July 28, 1931. J. R. CUROTTO 1,816,721

PRINTING MACHINE

Filed Aug. 4, 1930 2 Sheets-Sheet 1

Fig. 1.

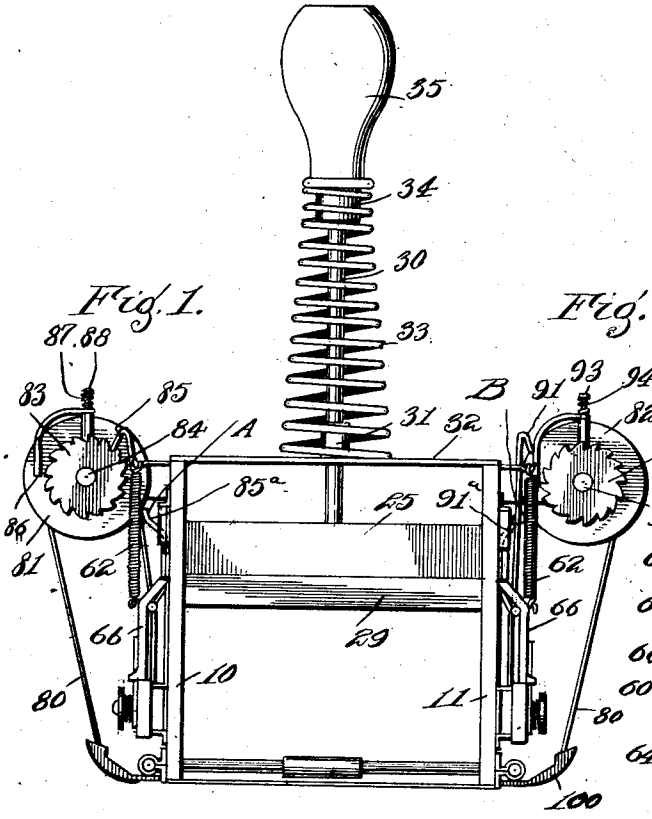
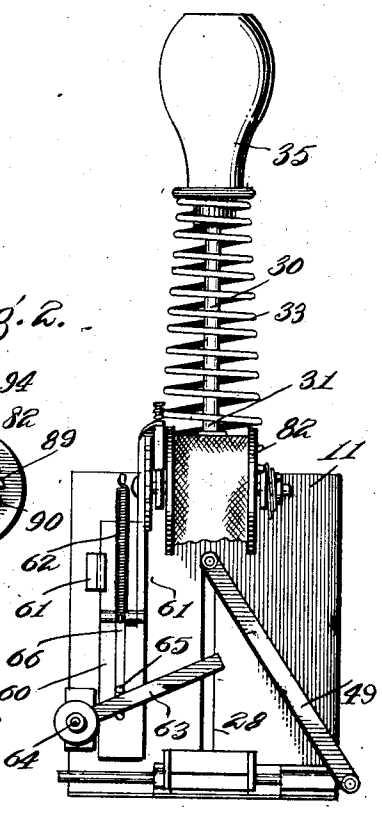



Fig. 2.



