F. P. SHARP.

INKING APPARATUS FOR PRINTING PRESSES.

APPLICATION FILED JAN. 24, 1906. RENEWED APR. 21, 1910.

978,495. **Patented Dec. 13, 1910.**

2 SHEETS—SHEET 1.

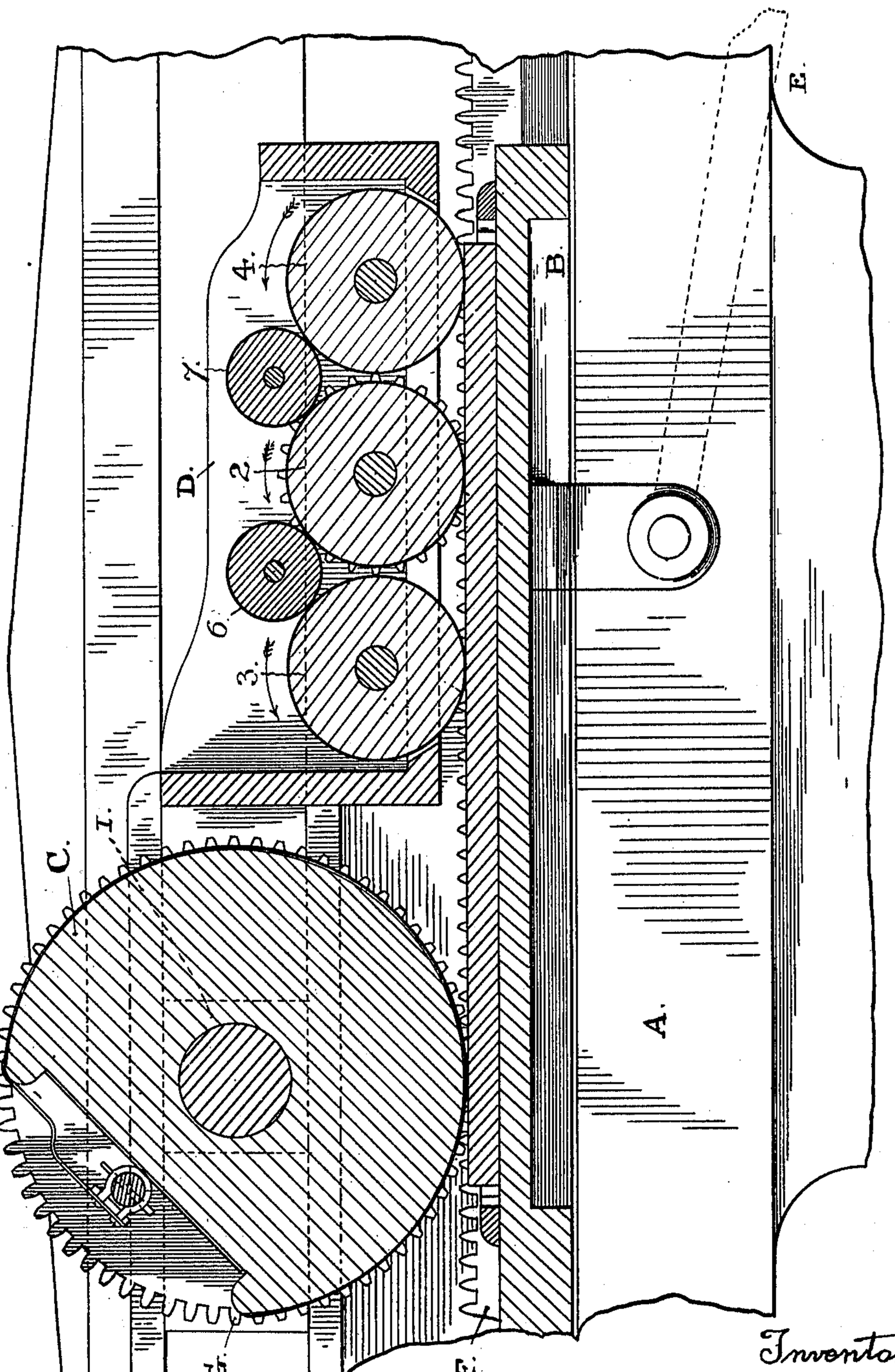

Fig. 1.

