F. A. PUTNAM & O. J. LOCKE.

INKING MECHANISM FOR PRINTING MACHINES.

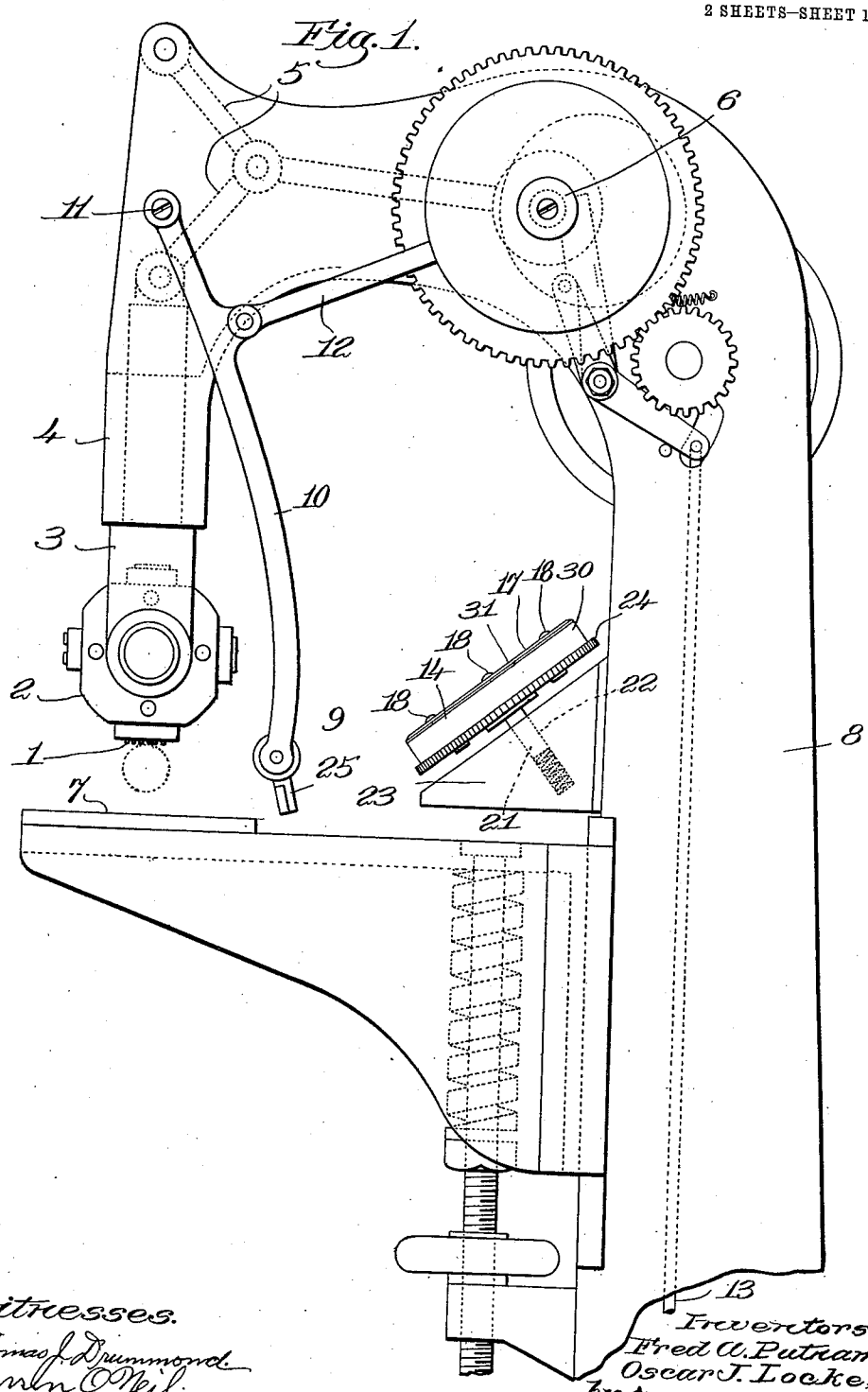
APPLICATION FILED JUNE 12, 1912.

