July 4, 1933. E. T. KNITTER 1,916,575

HOT STAMP PRINTING MACHINE

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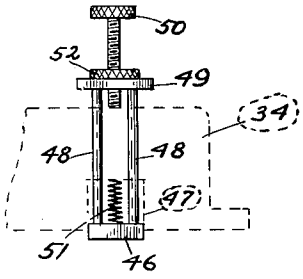


Fig. 1.

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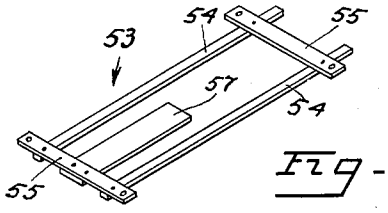


Fig. 6.

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Fig. 2.

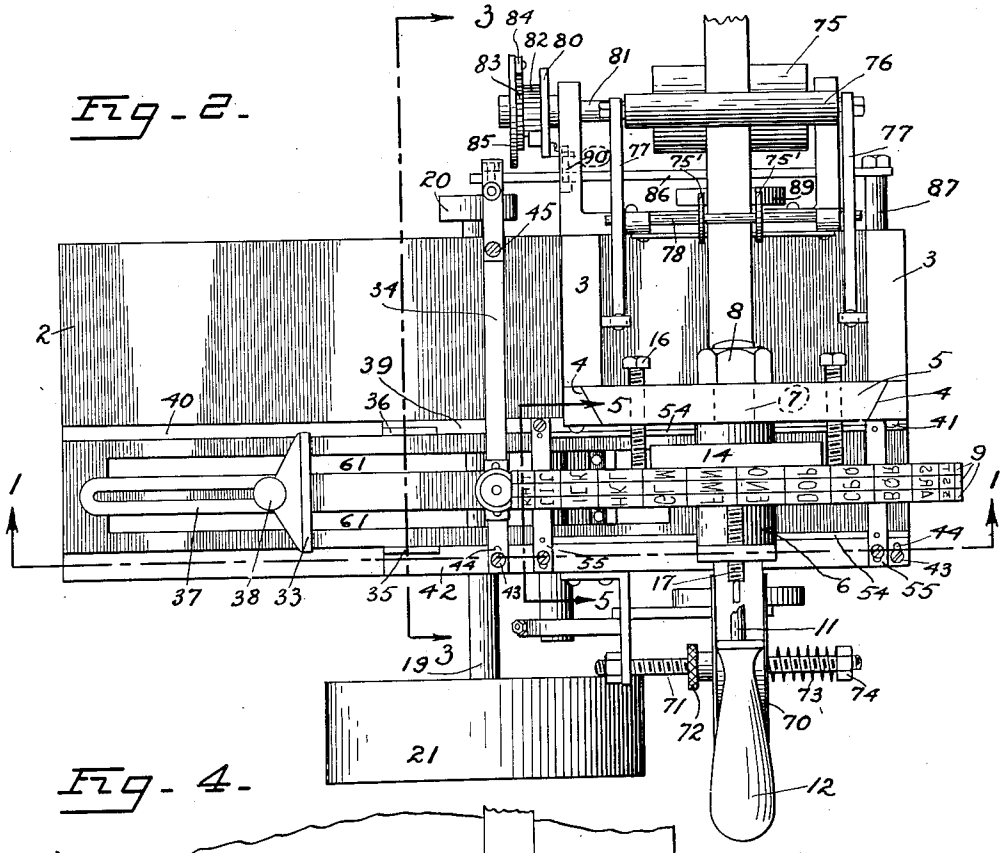
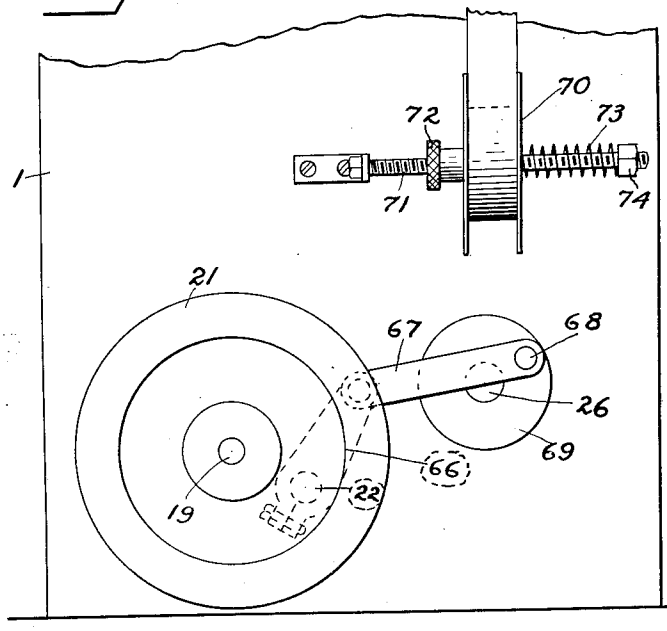


