

1,216,150.

J. G. MARK.  
PRINTING MACHINE.  
APPLICATION FILED APR. 18, 1914.

Patented Feb. 13, 1917.  
2 SHEETS—SHEET 1.

Fig. 2.

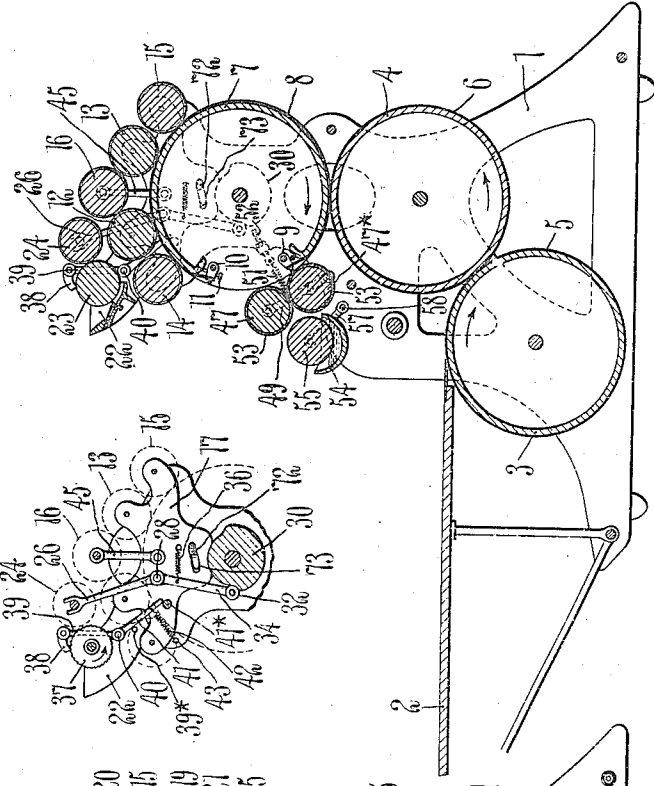


Fig. 3.

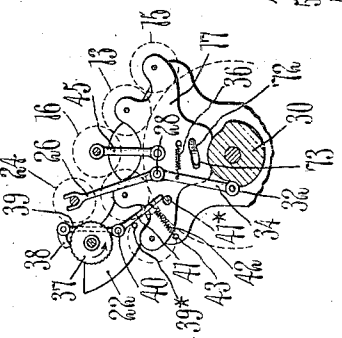


Fig. 1.

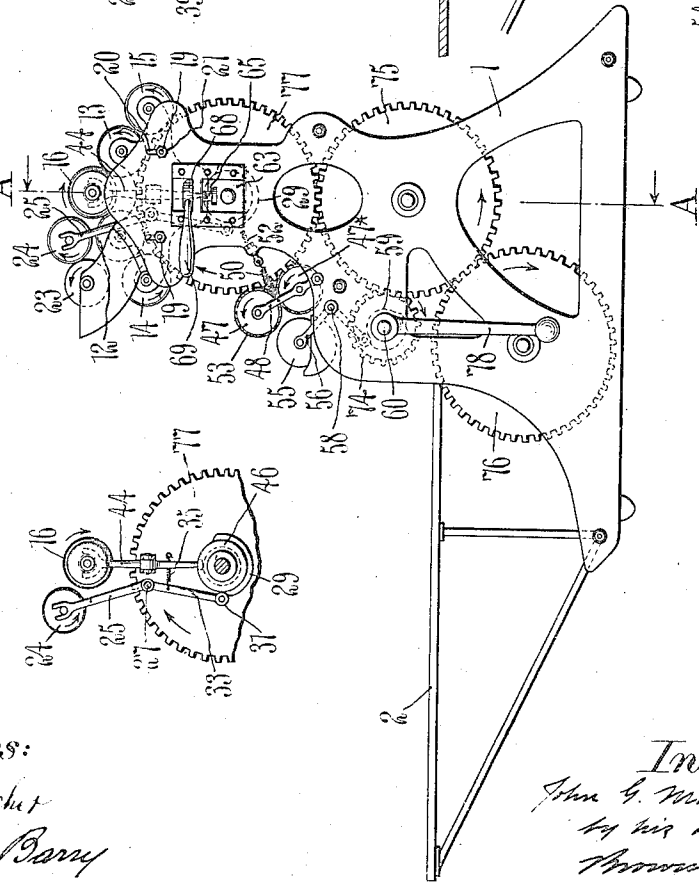


Fig. 4.

