

(No Model.)

5 Sheets—Sheet 1.

H. F. WYATT.
CHROMATIC PRINTING MACHINE.

No. 469,767.

Patented Mar. 1, 1892.

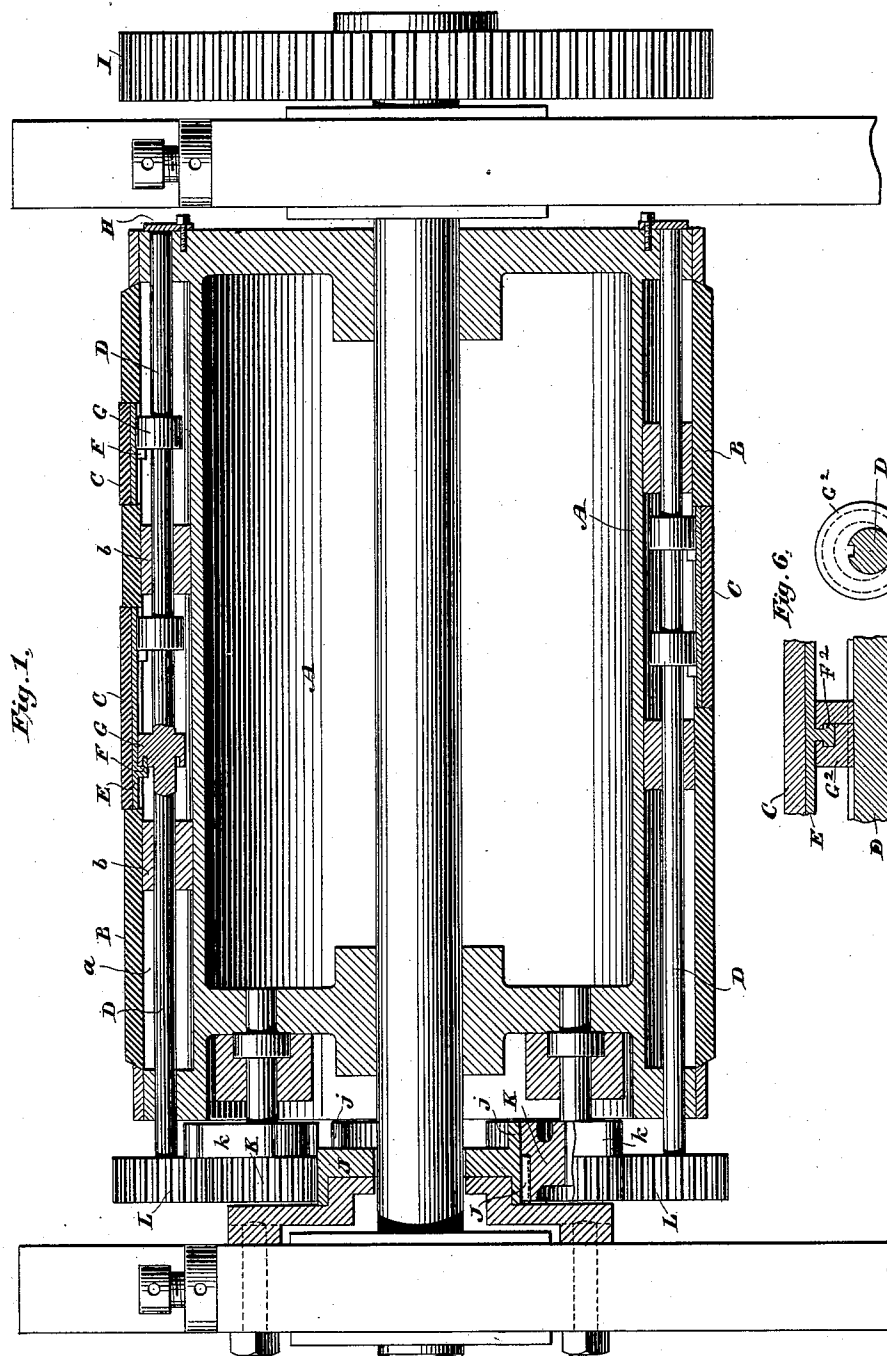


Fig. 1.

