

(No Model.)

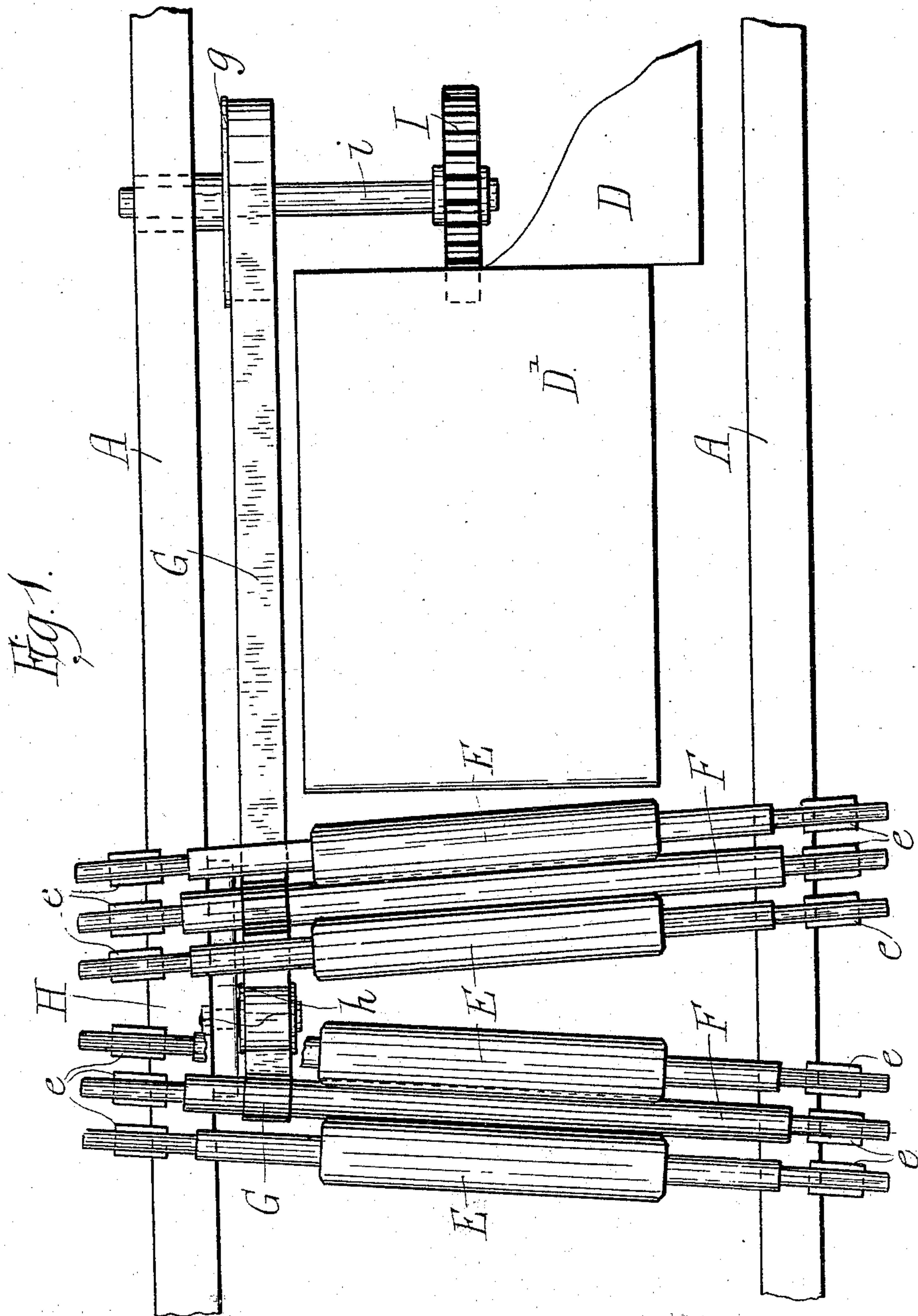
3 Sheets—Sheet 1.

R. MIEHLE.

INKING APPARATUS FOR PRINTING MACHINES.

No. 558,593.

Patented Apr. 21, 1896.