Fig. 4.



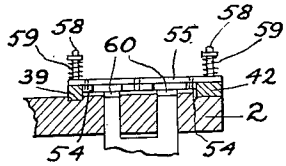


Fig. 5.

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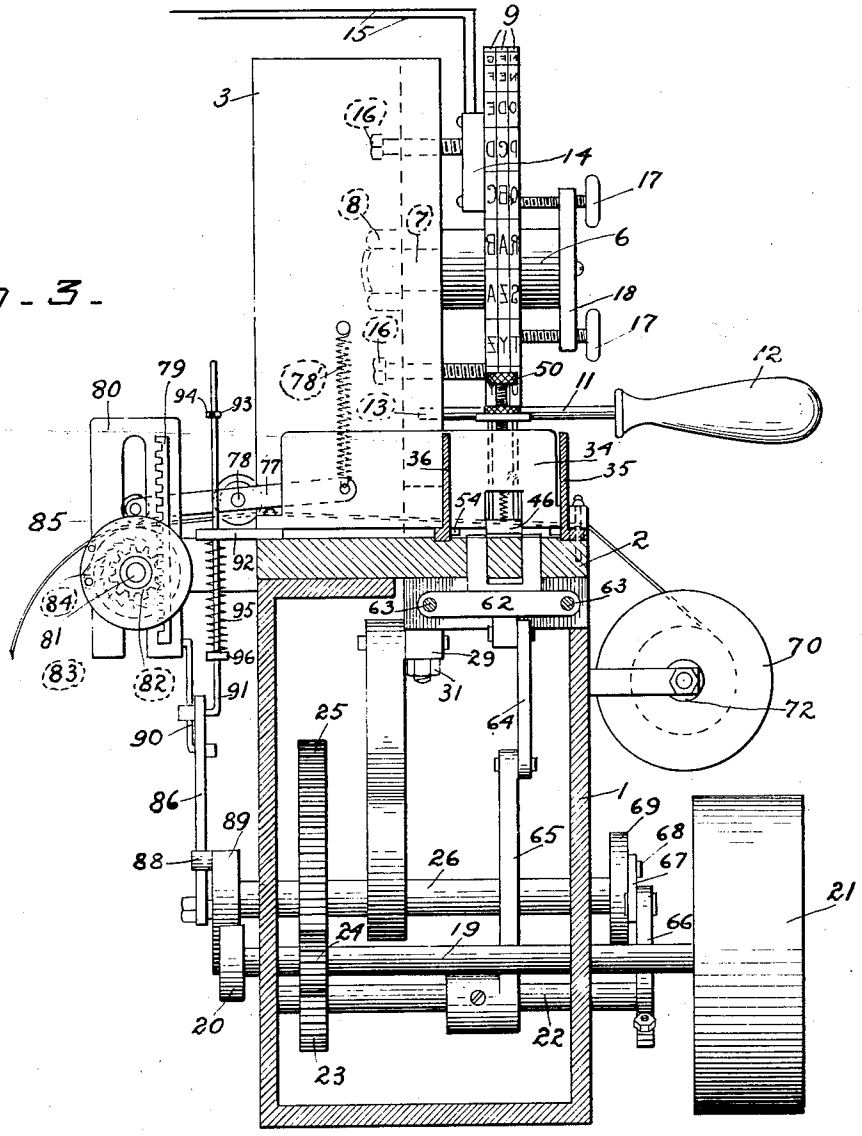
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HOT STAMP PRINTING MACHINE

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Fig. 3.