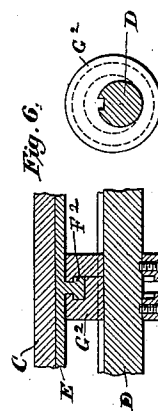


Fig. 6.

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Harry F. Wyatt Inventor

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Henry H. H. H. H.

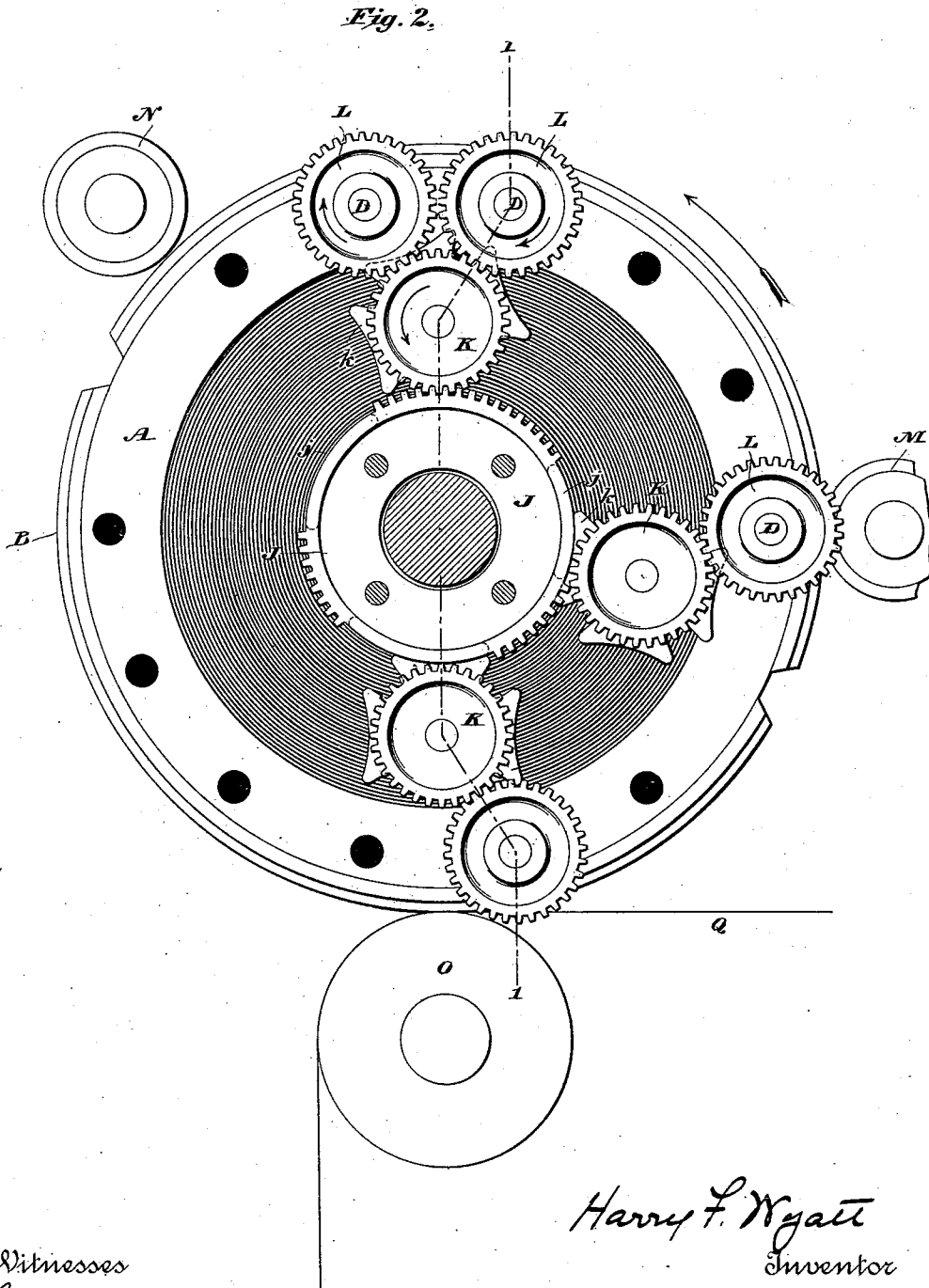
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