1,101,470.

Patented June 23, 1914.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
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2 SHEETS—SHEET 2.

Fig. 2.

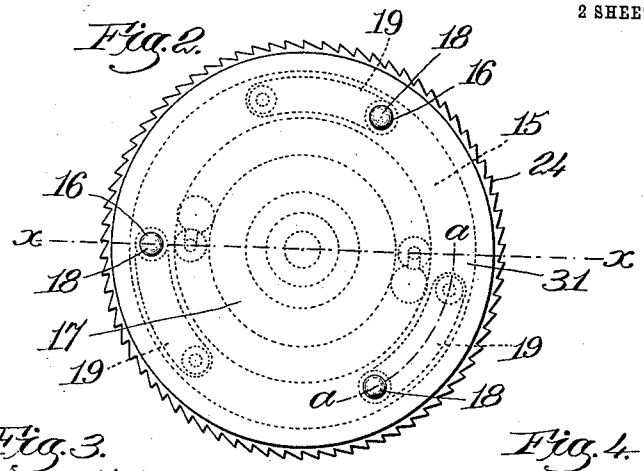


Fig. 3.

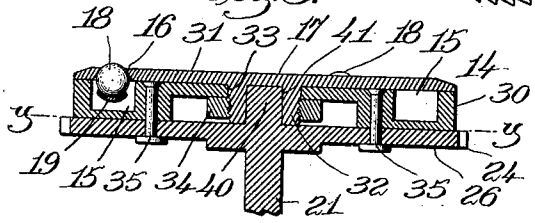


Fig. 4.

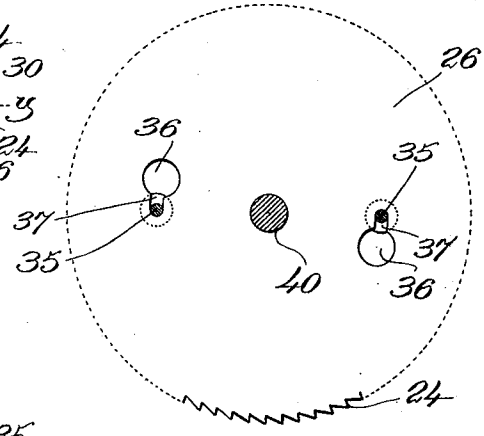


Fig. 5.

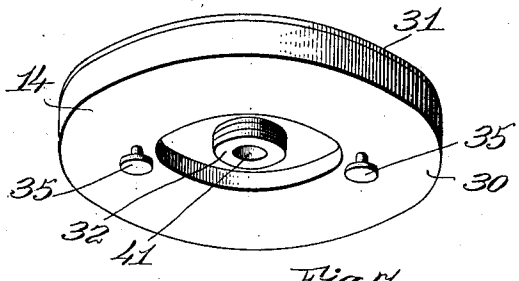


Fig. 6.

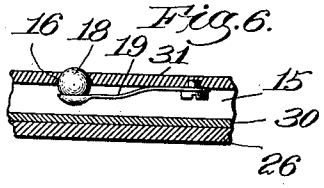


Fig. 7.

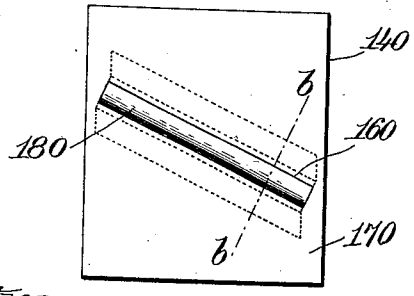
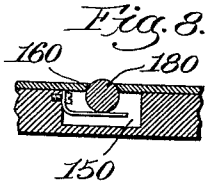


Fig. 8.



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UNITED STATES PATENT OFFICE.

FRED A. PUTNAM, OF MELROSE, AND OSCAR J. LOCKE, OF NEWTON, MASSACHUSETTS, ASSIGNORS TO MARKEM MACHINE CO., OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

INKING MECHANISM FOR PRINTING-MACHINES.