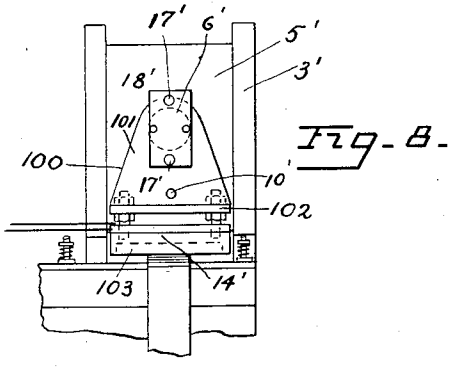


Fig. 8.

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UNITED STATES PATENT OFFICE

ELMER T. KNITTER, OF SAN FRANCISCO, CALIFORNIA

HOT STAMP PRINTING MACHINE

Application filed September 8, 1930. Serial No. 480,560.

The present invention relates to improvements in a card stamping press, and its principal object is to provide a machine in which playing cards can be initialed in gold or colored letters in continuous operation.

It is particularly proposed in the present invention to provide a stamping arrangement in which various combinations of letters representing the initials of an individual may be quickly effected.

More particularly it is proposed to use for this purpose a plurality of discs mounted coaxially and having characters formed in the peripheries thereof, and to provide means for aligning the characters of the different discs in desired combinations.

It is further proposed in the present invention to provide an improved card feeding means in which the cards are successively removed from a stack into the stamping device in timed relation to the stamping operations, and in such a manner that the individual cards are firmly guided and held against buckling while at the same time care is taken that only one card at a time may be fed into the stamping device. It is further proposed in the present invention to provide suitable means for heating the stamping device so as to allow gold or other colors to be imprinted on the cards from a ribbon of paper leaf, an article procurable in the market at the present time.

It is further proposed to provide a machine in which intermittent motion is imparted to the paper leaf so that the same is advanced between the stamping operations while it is held still during the stamping operation.

It is further proposed in the present invention to combine all the elements herein before mentioned into a compact unit, and to so arrange the different parts that they become operative at the proper times, and that any chance of error is eliminated.

Further objects and advantages of my invention will appear as the specification proceeds.

The preferred form of my invention is illustrated in the accompanying drawings, in which

Figure 1 shows a vertical section through the machine taken along line 1—1 of Figure 2;

Figure 2 shows a top plan view of the machine;

Figure 3 a vertical section taken along line 3—3 of Figure 2;

Figure 4 a front view of the lower portion of the device;

Figure 5 a sectional detail view taken along line 5—5 of Figure 2;

Figure 6 a perspective detail view of a frame used for preventing buckling of the cards;

Figure 7 an enlarged detail view of a gate used in connection with the original card enclosure, and

Figure 8 a detail view of a modified form of stamping device.

While I have shown only the preferred form of my invention, I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached without departing from the spirit of the invention.

My machine consists of the following principal parts, a stamping device, means for feeding individual playing cards thereinto and means for feeding the ribbon of paper leaf in intermittent motion.

In its structural features my machine comprises a frame 1, which supports a bed plate 2, and the latter has two walls 3 extending upwardly from one corner section thereof, these walls being formed with tapered grooves as at 4 and being adapted to slidably receive a plate, 5, which carries the stamping mechanism.

The plate 5 has a shaft 6 extending forwardly therefrom, a reduced end 7 of this shaft passing through the plate and being fastened by means of a nut 8. The shaft has a plurality of discs 9 mounted thereon and each disc is preferably made polygonal and has characters imprinted on the peripheral surface, the number of characters preferably corresponding to the number of letters in the alphabet so that by adjustment of the three discs shown in the present case, relative to one another, any desired combination of three letters may be established. Each of

the three discs is formed with an annular series of perforations 10 and these perforations are arranged in such a manner that when three letters on the three discs are brought into proper alignment the perforations of the three discs will also be aligned so that the three discs may be firmly held in adjusted position relative to one another by means of a pin 11, made to pass through three registering perforations. The pin 11 is provided with a handle 12 for facilitating its manipulation.

For the stamping operation it is necessary that a desired combination of letters be presented downwardly and to insure correct position of the three discs relative to the plate 5 the latter is formed with a single perforation 13 directly opposite the lowermost set of perforations in the three discs so that when the discs are in proper position for a stamping operation the pin 11 holding the three discs in proper relation may be pushed on further into the perforation 13 and thereby properly positions the three discs relative to the plate 5. The rearmost disk 9 has a heating element 14 supported near its rear face, the heating element being connected to a suitable source of electrical power by means of the wires 15.