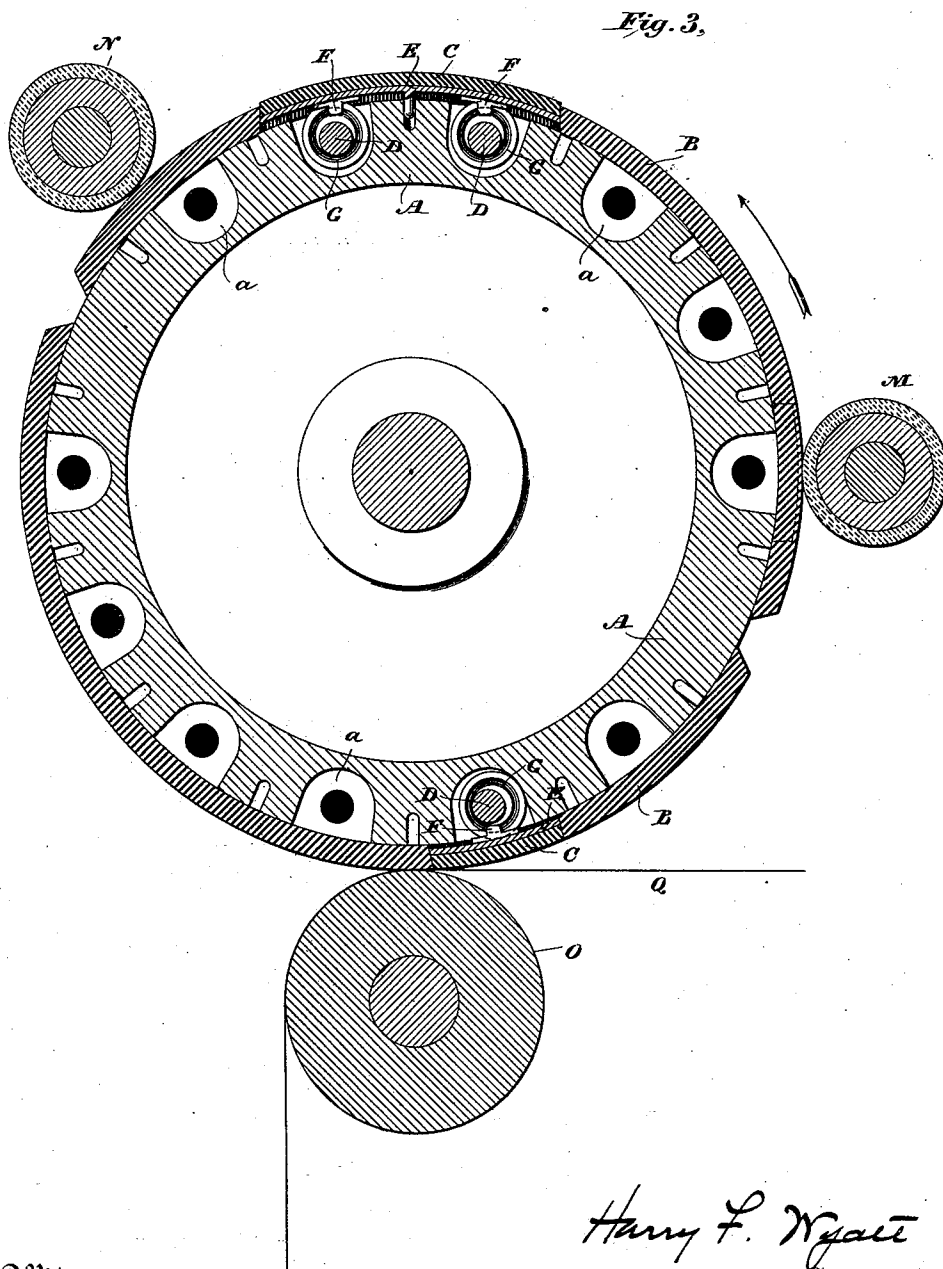
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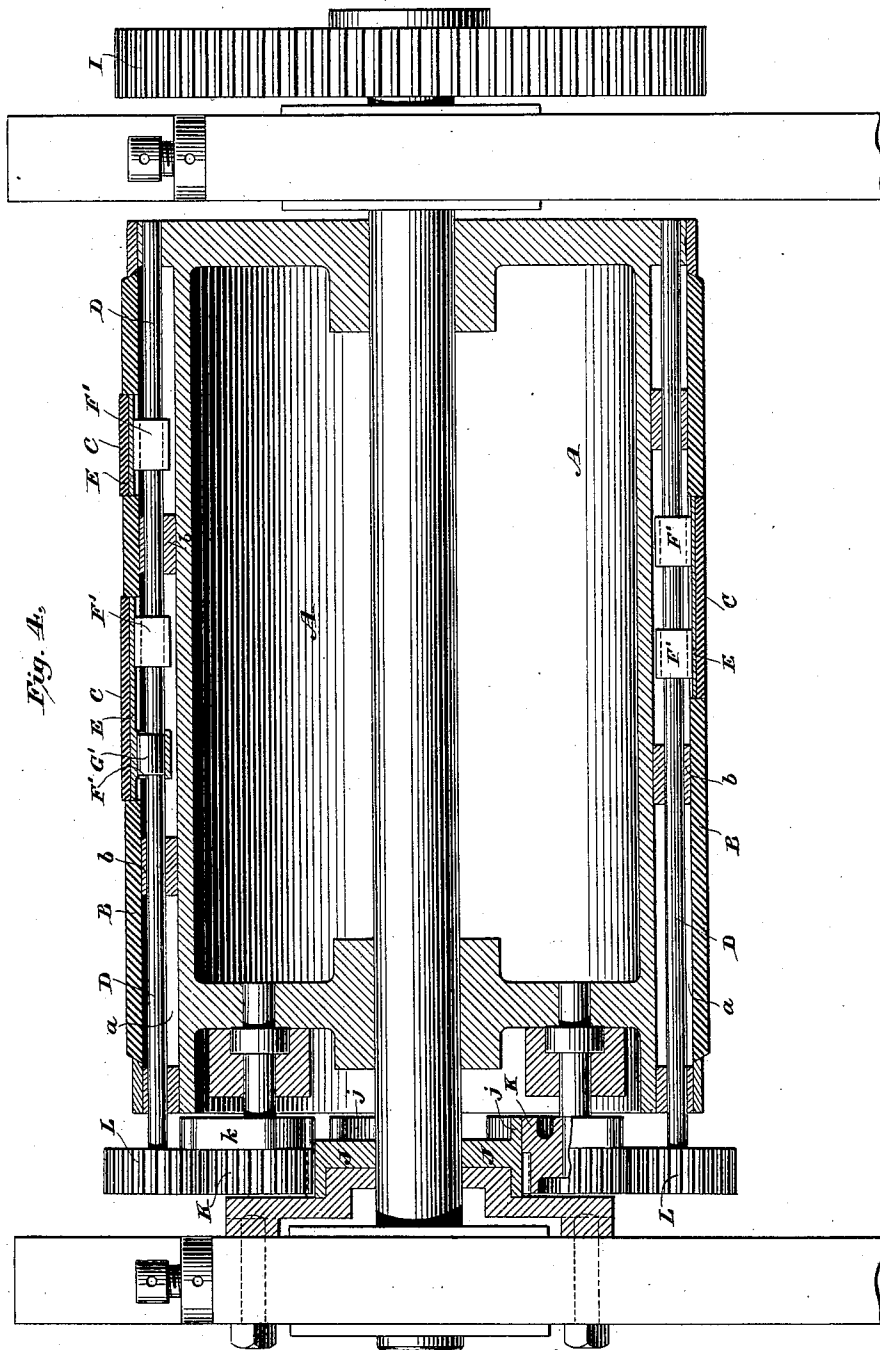
