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P. R. GLASS ET AL

MARKING MACHINE

Filed April 7, 1925

2 Sheets-Sheet 1

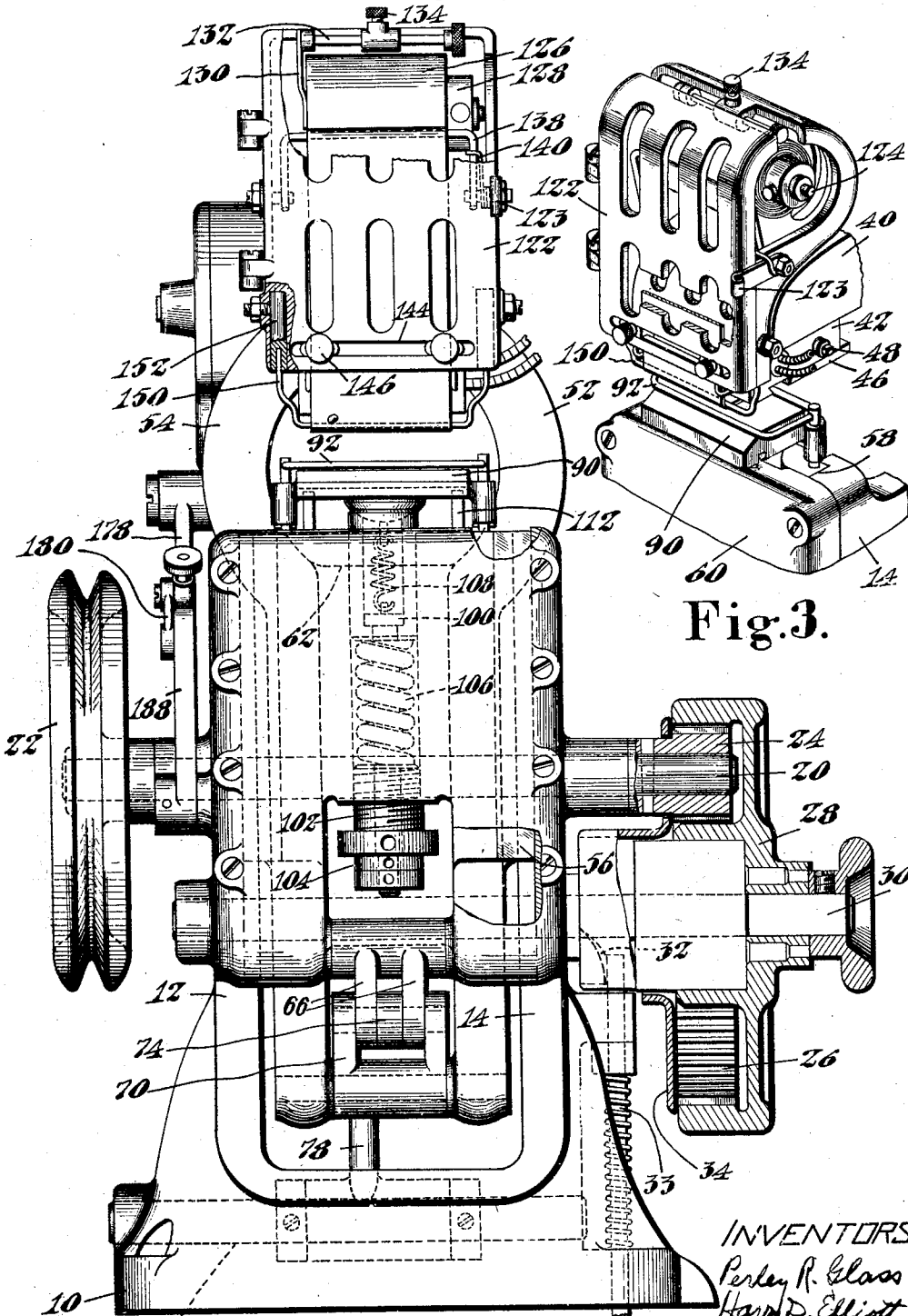


Fig. 3.

Fig. 1.