It will be noted that the adjusting means for the discs thus far described allows the latter to move axially on the shaft 6, and for holding the discs after they have been adjusted to the desired position against axial movement I provide a plurality of set screws 16 which are threaded through the plate 5 and bear against the rear face of the rear disc or the heating element respectively, and a second set of set screws 17 passing through a plate 18 fastened to the front end of the shaft and bearing against the front face of the front disc. It will be readily seen that by manipulation of the set screws the discs may be moved on the shaft 6 into any position desired.

For imparting vertical reciprocating motion to the plate 5 I use the following mechanism:

A shaft 19 is supported transversely in the frame 1 and is connected through a pulley 20 with a suitable source of power. A fly-wheel 21 is provided for insuring smoothness of operation. A second shaft 22 is supported in the frame in parallel relation to the first shaft and carries an idler gear 23 which meshes with a pinion 24 on the first shaft and with a large gear 25 on a third shaft 26 passing transversely through the frame 1 so that rotary motion is transmitted from the shaft 19 through the idler gear 23 to the large gear 25 and its shaft 26. The latter carries an eccentric 27 which operates the plate 5 through a connecting link 28 and cross head 29 operatively connected to the plate 5 through two rods 30, with freedom of adjustment through nuts 31. It will be seen that in this manner when the shaft 26 is rotated the plate 5 with its stamping mechanism is reciprocated between its guide walls 3.

The card feeding device may be described as follows:

A deck of cards, indicated at 32, may be confined between the four uprights 33, 34, 35 and 36, forming a rectangle corresponding substantially to the size of the cards. The upright 33 is formed with a slotted horizontal extension 37 which is held to the bed plate by means of a screw 38 passing through the slot so that the upright 33 may be adjusted to allow for different lengths of cards. The upright 36 rises from the left end of a guide bar 39 disposed in a groove 40 extending from left to right throughout the bed plate. This guide bar is held in place at the extreme right end by means of a screw 41 and in an intermediate section by the upright 34 previously referred to. The upright 35 rises from the left end of a second guide bar 42 running parallel to the guide bar 39 and along the front edge of the bed. This guide bar is held to the bed by means of two screws 43 passing through transverse slots 44 in the guide bar so as to allow the latter to be slightly adjusted for different widths of cards.

The upright 34 extends over the entire bed plate from front to rear and rests on the two guide bars 39 and 42 for holding the latter in place. It is secured to the bed plate by one of the screws 43 and a second screw 45.

For allowing the lowermost card to be pushed from the deck toward the stamping device the upright 34 is slightly spaced from the bed plate. For adjusting the space to a nicety to the exact thickness of a playing card I provide an adjustable gate in the upright 34, the gate being illustrated in detail in Figure 7 and comprising a small block 46 adapted for upward and downward motion in a recess 47 in the bottom of the upright 34. This block 46 is supported by two rods 48 extending vertically through the upright with freedom of adjustment and interconnected by means of a small plate 49 through which a screw 50 is threaded so as to bear upon the upper edge of the upright 34. A spring 51 urges the block 46 downward while the screw 50 limits its downward motion to a desired adjustment. A locknut 52 holds the screw 50 in adjusted position. It will be seen that in this manner the block 46 may be adjusted to give just sufficient clearance for a single card and to prevent a second card from being projected past the upright 34.

As the card is projected through the opening defined by the block 46 and is advanced between the two guide bars 39 and 42 which are spaced to correspond exactly to the width of the card, it enters under a spring frame 53, illustrated in detail in Figure 6 and comprising two parallel bars 54, two transverse

bars 55 overlying the same in spaced relation and extending beyond the same, and a fifth bar 57 extending into the rectangle from one of the bars 55 so as to lie in the plane of the two bars 54. This rectangular frame is supported on two guide bars 39 and 42 so that the extensions of the two bars 55 lie on the guide bars while the three bars 54 and 57 lie between the guide bars, leaving sufficient space between the same and the bed plate to allow a card to pass underneath the frame while preventing a second card from passing at the same time, and also holding the card perfectly straight and preventing any buckling. The frame 53 is fastened to the two guide bars 39 and 42 by means of screws 58 and springs 59 bearing on the extensions of the bars 55 so that the frame is capable of slight upward yielding and exerts springs pressure on the card passing underneath.

