration of the type with which it is associated.

Another object of the invention is to provide control means for controlling the pressure that is applied to each of the printing hammers.

A further object of the invention is to provide the type configuration, when positioned for a printing operation, to control the amount of pressure that is applied to its associated printing hammer.

With these and incidental objects in view, the invention consists of certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims, and a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

Of said drawings:

Fig. 1 is a section view taken through the printing sections of the printing mechanism.

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Fig. 2 is a detail view of the printing platen mechanism.

Fig. 3 is an end view of certain of the mechanisms shown in Fig. 1.

Fig. 4 is a detail view of the machine release mechanism.

Fig. 5 is a sectional view taken through the mechanism for controlling the setting of the printing wheels.

Fig. 6 is a detail view of a means for locking out the symbol-printing type carrier during certain operations of the machine.

Accounting machine switch setting mechanism

As has been previously pointed out, the printing mechanism in which this invention is utilized is adapted for use in connection with machines of the type shown in the patents cited previously. Such machines are usually provided with a differential mechanism through which an indicator segment is positioned according to the amount key which has been depressed on the accounting machine keyboard prior to the machine operation. Through the use of racks and pinions, rotation of the indicator segment positions the arm of an amount differential switch a like distance. These amount differential switches control the setting of corresponding data in the printing mechanism in a manner to be described hereinafter. For a more detailed disclosure of the switch-setting mechanism, reference should be made to the previously-cited co-pending application of Paul H. Williams et al., serial No. 743,842.

Printer-operating mechanism

The printer is operated by a motor 35 (Figs. 4 and 5) independently of the operation of the accounting machine. The motor 35 is provided with an armature 36, on which is mounted a pulley 37 (Fig. 4). The pulley 37 operates a second pulley 38, by a belt 39. Secured to the pulley 38, and mounted on a shaft 40, is a gear 41. The gear 41 meshes with a gear 42 connected to a pinion 43 mounted on a stud 44. The pinion 43 meshes with a gear 45 rotatably mounted on a stud 46, and connected to the gear 45 is a pinion 47. The pinion 47 meshes with a gear 48, to which one member 49 of a clutch is secured.

When during the operation of the machine the motor 35 is released for operation, the clutch member 49 is rotated clockwise (Fig. 4). When it is desired to operate the printer, a solenoid 50 is energized to withdraw a link 51 and rock a clutch control pawl 52 clockwise (Fig. 5). The lower end of the clutch pawl 52 engages a toe on a clutch pawl 53 (Fig. 4), which is spring-urged, by a spring 54, to engage the clutch member 49. Normally, the clutch pawl 52 prevents the spring 54 from rocking the clutch pawl 53. However, when the solenoid 50 is energized to rock the pawl 52 clockwise, it withdraws the lower end of the pawl 52 from engagement with the toe on the pawl 53, whereupon the spring 54 rocks the pawl 53 clockwise to engage one of the shoulders on the clutch member 49, in the manner well known in the art. The pawl 53 is pivotally mounted on a disk 55, secured to the printer cam shaft 56 (see also Fig. 5). At the end of the cycle of operation, a spring 57 (Figs. 4 and 5) returns the clutch pawl 52 into the path of the toe on the pawl 53, and, therefore, when the toe comes into engagement with the lower end of the pawl 52, it is rocked out of engagement with the clutch member 49.

Type-wheel-setting mechanism

The machine is provided with a plurality of type wheels 60 carried on a shaft 61 (Figs. 1, 2, and 6). Each type wheel 60 meshes with a gear 62 (Fig. 1), having