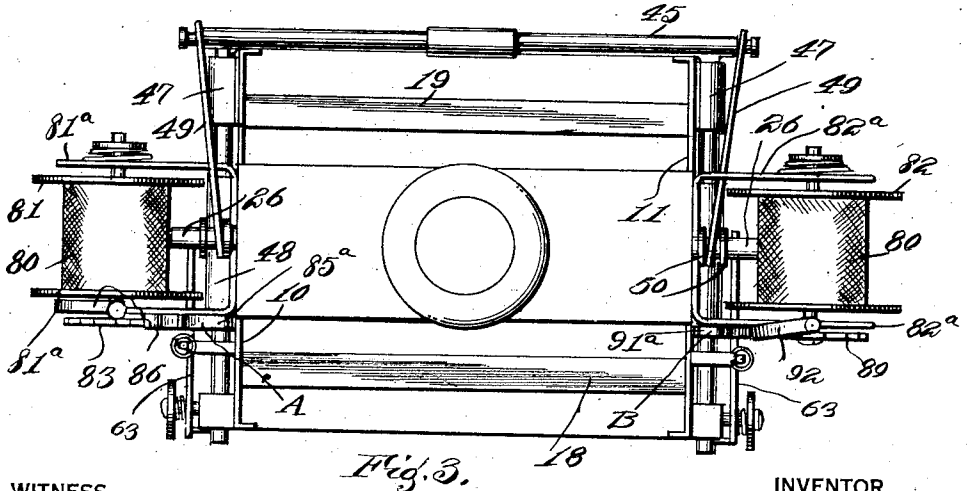




Fig. 3.

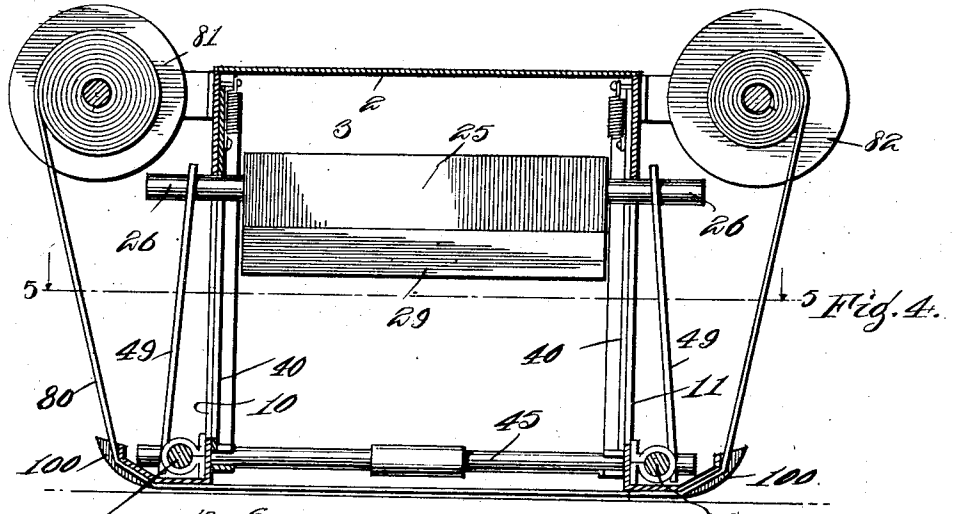
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PRINTING MACHINE

