

June 28, 1960

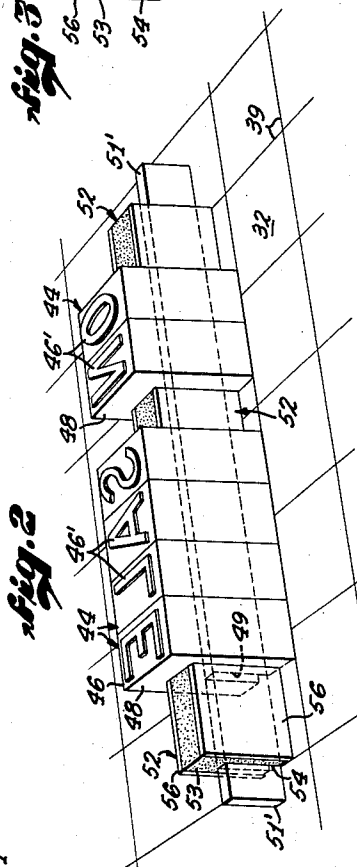
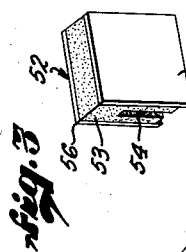
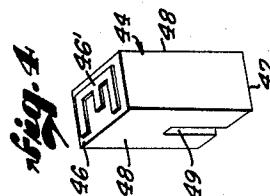
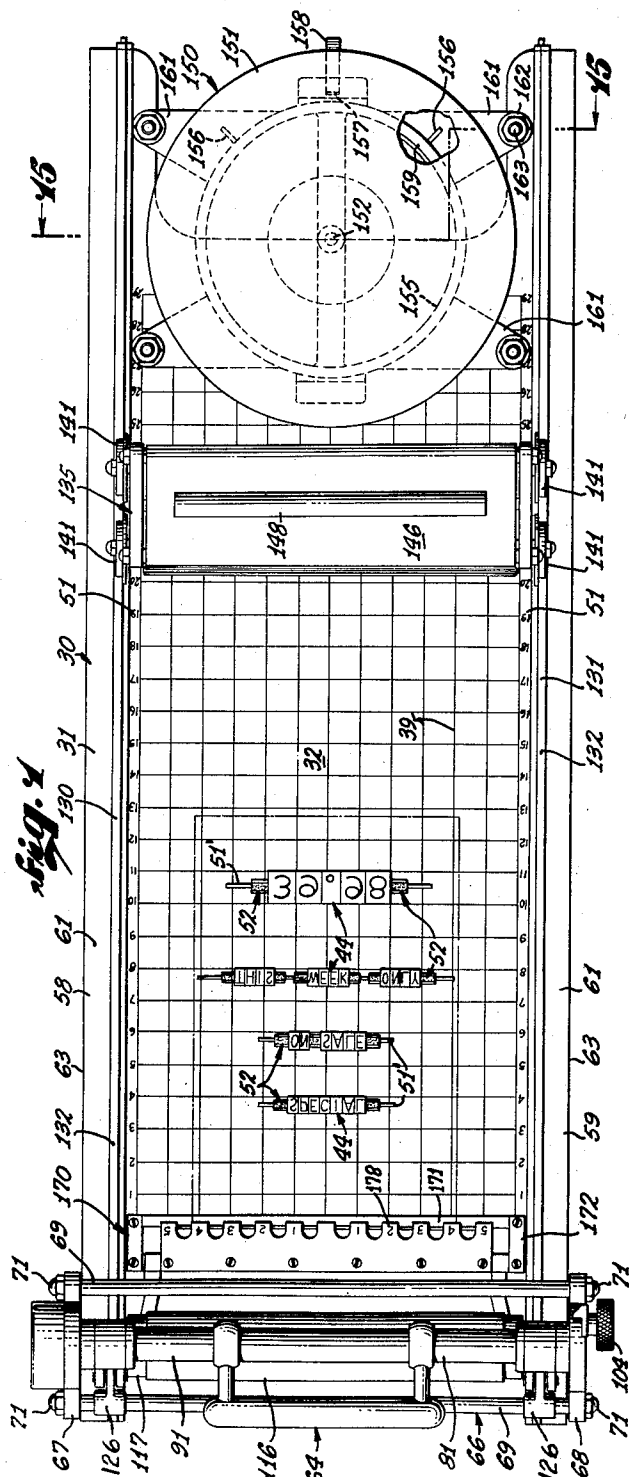
M. L. WILLIAMS

2,942,544

PRINTING MACHINE

Filed Feb. 8, 1957

6 Sheets-Sheet 1



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Albert M. Herzig

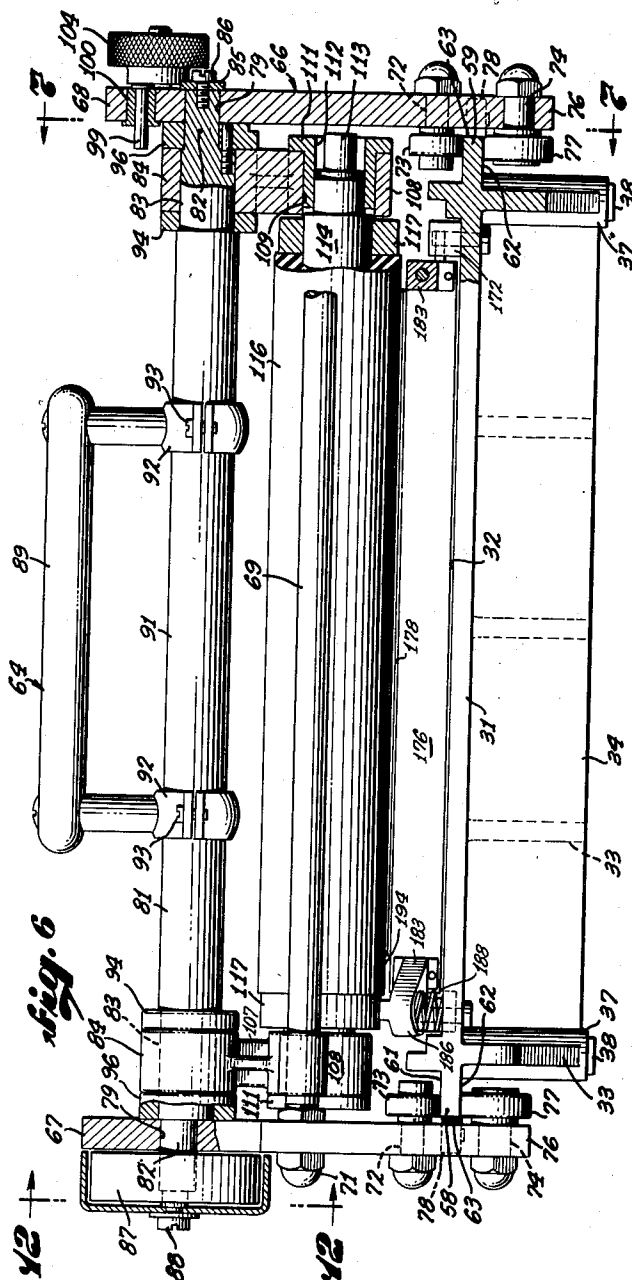
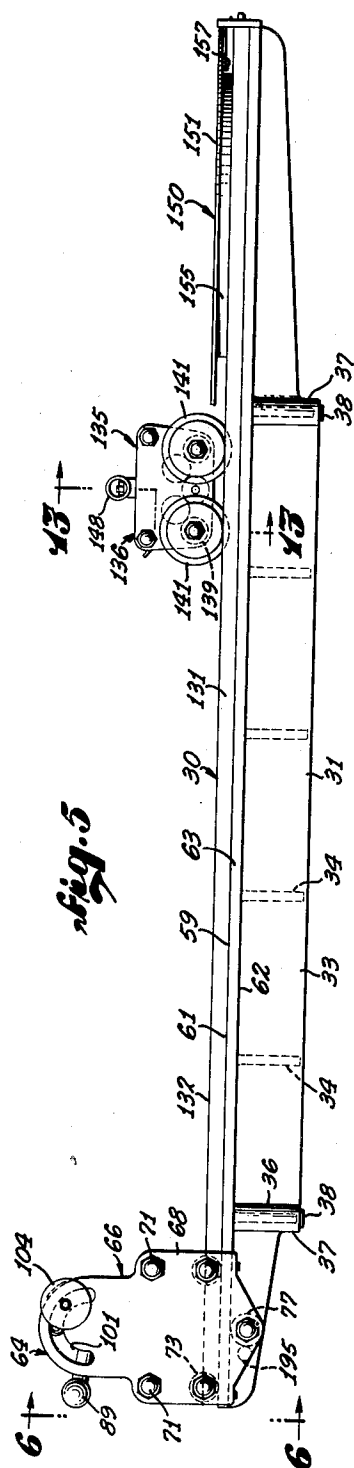
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6 Sheets-Sheet 2