internal teeth meshing with pinions on square shafts 63, as shown in the United States patent to Walter J. Kreider, No. 1,693,279, issued on November 27, 1928. The gears 62 are rotatably mounted on disks 64 carried on a shaft 65. The square shafts and the shaft 65 are supported between a right side frame 70 and a left frame 71 (Fig. 3), and these shafts project through two other side frames (not shown). Each ring gear 62 is connected to a ring gear 75 (Fig. 5) through the square shaft 63. The ring gears 75 are located between two side frames (not shown) and mesh with a differentially settable disk 76. The differentially settable disk 76 is provided with a stud 77, on which a latch pawl 78 is pivoted. The latch pawl is provided with a stud 79, which projects into a notch in a driving segment 80. A driving segment 80 is provided for each type-wheel-setting mechanism, and the driving segments are all pinned to a shaft 81, on which the differential disks 76 are rotatably mounted. Also secured to the shaft 81 is a segment 82, meshing with a segment 83 pivoted on a shaft 84 carried between two side frames (not shown). The segment 83 is provided with two anti-friction rollers 85, which engage with cam plates 86 on the cam shaft 56.

When the cam shaft 56 is rotated, the cam plates 86, cooperating with the rollers 85, rock the segment 83 first counter-clockwise (Fig. 5) and then back clockwise to its normal position. Counter-clockwise movement of the segment 83 rocks the segment 82 clockwise, thus rocking the actuators 80 clockwise. Clockwise movement of the actuators 80, through the stud 79 and the pawl 78, rocks the differential setting member 76 clockwise until it is arrested by a pawl 87 or 88, in a manner described hereinafter. The pawls 87 and 88 are moved into the path of movement of shoulders 94 at a proper time, as will be described, and arrest the differential disk 76, thus causing the latch pawl 78 to rock counter-clockwise on the stud 77 and move a stud 89 thereon into a notch 90 of an alining and locking bar 91, carried on a pair of rods 92.

The pawls 87 and 88 are moved into the path of movement of the shoulders 94, on the differentially settable disk 76, under control of the amount differential switches (not shown) of the accounting machine, as previously noted. When the differentially settable disk 76 is actuated, it will actuate the gear 75 a like extent and, through the square shaft 63 and the ring gear 62 (Fig. 1), adjust the type wheel 60 in accordance with the setting of the differentially settable disk 76. As before mentioned, a differentially settable mechanism is provided for setting each type wheel 60.

The pawl 87 (Fig. 5) is pivotally mounted on a stud and is spring-urged, by a spring 96, to urge the free end of the pawl 87 into the path of movement of the shoulders 94 on the differentially settable disk 76. Normally, the spring 96 cannot rock the pawl 87, inasmuch as the pawl is restrained by the armature 97 of the solenoid 98, which engages a shoulder on the pawl 87. When the solenoid is energized according to the setting of the amount differential switches (not shown), the armature 97 is withdrawn, thus releasing the pawl 87 to the action of the spring 96. Likewise, the pawl 88 is mounted on a stud 100 and is controlled by the armature 101 of a solenoid 102.

The solenoid 98 is energized under control of the even-numbered digit keys of the accounting machine, whereas the solenoid 102 is energized under control of the odd-numbered digit keys. The purpose of providing the two pawls 87 and 88, for arresting the differentials 76, is to provide more time for permitting the pawl 87 or 88 to drop into position in the path of movement of the shoulders 94. By providing separate pawls for the even and odd numbers, a greater spacing of the shoulders 94 on the differentially settable member 76 is possible.

For a disclosure of the circuit in which the solenoids 98 and 102 are energized under control of the amount

bank of the accounting machine and the supporting structure for the gears 62, reference should be made to the previously mentioned co-pending application of Paul H. Williams et al., Serial No. 743,842.

Type wheel and ring gear aliner

After the type wheels 60 have been adjusted by the rotation of the ring gear 62, aliner means will engage both the type wheels and the ring gear. As shown in Fig. 1, an aliner 33, mounted on a shaft 104, is rocked to engage an alining tooth 34 thereon with the notches in the type wheel 60. The aliner 33 is actuated by a cam 103 (Fig. 1) secured to the cam shaft 56. A pair of rollers 105 are mounted on a cam arm 106 pivoted on a shaft 107. Linkage means (not shown) are connected between the lower end of the cam arm 106 and the aliner arm 33.