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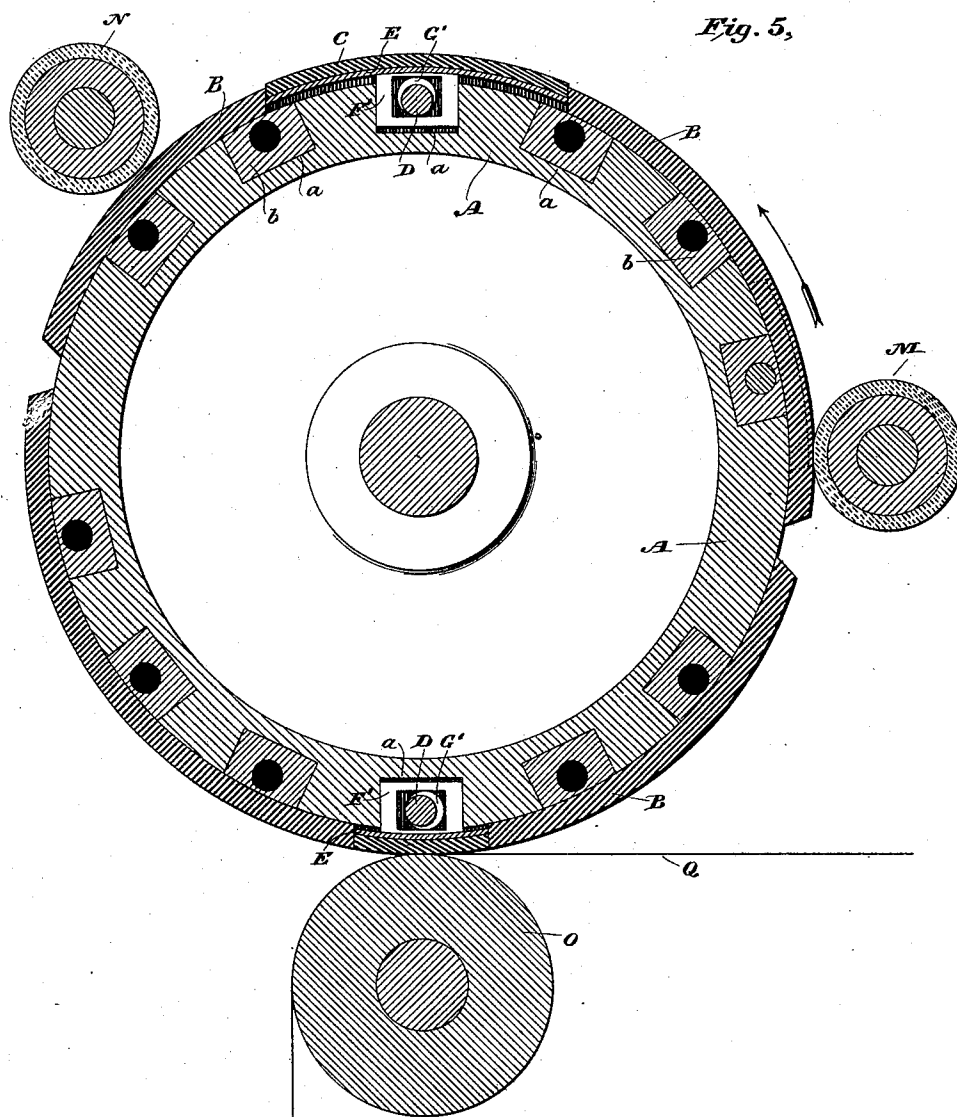
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UNITED STATES PATENT OFFICE.