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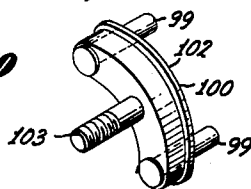
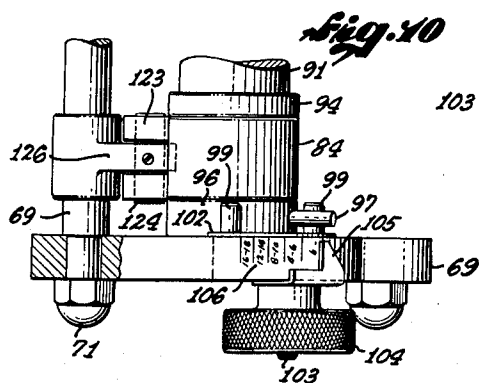
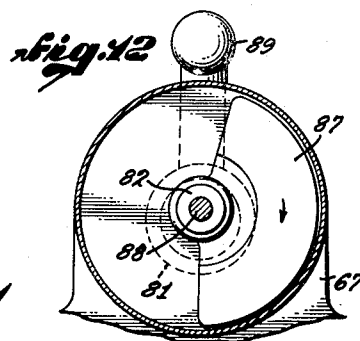
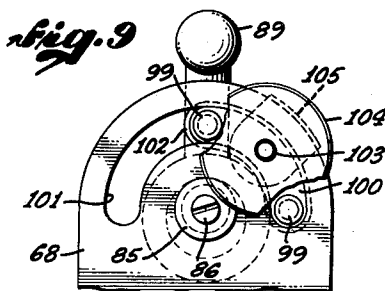
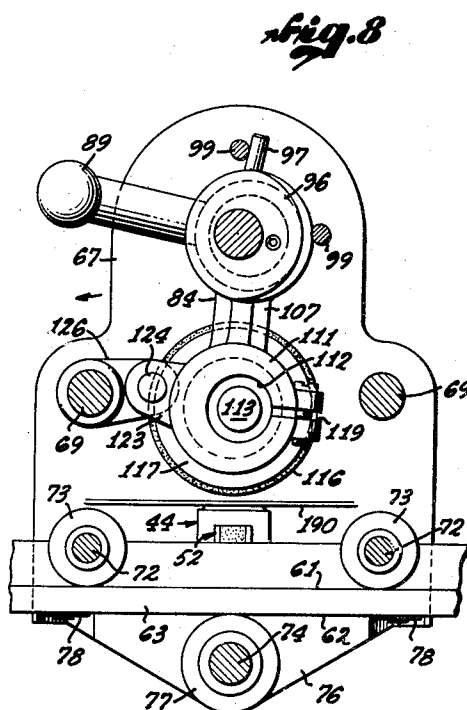
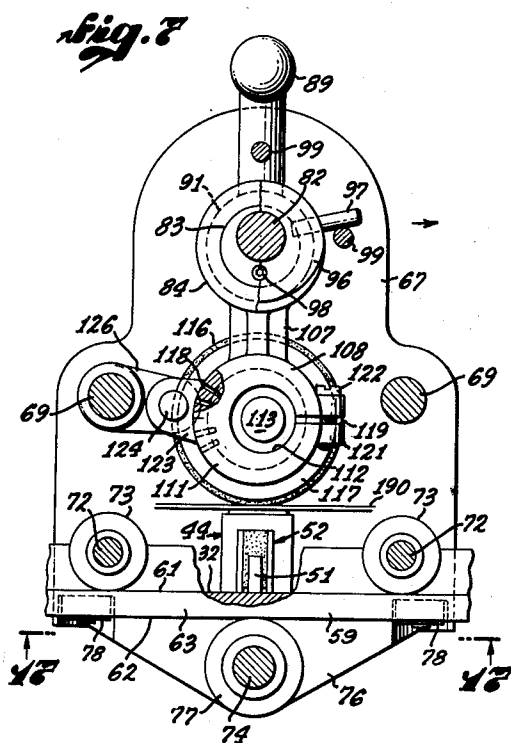
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6 Sheets-Sheet 3



