

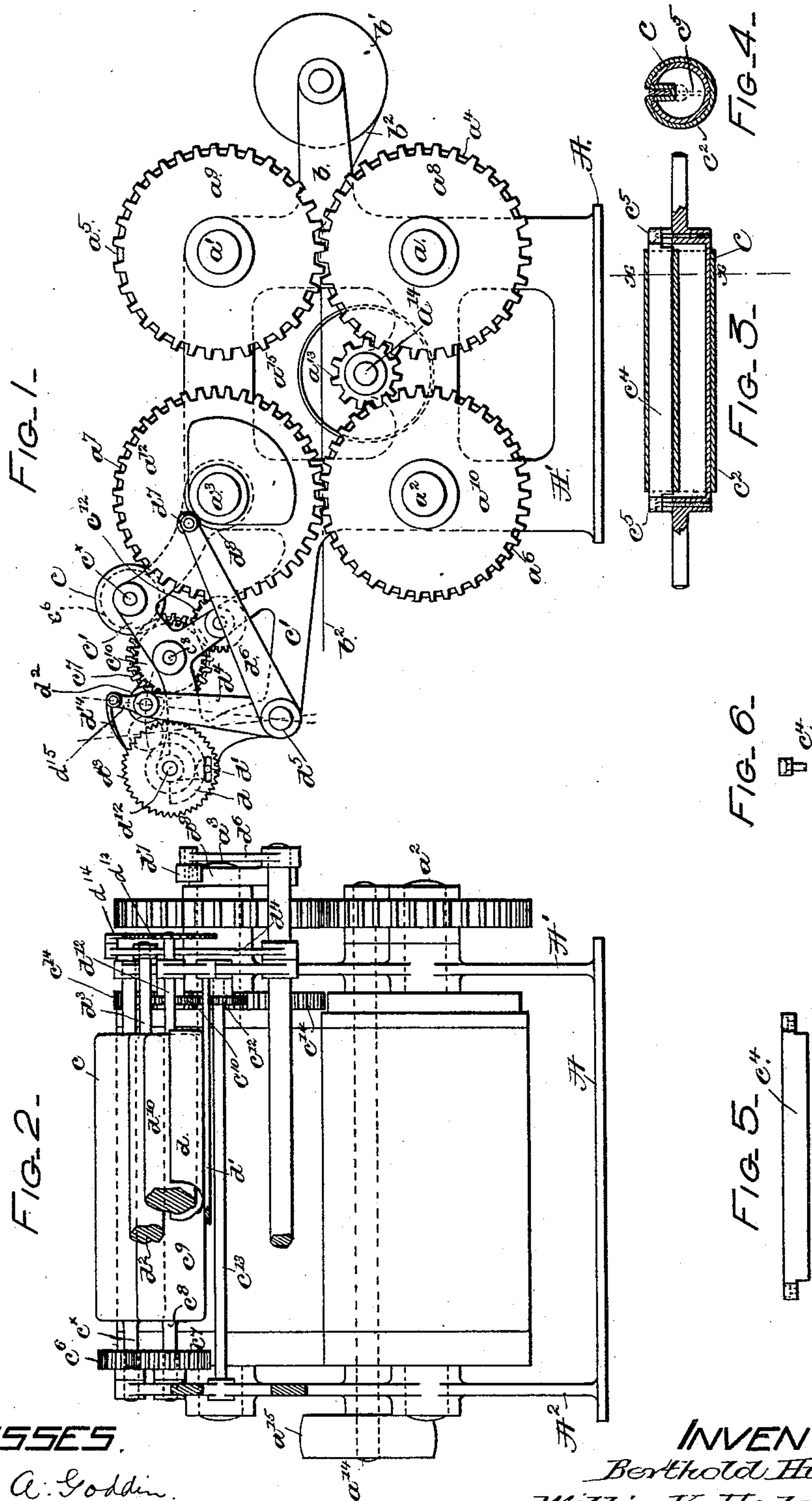
(No Model.)

B. HUBER & W. K. HODGMAN.

SET-OFF MECHANISM FOR PRINTING MACHINES.

No. 393,471.

Patented Nov. 27, 1888.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## SET-OFF MECHANISM FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 393,471, dated November 27, 1888.

Application filed January 12, 1888. Serial No. 260,532. (No model.)

*To all whom it may concern:*

Be it known that we, BERTHOLD HUBER and WILLIS K. HODGMAN, both of Taunton, county of Bristol, and State of Massachusetts, have invented an Improvement in Set - Off Mechanisms for Printing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to that class of printing-presses known as "perfecting-presses," wherein a web or sheet of paper receives an impression or is printed upon both sides.