HARRY F. WYATT, OF NEW YORK, N. Y.

CHROMATIC-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 469,767, dated March 1, 1892.

Application filed July 18, 1890. Serial No. 359,226. (No model.)

To all whom it may concern:

Be it known that I, HARRY F. WYATT, a subject of the Queen of Great Britain and Ireland, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Chromatic-Printing Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a chromatic-printing device which can be used on any ordinary printing-press in connection with the usual stereotype-plates and will make chromatic impressions while such plates are making common black impressions. I attain this object by means of certain improvements upon the mechanism heretofore invented by me, fully described in the specification accompanying Letters Patent No. 420,399, dated January 28, 1890, to which I beg leave to refer for a better understanding of the description hereinafter given. The said former specification contains a description of a form-cylinder with the ordinary fixed stereotype-plates and other relatively-movable plates which are raised and lowered for independent inking and held in three successive positions—viz., above, below, and even with the surface of the fixed plates—by means of lipped wedges beneath them, attached to and operated by reciprocating bars working in longitudinal recesses of the form-cylinder, said bars receiving their motion as the cylinder revolves from cams fixed to the frame of the machine. The improvements I now describe relate exclusively to the mechanism operating the said movable plates. As I find it convenient to use a reinforcing-plate beneath the regular movable stereotype-plate, to prevent confusion I will hereinafter use the expression "fixed printing-surface" to signify the ordinary fixed stereotype and "movable printing-surface" to signify the relatively-movable stereotype together with its reinforcing-plate and anything else rigidly attached to it and partaking of its motion. In place of the lipped wedges and sliding bars formerly described, I have in my present in-

vention cams within or underneath the movable printing-surfaces, operated by a shaft rotating intermittently in a longitudinal recess of the form-holder, and secure three fixed positions by means of a system of interrupted gear-wheels operating the shaft.

Figure 1 is a longitudinal sectional view in which A is the form-holder; B, the fixed printing-surface; C, the movable stereotyp; E, the reinforcing-plate; F, a projection from the reinforcing-plate designed to engage with the cam; G, the cam beneath the reinforcing-plate; D, the shaft to which the cam is attached; L K J, the train of gearing by which the shaft is rotated; b, the adjustable bearing of the shaft.

Fig. 2 is an end view showing the operation of the system of gear-wheels L K J.

Fig. 3 is a cross-sectional view showing the operation of the style of cam shown in Fig. 1. N is the colored-ink roller, M the black-ink roller, and O the paper.

Fig. 4 is a longitudinal sectional view showing how the shaft may pass directly through a projection from the reinforcing-plate and the cam work within instead of beneath it.

Fig. 5 is a cross-sectional view of the style of cam and reinforcing-plate shown in Fig. 4.

Fig. 6 shows another modification of the style of cam and reinforcing-plate.

Corresponding parts are designated by the same letters.

In Figs. 4 and 5, F' and G' represent, respectively, the projection from the reinforcing-plate and the cam, the exponents being used to indicate the modified construction. For the same reason these parts in Fig. 6 are designated by F² and G².

The shafts D may be of any number and operate in longitudinal recesses a cut in the form-holder and are supported by laterally-adjustable bearings b. They are also fitted with laterally-adjustable cams G, which may be of various styles to conform to different shapes of the movable printing-surface hereinafter described. For example, the cam G in Figs. 1 and 3 has a groove in its side in which the hook-shaped projection F of the reinforcing-plate forming part of the movable printing-surface works. It is manifest that when the cam is operated by means of the rotation of the shaft D the movable print-

ing-surface composed of the stereotype C, the reinforcing-plate E, and the projection F will be raised and lowered according to the position of the cam. If the shaft be passed through the center of G, the groove must be cam-shaped; but if, as shown, the shaft is passed through outside the center the groove can be circular.

G² in Fig. 6 has the groove cut in its edge instead of its side, and the projection F² from the printing-surface working in it is stud-shaped, with its head confined in such groove.

The cam G in Fig. 1 can be disengaged from the projection F by opening the stop H and pushing the shaft D.

In Figs. 4 and 5 the projection F' from the reinforcing-plate forming part of the movable printing-surface corresponds to a recess cut in the form-holder, and the shaft bearing the cam G passes through it. Such cams or cam-grooves are so shaped as to produce, when they revolve, the required elevation and depression of the movable printing-surface with reference to the fixed printing-surface, to enable the former to be inked independently of the latter, and then to be brought level with it when the paper to be printed is reached. These three positions of surface C—viz., above, below, and level with surface B—are made continuing by the arrangement of the interrupted gear-wheels L K J, (shown in Fig. 2,) by which the shaft D is intermittently rotated. Gear L is attached to the end of the shaft D. Fixed to the side frame of the machine is a stationary interrupted gearing J, having plain surfaces *j* opposite the points, where surface C is to be held in a continuing position. Gear L is connected with gearing J by the gear-wheel K on a stud fixed in the end of the form-cylinder, which is fitted with projections *k* in front or behind its cogs corresponding with the plain surfaces *j* and shaped so as to slide over surfaces *j*. The result is that as the cylinder rotates the shaft will be rotated, when gear K engages with the toothed portions of gearing J, but will be firmly held in one position when the projections *k* come to the plane surfaces *j*. To prevent pinching at the moment of engagement, *j* should be a flange on the wheel J, only extending along the blank space between the toothed portions. The same results can be obtained in a bed-plate press, the place of gear J being taken by a track with alternate toothed and smooth portions. Substantially the same result may be accomplished by omitting gear K, increasing the size of gear-wheel J, and placing the projections *k* on gear L.