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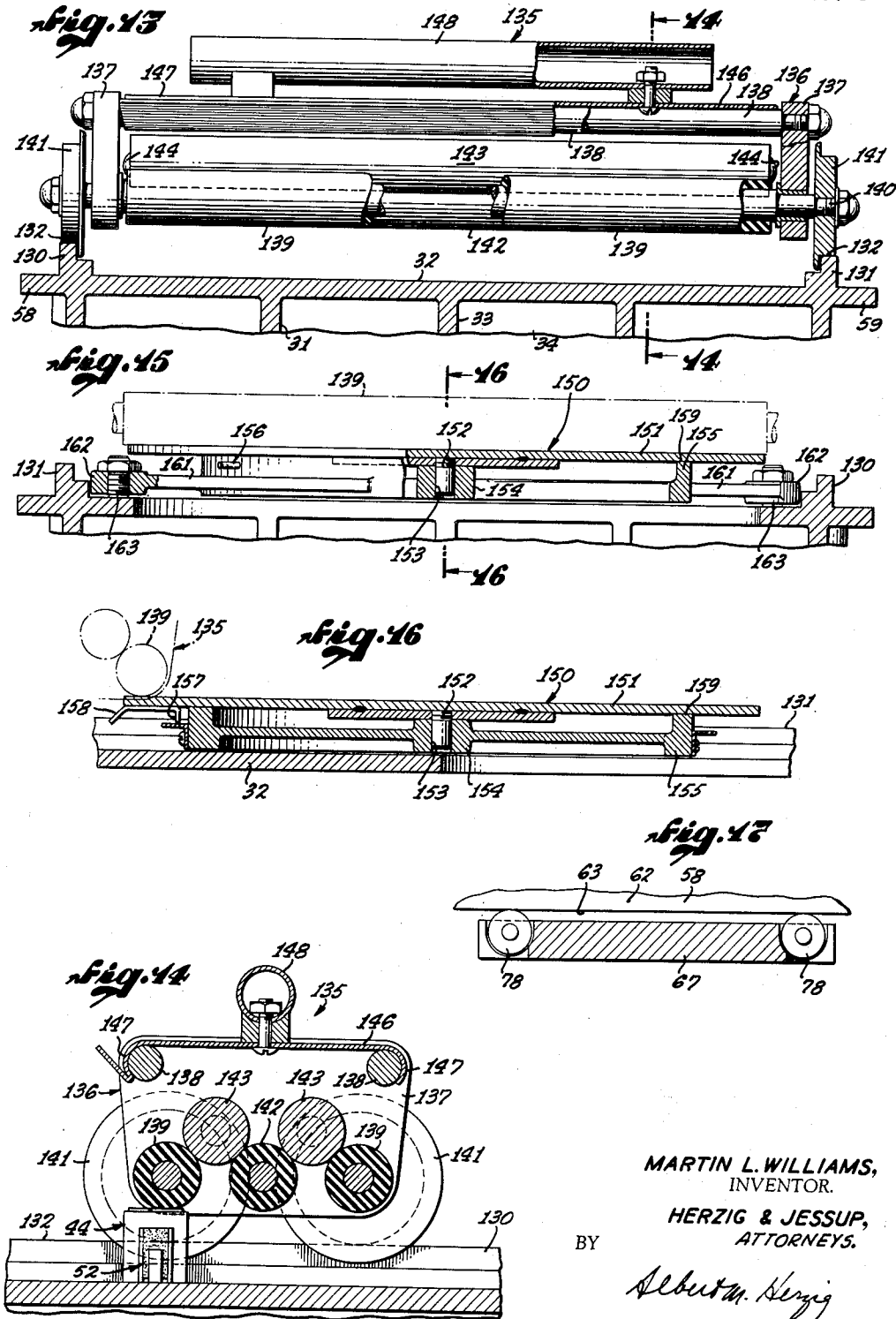
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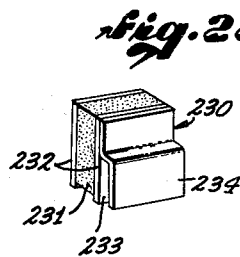
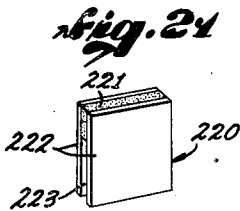
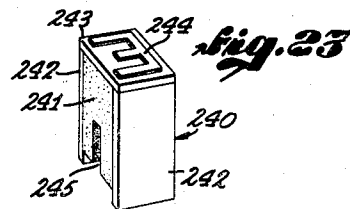
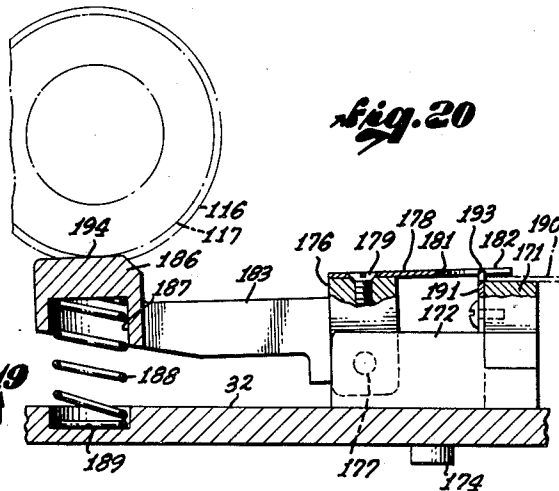
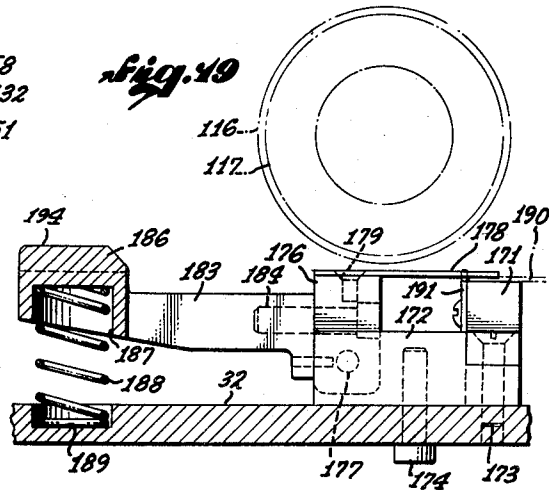
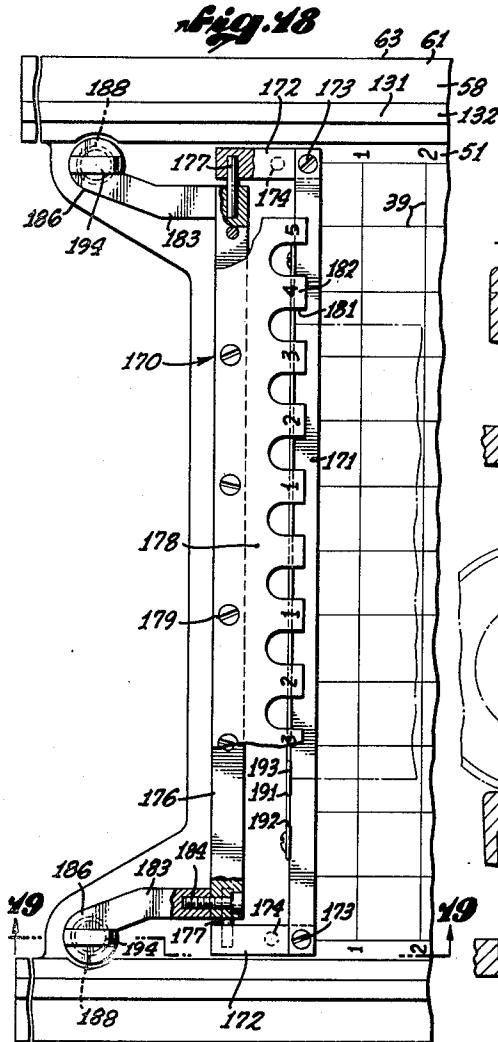
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6 Sheets-Sheet 5



