F. A. PUTNAM.

PRINTING MACHINE.

APPLICATION FILED AUG. 5, 1912.

1,109,938.

Patented Sept. 8, 1914.

2 SHEETS—SHEET 1.

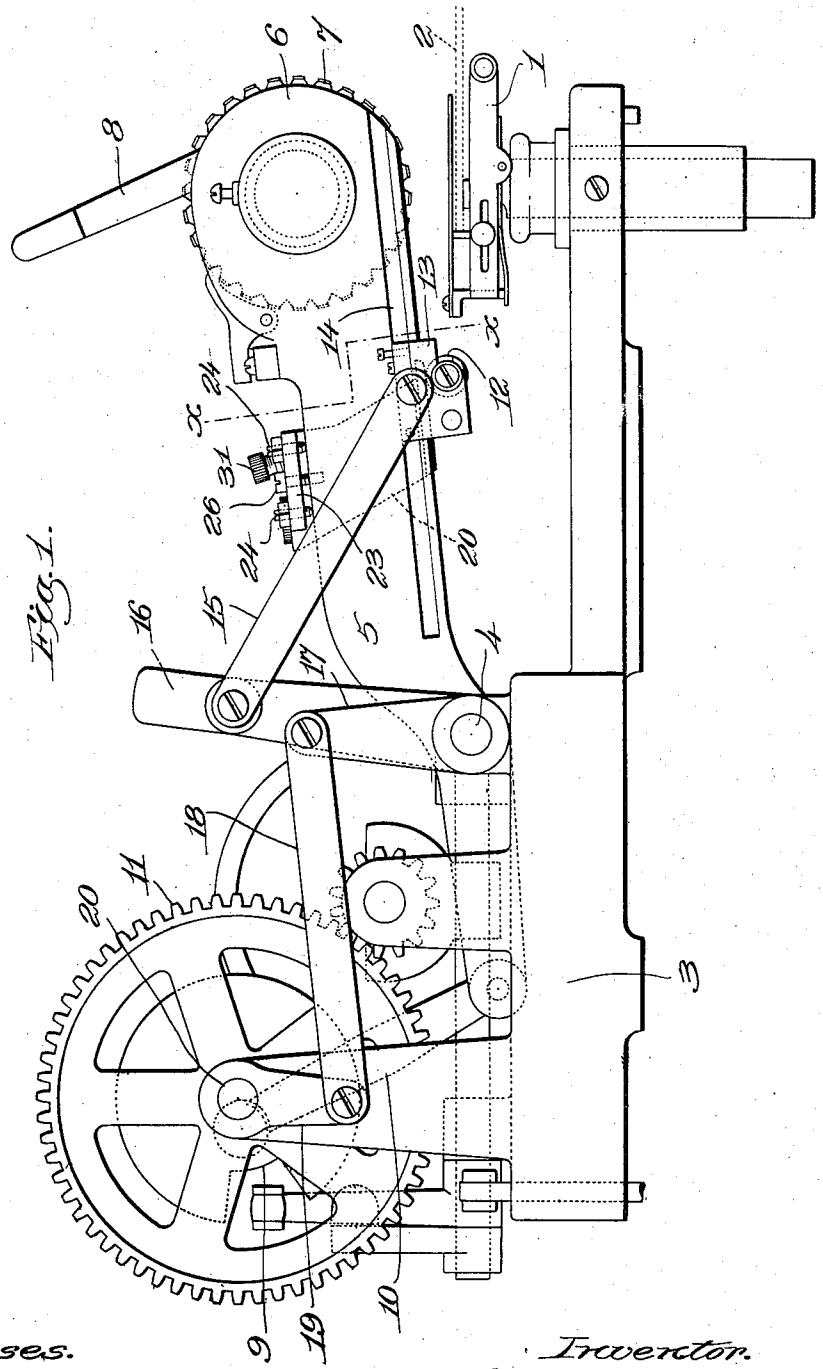


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 3.