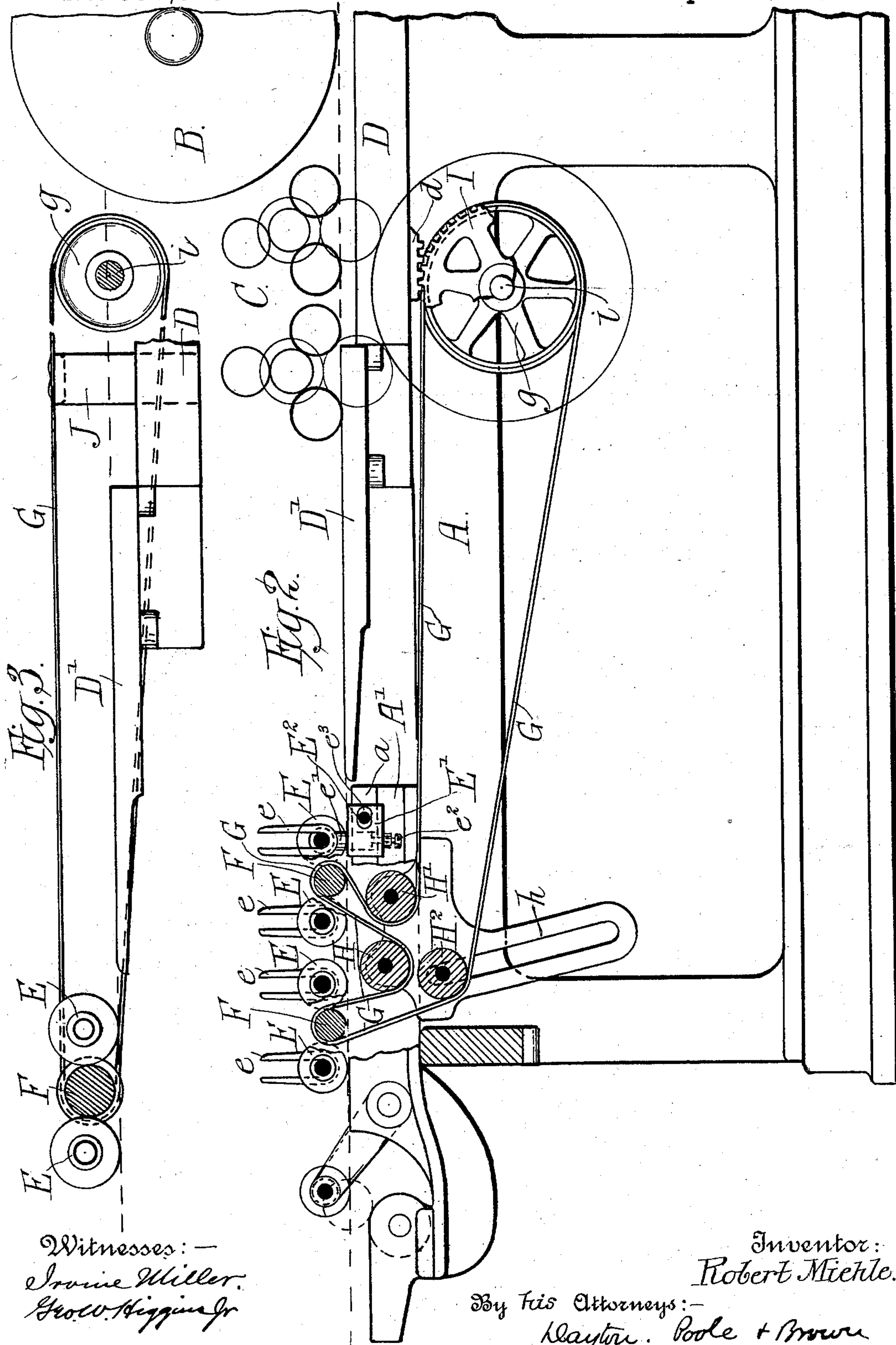
Witnesses:-
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Inventor
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By His Attorneys:-
Hayden, Poole & Brown

3 Sheets—Sheet 2.

INKING APPARATUS FOR PRINTING MACHINES.