Filed Aug. 4, 1930 2 Sheets-Sheet 2



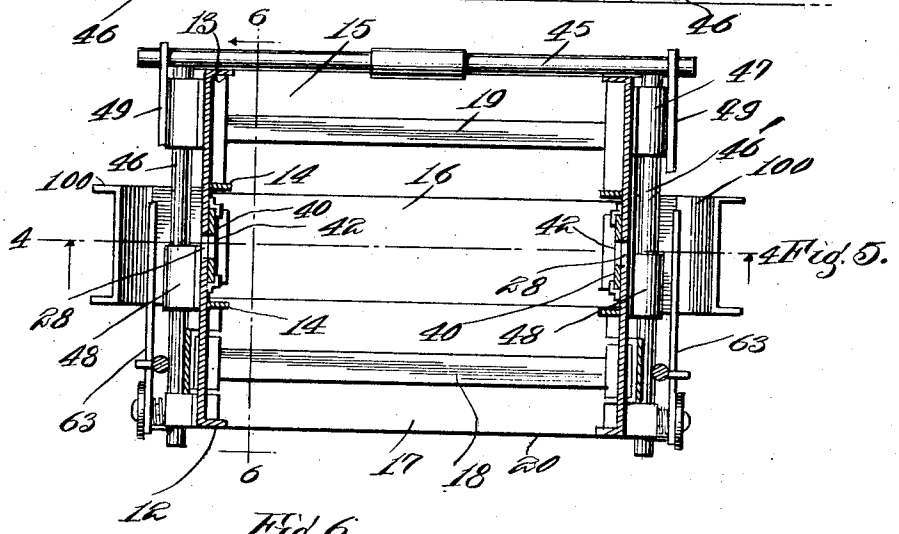
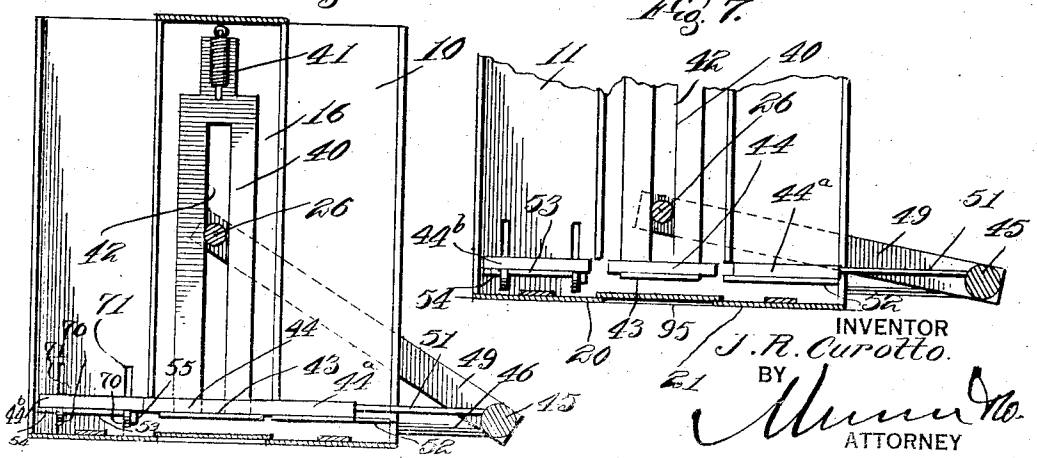




Fig. 6.

Fig. 7.




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# UNITED STATES PATENT OFFICE

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## PRINTING MACHINE

Application filed August 4, 1930. Serial No. 472,954.

This invention relates to a printing machine.

An object of the invention is the provision of a printing machine for addressing envelopes or other stationery and includes a hopper for printing frames from which hopper, the frames are automatically discharged for forcing a printing frame which is in an operating position beneath a hammer, into a storage space, the printing frame from the hopper replacing the printing frame removed from beneath the hammer.

Another object of the invention is the provision of a printing machine for addressing envelopes or other stationery in which a hammer is actuated for impressing a printing frame carrying type on to the stationery, a plurality of printing frames being retained in a hopper, one frame being forced beneath the hammer upon retraction of said hammer and replacing the previously positioned frame, the last mentioned frame being shifted to a storage space where the frames which have been previously stored in the space are elevated to permit the reception of the incoming frame.

A further object of the invention is the provision of a printing machine for addressing envelopes in which printing frames bearing type are automatically positioned and replaced beneath a stamping hammer, a ribbon for inking the type being moved periodically beneath the type at each effective stroke of the hammer, means operatively connecting the spools for the ribbon with the hammer.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

Figure 1 is a side view in elevation of a printing machine constructed according to the principles of my invention.

Figure 2 is an end view in elevation.

Figure 3 is a plan view of the machine.

Figure 4 is a longitudinal vertical section taken along the line 4—4 of Figure 5.

Figure 5 is a horizontal section taken along the line 5—5 of Figure 4.

Figure 6 is a transverse vertical section taken along the line 6—6 of Figure 5 showing the printing frames being shifted.

Figure 7 is a fragmentary vertical similar to the section in Figure 6 showing the printing frame ejector at the beginning of its stroke.

Referring more particularly to the drawings, 10 and 11 designate a pair of standards which form the side walls of the frame having the opposite edges turned at right angles as shown at 12 and 13 which cooperate with the vertically disposed bars 14 for dividing the frame into a plurality of chambers designated respectively as a hopper 15, a printing compartment 16 and a storage space 17. A bar 18 connects the lower ends of the standards and extends longitudinally of the storage space 17. The bar 19 connects the lower portion of the standards and extends longitudinally of the hopper 15. A pair of base members 20 and 21 are secured to the bottom of the standards and are respectively located below the bars 18 and 19.