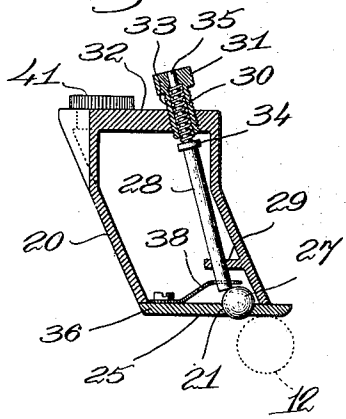


Fig. 2.

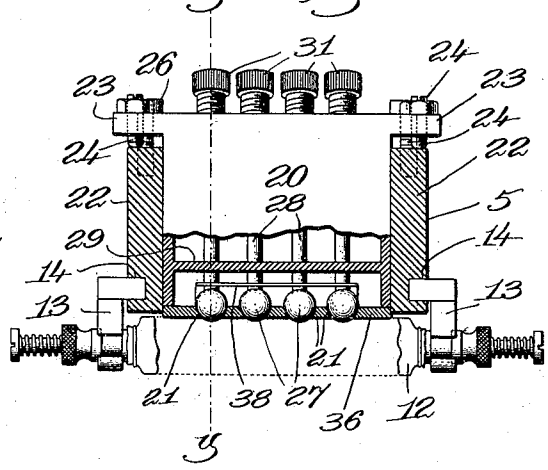


Fig. 4.

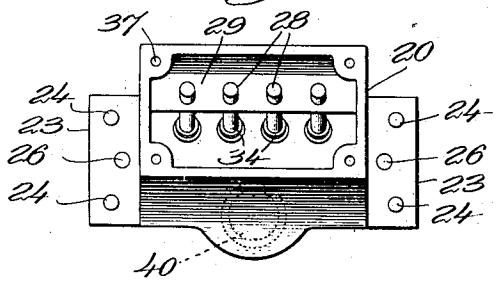


Fig. 5.

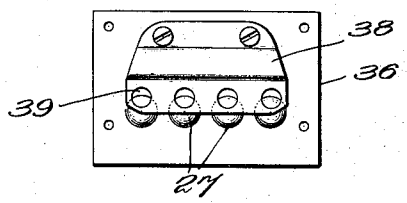


Fig. 6.

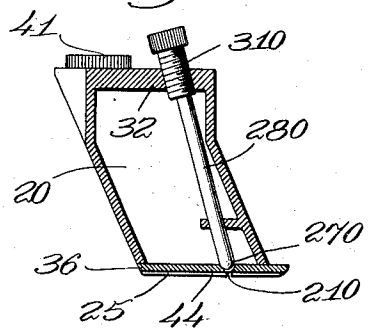
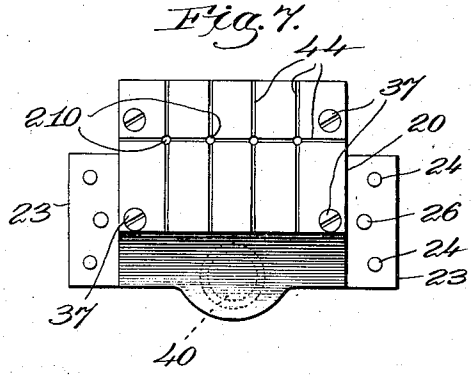


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRED A. PUTNAM, OF MELROSE, MASSACHUSETTS, ASSIGNOR TO MARKEM MACHINE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

PRINTING-MACHINE.

1,109,938. Specification of Letters Patent. Patented Sept. 8, 1914.

Application filed August 5, 1912. Serial No. 713,261.

To all whom it may concern:

Be it known that I, FRED A. PUTNAM, a citizen of the United States, residing at Melrose, county of Middlesex, State of Massachusetts, have invented an Improvement in Printing-Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to printing machines of that type provided with a printing head having type bearing members, a platen, means for giving said head and platen a relative movement to bring the type against the platen to make an impression and an inking mechanism for inking the type.