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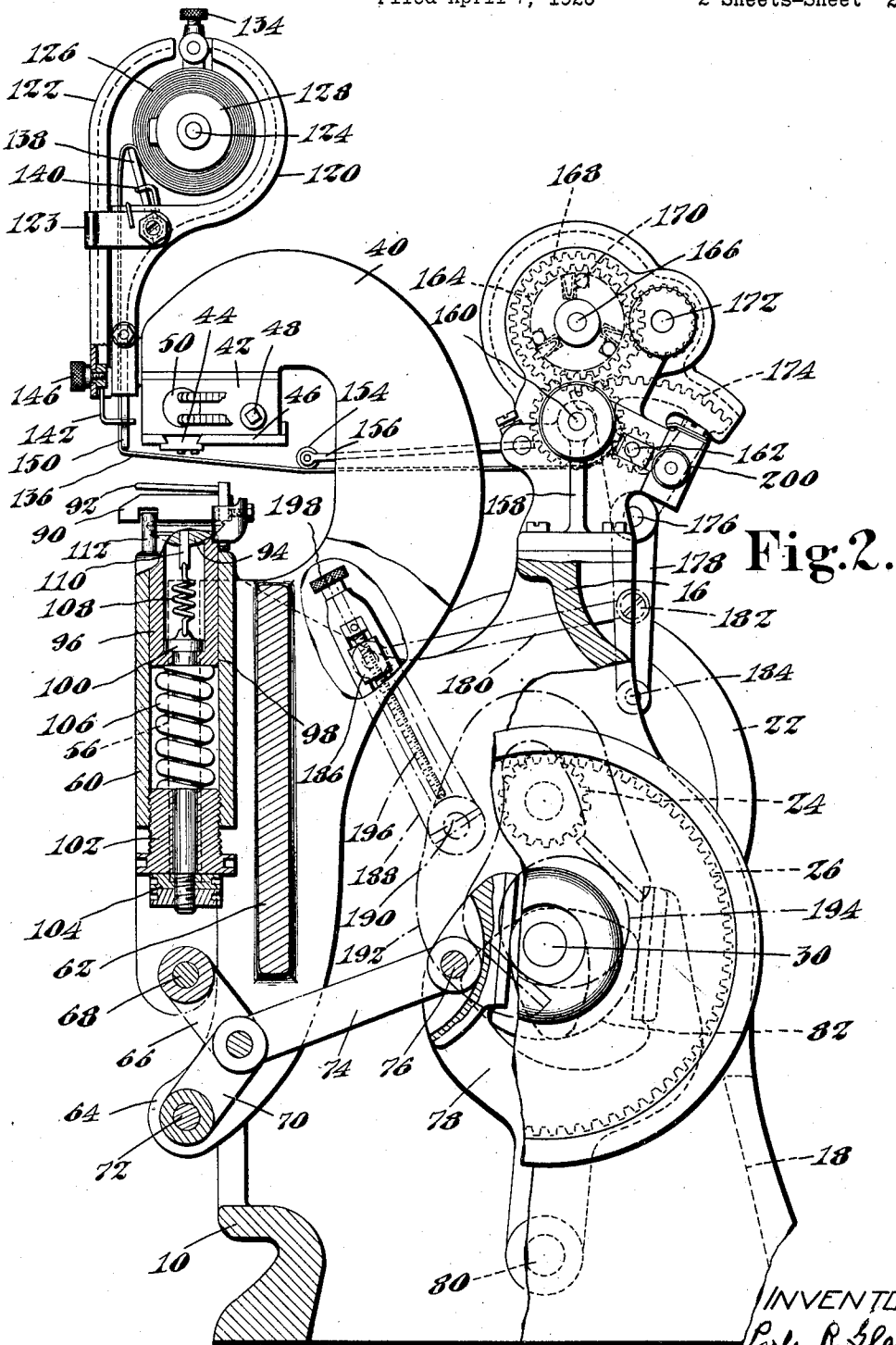


Fig. 2.

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## UNITED STATES PATENT OFFICE.

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## MARKING MACHINE.

Application filed April 7, 1925. Serial No. 21,344.

This invention relates to marking machines and is illustrated as embodied in the type of machine in which a heated die is used to transfer a marking medium to the work.

5 In machines of this type, which are sometimes called embossing machines, the pigment or metallic leaf used as a marking medium is supplied in strip form upon a carrier ribbon of paper. The marking medium is then  
10 applied to the work by pressing against the reverse side of the carrier strip with a heated die. In the operation of such machines considerable pressure is required, which should be applied evenly for a substantial interval.

15 Accordingly, an object of the invention is to provide an improved machine of this type by means of which heavy pressure may be applied to the heated die in a manner calculated to assure an even impression upon the work  
20 while insuring quiet, rapid operation of the machine.