A plunger or hammer 25 is slidably mounted in the printing space 16 with the ends of the hammer provided with pintles 26 movable in slots 28 in the standards 10 and 11 which act as guides for the pintles and likewise the handle in providing for a true vertical reciprocation of the plunger. The under portion of the plunger as shown at 29 is faced with either a strip of rubber or some composition material which is adapted to engage the printing frames located in the printing space which are periodically shifted through the printing space 16 from the hopper 15. A reciprocating rod 30 is secured to the plunger 25 which is movable in a bearing 31 secured to a cross bar 32 which in turn has its end attached to the upper portion of the standards 10 and 11. A coil spring 33 embraces the rod 30

and has one end bearing on the bar 32 while the other end receives a reduced portion 34 of the handle 35.

A pair of slides 40 are supported by means of springs 41 within the printing space 16 and in flat contact with the inner face of the standards 10 and 11. Each slide has a slot 42 to receive a pintle 26. The lower end of the slide is provided with a shelf or projection 43 which receives and supports a printing frame 44 when said frame has been shifted from the hopper 15 to the printing space 16.

A bar 45 is provided with guide rods 46 at its opposite ends which are slidably mounted in bearings 47 and 48. The outer ends of the rods 45 are connected by means of links 49 with the pintles 26 and collars 50 retain the upper ends of the links 49 on said pintle. Plungers 51 are rigidly secured to the rods 45 and movable inwardly through the hopper 15 and above shelves 52 which are secured to the inner walls of the standards 10 and 11. These shelves are located in the lower end of the hopper 15. As shown more particularly in Figures 6 and 7, the plungers 51 are in a horizontal plane in which the lowermost printing frames 44*a* are disposed when the hopper is supplied with such frames. The shelves 52 are further located in the same horizontal plane with the inturned lugs 43 of the slides 40 and in which plane are included the fixed supporting means or lugs 53, 54 and 55. The lugs 53—55 inclusive are located at the bottom of the storage space 17.

When the printing frame is moved into the storage space in a manner which will be presently explained, its opposite ends will rest upon the lugs 53–55 inclusive, but such printing frame must be elevated above the horizontal plane in which the printing frame normally rests in the printing space in order that the printing frame 44 in the printing space may be properly shifted to the storage space after the stationery has been printed by the frame in the printing space. For this purpose, I have provided a pair of slides 60 mounted in guides 61 formed at the outer faces of the standards 10 and 11. A coil spring 62 normally maintains the slides in the uppermost position. A lever 63 pivotally mounted at 64 on a standard is received by a fork 65 carried at the end of the arm 66 which is secured to a slide 60. The outer free end of the lever 63 is normally located across a slot 28 and in the path of movement of the pintles 26 so that when the plunger or hammer 25 nears the end of its effective printing stroke, the lever will be engaged by the pintles and moved downwardly, forcing the slides downwardly. The slides may be formed of resilient material and are provided with a pair of laterally disposed lugs 70 having their under faces rounded so that when the slides are moved to their lowermost position, the rounded portion of the lugs will engage the opposite ends of the printing frames 44*b* for forcing the lugs outwardly through the slots 71 as the slides are moved downwardly so that the lugs will engage beneath the ends of the printing frames 44*b*. When the plunger or hammer 25 is elevated by means of the spring 33, springs 62 will elevate the lever 63 and likewise the slide 60 so that the lowermost printing frame which is supported by the lugs 70 will be elevated above its normal horizontal portion on the lugs 53–55 inclusive.