Witnesses
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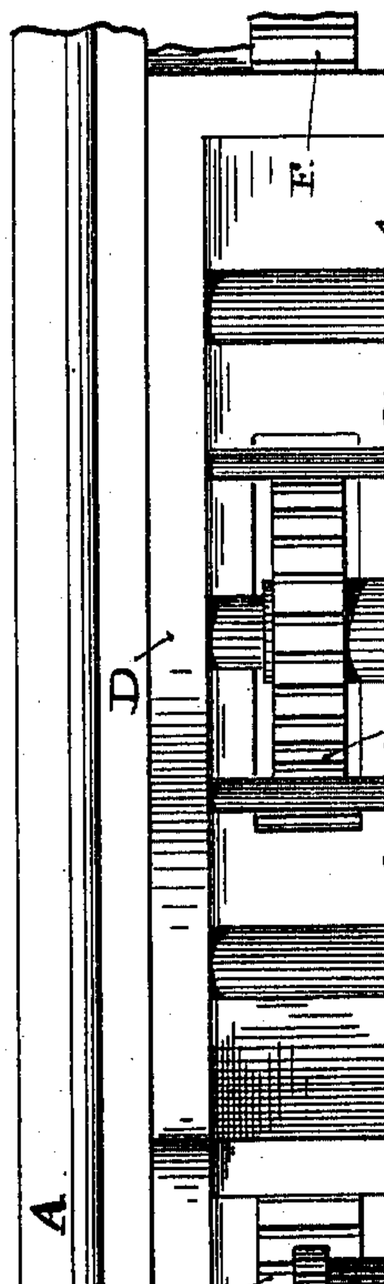

Fig. 2.