When the cam shaft 56 is rotated, the cam arm 106 is rocked counter-clockwise, which moves the aliner tooth 34 into engagement with a notch in the type wheels 60 and positively lock the type wheels in set position.

The ring gear 62 is also alined in a set position by an aliner 108 (Fig. 1), pivoted on a stud 109. The aliner 108 is provided with a roller 110, which is impinged between a spring-actuated arm 111 and an arm 112 by a spring 113. Both arms 111 and 112 are pivoted on a shaft 114. The lower end 165 of the arm 112 has pivoted thereto a link 170. This link is in turn pivoted to a cam arm 106, having rollers which coast with cam plates 103.

When the shaft 56 is rotated, the arm 112 is rocked counter-clockwise due to the movement of the connecting linkage. Counter-clockwise movement of the arm 112, through the spring-actuated arm 111, engages the roller 110 and rocks the aliner 108 into engagement with alining notches in the ring gear 62. As the cam reaches home position, a spring (not shown), attached to the lower part of the arm 112, restores the arm 112 and the links attached thereto to home position to withdraw the aliner 108 from engagement with the ring gears 62. For a detailed disclosure of the linkage arrangement for the type wheel and ring gear aliner, reference should be made to the previously mentioned application of Paul H. Williams et al., Serial No. 743,842.

Printing mechanism

After the type wheels 60 have been properly set and alined, the printing mechanism is actuated to impinge a tape against the record, upon which the printing is to take place, and the type wheels. One form of tape used in the printing mechanism is shown and described in the co-pending application, Serial No. 733,141, filed by Theodore Maieron et al. on May 5, 1958. The tape shown in said application is one in which magnetic material in a binder is applied in a stippling manner to a thin backing web made of strong film material, such as "Mylar," which is a polyethylene terephthalate, of a thickness of approximately .0005 inch, and the coating has a profusion of closely-spaced specks of ink caused by the stippling, which specks are practically invisible to the unaided eye because of their small dimensions and close proximity. The magnetic coating in the binder is called "magnetic ink" for the purpose of this disclosure.

The tape is wound from a supply roll 116 (Fig. 1), carried by a stud 117, and is guided around a stud 118, through a slip table 119, over the type wheels 60, around the aforementioned shaft 104, over a rod 120, onto a rewind spool 121. Means (not shown) are provided for rotating the rewind spool in a step-by-step manner. For a disclosure of such means, reference should be made to the co-pending application of Paul H. Williams et al., Serial No. 743,842.

Printing hammer mechanism

The printing platen is so constructed that, as the platen strikes the ribbon and the type wheel, the platen is given

a slight sidewise movement to in effect rub the magnetic ink material onto the record material, by sliding it slightly across the face of the type character. Also, the platen is so constructed as to dwell on the type at the time of impact. This is necessary, inasmuch as an ordinary blow does not make uniform impressions of the magnetic material on the record material. A separate platen 122 (Fig. 2) is provided for each type wheel. The platens 122 are slidably mounted in a frame 123, with a loose fit sufficient to allow the platen to move sidewise when striking the type wheel 60. A shoulder 124 of the platen 122 is normally held in engagement with a bar 125 carried by a pair of arms 126. A spring 127 holds the shoulder 124 against the bar 125. The arms 126 are secured to a shaft 172 and support a rod 128 extending between them, and the rod 128 is engaged by a pair of plates 129, loose on the shaft 172. A spring 130, connected to each plate 129, normally maintains the plates 129 in engagement with the rod 128. The plates 129 have rearwardly-extending fingers 131, carrying a rod 132 between them. The rod 132 extends into a bifurcated arm of a cam follower arm 133, pivoted on the shaft 107. The upper end of the cam follower arm is provided with a roller 134, normally held in engagement with a cam 135 by a spring 136. The cam 135 is secured to the cam shaft 56. Also formed on the cam follower arm 133 is a flange 137, engaging the outer periphery of the cam 135 at certain times, in the manner presently described.