Patented Apr. 21, 1896.

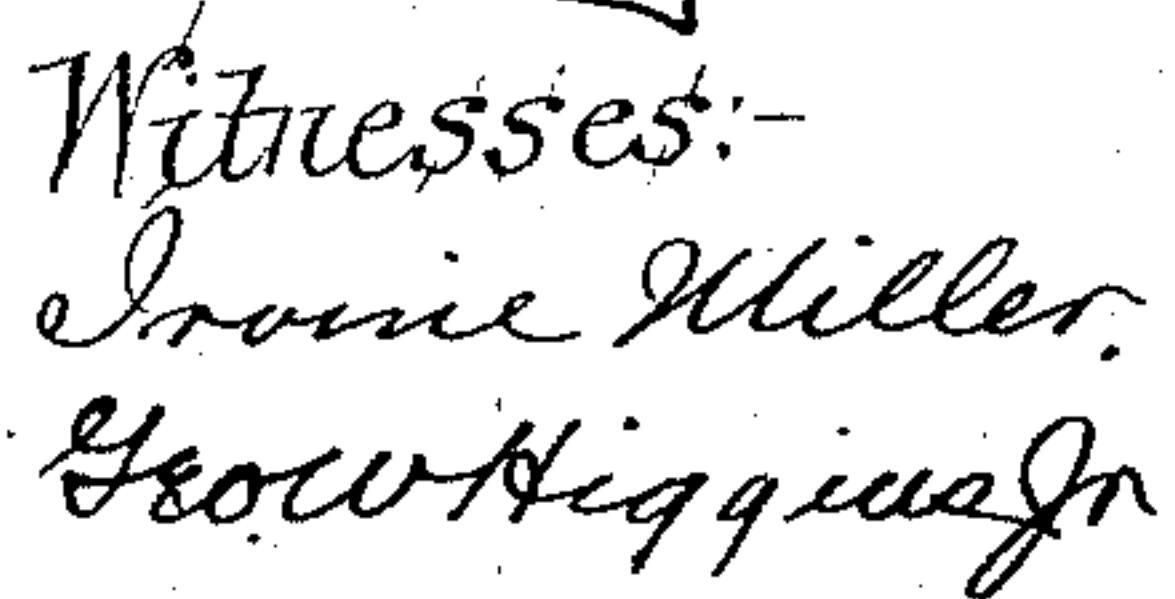


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3 Sheets—Sheet 3.

INKING APPARATUS FOR PRINTING MACHINES.

Patented Apr. 21, 1896.



Inventor:
Robert Miehle

By His Attorneys:-
Hayburn, Poole & Brown

UNITED STATES PATENT OFFICE.

ROBERT MIEHLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE MIEHLE PRINTING PRESS AND MANUFACTURING COMPANY, OF SAME PLACE.

INKING APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 558,593, dated April 21, 1896.

Application filed June 26, 1891. Serial No. 397,807. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MIEHLE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Inking Apparatus for Printing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to printing-presses, and more particularly to the inking apparatus therefor, and has for its object to provide an improved mechanism for supplying ink to and distributing the same on the ink-table, as will be hereinafter more fully described, and then particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a plan view of so much of a printing-press embodying my invention as is necessary for a proper comprehension of the same. Fig. 2 is a side elevation of the same, partly in section. Fig. 3 is a detail sectional view illustrating a modification. Fig. 4 is a partial plan view of a modified form of my invention. Fig. 5 is a side elevation of the same.

In the drawings, A represents the frame of the machine, B the impression-cylinder, and C the form-rollers, all of which parts may be of any approved construction and arrangement.

D indicates the type-bed, to which a reciprocatory movement is imparted in the usual manner, and D' the ink-table, carried by and moving with the type-bed D, of which it forms an extension.

At E are shown the distributing-rollers, which serve the purpose of distributing the ink evenly over the surface of the ink-table. In Letters Patent No. 347,364, granted to me August 17, 1886, are shown and described two distributing-rollers positively driven in unison with the ink-table and driven by an intermediate riding roller having a positive endwise motion. It is sometimes desirable to employ more than two of these distributing-rollers, and to arrange them diagonally across the ink-table in order to dispense with

the positive endwise motion just referred to. It is to provide for these features that I have devised the following mechanism.