The object of the present invention is to provide a novel form of inking mechanism which includes an ink-containing reservoir and means for conveying the ink from the reservoir to the type in uniform quantities so that a uniform quantity of ink will always be applied to the type. In carrying out my invention I provide an ink reservoir having discharge ports and employ an inking roll which is movable across said ports thereby to receive a small quantity of ink, and then against the type to ink the latter.

Heretofore it has been proposed in machines of this type to supply the ink roll with ink from a pad or from an inking plate on which the ink is spread and over which the roll passes, but the difficulty with such constructions is that when a fresh supply of ink is applied to the pad or plate the type will be too heavily inked, while when the ink has been partially used from the pad the type will be insufficiently inked.

With my improvement which involves the ink reservoir it is possible to apply a uniform quantity of ink to the type at each operation, regardless of the quantity of ink in the reservoir so that so long as the reservoir contains any ink the impressions which are made are entirely uniform.

In the machine shown the printing head is mounted on a vibrating arm and the ink reservoir is sustained by said arm. The advantage of this construction is that the vibrating motion of the arm serves to agitate the ink in the reservoir and keep it thoroughly mixed.

The features wherein my invention resides will first be described in connection with the accompanying drawings and then pointed out in the appended claims.

Referring to the drawings which show one embodiment of my invention, Figure 1 is a side view of a printing machine having my improvements applied thereto; Fig. 2 is an enlarged section on the line *x*—*x*, Fig. 1 with parts broken away; Fig. 3 is a section on the line *y*—*y*, Fig. 2; Fig. 4 is a bottom plan view of the device shown in Fig. 3 with the bottom plate removed; Fig. 5 is a view of the bottom plate; Fig. 6 is a view similar to Fig. 3 showing a modified form of the invention; Fig. 7 is a bottom plan view of the device shown in Fig. 6.

The printing machine herein shown comprises a frame 3 sustaining a platen 1 on which the work 2 to be printed is adapted to be placed and which also has pivoted thereto at 4 a vibrating member 5 carrying at its end a printing head 6 provided with a plurality of type disks 7, each of which is capable of being set independently by its lever 8. The member 5 is vibrated by means of a crank disk 9 connected by a link 10 with the end of said member, said crank disk being operated by a gear 11. The type disks are inked by means of an inking roll 12 which is carried in a carrier 13 shown as slidably mounted in ways 14 formed on the member 5 and operated by suitable mechanism which brings the inking roll against the type each time that the printing head 6 is elevated. The mechanism herein shown for moving the carrier 13 comprises links 15 pivotally connected to the carrier at each end thereof and pivotally connected to a rocking member 16 which is mounted to turn about the shaft 4 on which the member 5 is pivoted, said rocking member 16 having rigid therewith an arm 17 connected by a link 18 with a crank arm 19 on the shaft 20 carrying the crank disk 9.

The construction thus far described represents a type of printing machine which is now on the market, and as its operation will be perfectly plain to those skilled in the art I will not refer to it further. This particular type of printing machine has been referred to merely as an illustration of the manner in which my invention may be applied to printing machines generally. I wish to state at this point, however, that my invention is applicable to a great va-

riety of printing machines and is not at all confined in its use to a machine of the type herein illustrated. In fact my invention may be used in connection with any printing machine which embodies in its construction an inking roll and means to move the inking roll toward and from the type for inking the latter, whether said inking roll is slidably mounted on a vibrating arm or is sustained in any other appropriate way.

My invention comprises an ink reservoir provided with discharge ports situated so that each movement of the ink roll will carry it over the discharge ports and receive a quantity of ink therefrom. The ink reservoir may be placed in any suitable place where it will be in position to have the inking roll pass across its discharge ports while said roll is moving toward and from the type. In the type of machine herein illustrated having a vibrating member which carries the type disks, I prefer to sustain the reservoir on this vibrating member. The ink reservoir illustrated herein is shown at 20 and it is provided in its bottom with one or more discharge ports 21 across which the inking roll 12 moves at each vibration of the member 5. The manner in which the ink reservoir is sustained by the vibrating member 5 will depend upon the construction of the latter. In the machine shown in the drawings the member 5 has a forked construction and is provided with the two side arms 22. Where the member 5 is thus constructed, it is convenient to place the ink reservoir 20 between the side arms 22, as shown in Fig. 2, in which case said reservoir may conveniently be made of a length to fit the space between the side arms. I have herein shown the reservoir as provided with two lips 23 which overlie the top edges of the arms 22 and which are provided with leveling screws 24 which engage the top edge of the arms 22 and by which the position of the reservoir can be adjusted so as to bring the lower face 25 thereof in the proper position to be engaged by the inking roll 12. The reservoir is firmly held in its proper position by clamping screws 26 which extend through the flanges 23 and into the arms 22.