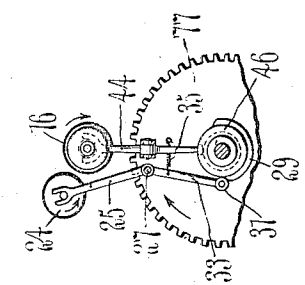
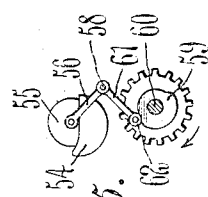


Fig. 5.



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Thompson & Wood

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2 SHEETS—SHEET 2.

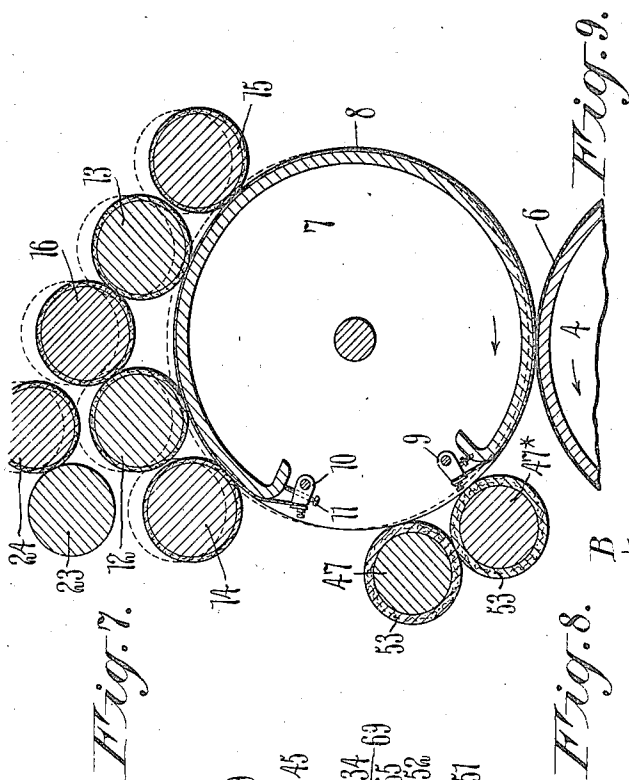


Fig. 7.

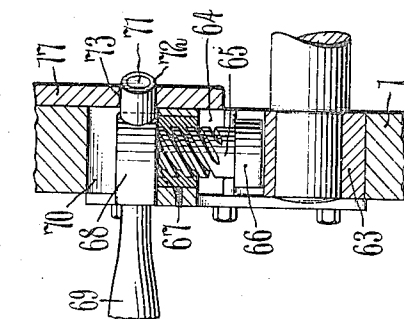


Fig. 9.

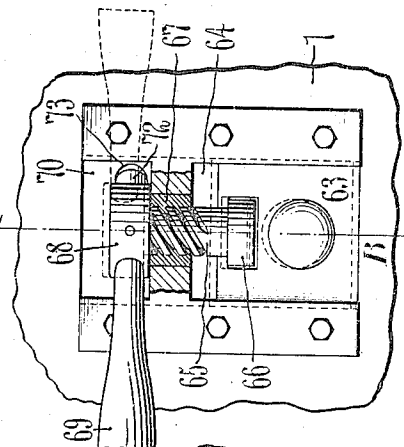


Fig. 8.

Fig. 6.