1,101,470. Specification of Letters Patent. Patented June 23, 1914.

Application filed June 12, 1912. Serial No. 703,114.

To all whom it may concern:

Be it known that we, FRED A. PUTNAM and OSCAR J. LOCKE, citizens of the United States, and residents of Melrose, county of Middlesex, State of Massachusetts, and Newton, county of Middlesex, State of Massachusetts, respectively, have invented an Improvement in Inking Mechanism for 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 has for its object to provide a novel inking mechanism for printing machines designed to provide an even distribution of the ink at all times to the inking roll by which the ink is transferred to the type.

Our invention can be used in connection with a variety of printing machines wherein an inking roll is used for transferring the ink from an inking plate or ink-containing reservoir to the type, and in the drawings we have shown a selected type of printing machine with our improvements applied thereto, it being understood, however, that the invention is not limited at all in its application to any particular type of printing machine.

Referring now to the drawings, Figure 1 is a side view of the upper part of a printing machine having our improvements applied thereto; Fig. 2 is a plan view of the inking plate; Fig. 3 is a section on the line *x—x*, Fig. 2; Fig. 4 is a section on the line *y—y*, Fig. 3; Fig. 5 is an underside perspective view of the inking member; Fig. 6 is a section on the line *a—a*, Fig. 2; Fig. 7 is a plan view of a modified form of the invention; Fig. 8 is an enlarged section on the line *b—b*, Fig. 7.

In the printing machine herein shown the type 1 are carried on a type holder 2 which is secured to a plunger 3 that moves up and down in the head 4 of the machine, said plunger being operated by the toggle lever device 5 which in turn is actuated from a suitable cam or eccentric on a shaft 6.

7 designates a platen or work support which is adjustably secured to the standard 8 from which the operative parts of the machine are supported.

9 is an inking roll carried in a swinging member 10 which is shown as pivoted to the head at 11 and which is operatively connected by a link 12 with a cam on the shaft 6 so that rotation of the shaft 6 will swing the inking roll across the face of the type 1, as shown in dotted lines Fig. 1, and will then carry said inking roll back across the face of an inking plate where the roll receives a fresh quantity of ink. The driving shaft is controlled by a suitable one-revolution clutch mechanism which is actuated by a link 13 leading to a treadle, not shown. These parts are parts of known printing machines and form no part of the present invention which relates solely to the inking plate by which the ink is fed to the inking roll 9. In machines of this type it has heretofore been the practice to provide an inking plate situated in a position so that the inking roll 9 will move across the face thereof during the swinging movement of the arm 10 and to provide means for turning the inking plate by the swinging movement of the arm, and it has been customary to place a quantity of ink directly on the top of the inking plate and then to rely on the moving of the inking roll over the plate and the turning movement of the plate to properly distribute the ink to the roll. The objection to this construction is that when the plate is freshly supplied with ink, the inking roll takes up more ink than is necessary to properly ink the type 1, with the result that the impression will be too heavy, while after the device has been in use for some time the quantity of ink which is taken up by the roll at each pass thereof over the inking plate is considerably less, and the impression which the type makes will be too faint. To secure an even distribution of the ink we provide the inking plate with an interior chamber which contains the ink and provide means for automatically feeding small quantities of the ink from the chamber to the surface of the inking roll thereover.

In the present embodiment of our invention the inking plate comprises a member 14 having one or more ink-containing chambers 15. Each chamber is provided with one or more openings 16 leading through

to the top surface 17 of said member with which the inking roll has contact. The openings 16 are normally closed by depressible valves 18 which are herein shown as in the form of balls, although the particular shape of the valves is not essential. The balls, however, have the advantage that whenever they are depressed by the inking roll passing over the surface 18, they will be turned somewhat and will thus bring up a fresh quantity of ink.