For advancing the bottom card I use a pair of pushers 60 rising through a pair of slots 61 which extend through the bed plate from left to right to a point substantially in line with the inner end of the bar 57 of the frame 53, the ends of the slots 61 allowing the pushers to advance the card directly into printing position. The two pushers are supported on a cross member 62 which is slidable on a pair of rods 63 supported underneath the bed plate, and the cross member 62 is reciprocated by means of a connecting link 64 and an arm 65 fixed to the shaft 22 which latter receives rocking motion from the shaft 26 through the arrangement shown in Figure 4 including an arm 66 fixed to the shaft 22, and a link 67 connecting the free end of the arm 66 with a pin 68 projecting eccentrically from a disc 69 mounted on the shaft 26.

It will be seen that in this manner the shaft 26 through the link 67 causes the shaft 22 to rock back and forth which rocking motion causes the arm 65 and the connecting link 64 to reciprocate the cross bar 62 on the rods 63, thereby causing the pushers to move back and forth in the slots 61.

For imprinting the characters on the cards I use a ribbon of paper leaf, a product well known in the market and used at the present time for imprinting gold letters on books and for similar purposes. Thus far it has been necessary to print monograms on cards by following the conventional printing process which has been very unsatisfactory principally due to the fact that playing cards usually are finished in such a manner that they do not readily take ink imprints. I find that by using in my machine the paper leaf with a heated stamp I not only can print a definite number of cards much more rapidly than can be done by means of the conventional printing press but that the work is much more satisfactory.

For feeding the ribbon or tape into the machine I arrange a spool 70 of this ribbon on a threaded rod 71 supported in front of the machine, the spool being held on the rod on one side by a nut 72 and on the other side by a spring 73 and a nut 74, the spring tending to place the spool under tension so that it will not revolve too readily. From this spool the ribbon is guided over the bed plate and under the stamping device and between the guides 75′ and is received rearwardly of the bed plate between two rollers 75 and 76, the former being a large roller made of fairly soft rubber and the latter being preferably a metal roller which is made to press the ribbon against the rubber roller. The metal roller 76 is supported in two levers 77 which latter are pivoted on a shaft 78 running alongside the rear edge of the bed plate and are acted on by the springs 78′ for urging the roller 76 upon the roller 75.

Intermittent movement is imparted to the roller 75 through a rack bar 79 forming part of a slotted frame 80 adapted to straddle the shaft 81 on which the roller 75 is supported, the rack bar actuating a pinion 82 loose on the shaft 81 and the pinion transmitting motion in one direction through a ratchet 83 and a pawl 84 to a disc 85 fixed on the shaft 81. The frame 80 is reciprocated by means of a link 86 running alongside the rear end of the frame and pivoted to the pin 87 in such a manner that an intermediate portion of the link 86 lies on an eccentric pin 88 extending from a disc 89 fixed to the shaft 26. It will be seen that in this manner when the shaft 26 revolves the pin 88 causes the connecting link 86 to rise and fall which motion is transmitted to the frame 80 and the rack 79 through a link 90.

For adjusting the length of stroke of the rack rod 79 I suspend the extreme end of the link 86 from a rod 91 which latter passes through a small extension 92 of the bed plate and has a collar 93 above the extension 92 which collar may be adjusted by means of a set screw 94. This collar limits the downward motion of the link 86 and thereby the length of its upward stroke. A spring 95 bearing on a second collar 96 tends to urge the link 86 downward so as to remain in contact with the eccentric pin 88 within the limits set by the collar 93.

The operation of my machine will be understood from the foregoing description.

Assuming that the three initials ABC are to be stamped on the cards, the operator first pulls out the pin 11 from the discs and loosens one of the set screws 17 so that the discs are now freely movable relative to one another. He then brings the three letters ABC on the three discs in the desired alignment, preferably watching the discs from above so that the three letters are exposed at the top of the discs. He then inserts his pin through the three perforations correspond-

ing to the three letters that have been brought into alignment whereupon he revolves the three discs by 180 degrees whereby the pin 11 is brought opposite the perforation 13 in the plate 5. He now pushes the pin into the perforation so that the letters are now presented in proper position at the bottom of the discs. In case it is necessary to adjust the discs on the shaft 6 the operator does so by manipulating the set screws 16 and 17.