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PRINTING MACHINE

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6 Sheets-Sheet 6

fig. 24

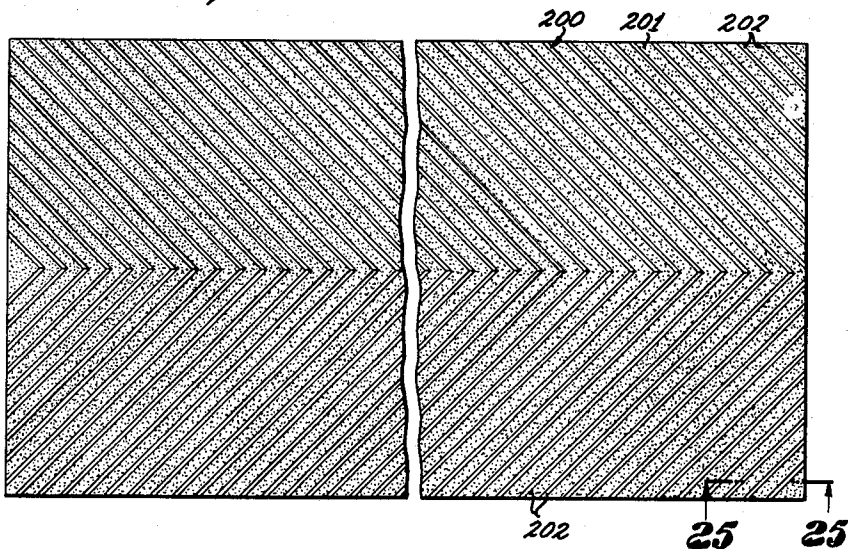


fig. 26

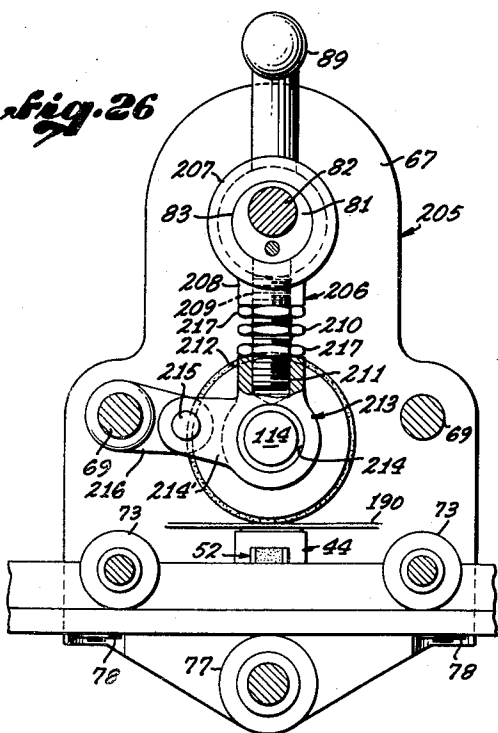


fig. 25



fig. 27

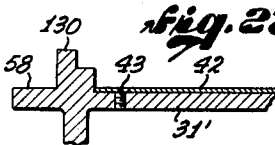
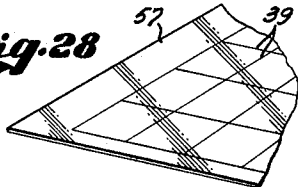


fig. 28



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2,942,544

PRINTING MACHINE

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Filed Feb. 8, 1957, Ser. No. 639,024

6 Claims. (Cl. 101-269)

This invention relates to a printing machine, and more specifically to a press-type printing apparatus for printing signs and show cards of paper-board card, or the like, particularly, but not necessarily, in multiple quantities.

In large department stores, supermarkets, chain stores or the like, signs and show cards of various sizes and shapes are almost constantly needed to advertise prices and/or description of merchandise or products or changes thereof. In such establishments, prices and merchandise vary considerably throughout the year, due to seasonal changes, special sales, changes in merchandise or other such instances, requiring constant changes of signs and show cards throughout the store to meet the situation.

In most instances, only a limited quantity of such signs are needed making it impractical to use conventional printing machines and methods which are rather large in size, difficult to set up and expensive to maintain. It is likewise impractical to use the services of professional printers for such limited quantities because the cost of printing is determined primarily by the initial set-up of type rather than by quantities of printed matter. Also, in most instances, changes are sudden and signs are required in less time than professional printers can normally supply them.

It is therefore an object of this invention to provide a new and improved press-type printing machine which is economical to manufacture, requires a minimum amount of storage space and is capable of mass-production, and interchangeability of parts.

Another object of this invention is to provide a new and improved printing machine which provides an improved arrangement of component parts relative to a printing bed means and improved means for the movement of said parts to facilitate the operation of the machine with a high degree of speed, accuracy, and precision.

A further object of this invention is to provide a printing machine of the desired character described, which includes improved means for automatically gripping a paper-board card to be printed, when such gripping means is desirable, preferably when an impression means is manually operated, to minimize the operations during use of the machine, and thereby appreciably increase the amount of cards printed in a given time.

Yet another object of this invention is to provide a printing machine incorporating new and improved provisions for a movable impression means which is capable of smooth operation, uniformly even impression force applied to the card and type means located on the bed, and accurate adjustment for various thicknesses of paper-board card to be used.

Another object of this invention is to provide a printing machine that provides improved manually or otherwise operated inking means to apply ink to the printing surface of the type during the printing operation.

A still further object of this invention is to provide

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a printing machine which includes an improved ink-supply means which is preferably rotatable and movable along the bed of the machine to supply ink to the ink-rollers in selective locations of said bed which are more advantageous and time-saving during the printing operation.

Another object of this invention is to provide an improved securing means for accurately and positively positioning the type means on the bed means on a printing machine of the general character described and further, to provide improved type-means to be used.

It is a general object of this invention to provide a new and improved press-type printing machine which overcomes disadvantages of prior methods and devices heretofore intended to accomplish similar purposes, i.e. for printing signs, show cards, and the like in single or multiple quantities.

These and other objects of this invention will be readily apparent to one skilled in the art from the following detailed description of the drawings, wherein:

Figure 1 is a top plan view in elevation of a printing machine embodying this invention;

Figure 2 is an enlarged perspective view showing a preferred embodiment of type means according to this invention and a preferred form of securement means to secure said type means to a bed means;

Figure 3 is a perspective view of the securement means shown in Figure 2;

Figure 4 is a perspective view of a type means as used in Figure 2;

Figure 5 is a side view in elevation of the preferred embodiment of this invention as shown in Figure 1;

Figure 6 is an enlarged end view in elevation, partly shown in section, as seen on the lines 6-6 of Figure 5;

Figure 7 is an enlarged vertical sectional view as taken on line 7-7 of Figure 6, showing the impression means in its lowermost position;

Figure 8 is a vertical sectional view similar to Figure 7, showing the impression means in its uppermost position;

Figure 9 is a fragmentary side view in elevation of a portion of the impression means, showing the adjustment means as embodied in this invention;

Figure 10 is an enlarged fragmentary top plan view of a portion of the impression means;

Figure 11 is an enlarged perspective view showing in detail a portion of the adjustment means used in the impression means;

Figure 12 is an enlarged vertical sectional view as taken on a line 12-12 of Figure 6;

Figure 13 is an enlarged sectional view, with parts broken away, as taken on a line 13-13 of Figure 5, showing the inking means anticipated by this invention;