In the preferred embodiment of my invention I propose to employ suitable valves for the discharge ports 21 to regulate the quantity of ink discharged therefrom at each pass of the inking roll. In the construction shown in Figs. 3–5 these valves are yieldingly sustained in position and are arranged to be unseated slightly at each pass of the inking roll thereby permitting a certain amount of ink to flow out onto the ink roll as the latter passes over the ports.

The form of valve which is shown in Figs. 2 and 3 is a ball valve 27 and where valves of this type are used the discharge ports 21 will preferably be of such a shape as to permit the balls to extend slightly through the face 25 so that each time that the inking roll 12 passes across the face it will engage the valves and raise them slightly. These valves are yieldingly held to their seats by means which will preferably be adjustable. The construction shown in the drawing is a convenient one and it comprises a plunger 28 for each valve which passes through an aperture in the guiding flange 29 within the reservoir 20 and which is backed by a spring 33 that yieldingly holds it against the valve 7. Means are provided for adjusting the tension of the spring, that herein shown comprising adjusting screws 31, one for each valve, each screw having screw-threaded engagement with the top 32 of the reservoir 20 and provided with an interior recess 30 in which the spring 33 is received. Each plunger 28 is provided with a flange 34 against which the corresponding spring 33 abuts and is also provided with an extension 35 which extends through the spring 33 and into an aperture in the thumb screw, said extension operating to hold the plunger in the proper position. The springs 33 allow the plungers 28 to give each time that the valves 27 are raised and the adjusting screw 31 provides for adjusting the tension of the springs.

In the preferred embodiment of my invention the bottom of the reservoir is made removable, said bottom being in the form of a plate 36 which is secured to the reservoir by clamping screws 37. This bottom plate is shown as having secured thereto a valve-retaining member 38 in the form of a piece of sheet metal which overlies the balls 27 and prevents them from becoming dislodged from the discharge ports 21 when the bottom plate 36 is removed. This ball-retaining plate 38 is provided with apertures 39 through which the lower end of the plungers 28 extend. The reservoir is provided with a suitable filling opening 40 which is closed by a plug 41.

In Figs. 6 and 7 I have shown another embodiment of my invention wherein the valves are positively adjustable instead of yieldingly sustained. In this latter construction the valves 270 are formed on the bottom of the plungers 280 and the latter form extensions of the adjusting screws 310 which screw into the top 32 of the reservoir. By turning the adjusting screws slightly the valves 270 can be opened or closed more or less. The face 25 of the bottom plate 36 is shown as provided with grooves 44 which intersect the discharge ports 210. Each time that the inking roll passes across the face 25 it will withdraw ink from the reservoir through the partially-opened ports 210 by capillary attraction. This form of inking

device is adapted for use where the ink is sufficiently thick so that it will not run out through the partially-opened ports 210. In the device shown in Figs. 2 and 3 the discharge ports are closed by the valves 27 except when the ink roll is passing across the face 25. This embodiment of the invention is adapted for use where the ink is sufficiently thin so that it would leak out through discharge ports which were constantly open.

Each time that the ink roll passes across the face 25 it will receive a quantity of ink which will be just sufficient to ink the type and by thus providing for continuously supplying the right quantity of ink to the inking roll the latter will be kept uniformly inked, and as a result the type will always be uniformly inked regardless of the amount of ink in the reservoir. Moreover, it is possible to make the reservoir of such a size to hold a quantity of ink sufficient for several days use so that with my invention no attention need be paid to the replenishment of the ink supply except at long intervals.