A stack of cards is placed between the uprights 33 and 34, 35 and 36, and the ribbon is guided over the bed plate so as to be received between the rollers 75 and 76 at which time the machine is ready for operation. As the power is applied to the shaft 19, rotary motion is transmitted through the idler 23 to the large gear wheel 25 which causes the plate 5 to reciprocate through the eccentric 27, the connecting link 28 and the cross head 29.

In Figure 1 the stamping device is shown in its uppermost position, ready to come down for a printing operation. The pushers 60 are shown in their most advanced position and have just delivered a card into printing position. The ribbon actuating link 86 and the rack 79 are in their uppermost positions and have just advanced the ribbon so as to expose an unused piece thereof below the stamp. As the revolving motion of the shaft 26 is continued, the stamping device descends and causes the letters ABC to be stamped through the ribbon on the back of the playing card. During this same part of the operation the pushers have been returned to their most rearward position back of the stack of cards 32, and the link 86 has returned to its lowermost position causing the rod 91 to descend and the ratchet 83 to idle past the pawl 84. As the rotation is further continued the stamping device rises to its uppermost position while the pushers advance and push the lowermost card into printing position and the link 86 causes the rack bar 79 to rise whereby the ribbon is again advanced. The opening, through which the lowermost card leaves, may be adjusted by means of the block 46 and the operating mechanism shown in detail in Figure 7, and the card is held, throughout its travel, to the bed plate by the spring tension frame 53, the outer bars 54 extending throughout the length of the bed plate to the right and bearing on the card until it leaves the machine, while the intermediate bar 57 is shortened so as to clear the card during the stamping operation. Each card is projected over the edge of the machine after it has been stamped, by the new card placed in its position.

In the form shown in Figure 8 a conventional printing unit is substituted for the disc arrangement thus far described. The plate 5′ is slidably mounted in the walls or posts 3′ and has a shaft 6′ extending therefrom. The printing unit 100 is suspended from this shaft and may be axially adjusted by manipulation of the set screw 17′ extending through the plate 18′ fastened to the end of the shaft 6′. An aligning hole 10′ takes the place of the perforations 10 in fixing the printing unit relative to the plate 5′. The printing unit consists of a hanger 101 having a bottom flange 102 to which is fastened the type frame 103, a heating unit 14′ being interposed between the flange and the type frame.

I claim:

1. A stamping unit having means for displaying characters thereon in desired combinations, a bed plate, means for reciprocating the stamping unit relative to the bed plate, means for successively and intermittently feeding cards between the bed plate and the stamping unit and means for passing a ribbon over the cards transversely to the direction of travel of the latter and in timed relation to the stamping operations.

2. In combination, a bed plate, a pair of vertical guides, a plate reciprocable in said guides, a shaft extending from the plate, a plurality of stamping discs slidable on the shaft, set screws extending from the plate for spacing the discs from the latter, a cross-member at the end of the shaft and set screws extending from the cross-member so as to bear on the discs from the opposite side for positionally fixing the same.

3. In combination, a bed plate, a stamping unit movable relative thereto, means for guiding a ribbon between the bed plate and the stamping unit comprising means for supporting a spool in front of the bed plate, a roller in the rear of the bed plate adapted to have the ribbon guided thereover, yielding means for pressing the ribbon into intimate contact with the roller and means for imparting intermittent rotary motion to the roller, including a pivoted arm, an eccentric adapted to periodically raise the same, adjustable means for limiting the downward movement of the arm and means for translating the upward movements of the arm into rotary movement of the roller.

4. A stamping unit having means for displaying characters thereon in desired combinations, a bed plate, means for reciprocating the stamping unit relative to the bed plate, means arranged in an extension of the bed plate for successively and intermittently feeding cards between the bed plate and the stamping unit and means for passing a ribbon over the cards transversely to the direction of travel of the latter and in timed relation to the stamping operations.

5. A stamping unit having means for displaying characters thereon in desired combinations, a bed plate, means for reciprocat-

ing the stamping unit relative to the bed plate, means arranged in substantially the same plane as the bed plate for successively and intermittently feeding cards between the bed plate and the stamping unit and means for passing a ribbon over the cards transversely to the direction of travel of the latter and in timed relation to the stamping operations.

Signed at San Francisco, in the county of San Francisco and State of California this 28th day of August A. D. nineteen hundred and thirty.

ELMER T. KNITTER.