To this end an important feature of the invention relates to the mounting of the movable impression member which latter, in  
25 the preferred form of the device, is a heated die. As illustrated a gooseneck-shaped, die-carrying arm is slidably mounted in grooves provided at the forward part of the frame and retained in position by a cover plate  
30 which carries the co-operating impression member, here a work-supporting table. The illustrated die-carrying arm is made up of laterally spaced members to allow the passage of a strip of marking medium from front  
35 to rear and the lower end of the arm is brought forward into alinement with the impression members so that pressure may be delivered to said arm in alinement with the two impression members as by means of a  
40 toggle which is straightened to deliver the required pressure by power supplied from a cam shaft thereby insuring even heavy pressure and quiet, positive operation.

45 In accordance with another feature of the invention, a work-supporting table is illustrated as mounted in the cover plate which serves as a retaining member for the sliding die-carrying arm. To insure even impressions in spite of inequalities in the thickness  
50 of the work, the illustrated work-supporting table is provided with a spherical portion received in a similarly-shaped socket which in turn is resiliently supported in the above-

mentioned cover plate. Suitable means such as a spring is preferably provided for returning the table to normal position in case it becomes displaced in the operation of the machine. 55

In machines of this type the handling of the strip carrying the marking medium is  
60 made difficult by the fact that the pigment or metallic leaf may be separated from the carrier strip in case it becomes unduly heated by remaining too long in proximity to the heated die. There is, furthermore, a tendency for  
65 the carrier strip to stick either to the work or to the heated die or to both, and it has been found necessary to provide mechanism to insure the separation of the carrier strip from the work and the heated die after the completion of an impression. Again, the convenient handling of the strip requires a take-up mechanism and each new strip must be threaded through this mechanism. 70

In view of the foregoing, other important features of the invention relate to improved  
75 mechanism for supplying and taking up the strip carrying the marking medium and to improved devices for guiding this strip arranged to hold it away from the heated die  
80 when the machine is in its stop position, while still allowing it to come into contact with the die when making an impression. Another novel device facilitates the separation of the work and the strip after the impression has  
85 been made.

These and other features of the invention will be best understood from a consideration of the following specification and claims taken in connection with the accompanying  
90 drawings in which,

Fig. 1 is a front elevation of the machine with parts broken away and parts in section;

Fig. 2 is a side elevation of the machine with parts in section; and

Fig. 3 is a perspective view of the supply device for the strip of marking medium showing its relation to the impression members. 95

The frame of the machine is made up of a base 10 and spaced side portions 12 and 14  
100 which are connected near the rear of the machine by cross portions indicated at 16 and 18 in Fig. 2. A drive shaft 20 is journaled in the side portions of the frame and may be provided with a suitable pulley 22 at one end  
105 and a pinion 24 at the other end arranged to

mesh with an internal gear 26 in a wheel 28 mounted at the end of a cam shaft 30 which is also journaled in the side members of the frame. A suitable clutch, such as is indicated at 32 in Fig. 1, which is controlled by a treadle rod 33, may be interposed between the wheel 28 and the cam shaft 30 and a cover plate 34 provided so that the pinion 24 and the internal gear 26 are completely enclosed.

A movable impression member is carried at the upper forward end of a gooseneck-shaped slidable member 40 on the overhanging forward arm of which a die-carrying block 42 is provided. In this die-carrying member, which may be constructed substantially the same as disclosed in United States Letters Patent No. 1,438,191, granted December 12, 1922, upon the application of E. W. Smith and D. A. Cabot an impression member or die 44 is held by means of a sliding plate 46 moved into and out of gripping position by means of a threaded rod 48. An electric cartridge unit 50 may be mounted in this same die-carrying member 42 to supply heat to the die 44. The gooseneck 40 is made up of laterally spaced members 52 (Fig. 1) and 54 which are provided with ribs, one of which is shown at 56 in Fig. 1, and these ribs are received in suitable grooves 58 (Fig. 3) provided in the forward part of the frame of the machine. A cover plate 60 attached by screws to the forward edges of the side portions 12 and 14 serves to retain the sliding die carrier in position in the frame and with the grooves 58 guides the slidable member 40 for straight line movement. At the same time this cover plate 60 renders the frame more rigid by joining together the spaced side portions thereof. As may be seen from Fig. 2, the lateral members 52 and 54 of the gooseneck die carrier are connected by an integral web 62 and it will be observed from Fig. 2 that the lower ends 64 of the lateral members lie directly underneath and in alinement with the die 44 and the opposed impression member to be later described. This makes it possible to apply pressure from a point beneath the operating mechanism of the machine directly in line with the moving element of the impression members and helps to make the machine quiet and smooth in operation as well as assisting in the application of sufficient pressure with a minimum of power. To this end a toggle is interposed between the lower spaced ends 64 of the sliding gooseneck member 40 and the frame. This toggle comprises an upper member 66 pivoted to the frame at 68 and a lower member 70 pivoted to the lower ends 64 of the gooseneck member at 72. The force required to straighten the toggle is applied through a link 74 connected at one end to the toggle at its knuckle and at the other end the link is