While the chambers 15 may have any suitable shape, we have herein illustrated the member 14 as having an annular groove or chamber 15 formed therein, which chamber is provided with two or more openings 16, each of which is controlled by a valve 18. The valves are yieldingly held in the position shown in Figs. 3 and 6 by some suitable means, such as springs, and these springs may be either spiral springs or leaf springs, or may have any other suitable construction.

In the drawings we have shown the springs as leaf springs, and each spring is also shown as cupped slightly at its outer end to receive the ball, so that the balls will not roll out of position when they are depressed. The member 14 is mounted for rotation about an axis perpendicular to the face 17, and means are provided for giving said member a turning movement at each operation of the arm 10. While it is possible to make the member 14 in a variety of ways without departing from the invention, we prefer the construction herein shown because of the ease with which it can be manufactured and because it admits of readily removing any member 14 and substituting another therefor. The member 14 is herein shown as mounted on a ratchet plate 26 which is provided with ratchet teeth 24 on its periphery and which is also provided with a pivotal stud 21 that is rotatably mounted in a socket 22 formed in a bearing 23 carried by the stand 8. The member 14 is shown as made in two parts, the body portion 30 in which the ink chambers 15 are formed, and the top or cap portion 31 which has the openings 16 therein and is provided with the top surface 17 with which the inking roll 9 has contact. The chamber 15 is shown in the form of a groove and this can conveniently be formed in the top face of the body 30 either when the body is cast or subsequently. When the cap 31 is in place it closes the open groove 15 and thus makes an entirely closed chamber. This cap may be secured in place in any suitable way. As herein shown it is provided with a screw-threaded boss 32 which extends through a central opening 33 in the member 30 to which is applied a clamping nut 34 that is received in a recess in the underside of the body 30. The springs 19 are preferably secured to the top 31 so that when the top is removed in order to fill the chambers 15 with ink, the valves 18 and springs 19 are removed with the top. This prevents any possibility of losing the balls when the cap 31 is removed.

The member 14 is preferably detachably secured to the ratchet disk 26 and while this may be accomplished in various ways, we prefer the construction shown wherein said member has headed studs 35 depending therefrom, the heads of which are adapted to be inserted through openings 36 in the ratchet disk, said disk having slots 37 leading from the openings so that the member 14 can be locked to the disk by a partial turning movement after inserting the headed studs through said openings.

In the use of these printing machines it is often desirable to be able to use different colored inks at different times and by making the member 14 detachable from the ratchet disk 26 it is possible to use anyone of a plurality of members 14, each containing ink of different color, and the change from a member having one color of ink to that having another color can be made with great facility. The ratchet member 26 and inking member 14 can be given a turning movement by any suitable means. We have herein shown for this purpose a finger 25 carried by the arm 10 and adapted to engage the ratchet teeth 24 as said arm swings. This construction will give the inking member 4 a slight turning movement at each oscillation of the arm 10.

In the operation of the device the work is laid on the platen 7 and the vertical movement of the plunger 3 brings the type against the work to make the impression thereon. The arm 10 swings in unison with the vertical movement of the plunger, and during each complete oscillation of the arm 10 the inking roll 9 makes two passes across the face 17 of the inking member, during one of which passes the finger 25 engages the ratchet teeth 24 and turns the member 14. During the backward movement of the arm 10 the finger 25 merely clicks over the ratchet teeth 24.

The engagement of the inking roll 9 with the balls 18 will depress the balls, and at the same time turn the balls slightly and as the underside of each ball is in contact with the ink in the chamber 15, the turning movement of the ball while it is depressed will bring an inked portion of the ball above the surface 17, thus bringing a slight quantity of the ink into position to be delivered to the inking roll 9. The turning movement of the member 14 will cause a constant shift in the position of the balls 18 relative to the inking roll, and by this means the ink will be gradually distributed to all parts of the

inking roll 9 and the latter will be evenly supplied with ink in uniform quantities. The same amount of ink will, therefore, be delivered to the type at such operation and all the impressions will be uniform.