Referring to Fig. 1, each plate 129 is also provided with an upstanding arm 138, which is interconnected by a bail 139. The bail 139 engages a series of arms 140, pivoted on shaft 141. There is one arm 140 for each printing wheel. Loosely mounted on the shaft 141 is a hammer 142, one for each of the arms 140. The hammers 142 are arranged side by side. The upper end of the hammer 142 is enlarged to provide extra weight to give the hammer a needed mass, as hereinafter described. The hammer 142 is provided with an insert 143, which is set in resilient material 144, such as rubber. The purpose of the rubber insert 144 is to provide an increase in contact time against the ribbon; that is, to increase the time during which pressure is exerted against the ribbon to obtain a better imprint from the magnetic ink. Tests have shown that a quick blow by the hammer does not transfer sufficient magnetic ink to obtain usable impressions.

Located on the arm 140 is a stud 145, which is engaged by one end of a link 146 (Fig. 1). The other end of the link 146 is pivotally mounted at one end of a lever 147. The lever 147 is loosely mounted on a shaft 148, supported by a plate 149 and the left side of the frame support 71, as shown in Fig. 3. As may be seen from Fig. 1, the other end of the levers 147 may be of either of two forms. Each of one set of levers has an end 150, which is engaged by a related spring 151. This set of levers is associated with a special symbol type configuration, hereinafter described, which requires a constant force to be applied to the printing hammer. This constant force is applied to these levers 147 by their related springs 151. Each of the remaining levers 147 has an inclined end 152, having a surface which coacts with a stud 153, located on a related link 154. One end 155 of each link 154 is engaged by a related spring 156. These levers 147 are capable of providing a variable force, which is hereinafter described. Both types of the springs 151 and 156 are connected to a bracket 157, mounted on a rod 158, supported between the plate 149 and the side frame 71. The plate 149 is supported on the shaft 159, extending between the right support frame 70 and the left support frame 71 (Fig. 3).

The other end of the link 154 (Fig. 1) is pivotally mounted on an arm 160. The arm 160 is rotatably mounted on a shaft 161, which is supported by a bracket 162 and the left side frame 71. One end of the arm 160 has a projection 163, which coacts with studs 164,

located on the ring gear 62, in a manner hereinafter described.

As previously described, pivotally mounted on the shaft 114 (Fig. 1) is an arm 112, the lower extension 165 of which has a stud 166 located at one end. The stud 166 is engaged with a bifurcated end of one of two bell cranks 167, pivotally mounted on a shaft 168, extending between the bracket 162 and the side frame 71 (Fig. 3). The other ends of the bell cranks engage a bail 169, as shown in Fig. 3.

Pivotally mounted on the arm 165 (Fig. 1) is the link 170, the upper end of which is pivotally mounted to the cam arm 106. As previously described, the cam arm 106 engages the cam plate 103 by means of the rollers 105, mounted on the cam arm.

There are four factors contributing to the quality of printing which may subsequently be read satisfactorily by a pick-up device when the records are fed through an analyzing machine, which are as follows:

- (1) The mass of the hammer, which is obtained by properly weighting the head of the hammer 142;
- (2) The force applied to the lever arm 150, 152 by the springs 151, 156;
- (3) The velocity of the hammer 142; and
- (4) The resilience of the rubber insert 144.

When these four factors are properly balanced, a certain dwell and pressure is applied at the point of impact.

When the cam shaft 56 rotates clockwise, the periphery of the cam plate 135 (Fig. 2) acts on the roller 134. Just prior to the time that the printing is to be effected, the roller 134 moves from contact with the periphery of the cam plate 135 and rides over a notched section 171. At this time, the flange 137 rides on the periphery of the cam plate 135, and, as the notched section 171 moves out from under the flange 137, the spring 136 whips the cam arm 133 clockwise, thus rocking the yoke, comprising the fingers 131, the plate 129, and the rod 132, counter-clockwise (Fig. 2). Movement of the plate 129 counter-clockwise about the shaft 172 rotates the arms 126 counter-clockwise due to the spring 130 connected between the rod 128 and supported by the arms 126 and the plate 129. Counter-clockwise movement of the arms 126 lowers the bar 125 to allow the platens to move downwardly. Counter-clockwise movement of the arms 138 withdraws the bail 139 from beneath the arms 140.