More than one shaft and more than one cam on each shaft may be used to operate a single movable printing-surface. The number of shafts and cams will naturally depend on the size of such surface. In ordinary cases two shafts, as shown in Fig. 3, with two cams on each shaft, as shown in Fig. 4, will be

found sufficient to hold it firmly and produce an accurate rise and fall.

Having thus described my invention and the operation thereof, what I claim as new is the following, using, unless otherwise specified, the expression "movable printing-surface" to signify not only the parts C E and F taken together, which here make up the movable printing-plate, but also electrotypes, molds, type-forms, cuts, engravings, &c., which are equally capable of being used in connection with the other elements of my invention.

1. In a printing-machine, the combination of a fixed printing-surface with a movable printing-surface and a rotary cam or cams beneath the latter, such cam or cams being so shaped with reference to the movable printing-surface as to hold it firmly and depress as well as elevate it.

2. A system of interrupted gearing such as herein shown, in combination with a shaft or shafts bearing a cam or cams rotated intermittently by such gearing, and one or more movable printing-surfaces successively raised, lowered, and held fast by said cam or cams through the intermittent rotation of such shaft or shafts, as and for the purposes described.

3. In a printing-machine, the combination, with a form-cylinder having longitudinal recesses, of a printing-surface supported on said cylinder by shafts rotated in said recesses by the rotation of said cylinder, as and for the purposes described.

4. In a printing-machine, the combination, with a form-cylinder provided with longitudinal recesses, of a fixed printing-surface and one or more relatively-movable printing-surfaces supported and held upon said form-cylinder by one or more shafts rotating in said recesses, and one or more cams attached to said shaft or shafts and working within or beneath the movable printing-surfaces, by which combination the rotation of such shaft or shafts will elevate and depress said movable printing-surfaces.

5. In a printing-machine, the combination of a form-holder provided with longitudinal recesses, a fixed printing-surface, a relatively-movable printing-surface, and a rotating shaft or shafts in such recesses for operating the movable printing-surface, as and for the purposes described.

6. In a printing-machine, the combination of a plurality of printing-surfaces arranged across a form-holder, means, substantially as described, for imparting motion to a part of said surfaces, and a form-holder having longitudinal recesses through which and beneath the stationary surfaces said means operate on the movable surfaces, as shown and described.

7. In a printing-machine, the combination of a movable printing-surface, together with a form-holder provided with recesses across its surface, together with a shaft or shafts bearing a cam or cams rotating within such

recesses for the purpose of operating the movable printing-surface.

8. In a printing-machine, the combination of a wheel or its equivalent provided alternately with teeth or cogs and convex smooth surfaces, and a second toothed wheel meshing with the teeth of the first and provided with concave projections corresponding to the smooth surfaces of the first, together with a shaft working in a recess of the form-holder, as and for the purposes described.

9. In a printing-machine, the combination of a form-holder having recesses across its surface, together with a shaft or shafts rotating within said recesses, together with holders or supports for said shaft or shafts movable and laterally adjustable within said recesses.

10. In a printing-machine, the combination

of a movable printing-surface, together with a rotating shaft, together with a system of interrupted gearing shaped and arranged to produce an intermittent rotation of the said shaft, together with a cam fitted on the shaft and holding the printing-surface, the whole so shaped and arranged as to intermittently raise and withdraw the printing-surface, substantially as described.

In witness whereof I have hereunto subscribed my name, at the city of New York, this 12th day of July, 1890.

HARRY F. WYATT.

Witnesses:

WM. J. CONNELL,
HENRY MELVILLE,
PERCIVAL C. SMITH.