

(No Model.)

2 Sheets—Sheet 1.

G. P. FENNER.

INKING APPARATUS FOR PRINTING MACHINES.

No. 372,214.

Patented Oct. 25, 1887.

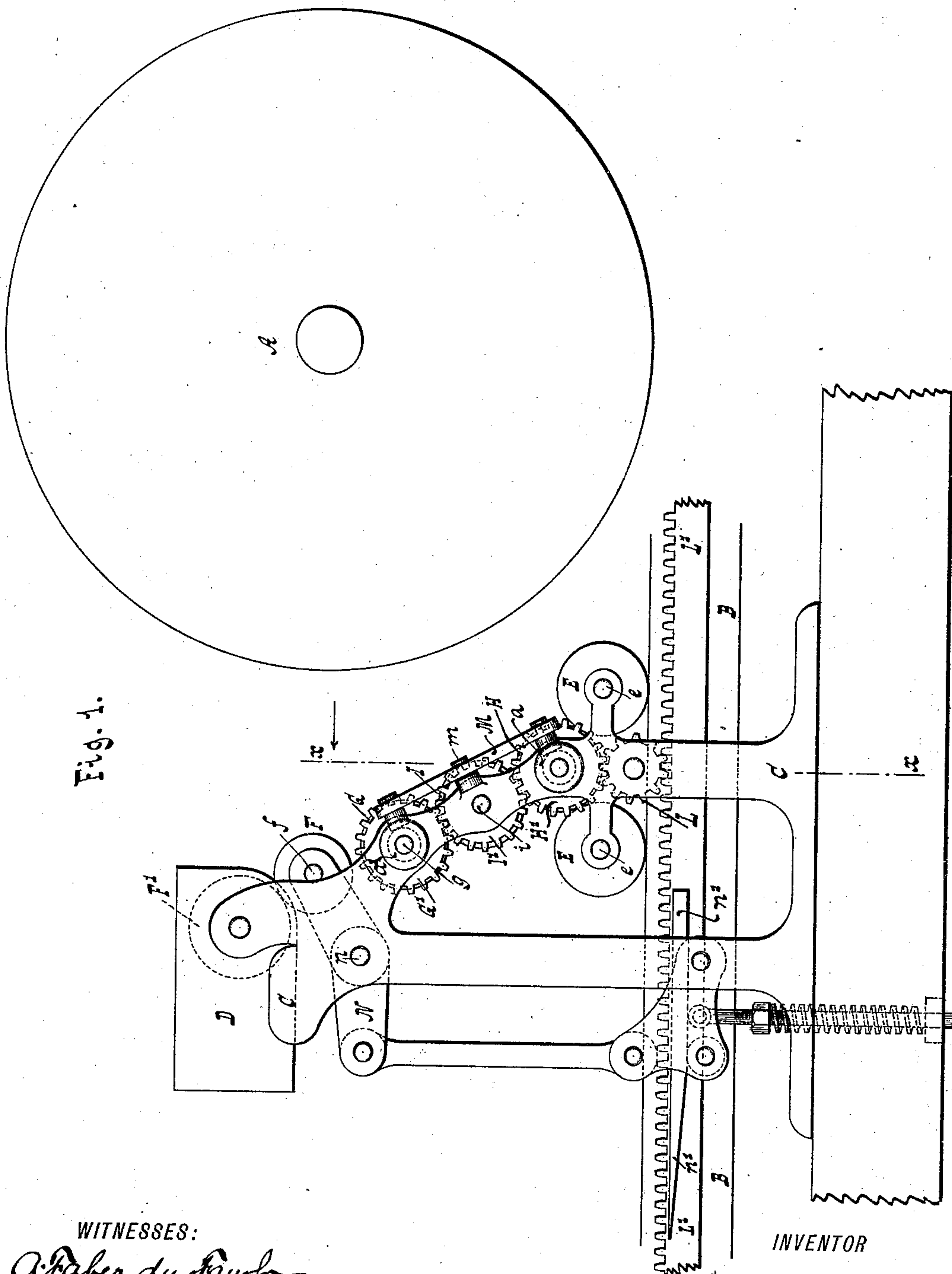


Fig. 1.