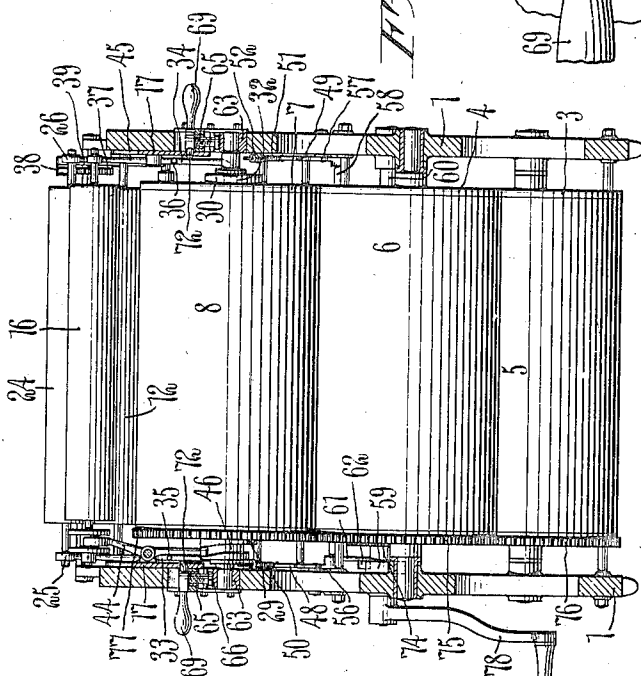
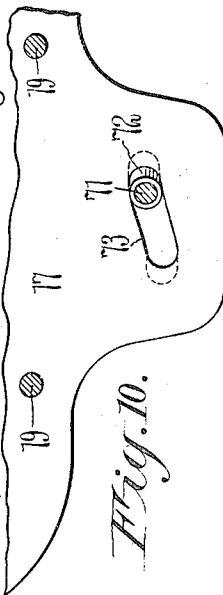


Fig. 10.

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# UNITED STATES PATENT OFFICE.

JOHN G. MARK, OF NEW YORK, N. Y.

## PRINTING-MACHINE.

1,216,150.

Specification of Letters Patent.

Patented Feb. 13, 1917.

Application filed April 18, 1914. Serial No. 332,955.

### *To all whom it may concern:*

Be it known that I, JOHN G. MARK, a citizen of the United States, and resident of the borough of Queens, in the city and State of New York, have invented a new and useful Improvement in Printing-Machines, of which the following is a specification.

My invention relates to improvements in a machine for printing or impressing designs or characters from a surface printing medium such as a thin aluminum or other metal plate, which has been previously subjected directly to the action of a typewriter from which the plate receives its design or character, said plate being treated in the usual manner before use.

One object of my invention is to provide means whereby the contacting surfaces of the form, impression transfer cylinders and inking rollers may be readily and quickly thrown into and out of operation.

A further object of this invention is to provide a manually operated means for separating the contacting surfaces of the form cylinder and inking rollers, that is common to both.

A still further object is to provide a dampening device for the form cylinder, which device will contact with the plate on the form cylinder and be supplied with liquid at intervals.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents a side elevation of my printing machine,

Fig. 2 represents a longitudinal central section taken from front to rear,

Fig. 3 represents a detail section showing the means for operating the inking mechanism,

Fig. 4 represents a detail section showing the means for operating the vibrating roll of the inking mechanism,

Fig. 5 represents a detail section showing the means for operating intermittently the liquid feeding device of the dampening rolls,

Fig. 6 represents a transverse section taken in the plane of the line A—A of Fig. 1, looking in the direction of the arrows,

Fig. 7 represents a detail section on an enlarged scale of the form cylinder and its adjacent mechanism,

Fig. 8 represents a detail section on an

enlarged scale showing the means for raising and lowering the form cylinder and inking mechanism,

Fig. 9 represents a transverse section taken in the plane of the line B—B of Fig. 6 8, and

Fig. 10 represents a detail section on an enlarged scale showing a portion of one of the side frames of the inking mechanism with its cam and roller for raising or lowering the same.