The distributing-rollers E are shown in the present instance as four in number, although I may vary this number as desired. Each roller is mounted at each of its ends in a U-shaped bearing *e*, which is provided with a cylindrical shank *e'*, swiveled in a suitable socket in a block *E'*. An adjusting-screw *e*², extending up through the bottom of the block *E'* into the socket thereof and bearing upon the lower end of the shank *e'*, serves to vertically adjust the bearing *e* in an obvious manner. Each block *E'* is mounted on a suitable guiding way or rib *a* on the outside of the top rail *A'* of the frame A and is slotted, as shown at *e*³, for the passage of a securing-bolt *E*² to permit longitudinal adjustment of the block and correspondingly of the bearing relatively to the frame. This adjustment of the bearings of the distributing-rollers permits these latter to be accurately adjusted with relation to the driving-rollers hereinafter referred to to insure proper contact between said rollers.

The rollers E are shown arranged in two sets or groups of two each, these sets being arranged at opposing angles of inclination to the line of travel of the table and bed and are positively driven at a peripheral speed equal to that of the said bed and table and in the same direction. One form of driving mechanism for this purpose is shown in Figs. 1, 2, and 3, and is as follows:

Between each pair of rollers E is located a driving-roller F, mounted in bearings similar to those of the rollers E and arranged with its axis of rotation on a level with or slightly below the plane of the axes of rotation of the said rollers, the peripheries of these latter being in contact with the periphery of the roller F and being driven by such contact. The rollers F are of smaller diameter than the rollers E and do not touch the table, in order that they may not interfere with the travel of the ink-table and bed.

G represents a belt passing over the rollers F and under suitable idle-pulleys H, H', and H², one of which—for instance, the pulley H²—

is preferably a tension-pulley, being mounted in a slotted arm *h*, for taking up any slack in the belt.

It will be observed that by arranging the driving-rollers *F* on a level with or below the distributing-rollers *E* enables the inking-rollers to be lifted from their place without disturbing the driving-rollers or rendering it necessary to remove the driving-belts from the latter. It also dispenses with the necessity of any special form of distributing-roller and enables me to use the same distributing-rollers as are usually employed.

The belt *G* may be driven from the bed or table in any suitable manner. In Figs. 1 and 2 I have shown one mode of accomplishing this result, in which the bed *D* is provided with a rack *d*, which meshes with a gear *I*, mounted on a shaft *i*, which is provided with a pulley *g*, around which the belt passes.

It will be seen that by reason of the construction shown and described in the several elements, which are made of proper relative proportions for the purpose, a peripheral speed equal to the speed of the table will be imparted to the distributing-rollers *E* and that this motion will be synchronous with and in the same direction as the motion of the table. The destruction of the composition of the rollers, due to the sudden strain in overcoming their inertia brought on the composition by the contact of the rapidly-moving table with the said rollers when at rest, is avoided, and the rollers thereby rendered much more durable.

It will be observed that by employing a belt to impart motion to the distributing-rollers I am enabled to arrange said rollers at any desired angle without any change in the driving mechanism, and it will also be noted that I may readily vary the number of said rollers, the only changes necessary being the lengthening or shortening of the belt and the employment of the necessary number of idle pulleys.

I have already stated that the belt *G* may be actuated from the bed or table in any suitable manner. For instance, as a substitute for the connecting mechanism just described I have shown in Fig. 3 a modified construction which has the merit of superior cheapness and simplicity. In this construction the rack *d* and gear *I* are dispensed with, and the bed or table is provided with an arm *J*, attached to the bed or table and to the belt, being preferably for this purpose of an **L** shape and operating in an obvious manner to communicate the motion of the bed or table to the belt. In this construction the pulley *g* becomes an idle-pulley, and its location may obviously be varied in a much wider range, since it is no longer an intermediate driver between the bed and belt.