In presses of the class referred to the web or sheet of paper is first fed between one set of cylinders comprising a type or form cylinder and an impression-cylinder to print the said sheet or web on one side, and thereafter it is fed between another set of cylinders oppositely arranged to the first set, so that the opposite or other side of the sheet or web is printed upon. The side of the sheet or web first printed upon is thus brought beneath and in contact with the impression-cylinder of the second set of cylinders, and it frequently happens that a portion of the freshly-laid ink is taken off from the web or sheet by the said impression-cylinder of the second set. The fresh ink thus taken off by the impression-cylinder adheres to the said cylinder, rapidly accumulates thereon, and, catching the fine particles of dust, forms a gummy substance on the impression-cylinder, which spoils, blurs, or otherwise deteriorates the work. This accumulation of ink on the impression-cylinder is known to the trade as "offset;" and the main feature of this invention is to prevent the formation or accumulation of offset upon the impression-cylinder. We accomplish this feature of our invention by means of a "set-off" mechanism, herein shown as a roller constructed and operated as will be described, whereby the said roller wipes over the said impression-cylinder at a somewhat accelerated speed.

Other features of our invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of a sufficient portion of one form of web-perfecting printing-press embodying our invention; Fig. 2, an end elevation of the same, showing the set-off mechanism partially broken out; Fig. 3, a longitudinal section of the set-off roller and its jacket or covering; Fig. 4, a section of Fig. 3 on line  $x x$ ; Fig. 5, a side elevation of the tightening-bar employed to hold the covering of the set-off roller in position, and Fig. 6 an end view of the bar shown in Fig. 5.

The frame or casting composed of the base A and sides  $A' A^2$  is of sufficient strength to support the working parts of the machine. The sides  $A' A^2$ , as herein shown, have journal-bearings for shafts  $a a' a^2 a^3$ , having mounted on them, respectively, between the said sides, cylinders  $a^4 a^5 a^6 a^7$ , arranged, as shown, in two sets, the cylinders  $a^5 a^6$  in the present instance constituting type-cylinders, and the cylinders  $a^4 a^7$  impression-cylinders, of the said sets of cylinders.

The shafts referred to have mounted on them at one side of the machine gears  $a^8 a^9 a^{10} a^{12}$ , respectively, the gears  $a^8 a^9$  and  $a^{10} a^{12}$  being in mesh with each other and rotated, as shown, by an intermediate pinion or gear,  $a^{13}$ , on a main shaft,  $a^{14}$ , to which rotation is imparted by a belt (not shown) engaging a pulley,  $a^{15}$ , on the opposite end of the said shaft.

The sides  $A' A^2$ , as shown, have rearwardly-extended arms  $b$ , only one of which is shown, to support the roller  $b'$ , upon which the web or sheet,  $b^2$ , of paper or other material to be printed upon, is wound. The web or sheet  $b^2$  is first fed to the cylinders  $a^4 a^5$  by a suitable feeding mechanism, (not shown,) where it is printed upon its upper side or face, and then the web passes between the cylinders  $a^6 a^7$  and is printed on its under or opposite side or face, after which it may be cut into sheets by suitable cutting mechanism, (not herein shown.) As the freshly-printed upper side of the sheet or web  $b^2$  comes in contact with the impression-cylinder  $a^7$  a quantity of the fresh ink is imparted to the said impression-cylinder, the said ink, if permitted to accumulate, injuring the quality of the work.

To effectually remove the ink from the im-



pression-cylinder  $a'$ , and thereby prevent any accumulation of ink thereon, we have provided a set-off mechanism, it consisting, as herein shown, of a set-off roller,  $c$ , having its shaft  $c^x$  supported, as shown, in arms  $c'$  of the sides  $A' A^2$ . The set off roller is herein shown as a hollow tube or pipe provided with a longitudinal slot and covered with a yielding or elastic material, preferably a piece of plush, as  $c^2$ , which is maintained tightly on the said tube or pipe, as herein shown, by a tightening device or bar,  $c^4$ , inserted in the said longitudinal slot, (see Figs. 3 and 4,) the said material being clamped between the said bar and the sides of the said slot, the said bar being secured in place by bolts  $c^5$ , as shown in Fig. 3. The covering  $c^2$ , referred to, runs against and wipes over the surface of the impression-cylinder  $a'$ , their surfaces in contact running in the same direction, but the speed of the set-off roll is somewhat accelerated in a manner, as will be described.