When the cam shaft rotates clockwise, the periphery of the cam plate 103 (Fig. 1) acts on the rollers 105. Just prior to the time that the printing is to be effected, the lower or lead roller 105 will ride over the recessed section 173 of the outer roll of the cam plate 103, rocking the cam follower arm 106 counter-clockwise. Initial movement counter-clockwise of the arm 106 shifts the link 170 upwardly, rotating the arm 165 counter-clockwise and the bell crank 167 clockwise, which results in the clockwise movement of the bail 169 from beneath the arms 160.

As may be seen from Fig. 1, the end 152 of the lever 147 is inclined to the direction in which the spring 156 is extended. The action of the spring 156 is transmitted by the stud 153, located on the link 154, to the inclined end 152. Due to the inclination of the end 152, the spring 156, acting through the stud 153, together with the arm 152, constitutes a moment arm which rotates the lever 147 counter-clockwise and urges the link 154 to move downwardly. Upon the removal of the bail 169 from beneath the arm 160, the downward movement of the link 154 rotates the arm 160 clockwise, bringing the projections 163 of the arm 160 into contact with one of the studs 164 located on the side of the ring gear 62.

The studs 164 are located on the side of the ring gear 62, where each stud represents a different character on the type wheel. Positioning of the type wheel 60 by the ring gear 62 also positions one of the studs 164 in line with the travel of the projection 163. As seen in Fig. 1,

the studs are located at various radii of the ring gear 62, thereby controlling the length of travel of the projection 163. This length of travel will be transmitted through the link 154 to move the stud 153 a similar distance on the inclined face of the end 152. Movement of the stud 153 along the face of the inclined end 152 will vary the pressure acting on the lever 147, thereby controlling the force exerted on the platen by the hammer 142, as will be described hereinafter.

When the bail 139 is removed from beneath the arms 140 due to the rotation of the cam 135, the force acting on the lever 147 by the springs 151, 156 will be transmitted by the link 146 to the arm 140. Counter-clockwise movement of the arm 140, acting by means of a stud 174, will whip the hammer 142 counter-clockwise, impelling the insert 143 against the top of the platen 122 and driving said platen down against the type wheel 60. The force acting to whip the hammer 142 against the platen 122 is directly proportioned to the moment of force applied to the lever 147. The moment will vary as the position of the stud 153 is moved along the end 152, as previously stated. From this it may be seen that the force applied to the hammer is controlled by the length of travel of the projection 163. The arm 140 will travel counter-clockwise until a finger 175 engages a rod 176.

The lower end of the platen 122 is slightly beveled, as at 177 (Fig. 2), and, therefore, as the platen is engaged with the type, as described, the lower end of the platen is cammed sidewise a slight extent, due to the action of the bevel 177 of the platen 122 on the type carrier 60 and also due to the sliding fit of the platen in the frame 123. This sidewise shifting causes a rubbing action on the printing ribbon, to rub the magnetic material onto the record material, which, taken with the dwell at the time of impact, causes a good print to be made on the record material.