pivoted at 76 in a recess (Fig. 2) in one arm of a forked lever 78 pivotally mounted upon a rod 80 extending across the base of the machine. This forked arm 78 surrounds a cam 82 in cam shaft 30, which is designed in a manner well understood in the art so that it continually is in contact with both sides of the fork. The cam is designed to hold the die in engagement with the work through a half revolution of the cam shaft 30. It is then arranged to lift the die quickly, after pressure has been applied, or to depress the die quickly at the commencement of the operation, each of these steps taking place in a quarter revolution of the shaft. This arrangement also assists in the quiet operation of the machine and the application of sufficient force with a minimum expenditure of power.

A work-supporting table 90, which constitutes the lower and fixed impression member, is carried by the cover plate 60 and is provided with a beveled forward edge which assists in the insertion of the work between the table 90 and a stripper guard 92 comprising a U-shaped piece of wire mounted on studs adjustably fixed on said table. Thus the work is held back when the die rises and sticking of the carrier strip thereto is avoided. The table is also provided with a spherical projection 94 on its under side, which is received in and supported by the complementally shaped annual upper edge of a socket member 96 slidably mounted in a suitable guideway 98 formed in the cover plate 60. A stud 100 passes through the bottom of the socket member 96 and through an adjustable plug 102 in the bottom of the guideway 98 where it is held by means of nuts 104. Interposed between the bottom of the socket member 96 and the plug 102 is a relatively stiff spring 106 which provides a resilient support for the table 90, and it will be observed that the tension of this spring may be adjusted by turning the plug 102. A light spring 108 connected to the upper end of the stud 100 is joined at its upper end to a lug 110 depending from the lower side of the spherical member 94. This spring serves to return the table 90 to its normally level position when it is angularly displaced by reason of unevenness in the die 44 or irregularities in the work. To prevent rotation of the table 90 in a horizontal plane, pins 112 extend upwardly from the cover plate 60 and are received loosely in a transverse recess in the lower side of the table 90. The table 90 is therefore retained normally with its beveled edge at the front of the machine but is not prevented from being self-adjusting, as required by the character of the work, to insure an even impression.

In addition to the mechanism thus far described for actuating the impression members of the machine, mechanism is provided

for delivering the marking medium to a point between the impression members and for feeding or taking up the used part of the carrier strip. To this end a supply casing 120 provided with a hinged cover 122, which is held in closed position by a latch 123, is mounted upon the forward upper end of the gooseneck member 40 and is provided with a transverse horizontal spindle 124 upon which may be mounted a supply roll 126 of the carrier strip for the marking medium. This supply roll may vary in width and is adjustably retained in proper position on the spindle 124 by means of an adjustable head 128 and an adjustable resilient fork 130 (Fig. 1) carried upon a rod 132 which passes through a lug in the casing 120 and is held in adjusted position by a thumb screw 134. A strip 136 (Fig. 2), which is unwound from the supply roll 126 passes first up over a take-up member 138 formed (see Fig. 1) as a U-shaped member carried in rotatable studs in the side of the casing 120 and held in upright position in contact with the uncoated side of the strip upon the roll 126 by a spring 140. The strip then passes down through a narrow part of the casing 120 where it is kept in the desired position transversely of the machine by lateral guides 142 which are adjustably mounted in a slot 144 in the cover 122 of the supply casing and are retained in adjusted position by means of nuts 146. After leaving the lateral guides 142, the strip 136 passes over a horizontal guide bar 150 forming the base of a U-shaped member whose upstanding arms are received in rods 152 which are adjustably retained in position in suitable sockets in the supply casing 120. The strip then passes under the die 44 through a passageway formed by the spaced members 52 and 54 to feeding mechanism and in the stop position of the machine is held out of contact with the heated die by a guide roller 154 carried on the outer end of arms 156 mounted in a removable frame 158 supporting the take-up or feeding mechanism.