We prefer to arrange the ink-distributing member 14 in an inclined position, as herein shown. The advantage of this is that the ink will tend to flow by gravity toward the portion of the chamber at the lower side of the member, and this part of the chamber will always be filled with ink even when the ink has been partially used from the chamber. As a result, whenever the member 14 is turned to bring the ball valves 18 around at the lower side thereof, the undersides of the valves will be in contact with the ink and the next time they are turned the coated under sides will be brought up to carry fresh ink to the ink roll. If the ink-distributing member 17 stands horizontally, then it will be necessary to keep the chamber 15 filled with ink in order that the ball valves may operate to feed ink to the surface 17 thereof. By placing the device in an inclined position, as shown in Fig. 1, however, the ball valves will operate to feed ink to the inking roll so long as there is any ink in the chamber 15, for each time that the ball valves are carried around on the lower portion of the member they will come in contact with and the lower sides may be coated by any ink in the chamber.

In Figs. 7 and 8 we have shown another embodiment of the invention wherein the inking member does not turn. In this embodiment the inking member 140 is provided with a chamber 150 to receive ink and is also provided with a slot 160 in its upper face 170 with which the inking roll 9 has engagement. This slot is normally closed by a roll 180 yieldingly held in place by suitable springs. The roll is preferably arranged diagonally although this is not essential. At each pass of the inking roll over the face 170 the roll 180 will be turned slightly, thus bringing a fresh supply of ink from the chamber 150 into position to be taken up by the inking roll 9. By the term "ink" as herein used, we intend to cover any inking compound of whatever nature.

While we have illustrated herein one embodiment of our invention, we do not wish to be limited to the constructional details shown, as they may be varied without departing from the invention.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In an inking device, the combination with a rotary supporting plate, of an inking member sustained thereby and comprising a body portion having an ink-containing chamber open at the upper side of said member, a flat-faced cap portion covering the chamber and provided with discharge ports, the whole surface of the cap constituting an inking surface, an ink roll adapted to pass over said inking surface, and means to rotate the supporting plate by or through movement of the ink roll while the latter is in contact with said inking surface.

2. In an inking device, the combination with a rotary supporting plate, of an inking member removably sustained thereby and comprising a body portion having an ink-containing chamber open at the upper side of said member, a cap portion covering the chamber and provided with discharge ports, the whole surface of the cap constituting an inking surface, an ink roll adapted to pass over said inking surface, and yieldingly-sustained valves normally closing said ports.

3. In an inking device, the combination with a rotary supporting plate, of an inking member removably sustained thereby and comprising a body portion having an ink-containing chamber open at the upper side of said member, a cap portion covering the chamber and provided with discharge ports, the whole surface of the cap constituting an inking surface, an ink roll adapted to pass over said inking surface, and yieldingly-sustained valves normally closing said ports, said valves having portions projecting through said inking surface whereby they are depressed by the movement of the ink roll thereover.

4. In an inking device, the combination with a rotary supporting plate, of an inking member removably sustained thereby and comprising a body portion having an ink-containing chamber and a cap portion covering said chamber and provided with discharge ports, the upper surface of said cap constituting an inking surface, an ink roll adapted to pass over said inking surface and means associated therewith to cause the plate to rotate.

5. In an inking device, the combination with a rotary ink-distributing plate having an ink roll receiving surface and a chamber to contain ink and provided with openings leading to said face, of yieldingly-sustained ball valves normally closing said openings, but projecting through the face, an ink roll arranged to pass across the face and depress and rotate the ball valves, and means to turn the inking plate as the ink roll passes across.

6. In an inking device, the combination with a supporting member, of an inking member removably sustained thereby and provided with an inking surface, and a chamber to contain ink, said member having openings leading from the chamber to

said surface, yieldingly-sustained valves normally closing said opening but projecting through the surface, an ink roll arranged to pass across the face and depress the valves and means associated with said ink roll to cause the supporting member to rotate.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

FRED A. PUTNAM.
OSCAR J. LOCKE.

Witnesses:
H. R. FLETCHER,
E. C. LONGFELLOW.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."