After the impression has been made, the hammers 142 are restored to their normal position by a rod 178 (Figs. 1 and 6) carried on the upper end of a pair of arms 179 (Fig. 6) secured to the shaft 141. Also secured to the shaft is a pinion 180 (Fig. 6), meshing with a segment 181 on a shaft 182. A similar pinion, which meshes with the teeth of a segment 183, is mounted on the opposite end of the shaft 141. A spring 184 normally tends to rotate the segments 181 and 183 clockwise, but is limited in its movement by the engagement of a roller 185 on the segment 183 with the upper end of a cam arm 186. Secured to the cam arm 186 is a roller 187, which is held in engagement with a cam 188, on the cam shaft 56, by the spring 184. The cam arm 186 is pivoted on the shaft 107. Action of the spring 184 against the upper end of the cam arm 186 maintains the roller 187 in engagement with the cam 188. Rotation of the cam 188 when the cam shaft 56 is operated allows the cam arm 186 to rock clockwise, permitting the segments 181 and 183 to rock clockwise, which rocks the pinions 180 counter-clockwise to move the rod 178 counter-clockwise, thus permitting the hammer to operate in the manner described above. After the hammers have completed their printing operation, the cam 188 reverses the movement of the cam arm 186, thus rocking the segments 181 and 183 counter-clockwise and rotating the arms 179 and the rod 178 clockwise back to their home positions, during which time the rod 178 engages the hammer arms 142 and restores them to the position shown in Fig. 1.

Prior to the time that the hammer arms are restored to their home position, the arms 160 (Fig. 1), and the bail 169 are being restored to their home position, shown in Fig. 1. Upon the counter-clockwise movement of the lever 147, the end 152 (Fig. 1) will be rotated to a position where it is inclined in a forward direction. In this position, the force of the springs 151, 156, acting through the stud 153, will move the link 154 upwardly, thereby rotating the arm 160 counter-clockwise. Upon

the restoration of the hammer, the lever 147 will be rocked clockwise, thereby further rotating the arms 160 to the position shown in Fig. 1.

Simultaneously, with the rotation of the arm 160, the cam plate 103 is rotated to a position which rocks the cam arm 106 clockwise, thereby rotating the arm 165 clockwise by means of the link 170. Clockwise rotation of the arm 165 will rotate the bell crank 167 counter-clockwise, which positions the bail 169 beneath the arms 160.

The printing mechanism also includes a platen 139 (Fig. 6), for printing a special symbol. During certain operations, it is desired to suppress the printing of this symbol. The symbol-printing platen 139 is provided with a shoulder 190, which may be engaged by a finger 191. The finger 191 is secured to a shaft 192, to which an arm 193 is also secured. The finger 191 and the arm 193 are normally depressed by a roller 194 on the lower end of the arm 179, above described, but in the normal position the roller 194 engages the upper end of the arm 193 to maintain the finger 191 in the position shown. However, when the rod 178 is moved to release the printing hammer, the roller 194 is removed from contact with the arm 193. If at this time the platen 139 is still in the upper position, the finger 191 can move beneath the shoulder 190 and prevent operation thereof by its respective hammer 142. Movement of the finger 191 is controlled by a manually-set lever 195, pivoted on a shaft 196. An aliner 197 is spring-urged to maintain a stud 198 in engagement with an alining notch on the lever 195 by a spring 199. The lever 195 is provided with teeth meshing with a ring gear 200. The ring gear 200 is connected to a disk 201 by a square shaft 63 and pinions thereon. The disk 201 has a notch 202 in its periphery. A stud 203 lies adjacent the periphery of the disk 201 and is held in such contact position by a spring 204. The stud 203 is carried on a lever 205, pivoted on a shaft 206, and is connected to the arm 193 by a link 207.

As before described, the roller 194 normally holds the arm 193 depressed and, through the link 207, holds the lever 205 in a position wherein the stud 203 cannot enter the notch 202. As soon as the machine begins its operation, the roller 194 is rocked away from above the arm 193, thus freeing the arm 193 to the action of the spring 204.

If the lever 195, together with the segment formed thereon, is moved far enough to move the notch 202 into the path of movement of the stud 203, the spring 204 moves the stud 203 into the notch, thus raising the link 207, rocking the arm 193 and the finger 191 to move the finger 191 underneath the shoulder 190. Thereupon, after the hammer 142 for the symbol-printing platen is released, the platen cannot move, since the finger 191 locks it against such movement. In this case, no symbol will be printed.