Figure 14 is an enlarged vertical sectional view as taken on a line 14-14 of Figure 13 showing the inking means in greater detail;

Figure 15 is an enlarged vertical sectional view as taken on a line 15-15 of Figure 1, showing in greater detail the ink-supply means according to this invention;

Figure 16 is an enlarged vertical sectional view as taken on a line 16-16 of Figure 15;

Figure 17 is an enlarged horizontal sectional view as taken on a line 17-17 of Figure 7, showing the side thrust bearings of the impression means frame;

Figure 18 is an enlarged fragmentary plan view, with parts broken away for greater clarity, of the card-holding means embodied in this invention;

Figure 19 is a vertical sectional view as taken on a line 19-19 of Figure 18 showing the clamping means incorporated in the card-holding device of Figure 18;

Figure 20 is a vertical sectional view similar to Figure

19, showing the clamping device in an unclamped or open position;

Figure 21 is an enlarged perspective view similar to Figure 3 showing a modified form of a securement means for the type means;

Figure 22 is an enlarged perspective view similar to Figure 3, showing a further modified form of securement means;

Figure 23 is an enlarged perspective view similar to Figure 4, showing a modified form of a type means which may be used in a printing machine as described;

Figure 24 is an enlarged top plan view in detail, showing a modified form of bed means which may be embodied in this invention;

Figure 25 is an enlarged vertical sectional view as taken on a line 25—25 of Figure 24;

Figure 26 is an enlarged vertical sectional view similar to Figure 7, showing a modified form of the adjustment means for the impression means;

Figure 27 is an enlarged fragmentary horizontal sectional view showing a modified form of a bed means; and

Figure 28 is a fragmentary perspective view of a portion of a modified form of calibrated sheet which may be used in this invention.

Referring to the drawings, there is shown by way of illustration, but not of limitation, a preferred embodiment of a press-type printing machine 30 comprising an elongated frame 31 which is preferably rigidly formed as by casting or the like.

The frame 31 includes a substantially rectangular horizontal bed portion 32, reinforced as on the underside thereof by a plurality of longitudinal and transverse ribs 33, 34 respectively. The ribs may be thickened at selective portions as indicated at 36 to form a plurality of downwardly extending legs 37 optionally provided with adjustable bearing pads 38 to facilitate leveling of the frame.

The bed 32 as previously mentioned, is horizontally disposed on the frame 31 and may be formed integrally therewith as shown. Preferably the bed 32 is scored on the upper surface thereof as indicated by the longitudinal and transverse lines 39 (see Figures 1 and 2) and additionally provided with suitable indicia as indicated at 51 or otherwise marked to facilitate lay-out and composition of type means in preparation for printing. The bed 32 is preferably formed of a ferrous material such as cast-iron or the like for a reason which will be hereinafter described. It may however be formed of a separable sheet 42 of ferrous material, such as steel or the like, removably fixed to the upper surface of a frame 31' (see Figure 27) as by screws 43 or the like. The frame 31' may be formed in this latter instance of a lighter weight material such as cast-aluminum, or the like, where it is desirable to decrease the weight of the frame.

As best seen in Figures 2, 3 and 4, a plurality of individual type-means 44 are provided for placement on the bed means to imprint characters of desired form in the printing operation. The type-means 44 are preferably substantially rectangular in configuration with flat parallel upper and lower faces 46, 47 respectively. The lower face 47 of each type means 44 is adapted to rest on the flat bed 32 whereas the upper faces 46 are provided with letters, numerals or other desired characters 46' to be imprinted.

The type-means 44 are preferably additionally provided with substantially vertical flat sides 48, adapted to be placed side-to-side in abutting relationship to form words or numerical combinations desired. Each type-means 44 includes a transverse slot or groove 49 to nest over an alignment bar 51' conforming in configuration to the groove 49 and extending therethrough to align type pieces in abutting relationship when arranged in such combinations described.

The type-locking means 52, preferably of magnetic composition, is provided, to removably secure the type

means to the bed 32. Said locking means preferably comprises a substantially rectangular body 53 most desirably of a magnetic ceramic material, cast or otherwise formed with a groove 54 of sufficient depth and width to snugly circumscribe the bar 51'. A pair of opposing plates 56 are provided adjacent said body 53 and are preferably formed of a ferrous material such as soft-iron, or the like, to form a permanent magnet.

It is contemplated by this invention that the type-means 44 are first arranged in any desired combination upon the bar 51'. The type-locking means 52 are then mounted over the bar 51' at each end of said combination of type-means and in close abutting relationship to the type-means 44 or groups thereof. The resulting assembly is then placed upon the bed 32. The type-locking means 52, being magnetic, will adhere to the bed 32 of ferrous material, in tight relationship, locking the type pieces 44 thereon. Additional type-locking means 52 of varying lengths or groups of locks 52 of uniform length may be inserted between words or combinations to space them along the bar 51' on the bed 32.

It is also within the scope of this invention to provide a variety of relatively thin transparent or other non-ferrous sheets 57 (see Figure 28), such as plastic or paper which may be placed over a ferrous bed like 32 described, individual sheets having various scales and/or indicia inscribed or printed thereon to facilitate printing composition of various scales. Such sheets will not disturb the magnetic field of the type-locking means 52, permitting the locks 52 to firmly hold type-means 44 on the bed as described.

A pair of substantially parallel outwardly extending longitudinal tracks 58, 59 are provided at opposing longitudinal edges of the frame 31 adjacent to the bed 32 and may be optionally formed integrally therewith as shown. The tracks 58, 59 are preferably formed with substantially horizontal flat upper and lower surfaces 61, 62 respectively and a substantially vertical flat outer surface 63. The outer surfaces 63 are preferably substantially parallel to each other to form opposing bearing surfaces. The tracks 58, 59 provide means to support and guide an impression means 64.

The impression means 64 comprises a frame 66 transversely disposed over the frame 31 for longitudinal reciprocal movement relative to the bed means 32. The frame 66 includes a pair of vertical side plates 67, 68 at opposing ends thereof, tied together as by elongated tie-rods 69, which are preferably adjustably secured to the plate as by nuts 71.

As best seen in Figures 6, 7 and 8, the side plates 67, 68 are provided at the lower edges thereof with a pair of inwardly extending horizontal stub shafts 72 on which a pair of upper support rollers 73 are rotatably mounted to engage the upper surfaces 61 of the longitudinal tracks 58, 59 and support the frame 66 thereon for longitudinal reciprocal movement as previously mentioned.

The plates 67, 68 are additionally provided with a similar stub shaft 74 on a lower extension 76 of the plates on which a stabilizing roller 77 is rotatably mounted to engage the underside surfaces 62 of the tracks 58, 59. The roller 77 prevents undesired lifting of the impression means 64 from the tracks 57, 58 and further resists the thrust force imparted by the impression means as will be described.

As best seen in Figures 7, 17, a pair of thrust roller bearings 78 are preferably provided at the inner surfaces of the plates 67, 68 to bear against the outer surfaces 63 of the tracks 58, 59, and prevent side sway of the frame 66 along the tracks.