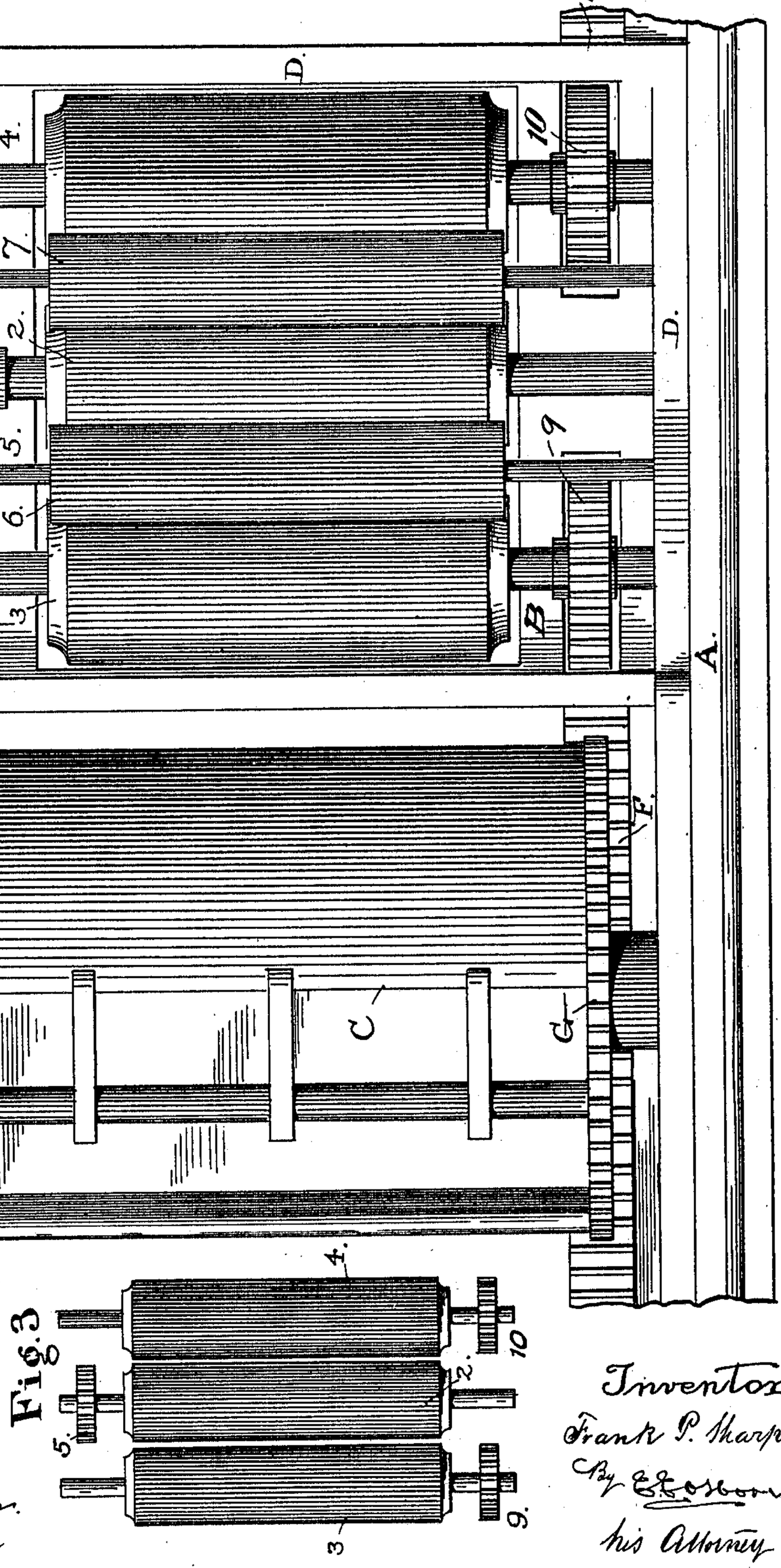

Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANK P. SHARP, OF SAN FRANCISCO, CALIFORNIA.

INKING APPARATUS FOR PRINTING-PRESSES.

978,495. Specification of Letters Patent. Patented Dec. 13, 1910.

Application filed January 24, 1906, Serial No. 297,541. Renewed April 21, 1910. Serial No. 556,809.

To all whom it may concern:

Be it known that I, FRANK P. SHARP, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Inking Apparatus for Printing-Presses, of which the following is a specification.

This invention relates to improvements made in the means or appliances by which the ink is applied to the form in a printing press or machine of the reciprocating bed and traveling cylinder type.

In a machine of this class or description it has been found that the ink is applied to the face of the type in a more or less uneven manner, especially under conditions of high speed, when the inking-rollers and the form-bed are traveling rapidly in opposite directions, on account of the inking rollers being caused to rotate during the inking operation solely by virtue of the peripheral contact of their ink-coated surface with the face of the type, the result being a lack of uniformity in the impression when the machine is being operated at high speed.

The object of the present invention is to produce the positive rotation of the inking-rollers and a rolling-contact of the rollers with the face of the type; thereby producing an even application of the ink to the printing-surface, and insuring a perfect impression in every run of the form-bed, without restricting the speed at which the machine can be worked.

To this end and object my invention consists in novel means of driving the form-inking rollers with a positive rotary motion and a rolling-contact with relation to the printing-surface carried by the form-bed; also, in a form-inking apparatus of novel construction, in which the inking-rollers are driven with a positive, rotary motion directly by or from the traveling form-bed or carrier of the machine, all as hereinafter described and pointed out in the claims at the end of this specification.

The accompanying drawings herein referred to illustrate the application of my invention to a printing-machine of the reciprocating form-bed and traveling-cylinder type; Figure 1 being a longitudinal sectional-view; Fig. 2 a plan or top-view of Fig. 1, and Fig. 3 a detail top-view of the inking-rollers removed from the frame.