The main frame of the machine is denoted by 1 and the feeding table by 2. The impression cylinder 3 is arranged to take the sheets to be printed from the feed table 2 and pass them between the transfer cylinder 4, where it receives an impression and is delivered to a suitable receptacle, not shown.

The contacting surface of the impression cylinder 3 is provided with a yielding surface 5, such as rubber or other yielding composition.

The transfer cylinder 4 is provided with a yielding and absorbent surface 6.

The form cylinder, denoted by 7, is provided with a thin aluminum or other metal plate 8, which is securely held between two swinging clamps 9, 10. The clamp 10 is provided with one or more screws 11 which are adapted to engage the cylinder 7 for drawing the plate tight upon the surface.

The plate 8, before it is secured to the cylinder 7, is first subjected to the action of a typewriting machine having an interposed ribbon or sheet of carbon paper, so as to imprint the letter or character thereon; the plate being then coated with any of the well known ink resisting materials used in the art.

The plate 8 is inked from inking rollers 12, 13, 14, 15, which coast with a vibrating roller 16. These rollers are mounted in a supplemental frame 17, which is arranged to slide in the main frame 1. The supplemental frame 17 is held in slidable engagement with the main frame 1 by means of studs 19 fixed in the frame 17, passing through slots 20 in the main frame. Both frames may be locked together by nuts 21 on the studs 19.

The ink fountain is denoted by 22 and the fountain roll by 23. The ink is transferred from the fountain roll 23 by the ductor roll 24, which is mounted in oscil-

lating arms 25, 26. These arms 25, 26, are mounted to oscillate on studs 27, 28, fixed in the supplemental frame 17.

To cause a fresh supply of ink to be given 5 to the vibrating roller 16 at regular intervals during the rotation of the cylinder, I oscillate the ductor roll 24 by means of cams 29, 30, located upon opposite sides of the form cylinder 7 and adapted to be engaged 10 by rollers 31, 32, carried by the depending ends 33, 34, of the arms 25, 26. Springs 35, 36, are fixed to the depending ends 33, 34, and the frame 17, and tend to keep the rollers 31, 32, against the cams 29, 30.

15 The fountain roll is intermittently rotated by means of a ratchet 37 fixed thereon, which is engaged by a pawl 38 mounted on an oscillating arm 39 which is pivoted on a stud 40 fixed on the frame. An arm 41 20 depends from the oscillating arm 39 and is adapted to be rocked by a stud 41\* fast in the end of the form cylinder 7.

A spring 42, one end of which is secured to the arm 41 and the other end fixed to a 25 stud 43 on the frame, is arranged to pull the arms 41 and 39 back to the stop 39\*.

The vibrating roller 16 is mounted to vibrate in arms 44, 45. The lower end of the arm 44 is adapted to engage a drum cam 46 30 fixed to rotate with the cam 29, fast on the cylinder 7.

A dampening device, consisting of a pair of rollers 47, 47\*, mounted in arms 48, 49, pivoted on the main frame 1, is held yield- 35 ingly in contact with the plate 8 on the form cylinder, by means of springs 50, 51, the tension of which may be adjusted by the bolt and nut connection 52 mounted on the main frame 1.

40 The rollers 47, 47\*, may be covered with felt or other absorbent material 53.

A water fountain 54 having a dampening roll 55 is mounted between arms 56, 57, on a rock shaft 58 journaled in the frame 1.

45 Intermittent motion is transmitted to the rock shaft 58 through a cam 59 fast on the drive shaft 60, and an arm 61 fixed on the shaft 58, upon which arm is mounted a truck roller 62 which engages the cam 59. 50 This motion imparted to the rock shaft 58, lifts the dampening roller 55 from the fountain 54 to the felt covered rollers 47, 47\*, thereby moistening the same at intervals.