The upper portions of the plates 67, 68 are provided with aligned apertures 79 to rotatably support an elongated eccentric horizontal shaft 81. The shaft 81 preferably is provided with reduced eccentric ends 82 rotatably supported within the apertures 79, and bearing surfaces 83

adjoining the ends 82 to rotatably support a pair of depending hanger brackets 84.

One end 82 of the shaft 81, supported as by the forward side plates 68, is preferably secured to the plate as by a thrust washer 85 and screw 86. The other end like 82, preferably extends through the apertures of the rearward plate 67 and is secured within a counterweight 87 as by a screw 88 at the outer side of side plate 67.

A handle 89 is secured to an enlarged central portion 91 of the shaft 81 as by split-clamp extensions 92 of the handle and screws 93. As best seen in Figure 12, the handle 89 and counterbalance 87 are preferably fixed to the shaft 81 in such relationship that the counterbalance 87 will normally urge the handle 89 into the substantially horizontal position shown in Figure 8 for a reason which will be hereinafter described.

The shaft 81 is further provided with a pair of inner thrust washers 94 adjacent to the inner surfaces of the hanger brackets 84 and a pair of outer washers 96 adjacent to the outer surfaces of the brackets 84.

The foremost washer 96 is preferably provided with a radial stop pin 97 extending outwardly therefrom and keyed as by a set screw 98 or the like to the bearing portions 83 of the shaft 81. The pin 97 is adapted for arcuate movement when the shaft 81 and washer 96 are rotated, and is limited as by a pair of inwardly extending limit pins 99 of an arcuate adjustment slide 100.

The slide 100 is slidably disposed in an arcuate slot 101 of the upper portion of the forward side plate 68, substantially concentrically disposed in the plate relative to the ends 82 of the shaft 81 and is likewise preferably provided with a flange 102 on the inner side thereof abutting the inner face of the forward plate 68. The slide also includes an outwardly extending externally threaded pin or shaft 103 extending beyond the outer face of the plate 68 and secured by an enlarged internally threaded nut or knob 104. The limit pins 99 are preferably spaced to provide substantially a 90° travel of the stop pins 97 about the center point of the shaft end 82. The slide 100 is movable within the slot 101 and preferably provides substantially a 90° arcuate adjustment of the limit pin 99. The slide 100 may be secured in a predetermined position by tightening of the knob 104, to determine the primary and secondary position of the pin 97 and the vertical eccentricity of the shaft end 82 relative to shaft 81 as will be hereinafter described.

An indicator 105 may be disposed on the shaft 103 and extending over the periphery of the arcuate upper edge of the plate 68 to move with the slide 100. Indicia 106 may be provided on the edge of plate 68 to facilitate accurate adjustment of the slide.

The depending hangers 84 include downwardly extending webs 107 and enlarged bosses 108. The bosses 108 are transversely bored as at 109 to receive therein a flanged adjustment bushing 111. The bushings 111 are preferably eccentrically bored as at 112 to rotatably support reduced ends 113 of an elongated impression-roller shaft 114. The shaft 114 includes a centrally located elongated sleeve 116 of compressible resilient material such as rubber, neoprene or the like, and a pair of collars 117 of a hardened non-compressible material such as steel or the like disposed adjacent to the hangers 84.

The bushings 111 are preferably rotatable but have a tight fit within the bore 109 of the bosses 108 to permit adjustment of the distance between the centers of the shaft 114 and 81. A plurality of radial apertures 118 may be provided on the periphery of the bushing flange for insertion of a tool (not shown) to rotate the bushing relative to the hanger 84 and adjust the distances described. The bosses 108 are preferably split as at 119 to facilitate insertion and rotation of the bushings 111 and are provided with horizontally disposed lugs 121. Screws like 122 may be used to tighten the bosses to secure the similarly split bushings 111 in a desired adjusted position.

The hangers 84 preferably include outwardly extending

bifurcated lugs 123 which are hingedly secured as by a pin 124 to inwardly extending bracket arms 126 pivoted on the outer tie-rod 69 to prevent side sway of the hangers 84 about the shaft 81.

It is apparent by the foregoing description that the impression roller sleeve 116 is supported by hangers 84 of the frame 66 and is adapted to be raised in an upper position to clear the type-means 44 magnetically or otherwise secured to the bed 32, when the handle 87 is in a normal downmost position as held by the counterbalance 87. The impression roller sleeve 116 is capable of being depressed downwardly to impress a resilient force on the type-means 44. When the handle 89 is rotated to its uppermost position, to rotate the shaft 81, the portion 83 of the shaft is revolved about the eccentric end 82 of the shaft to lengthen the vertical offset between the centers of 81, 82 and lower the sleeve. The uppermost and lowermost positions of the handle 89 may be determined by the position of the slide 100 and its limiting pins 101 so that when the slide 100 is in its furthestmost clockwise adjusted position, the impression roller shaft 114 and sleeve 116 is in its downmost position as for thin paperboard card or the like, and conversely, when the sleeve 100 is in its furthestmost counterclockwise adjusted position, the sleeve 116 is in its uppermost position when lowered, as for cards of heavier thickness.

The frame 31 is provided with a pair of elongated longitudinal rails 130, 131, adjacent to the bed means 32 and spaced inwardly from the opposing tracks 58, 59 respectively. The rails 130, 131 may be optionally formed integrally of the frame 31 and preferably with flat upper surfaces 132 in a common horizontal plane, extending substantially the length of the frame 31 to support an inking means 135 for longitudinal reciprocal movement relative to the bed 32. Inasmuch as the ink supply means is adjustable and readily movable to any position along the bed portion 32, it may be brought anywhere to the left, relative to Figure 1, for example, and, if desired, immediately adjacent the card-holding means 170, or the type 44. Thus, it is not necessary to move the inking means 135 from one end of the bed to the other, as in prior art devices, and therefore rapid production and duplication of smaller signs is facilitated.

The inking means 135 comprises a frame 136 transversely disposed over the bed 32, including a pair of forward and rearward vertical side plates 137 adjustably joined as by tie-rods 138. A pair of elongated driven inking rollers 139 are rotatably secured on the lower portions of the side plates 137. Reduced ends 140 of the rollers extend through the plates 137 and are non-rotatably fixed in enlarged flanged support rollers 141. The rollers 141 are supported on the upper surfaces 132 of the rails 130, 131 to roll thereon and support the frame 136 for longitudinal reciprocal movement, as previously mentioned. An idler roller 142 is rotatably disposed on the frame 136 between the driven rollers 141. The driven rollers 139 and idler roller 142 are preferably mounted in a common horizontal plane and provided with compressible resilient sleeves of rubber, neoprene, or the like, for resilient contact with the type means 44, as best seen in Figure 14. A pair of elongated idler rollers 143 are provided in juxtaposition to the rollers 139, 142 and supported thereon. The rollers 143 may be formed of plastic, aluminum, or other suitable material and are provided with end bearing surfaces or buttons like 144 to reduce friction and/or end wear against the side plates 137. An elongated cover 146 may be formed of a sheet metal or other suitable material with down-rolled opposing edges 147 to snap over and be retained by the tie-rods 138. A handle 148 is secured to the cover 146 as by bolts and nuts or the like to facilitate manipulation of the frame by the operator.