This mechanism operates in the same manner as does the rewinding mechanism described in United States Letters Patent No. 1,438,191, referred to above, and will be seen to comprise feed rolls mounted upon axles 160 and 162, said rolls being interconnected by spur gears, the larger of which meshes with a gear 164 carried on an axis 166 and movable with a larger gear 168 when connected thereto by a one-way clutch 170 of any suitable form. A receiving roll mounted upon a stud 172 is frictionally connected thereto and driven by means of a gear connection to the gear 164. The gear 168 is rotated intermittently by means of an oscillating rack 174 pivoted at 176 in the sub-frame 158. This rack is provided with a depending arm 178 to which an operating link 180 may be connected at either the point

182 or the point 184. The link 180 is connected at its other end to a block 186 adjustably mounted in the slot of an oscillating arm 188 secured to a horizontal stud 190 to the inner end of which is secured a forked operating lever 192. This lever surrounds and is always in contact with an eccentric 194 mounted on the cam shaft 30. Adjustment of the block 186 in the slot of the arm 188 is effected by means of a screw 196 which may be turned by a head 198. By means of the arrangement just described a constant angle of oscillation is imparted to the arm 188 but the extent of the movement imparted to the strip 136 may be adjusted through a considerable range by adjusting the head 198 and this range may be increased by changing the connection of the link 180 to the depending arm 178 of the rack 174. Such an arrangement renders it possible to move the strip along step by step just as little or just as much as may be necessary so that a fresh portion of the strip is always presented beneath the heated die 44 without unnecessary waste. By the timing of the mechanism the strip is moved along just as the die descends so that there is practically no chance for the spoiling of the portion of the strip to be used by reason of heat from the die 44 in case the machine has stood without being operated for several minutes. To facilitate the removal of a partly used strip of marking medium, means are provided including a finger piece 200 by means of which the feed rolls may be separated if desired, as described in the above-mentioned Letters Patent.

In using the machine a roll of the desired marking medium is placed on the spindle 124 and the strip is drawn over the take-up member 138 and passed between the guides 142 beneath the guide 150 and through the passageway in the member 40, thence under the roll 154 to the feed rolls. Having been threaded through the feed rolls it is secured to the receiving roll mounted on the stud 172 where the used portion of the strip will be rewound for convenient handling. A die 44 of the desired character is clamped in the die-carrying block 42 and the paper feeding mechanism is adjusted to suit the character of the die in the manner above described so that the paper strip is moved along just enough to present a fresh portion of the strip at each operation of the machine without unnecessary waste. A piece of work may be placed upon the table 90 by slipping it under the stripper 92 and the machine operated by depressing the treadle rod 33, thus causing the die-carrying member 40 to be reciprocated by means of a toggle so that the die is brought against the strip 136 and the latter is pressed against the work where portions of the pigment or metallic leaf are retained on the work due to the combined action of

the heat and the pressure of the die 44. This operation may be repeated as frequently as desired.

Having described the invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. In a marking machine, a frame, a work support on said frame, a die-carrying member slidably mounted on the frame, said member comprising an overhanging arm, an impression die carried by said overhanging arm, means for actuating said member comprising a toggle interposed between the frame and the lower end of the die-carrying member at a point directly underneath the point of contact between the die and a piece of work supported on the work support.

2. In a marking machine, a frame, a work-supporting table carried at the forward part of the frame, a gooseneck-shaped die-carrying arm slidably guided for straight line movement in said frame arranged with an overhanging upper end superposed above said table, the lower end of said die-carrying arm being in alinement with the die and the work-supporting table, and a toggle interposed between said frame and the lower end of said die-carrying arm arranged to deliver pressure to the die-carrying arm in direct line with the die and the work-supporting table.

3. In a marking machine, a frame, a member having a passageway and provided with an overhanging arm, said member being slidably mounted in said frame, opposed impression members carried by the frame and the overhanging end of said arm, means for sliding the member with the overhanging arm to bring the impression members into engagement with a piece of work interposed therebetween, a supply device for a marking medium carried at the forward end of the overhanging arm, and a feeding device carried on said frame at the rear of said sliding member co-operating with the supply device to move the marking medium along step by step between the impression members and through the passageway.