A ribbon 80 has a portion thereof normally located at the bottom of the printing space and below the printing frame 44 so that when the stationery is placed beneath the ribbon or the base members 20 and 21 it will be printed upon the downward movement of the plunger or hammer 25. One end of this ribbon is wound upon a spool 81 and unwound from a spool 82. A ratchet wheel 83 is rigid with a shaft 84 to which the spool 81 is connected, which ratchet wheel is adapted to be engaged by a pawl 85 secured to a slide 60 so that when the slide is reciprocated the wheel 83 and spool 81 will revolve in a step by step manner for winding the ribbon on the spool 81. A member 86 normally maintains a pawl 85 out of engagement with the teeth of the ratchet 83 when the spool 82 is winding the ribbon. When, however, the pawl engages the ratchet wheel 83 the member or guard is swung on its pivot 88 and out of the way of the pawl. A spring 87 aids in maintaining the guard in position. A spring 85*a* is adapted to force the pawl into engagement with the ratchet wheel 83 when the guard 86 has been removed.

A ratchet wheel 89 is rigid with a shaft 90 to which the spool 82 is secured and the ratchet wheel is operated by means of a pawl 91 secured to the other slide which operates on the outer face of the standard 11. A guard 92 engages the pawl 91 and retains it out of contact with the teeth of the ratchet wheel 89. The guard 92 is slidably mounted on a pin 93 and maintained in position by means of a spring 94, as shown in Fig. 1. When the guard is revolved on the pin 93 to a diametrically opposite position, a spring 91*a* forces the pawl in engagement with the rachet 89.

The operation of my device is as follows: A number of the printing frames are placed within the hopper 15 with the lowermost frame resting upon the shelves 52. The envelope or other stationery to be printed is placed beneath the base members 20 and 21 and adjacent the opening 95. The handle 35 is grasped and the plunger or hammer 25 is forced downwardly. How-

ever, upon the return of the hammer 25 by means of the spring 33, the plungers 51 will move inwardly and engage the printing frame 44*a* forcing the same from the bottom of the hopper to a horizontal position on the shelves 43 of the printing space. When the plunger is again reciprocated or moved downwardly, it will engage the printing frame 44 and cause the supporting slides 40 to be moved downwardly, forcing the type in the printing frame in contact with the ribbon 80 whereby the stationery is printed.

When the handle 35 is released the spring 33 moves the plunger 25 upwardly causing the plungers 51 to be moved inwardly and into engagement with a printing frame 44*a* forcing the same towards the printing space so that the printing frame 44*a* will come in contact with the edge of the printing frame 44. Since, however, the plungers 51 move inwardly a sufficient distance to force the printing frame 44*a* into the printing space the printing frame 44 in the printing space will be moved into the storage space where the ends of the printing frame 44*b* will rest upon the lugs 53 to 55 inclusive.

When the plunger or hammer 25 is again moved downwardly, the plungers 51 through the links 49 will force the rod or bar 45 upwardly to permit the plunger to force the printing frame 44 downwardly into engagement with the ribbon 80. When the handle 35 is released the spring 33 will automatically return the plunger 25, forcing the plungers 51 inwardly whereby a frame 44*a* will be shifted from the hopper to the printing space and the frame in the printing space will be moved into position in the storage space. However, before the plunger 25 reaches the end of its effective printing stroke, the slide 60 will be moved downwardly causing the supporting lugs to move over and beneath the ends of the printing frame 44*b* which has been previously shifted to the storage space so that when the plunger is released and elevated by the spring 33, the slides 60 will be released through the action of the coil spring 62 whereby the slides will be elevated in raising the printing frame 44*b* above the lugs 53—55 inclusive and a sufficient distance above said lugs to permit the frame 44 from the printing space to be shifted onto the lugs in the storage space.

It will be seen by this construction that the printing frames from the hopper will be periodically and successively shifted from the hopper to the printing space and then disposed upon the lugs 53—55 inclusive in the storage space and the printing frames which have just previously arrived in the storage space are elevated out of the path of the incoming printing frame from the printing space.