The set-off roller is rotated by means of a gear,  $c^6$ , (see Fig. 2,) on its shaft,  $c^x$ , in mesh with a somewhat larger gear,  $c^7$ , on a shaft,  $c^8$ , upon which is mounted a preferably-polished iron roller,  $c^9$ , the said shaft  $c^8$  having at its other end a gear,  $c^{10}$ , in mesh with and driven by an intermediate gear,  $c^{12}$ , on a shaft,  $c^{13}$ , the gear  $c^{12}$  being in mesh with and driven by a gear,  $c^{14}$ , on the shaft  $a^1$ , the gear  $c^{14}$  being shown only in Fig. 2. The pitch diameter of the gear  $c^{10}$  is the same as the roller  $c^9$ , and the pitch diameter of the gear  $c^{14}$  is the same as the cylinder  $a'$ , and therefore the surface speeds of the said roller and cylinder are equal but in opposite directions, and the gear  $c^7$ , being larger than the gear  $c^6$ , causes the shaft  $c^x$  and roller  $c$  to rotate faster than the cylinder  $a'$ .

The set-off roller  $c$  will preferably be kept dampened or moistened with a mixture, preferably of kerosene and machine oil, contained in a fountain or trough,  $d$ , supported, as shown, by the rod  $d'$ . The mixture of oils is applied to the set-off roller by the roller  $c^9$ , to which it is imparted by a transferring or ductor roller,  $d^2$ , having its shaft  $d^3$  supported by a lever,  $d^4$ , mounted on a rock-shaft,  $d^5$ , the said rock-shaft being operated, as shown, through a lever,  $d^6$ , provided, as shown, with a roller,  $d^7$ , resting upon and deriving its motion from a cam,  $d^8$ , on the shaft  $a^3$ , the said cam through the said levers moving the ductor-roller  $d^2$  from its full-line position in contact with the roller  $c^9$ , to its dotted-line position in contact with the fountain-roller  $d^{10}$ , having its shaft  $d^{12}$  supported in the arms  $c'$  of the sides  $A' A^2$ , and provided outside the side  $A'$ , as shown, with a ratchet,  $d^{13}$ , having its teeth engaged by a pawl,  $d^{14}$ , secured to an arm,  $d^{15}$ , on the shaft  $d^3$  of the ductor-roller, so that when the said ductor-roller is moved forward into its dotted-line position the fountain-roller will be partially rotated to present a moistened surface to the said ductor-roller.

The oil applied to the impression-cylinder

by the set-off roller serves to lubricate or moisten the said cylinder, and also to moisten the ink which may adhere thereto, thus materially assisting the set-off roller in removing the ink from the said impression cylinder.

We claim—

1. In a perfecting printing press, the combination, with an impression-cylinder, of a set-off roller rotating at an accelerated speed and having a surface of yielding or elastic material, substantially as described, to wipe over the said impression-cylinder, substantially as described.

2. In a perfecting printing press, the combination, with an impression-cylinder, of a set-off roller having a surface of yielding or elastic material, substantially as described, to wipe over the said impression-cylinder, and gearing actuated by the rotation of the impression-cylinder to effect an accelerated rotation of the set-off roller, substantially as described.

3. In a perfecting printing press, the combination, with an impression-cylinder, of a set-off roller having a surface of yielding or elastic material, substantially as described, to wipe over the said impression-cylinder, an intermediate roller,  $c^9$ , in contact with the set-off roller, and a ductor-roller,  $d^2$ , to moisten the said intermediate roller, substantially as described.

4. In a perfecting printing press, the combination, with an impression-cylinder, of a set-off roller having a surface of yielding or elastic material, substantially as described, to wipe over the said impression-cylinder, an intermediate roller,  $c^9$ , in contact with the set-off roller and driven from the impression-cylinder, and a ductor-roller,  $d^2$ , to moisten the said intermediate roller, substantially as described.

5. In a perfecting printing press, the combination, with an impression-cylinder, of a roller,  $c^9$ , rotating at substantially the same surface speed, and a set-off roller in contact with the impression-cylinder and driven from the roller  $c^9$  at an accelerated speed, substantially as described.

6. In a perfecting printing press, the combination, with an impression-cylinder, of an intermediate roller rotating at substantially the same surface speed and a set-off roller in contact with the impression-cylinder and driven from the intermediate roller at an accelerated speed, and a fountain-roller and ductor-roller to transfer moisture from the said fountain-roller to the intermediate roller, substantially as described.

7. In a perfecting printing press, the combination, with an impression-cylinder, of an intermediate roller rotating at substantially the same surface speed and a set-off roller in contact with the impression-cylinder and driven from the intermediate roller at an accelerated speed, and a fountain-roller and ductor-roller actuated by a cam on the cylin-

der-shaft to alternately bring the said ductor-roller in contact with the fountain-roller and intermediate roller, substantially as described.

8. In a perfecting printing-press, a set-off  
5 roller consisting of a hollow pipe having a longitudinal slot and a sleeve of plush fitted on said pipe, combined with a tightening-bar fitted into said slot to clamp the sleeve between it and the sides of the slot, substantially as  
10 described.

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

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WILLIS K. HODGMAN.

Witnesses:

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