When the check or other record-receiving material is placed on the slip table 119 (Fig. 5), feed rollers 208 and 209, together with other feeding mechanism, move the record material into proper position to receive the impression. This mechanism is not described herein, inasmuch as it forms a part of a separate application, where it is fully described.

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

What is claimed is:

1. In a machine of the class described, the combination of a positionable type member having a plurality of type configurations located thereon; settable control means having control surfaces thereon, each of said control surfaces corresponding to a particular configuration and differing in position on said control means according to

the configuration of the type on the type member; means for simultaneously positioning the type member with a desired type configuration in printing position and the control means with the related control surface in controlling position whereby the type configuration and its associated control surface are positioned for a printing operation; impression means to make a print from the type member; variable force actuating means for the impression means including a member and means for exerting an actuating force on the member, said member being variably engageable with the impression means to vary the actuating force applied to the impression means; and means controlled by the control surface in controlling position for adjusting the engagement of the member with the impression means to adjust the force applied to the impression means to correspond to the particular type configuration in the printing position.

2. In a machine of the class described, the combination of a type member having a plurality of type configurations located thereon; settable control means having control surfaces thereon, each of said control surfaces representing a particular type configuration and differing in position on said control means according to the configuration of the type on the type member; means for simultaneously positioning the type member with a desired type configuration in printing position and the control means with the related control surface in controlling position whereby the type configuration and its associated control surface are positioned for a printing operation; impression means to make a print from the type member; variable force actuating means for the impression means including a lever operatively associated with said impression means; means for exerting an actuating force on said lever, including biasing means slidably located on said lever for urging the lever in one direction; and means controlled by the control surface in controlling position for varying the location of the biasing means on said lever to adjust the force applied to the impression means to correspond to the particular type configuration in the printing position.

3. In a machine of the class described, the combination of a type member having a plurality of type configurations located thereon; settable control means having control surfaces thereon, each of said control surfaces representing a particular type configuration and differing in position on said control means according to the configuration of the type on the type member; means for simultaneously positioning the type member with a desired type configuration in printing position and the control means with the related control surface in controlling position whereby the type configuration and its associated control surface are positioned for a printing operation; impression means to make a print from the type member; variable force actuating means for ac-

tuating said impression means; and means controlled by the control surface in controlling position for varying the actuating force by which the impression means is actuated to take an impression from the type member according to the desired type configuration set up in a printing position.

4. In a machine of the class described, the combination of a type carrier having a plurality of type configurations located thereon; gear means having a plurality of studs located at different positions thereon, each stud representing a different configuration of type on said type carrier; means for simultaneously positioning the type carrier with a desired type configuration in printing position and the gear means with the related stud in controlling position whereby the type configuration and its associated stud are positioned for a printing operation; impression means for taking an impression from the type carrier; variable force actuating means for actuating said impression means; and means controlled by the stud in controlling position for varying the actuating force by which the impression means is actuated to take an impression from the type member according to the desired type configuration set up in a printing position.

5. In a machine of the class described, the combination of a type wheel having a plurality of type configurations located on its periphery; settable control means having control surfaces thereon, each of said control surfaces corresponding to a particular configuration and differing in position on said control means according to the configuration of the type on the type wheel; means for simultaneously positioning the type wheel with a desired type configuration in printing position and the control means with the related control surface in controlling position whereby the type configuration and its associated control surfaces are positioned for a printing operation; impression means including a platen engageable with the type wheel and a hammer to strike said platen against the type wheel; variable force actuating means for actuating said hammer comprising a first lever operatively associated with said hammer; means for exerting a force on said lever including linkage means having a stud located thereon; means attached to one end of the linkage means for urging said stud into a slidable engagement with said lever; and a second lever having one end pivotally attached to the other end of said linkage means, the other end of said second lever having means for sensing the position of the related control surface of the desired type configuration positioned for a printing operation such that upon engagement of the sensing means with the related control surface, the linkage means is moved to position the stud on the lever for varying the force that is transmitted by said lever to the hammer for taking an impression of said type.

No references cited.