Machines of this type are frequently used for marking laundry, or marking linings for shoe uppers, or marking clothing, and in such places they are apt to be operated by persons who do not pay sufficient attention to keeping the machine properly inked. With my invention the operator does not need to be continually supplying new ink to the machine as one reservoir full of ink will last for several days even though the machine is used constantly. With my invention, therefore, it is possible to secure a uniform inking of the type without requiring any special attention on the part of the operator.

While I have illustrated my invention as embodied in one type only of printing machine, yet I wish it understood that the invention is capable of application to a great variety of different printing machines, and in fact to any machine that embodies in its construction an inking roll movable toward and from the type for inking the latter, it only being necessary to provide an ink reservoir which is properly positioned so that at each pass of the inking roll the latter will pass across the face of the ink reservoir and receive a quantity of ink therefrom. There are some advantages as above pointed out in mounting the ink reservoir on a movable member such as the vibrating member 5 because by so doing the ink is kept constantly stirred and uniformly mixed, but the invention is not limited to an ink reservoir thus mounted.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is—

1. In a printing machine, the combination with a base, of an arm pivotally mounted thereon and carrying at its end a printing head having type characters, means on the base for vibrating the arm, an ink reservoir sustained by the arm between the pivotal point thereof and the printing head and provided with a discharge port through which the ink flows by gravity, an ink roll, and means actuated by the arm-vibrating mechanism to move the roll toward and from the type characters and across said port.

2. In a printing machine, the combination with a base, of an arm pivotally mounted thereon, a printing head having type characters sustained on the arm at the end thereof, means on the base for vibrating said arm, an ink reservoir sustained by the arm between the pivotal point thereof and the printing head and provided with a discharge port, an ink roll carrier slidably mounted on the arm, an ink roll sustained by said carrier, and means actuated by the arm-vibrating mechanism to move the ink roll carrier longitudinally of the arm.

3. In a printing machine, the combination with a horizontally-extending vibrating arm carrying at its end a printing head having type members, of an ink roll situated beneath and sustained by said arm and movable longitudinally thereof, an ink reservoir also carried by said arm and provided with a discharge port situated so that the ink will flow therethrough by gravity, and means to move the ink roll toward and from the type members and across said port.

4. In a printing machine, the combination with a pivotally-mounted arm having a forked portion, of a printing head having type characters sustained by said arm, an ink reservoir situated between and fixedly secured to the arms of the fork and provided with a discharge port and an ink roll movable toward and from the type characters and across said port.

5. In a printing machine, the combination with a base, of an arm pivotally mounted thereon and having a forked portion, a printing head carried by said arm at the end of the forked portion thereof, an ink reservoir situated between the branches of the forked portion of the arm and provided in its under side with a discharge port, means on the base for vibrating the arm, an ink roll carrier slidably mounted on the arm, an ink roll sustained by said carrier for conveying ink from said reservoir to said printing head, and means actuated by the arm-vibrating mechanism for operating said ink roll carrier.

6. In a printing machine, the combination with a base, of an arm pivotally mounted thereon and having a forked portion, a printing head carried by said arm at the end of the forked portion thereof, an ink

reservoir situated between the branches of the forked portion of the arm and provided in its under side with a discharge port, means on the base for vibrating the arm, an ink roll carrier slidably mounted on the arm, an ink roll sustained by said carrier for conveying ink from said reservoir to said printing head, means actuated by the arm-vibrating mechanism for operating said ink roll carrier, a valve for the discharge port, and means accessible above the arm for adjusting the valve.

7. In a printing machine, the combination with a pivotally-mounted arm, of a printing head having type characters carried thereby, an ink reservoir sustained by said arm and provided with a discharge port, an ink roll situated beneath said arm, means to move said ink roll toward and from the type characters and across the discharge port, a valve for the discharge port, and means accessible above the arm for adjusting said valve.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FRED A. PUTNAM.

Witnesses:
HARRY R. FLETCHER,
CONRAD W. TUPPER.