Another form of mechanism for imparting motion to the distributing-rollers is shown in Figs. 4 and 5, in which the shaft *i*, driven from the bed or table by a rack and pinion *I*, as already described, is provided at its outer

end with a bevel-gear *K*, with which meshes a bevel-pinion *k* on one end of an inclined shaft *K'*, the other end of said shaft *K'* being provided with a bevel-pinion *k'*, which meshes with a bevel-gear *L* on a shaft *l* adjacent to the distributing-rollers. The shaft *l* has a gear *L'*, which may be in one piece with the gear *L*, as shown, and *m* represents short shafts provided with pinions *M* to mesh with opposite sides of the gear *L'*, the said shafts *m* being respectively coupled to the shafts of the driving-rollers *F* to impart motion to the same by means of universal joints or couplings of familiar construction, such, for instance, as are shown in the drawings.

Any other suitable form of intermediate gearing may be substituted for that shown and described.

I claim as my invention—

1. In a printing-press, the combination with distributing-rollers arranged at an angle with the ink-table, of driving devices for actuating the said inking-rollers receiving motion from the actuating devices by which the ink-table is driven and constructed to turn the said rollers alternately in opposite directions and to reverse the movement of the same to correspond with the movements of the ink-table, substantially as described.

2. In a printing-press the combination with distributing-rollers arranged at an angle with the ink-table of a driving-roller arranged in contact with the distributing-rollers and having its axis in the same plane with or below the axes of said distributing-rollers and means for actuating the driving-rollers, receiving motion from the actuating devices by which the table is driven and constructed to turn said rollers alternately in opposite directions to correspond with the movement of the ink-table, substantially as described.

3. In a printing-press the combination with distributing-rollers arranged at an angle with the ink-table of a driving-roller in contact with the distributing-rollers and having its axis arranged in the same plane with or below the axes of said distributing-rollers and devices for actuating the driving-rollers consisting of a belt which passes over said driving-rollers and is connected with a reciprocating part of the machine, substantially as described.

4. In a printing-press the combination with a reciprocating bed and ink-table of distributing-rollers arranged at an angle with the ink-table, a driving-roller in contact with said distributing-rollers and a belt in operative connection with said driving-roller, said belt receiving motion from the actuating devices by which the table is driven and acting to turn said rollers alternately in opposite directions and to reverse the movement of the same to correspond with the movement of the ink-table, substantially as described.

5. In a printing-press, the combination, with the reciprocating bed and ink-table, of distributing-rollers arranged at an angle to the line

of travel of said bed and table, a driving-roller in contact with said distributing-rollers, and a belt passing around said driving-roller and actuated by one of said reciprocating parts to positively rotate said distributing-rollers, substantially as described.

6. In a printing-press the combination with a reciprocating bed and ink-table, of a plurality of sets of distributing-rollers arranged in an angle with the ink-table, a driving-roller of each set engaging the said distributing-rollers and a belt passing around said driving-rollers and actuated by one of said reciprocating parts, to positively rotate said driving and distributing rollers, substantially as described.

7. In a printing-press, the combination, with the reciprocating bed and ink-table, of a plurality of sets of distributing-rollers, arranged at opposite angles to the line of travel of said bed and table, a driving-roller for each set, and a belt passing around said driving-rollers and actuated by one of said reciprocating parts, whereby a positive rotary movement is imparted to the several distributing-rollers, substantially as described.

8. In a printing-press the combination with a reciprocating bed and ink-table of distributing-rollers arranged at an angle with the

ink-table, driving-rollers in contact with said distributing-rollers, a belt engaging said driving-rollers, a shaft provided with a pulley for said belt, a gear-wheel on said shaft and a rack attached to the reciprocating bed and intermeshing with said gear-wheel to give motion to the shaft-pulley and belt, substantially as described.

9. In a printing-press the combination with a reciprocating bed and ink-table, of distributing-rollers arranged at an angle to the line of travel of said bed and table, a driving-roller in contact with the said distributing-rollers and having its axis arranged in the same plane with or below the axes of said distributing-rollers, of bearings for the ends of the distributing-rollers which are independently adjustable both vertically and horizontally to enable the distributing-rollers to be accurately adjusted with relation to the driving-rollers, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

ROBERT MIEHLE.

Witnesses:

C. CLARENCE POOLE,
GEORGE W. HIGGINS, Jr.