I claim:

1. A device of the character described comprising a frame, a hammer slidably mounted in the frame, a hopper for printing frames, means for supporting a printing frame below the hammer and in horizontal alinement with a printing frame in the hopper, a storage space for the used printing frames, means for manually moving the hammer into operative relation with a printing frame located beneath the hammer, means for automatically returning the hammer, means operatively connected with the hammer for moving a printing frame in the hopper into engagement with the printing frame under the hammer and for forcing the last mentioned frame into the storage space while placing the moving frame from the hopper into an operative printing position under the hammer, a fixed means in the storage space for supporting the printing frame shifted to said space and a movable means in said space adapted to engage beneath the frames and for supporting the frames above the fixed support and spring means for elevating the movable means and likewise the frames above the initial position on the fixed support.

2. A device of the character described comprising a frame, a hammer slidably mounted in the frame, a hopper for printing frames, means for supporting a printing frame below the hammer and in horizontal alinement with a printing frame in the hopper, a storage space for the used printing frames, means for manually moving the hammer into operative relation with a printing frame located beneath the hammer, means for automatically returning the hammer, means operatively connected with the hammer for moving a printing frame in the hopper into engagement with the printing frame under the hammer and for forcing the last mentioned frame into the storage space while placing the moving frame from the hopper into an operative printing position under the hammer, a fixed means in the storage space for supporting the printing frame shifted to said space and a movable means in said space adapted to engage beneath the frames and for supporting the frames above the fixed support and spring means for elevating the movable means and likewise the frames above the initial position on the fixed support, and means actuated by the hammer for depressing the movable means to an operative engaging means with a printing frame.

3. A device of the character described comprising a frame, a hammer slidably mounted in the frame, a hopper for printing frames, means for supporting a printing frame below the hommer and a horizontal alinement with a printing frame in the hopper, a storage space for the used

printing frames, means for manually moving the hammer into operative relation with a printing frame located beneath the hammer, means for automatically returning the hammer, means operatively connected with the hammer for moving a printing frame in the hopper into engagement with the printing frame under the hammer and for forcing the last mentioned frame into the storage space while placing the moving frame from the hopper into an operative printing position under the hammer, a fixed means in the storage space for supporting the printing frame which is shifted to the space, a movable means adapted to support and raise the printing frame above the fixed means, means operatively connecting the movable means with the hammer for depressing the movable means, and means for elevating the movable means.

4. A device of the character described comprising a frame, a hammer slidably mounted in the frame, a hopper for printing frames, means for supporting a printing frame below the hammer and in horizontal alinement with a printing frame in the hopper, a storage space for the used printing frames, means for manually moving the hammer into operative relation with a printing frame located beneath the hammer, means for automatically returning the hammer, means operatively connected with the hammer for moving a printing frame in the hopper into engagement with the printing frame under the hammer and for forcing the last mentioned frame into the storage space while placing the moving frame from the hopper into an operative printing position under the hammer, a fixed means in the storage space for supporting the printing frame which is shifted to the space, a movable means adapted to support and raise the printing frame above the fixed means, means actuated by the hammer near the end of the effective stroke of the hammer for causing the movable means to actively engage the lowermost printing frame in supporting position and means for elevating the movable means and likewise the printing frames.

5. A device of the character described comprising a frame, a hammer slidably mounted in the frame, a hopper for printing frames, means for supporting a printing frame below the hammer and in horizontal alinement with a printing frame in the hopper, a storage space for the used printing frames, means for manually moving the hammer into operative relation with a printing frame located beneath the hammer, means for automatically returning the hammer, means operatively connected with the hammer for moving a printing frame in the hopper into engagement with the printing frame under the hammer and for forcing the last mentioned frame into the storage space while placing the moving frame from the hopper into an operative printing position under the hammer, a fixed means in the storage space for supporting the printing frame shifted into said space, slides provided with resiliently supported lugs and movable at opposite sides of the printing frames in the space, the lugs being adapted to spring over the edges of the frames, means operatively connecting the slide with the hammer for causing reciprocation of the slide in one direction, and means for moving the slides in the opposite direction for elevating the frames.

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