As best seen in Figures 1, 15, 5 and 16, an ink-supply means generally referred to by the numeral 150 is disposed at one end of the bed 132, to the right as viewed

in Figures 1 and 2. The ink supply means 150 comprises a substantially horizontal disc-like or otherwise shaped platform 151 including a depending pivot pin 152 fixed centrally thereof. The pin 152 is rotatably disposed in a vertical bore 153 of a centrally located boss 154 of a base member 155. The base 155 is preferably cylindrical in configuration and is provided with a pair of radial limit pins 156 (see Figures 1 and 15) extending outwardly and engageable with a downwardly extending portion 157 of a handle 158 disposed on the underside of the platform 151 to limit the rotation of the platform relative to the base 155. The outer peripheral edge of the platform 151 preferably supported by the upper surface 159 of the base 155.

The base 155 includes a plurality of horizontally disposed legs 161 provided with enlarged outer ends 162 vertically threaded to receive adjusting screws 163. The screws 163 provide adjustment means to raise or lower the platform 151 for desired intimate contact with the inking rollers 139, 142 of the inking means 135. The screws 163 also provide slides for longitudinal movement of the ink supply means 150 on the bed 32 to bring the ink supply means as close as possible to the type-means such as 44 set up on the bed 32.

As best seen in Figures 1, 18, 19 and 20, a card-holding means 170 is transversely disposed at the other end of the bed 32, to the left as viewed in Figure 1, wherein a paper-board card to be printed is held in clamped relationship over the bed 32.

The card-holding means 170 comprises an elongated stationary member 171 fixed at its outer ends to mounting brackets 172 as by screws 173. The brackets 172 may be secured to the bed 32 as by cap screws 174.

A movable member 176 is pivotally secured in the outer ends of the brackets 172 as by stub shafts 177, and includes a substantially horizontal plate member 178 overlying the stationary member 171. The plate 178 may be secured to the movable member 176 as by screws 179 or the like and preferably includes a plurality of cut-outs 181 to form inwardly extending fingers 182 substantially overlying the stationary member 171.

A pair of outwardly extending arms 183 are secured as by cap screws 184 to the moveable member 176. Arms 183 include enlarged outer ends 186 with vertical bores 187 to receive compression springs 188. The springs 188 extend into vertical blind bores 189 of the bed 32. The bores 187 and 189 act as keepers for the spring. The springs 188 urge the arms 183 upwardly to pivot the moveable member 176 about the horizontal pivot pin 177 and clamp the plate member 178 against a paper-board card 190 indicated in broken lines in Figures 19 and 20, inserted between the plate 178 and the stationary member 171. A vertical strip 191 may be secured at the outer side of the stationary member 171 and provided with a plurality of notches 192 form fingers 193 extending upwardly between the fingers 182 of the plate 178 to form an abutment stop for the paper-board card 190 inserted therebetween.

The enlarged ends 186 of the arms 183 are preferably formed with the upper surfaces 194 in a horizontal plane higher than the lowest point of the collars 117 of the impression means 64. When the impression means 64 is in a normal outer position, to the left as viewed in Figure 5, the collars 117 engage the surfaces 194 to compress the springs 188, raise the plate 178 and release the card 190. When the impression means is moved longitudinally towards the central portion of the bed means, the collars 117 disengage the surfaces 194, and the springs 188 urge the plate 178 automatically into a clamping position to clamp the card like 190.

Referring to Figure 21, there is illustrated a modified form of type-locking means contemplated by this invention and referred to generally by the numeral 220.

Type-locking means 220 comprises a substantially rectangular body 221 cast or otherwise formed of a ceramic-

iron magnetic compound with opposed elongated side plates 222. The body 221 is substantially shorter than the side plates 222 to form therewith a groove 223 of appropriate dimensions to receive therein the alignment bar 51' holding type means like 44 as described in the previous embodiment.

A further modified type-locking means 230 is illustrated in Figure 22 wherein a short rectangular body 231 of magnetic composition is disposed between a pair of side plates 232 to form a permanent magnet.

A groove 233 is formed by an offset plate 234 spot-welded or otherwise secured to a plate like 232, to receive therein an alignment bar like 51' as previously described.

The type-locking means 220, 230 of Figures 21, 22 respectively are particularly adapted to permit sets of type means on bars like 51' to be placed on the bed means 32 in close proximity when desired.

Referring to Figure 23 there is shown a modified form of a type-means 240, adapted to be magnetically self-locking to the bed means.

The type-means 240 comprises a body 241 cast or otherwise formed of a magnetic ceramic compound and circumjacent side plates 242 of ferrous material such as soft-iron or the like to form a permanent magnet.

A transverse top plate 243 is welded or otherwise fixed to bridge the upper ends of the side plates 242. The upper surface of top plate preferably includes a letter, numeral or other desired character 244 to be printed.

A groove 245 may be provided to facilitate alignment of individual type means like 240 as by the placement over a bar like 51'.

Referring to Figure 24, there is shown a modified form of a bed means indicated generally as 200. The bed means 200 comprises a base 201 cast or otherwise formed of a ceramic material containing powdered iron or the like which is magnetized. A plurality of metal strips 202 of ferrous material, such as soft-iron or the like, is preferably cast integrally with the base 201. As seen in Figure 25, the strips 202 are preferably vertically cast integrally with the base with top edges substantially flush with the top and bottom of the base 201. The strips 202 are preferably diagonally arranged in a herringbone-like pattern, to provide a maximum magnetic surface for the placement of the type-means like 44. It is, of course, understood that with a base means of this embodiment, type-holders such as 52 would not be needed. Type-means similar to 44, made of ferrous material, would be attracted to the magnetic field of the base 200 for firm adherence thereto.

Referring to Figure 26, there is shown a modified form of the impression means generally referred to by the numeral 205 wherein like parts previously described are referred to by like numbers. Impression means 205 includes the side plates described in the previous embodiment, one of which is shown at 67, and an elongated eccentric shaft 81. A pair of hangers 206 are provided at each end of the shaft 81 adjacent to the sides 67, which include enlarged bosses 207 supported on surfaces like 83 of the shaft 81. The bosses 207 are provided with downwardly extending internally threaded portions 208 to receive one end 209 of a turnbuckle 210. The other end 211 of the turnbuckle 210 is threadedly received in an upwardly extending portions 212 of a bracket 213. The brackets 213 are enlarged at their lower ends and are preferably concentrically bored as at 214 to support the reduced ends of the impression roller shaft 114 in a substantially horizontal plane. The brackets 213 are additionally provided with outwardly extending bifurcated ears or lugs 214' hingedly secured as by pins 215 to inwardly extending brackets 216 mounted on a tie-rod 69. In this embodiment, adjustment is secured by the rotation of the turnbuckle 210 by means of an enlarged central non-circular portion. Locknuts 217 may

be provided to lock the turnbuckles in the desired adjusted position.