The means which I employ for raising or 55 lowering the form cylinder 4, together with the inking mechanism, is constructed and operated as follows: The shaft of the form cylinder 7 is journaled in bearings 63 fitted to slide vertically in recesses 64 in the frame 60 1, and is held in position by means of screw threaded pins 65, having enlarged heads 66, which are rotatably mounted in the sliding bearings 63. The pins 65 have a screw threaded engagement with a nut 67 fast in 65 the frame 1, and are adapted to be rotated

by means of hubs 68 fixed to the upper end of the pins. The hubs are provided with handles 69 and are arranged to rotate in recesses 70 in the frame. The hubs 68 are also provided with inwardly projecting 70 abutments 71 having rollers 72 thereon adapted to enter cam-shaped slots 73 in the supplemental frame 17. The slots 73 are so arranged that when the handles are rotated from one side to the other, the roller 75 72 will work from one side of the slot to the opposite side and either lift or lower the inking rollers toward or away from the cylinder 7.

It will be seen that by moving the handles, 80 the pins 65 are caused to rise or fall in the nut 67, thereby raising or lowering the form cylinder through the bearings 63 into or out of contact with the transfer cylinder 4.

The several cylinders and parts are ro- 85 tated from the drive shaft 60 through a gear 74, fast on the shaft, meshing with a gear 75 on the transfer cylinder, which, in turn, meshes with a gear 76 on the impression cylinder 3 and a gear 77 on the form cylin- 90 der 7. The drive shaft 60 is rotated by means of a crank 78, or it may be driven from any suitable source of power (not shown).

The inking rollers and dampening device 95 are driven from the form cylinder by frictional contact therewith.

In operation: Assuming that the plate 8 has been subjected to the action of a type- 100 writing machine, and the letter or character typed thereon, coated with the ink resisting material, secured to the form cylinder and the form cylinder lowered by means of the handles 69 to the position shown in the 105 drawings; the form cylinder 7 is rotated to first pass the plate 8 between it and the dampening rolls, thence pass the inking rollers, presenting the inked plate to the transfer cylinder 4 where the letter or character is 110 transferred upon the yielding absorbent material 6 of the said cylinder, which, in turn, transfers the impression to the sheet to be printed, which is being fed from the table between the impression cylinder 3 and the 115 transfer cylinder 4.

It is evident that slight changes may be resorted to in the form, construction and arrangement of the several parts without departing from the spirit and scope of my invention; hence I do not wish to limit my- 120 self strictly to the structure herein shown and described, but

What I claim is:—

1. In a printing machine, a main frame, a supplemental frame vertically slidable in 125 said main frame, a form cylinder slidable in the main frame, a plate thereon having ink receptive characters and an ink resisting field surrounding said characters, a damp- 130 ening device, an inking mechanism carried

by said supplemental frame, an impression cylinder, a transfer cylinder, interposed between said form and impression cylinders, arranged to receive an impression from the said plate of the ink receptive characters, and means for throwing the form cylinder and supplemental frame into and out of operation, said means comprising a pin having a screw threaded engagement with the main frame, and connected to said form cylinder, a handle secured to said pin for rotating it, and an abutment on said handle adapted to engage said supplemental frame for raising or lowering the same.

2. In a printing machine, a main frame, a supplemental frame vertically slidable in said main frame, a form cylinder slidable in the main frame, a plate thereon having ink receptive characters and an ink resisting field surrounding said characters, a dampening device, an inking mechanism carried by said supplemental frame, an impression

cylinder, a transfer cylinder, interposed between said form and impression cylinders, arranged to receive an impression from the said plate of the ink receptive characters, and a manually controlled means for throwing the form cylinder and supplemental frame into and out of operation, said means comprising a pin having a screw threaded engagement with the main frame and connected to said form cylinder, a handle secured to said pin for rotating it, and an abutment on said handle adapted to engage said supplemental frame for raising or lowering the same.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this sixteenth day of April 1914.

JOHN G. MARK.

Witnesses:

JOSEPH E. PERRY,  
F. GEORGE BARRY.