A indicates the frame of the press; B the form-bed or carrier; C the impression-cylinder and D the inking-roller carrier, or the frame inclosing the form-inking rollers, and in which they are journaled.

6, 7 indicate idler rolls mounted in the carrier D and arranged between the rolls 3, 2 and 2, 4, respectively.

Reciprocating movement is given to the form-bed in the well-known manner from a crank-shaft beneath, with which the bed is connected by a pitman E. The impression-cylinder receives its revolving motion from the traveling form-bed through the medium of racks F on the sides of the form-bed and toothed-wheels G on the axis or journals of the cylinder.

In the type of printing-machine herein illustrated the rectilinear or traveling movements of the impression-cylinder across the form-bed are effected by rocking-levers pivotally mounted on the stationary-frame and having their upper ends connected with the journal-boxes I of the cylinder, and their ends on the opposite side of their pivots or fulcrum connected with the form-bed in such manner that the impression-cylinder is caused to travel in a horizontal path over and in the contrary direction to the form-bed.

The carrier D containing the inking-rollers 2—3—4 travels with the impression-cylinder, and receives its movement from the same means that drives the cylinder by being attached to the slide-boxes.

The journals of the inking-rollers are set in open bearings in the ends of the carrier D, for convenience in removing and in setting them in place. Positive rotation is given to the middle one 2 of the rollers by fixing on its journal at one end a toothed-wheel 5 in line with and in working relation to the rack F on that side of the form-bed. I also fix gears 9, 10, on the journals of the outer rolls 3, 4, respectively, in position to engage a rack on the bed. The gears 5, 9 and 10 are placed to operate without interfering with each other by fixing the gear 5 on the middle roll to engage the rack F on one side of the form bed, and placing the gears 9, 10 of the outer rolls 3, 4, on the opposite side to engage the other rack F. Each roll will thus receive positive rotation directly from a rack on the form bed. Slots are provided in the bottom of the carrier D for the toothed-wheels to work in and engage the racks beneath; the pitch-circle of

the racks and toothed wheels being arranged to coincide with the plane of printing-contact in which the face of the type or printing-block moves as it is carried under the rolls, so as to obtain a true rolling-contact of the ink-coated surface of the rollers with the traveling printing-surface. This means of driving the printing-rolls by or from the movements of the form-bed has the effect to insure an even and uniform application of the ink to the face of the type, which it is not possible to obtain when the contact between the face of the form and the rolls is relied on to rotate the rolls, particularly where the machine is intended to be worked at high speed, as in the case of this type of printing machine; for, under such conditions and especially where the inking-rolls are of relatively small diameter, the rapid movement of the traveling-form will not always produce the proper rotation of the ink-rolls at their time of contact with the type to apply the ink evenly over the whole face of the printing-surface.

Inking-rolls of the smaller sizes can be caused to operate with the necessary rolling contact by driving the middle roll from the traveling form-bed by means of the rack and toothed-wheels, and transmitting the motion from the middle-roll to the remaining rolls composing the form-inking apparatus, by means of idler-rolls. But the outer rolls 3—4, when of large diameter, are better driven directly from the movement of the form-bed than by the use of the idler-rolls.

What I claim as my invention, and desire to secure by Letters Patent is:—

1. In a printing press, the combination of a reciprocating bed provided with racks, an impression cylinder, a movable carrier, inking rolls mounted in said carrier, and a gear fixed to each of said inking rolls, arranged to mesh with one of said racks, for positively driving the said rolls, the gear of one roll being arranged at one end thereof and the gear of an adjoining roll being arranged on the opposite end thereof.

2. In a printing press, the combination of a reciprocating bed provided with racks, an impression cylinder, a movable carrier having apertures in its bottom, inking rolls mounted in said carrier, and a gear for each roll extending through said apertures and arranged to mesh with one of said racks, for positively driving the said roll, the gear of one roll being arranged at one end thereof, and the gear of an adjoining roll being arranged at the other end thereof.

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

FRANK P. SHARP.

Witnesses:
M. REGNER,
EDWARD E. OSBORN.