Operation of above apparatus

To operate the printing machine embodying this invention, the type-means 44 are arranged in desired combinations upon the shaft 51', clamped in position by the magnetic type holders 52, and placed upon the bed 32 as desired. The impression means 66, at this time, is at its leftmost position with the collars 117 depressing the springs 188 to hold the movable member 176 of the card-holding means 170 in its uppermost position ready to receive a paper-board card like 190. The impression means is adjusted by the operator by means of the slide 100 in its cooperating arcuate slot 101 to adjust the relative position of the roller sleeve 116 for the amount of impression desired. At this time, any adjustment of the bushing 111 desired is accomplished to further achieve this adjustment.

The operator may then place printing ink upon the platform of the ink supply means 150. If desired, an ink of a uniform color may be spread over the platform 151, or on only portions thereof in alignment with type-means such as 44 which are desired to be printed in a particular color, for instance, one side of the platform 151 may bear a printing ink of one color, whereas the other side of the platform may be supplied with a printing ink of another color to print a show-card with a plurality of colors. The platform 151 may be rotated to align the inked areas with the type-means desired to be printed.

The inking means 135 is then moved longitudinally on the rails 130, 131 towards the ink supply means 150 to bring the ink rollers 139, 142 into contact with the platform 151. The printing ink is spread over the driven rollers like 139, to the adjacent roller 143, roller 142, the other idler roller 143, and then to the other driven roller 139.

It is to be noted that a large supply of printing ink may be carried by the rollers of the means described, which is particularly desirable when a card of large size with a plurality of type is desired to be printed.

A card like 190 is then inserted between the clamping plate 178 and the stationary member 170 into abutment with the stop strip 191.

The impression means 164 is then moved longitudinally on the tracks 58, 59 toward the bed means 32. This movement disengages the collars 117 of the impression roller from the enlarged ends 186 of the card-holding means, permitting the springs 188 to rotate the member 176 to clamp the plate 178 down on the card like 190 and the stationary transverse member 171, clamping the card securely in place. The impression means is moved longitudinally by means of the handle 89. The handle 89 is normally in a substantially horizontal position, being held in this position by the counterbalance weight 87. The force applied to the handle 87 to move the impression means to the right as viewed in Figure 5 rotates the handle upwardly, lowering the impression roller 116 to its downmost position. Additional force to the right will bring the impression roller in contact with the paper-board 190 on top of the printing means 44 to press the paper or card down into intimate contact with the type-means and transfer the printing ink to the underside of the card.

When the impression means passes beyond the type-means, the direction is reversed to move the impression means to the left, as viewed in Figure 5. The operator rotates the handle 89 downwardly, which through the eccentric shaft 81 lifts the impression roller 116 to its uppermost position as seen in Figure 8 to clear the paper-board 190 and remove the pressure therefrom. Additional travel to the normal position of the impression means to the left positions the collars 117 over the enlarged ends 186 of the card-holder means, depressing the springs 188, to automatically release the paper-board 190. A stop 195 in abutment with roller 177 may be provided

to limit the travel of the impression means at the extreme left position. The impression roller or sleeve 116 is adjustable by means of the turn buckle hanger construction 206, at either end, for raising, lowering and/or leveling the same. Any desired adjustment is then secured by the jamb nut or like means.

While I have herein shown and described what I conceived to be the most desired form of my invention, it is to be understood that alterations and modifications thereof may be made in a manner to satisfy the spirit of my invention which is intended to comprehend any and all equivalent devices as comprehended in the following claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A hand-operated printing machine comprising a substantially rectangular frame, a bed means horizontally disposed on said frame, a plurality of type-means, a type-locking means adapted to lock said type-means to said bed means adjacent one end thereof, a card-holding means mounted on said end of said bed means, said means being adapted to hold a card over said type-means for printing, an ink-supply means movably and removably disposed at the other end of said bed means, an inking means reciprocally disposed on said frame adapted to transfer printing ink from said ink-supply means to said type-means, and an impression means reciprocally disposed on said frame to impress the card on said type-means, mounting means mounting said impression means for vertical movement for selectively clearing or engaging said card, relatively fixed spaced stop means cooperating with said mounting means for limiting vertical movement of said impression means to a fixed range, and means for simultaneously adjusting said stop means relative to said mounting means to change the vertical position of the upper and lower limits of said range to thereby adjust the apparatus for cards of different thicknesses.

2. A printing machine according to claim 1, wherein said impression means includes a vertically movable transverse resilient roller element, a handle swingably mounted on said impression means, said handle being connected to said roller through eccentric and link means so that swinging movements of said handle operate to lower said roller element within said fixed range to roll on and impress the paper-board card on the type-means when the handle is manually raised, and conversely, to raise said roller element within said fixed range to clear the paper-board card when the handle is lowered.

3. A printing machine according to claim 2, wherein said impression means includes a counter-balancing means to urge said roller element to and retain it in its raised position until manually lowered by actuating said handle.

4. A printing machine according to claim 1 wherein said inking means includes a transverse frame element movably mounted on said elongated frame for longitudinal reciprocal movement relative to said bed means, a plurality of elongated driven rollers rotatably mounted on said transverse frame element, a pair of enlarged rollers fixed at the ends of each driven roller, said enlarged rollers adapted to roll on the elongated frame and transport the transverse frame, a plurality of elongated idler rollers in juxtaposition to said driven rollers and supported by said driven rollers, said driven rollers and idler rollers accumulating printing ink from said ink-supply means to transfer the printing ink to upper surfaces of said type means.

5. A printing machine according to claim 1, wherein said ink supply means has a base element slidably disposed on said bed means for manual longitudinal movement, and a substantially horizontal platform rotatably supported on said base element on a vertical axis, said base element having a pair of spaced radial stops and said platform having a radial handle fixed thereto, said radial stops cooperating with said handle to limit the rotation of said horizontal platform.

6. A hand-operated printing machine comprising a substantially rectangular frame, a bed means horizontally disposed on said frame, a plurality of type-means, a type-locking means adapted to lock said type-means to said bed means adjacent one end thereof, a card-holding means mounted on said end of said bed means, said means being adapted to hold a card over said type-means for printing, an ink-supply means disposed on said bed means, an inking means reciprocally disposed on said frame adapted to transfer printing ink from said ink-supply means to said type-means, and an impression means reciprocally disposed on said frame to impress the card on said type-means, mounting means mounting said impression means for vertical movement for selectively clearing or engaging said card, relatively fixed spaced stop means cooperating with said mounting means for limiting vertical movement of said impression means to a fixed range, and means for simultaneously adjusting said stop means rela-

tive to said mounting means to change the vertical position of the upper and lower limits of said range to thereby adjust the apparatus for cards of different thicknesses.

References Cited in the file of this patent

UNITED STATES PATENTS

25,008	Gordon	Aug. 9, 1859
830,617	Schlesinger	Sept. 11, 1906
907,070	Mann	Dec. 15, 1908
1,086,263	Antelotti	Feb. 3, 1914
1,516,120	Rooney	Nov. 18, 1924
1,532,360	Zubli	Apr. 7, 1925
1,924,288	Reardon	Aug. 29, 1933
2,034,584	Lamb	Mar. 17, 1936
2,057,843	Oliver	Oct. 20, 1936
2,068,707	Reardon	Jan. 26, 1937
2,181,714	Vandercook et al.	Nov. 28, 1939