4. In a marking machine, a frame, a work support thereon, a die-carrying arm movably mounted in said frame having an overhanging end above the work support, a die supported on said overhanging end, said overhanging end being connected to the body of the arm by laterally spaced members, means for transferring a strip carrying a marking medium beneath the die and between the laterally spaced members, and an arm-operating toggle interposed between said laterally spaced members at one end and connected to the frame at the other end.

5. In a marking machine, a frame, a work support thereon, a gooseneck-shaped die-carrying arm slidably mounted in said frame comprising laterally spaced portions, a sup-

ply device for a strip of marking medium carried at the forward end of the overhanging portion of the gooseneck, feeding mechanism on said frame located behind the arm to take up the used portion of the strip after it has passed between the spaced members of the gooseneck, a brace between the spaced portions of the gooseneck below said strip, and operating means for the arm interposed between the spaced portions at their lower end.

6. In a marking machine, a frame, a work support thereon, a gooseneck-shaped die-carrying arm slidably mounted on the frame, a heated die carried in the overhanging end of the gooseneck above the work support, said gooseneck comprising laterally spaced members, means for feeding the strip of marking medium under the die and between the spaced members of the gooseneck, a guide bar for said strip carried at the outer overhanging end of the gooseneck arranged to hold the strip normally out of contact with the die, and another guide member carried upon the frame between the gooseneck and the die arranged to hold the strip out of contact with the die in the raised position of the arm.

7. In a marking machine, the combination with a frame and impression members mounted thereon, of a casing, a supply roll of a strip of marking medium journaled in the casing unwinding from its lower side, a take-up device pivotally mounted in said casing to extend upwardly from its pivots arranged to contact with the uncoated side of the strip to hold the loose end of the strip of marking medium in contact with the roll of said medium as it passes up over the take-up device and then down to the impression members and means for urging said take-up into contact with the roll.

8. In a marking machine, a die-carrying arm, a supply slotted device carried upon said arm for strips of marking medium of different widths, a bar adjacent to a bar carried by said arm for guiding a strip with respect to said die, and guide fingers individually laterally adjustable in said slot arranged to engage the edges of the strip of marking medium to determine its transverse position as it passes over said bar to the die.

9. In a marking machine, a frame, a socket carried in said frame having its annular upper edge shaped to receive a spherical member, a self-adjusting work-supporting table having a spherical portion resting in said socket, resilient means attached to the under side of said spherical portion for moving said table angularly to bring it back to normal position after displacement thereof, and resilient means interposed between said socket and said frame to support said table.

10. In a marking machine, a frame provided with a guideway, a socket member resiliently supported in said guideway, a work-supporting table provided with a spherical

portion resting in said socket, means interposed between said spherical portion and said socket member tending to move the table angularly with respect to the socket to return it to normal position, and other means preventing rotation of the table with respect to the socket member.

11. In a marking machine, a frame provided with a grooved vertical face at its forward part, a die-carrying arm slidably mounted in the groove provided in said frame, a cover plate for retaining said die-carrying arm in said groove, and a work-supporting table carried by said cover plate.

12. In a marking machine, a frame, a die-carrying arm slidably mounted for up-and-down movement in the forward part of the frame, a work-supporting table cooperating with said die-carrying arm, and a cover plate carrying said work-supporting table and arranged to assist in guiding the die-carrying arm in the frame.

13. In a marking machine, a frame having guideways adjacent to its forward portion, a die-carrying member slidably mounted in

said guideways and comprising an overhanging arm at the end of which a die is supported, a cover plate completing said guideways, a work-supporting table carried by said cover plate in alinement with the path of movement of the die upon said arm, and means for actuating the arm connected with the lower end thereof.

14. In a marking machine, a frame provided with open guideways adjacent to its forward part, a die-carrying arm slidably mounted in said guideways and provided with interconnected laterally spaced members, a die carried on the overhanging end of said arm, a work-supporting table in alinement with the path of movement of said die, a cover completing the guideways and retaining the slidable arm, said cover being arranged to support said table, and means for applying pressure to the lower end of said arm in alinement with the die and the table.

In testimony whereof we have signed our names to this specification.

PERLEY R. GLASS.  
HARRY D. ELLIOTT.

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**CERTIFICATE OF CORRECTION.**

Patent No. 1,695,582.

Granted December 18, 1928, to

**PERLEY R. GLASS ET AL.**

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, line 109, claim 8, for the word "bar" second occurrence, read "die"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 1st day of October, A. D. 1929.

**M. J. Moore,**  
Acting Commissioner of Patents.

(Seal)