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his ATTORNEYS

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Fig. 2.

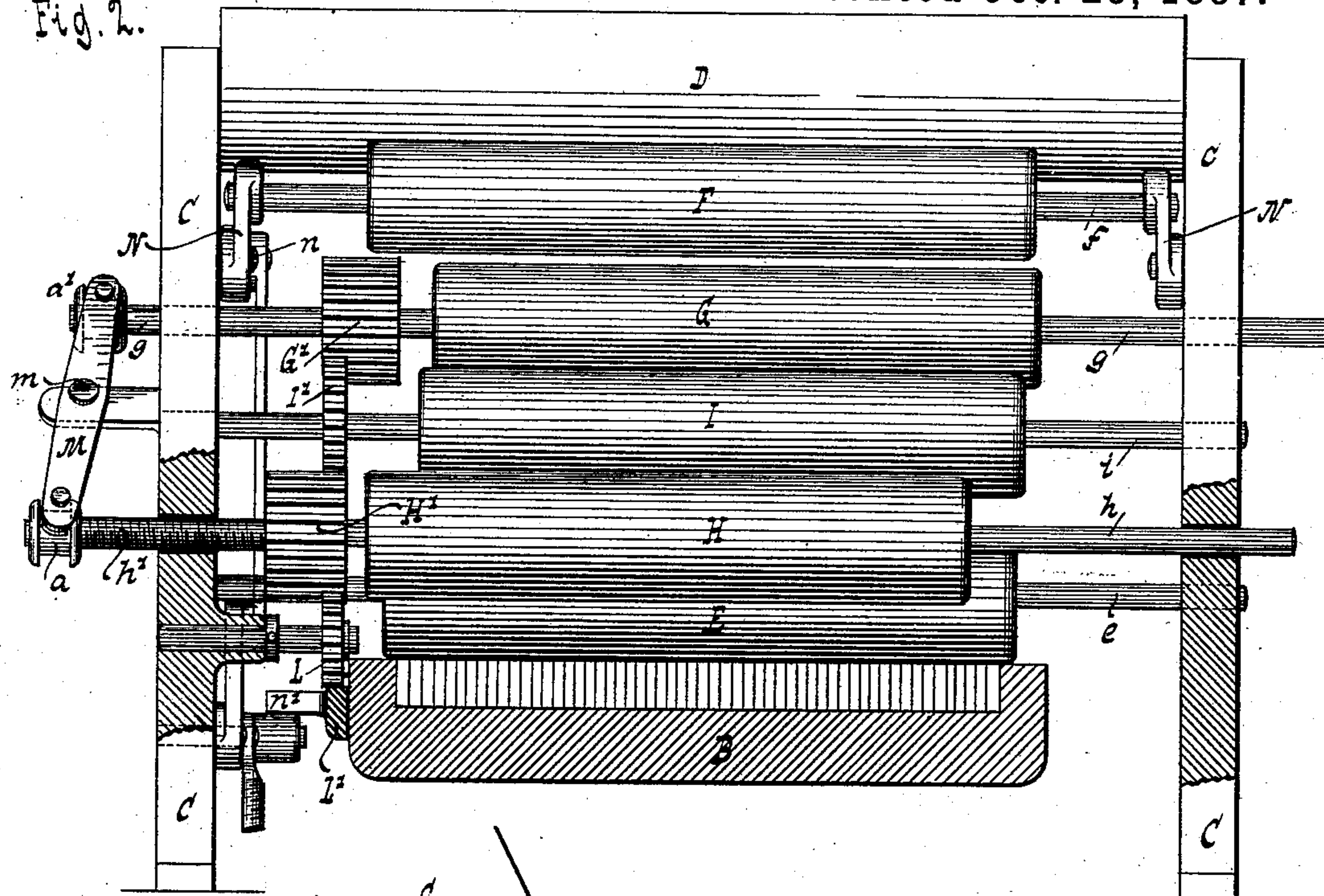
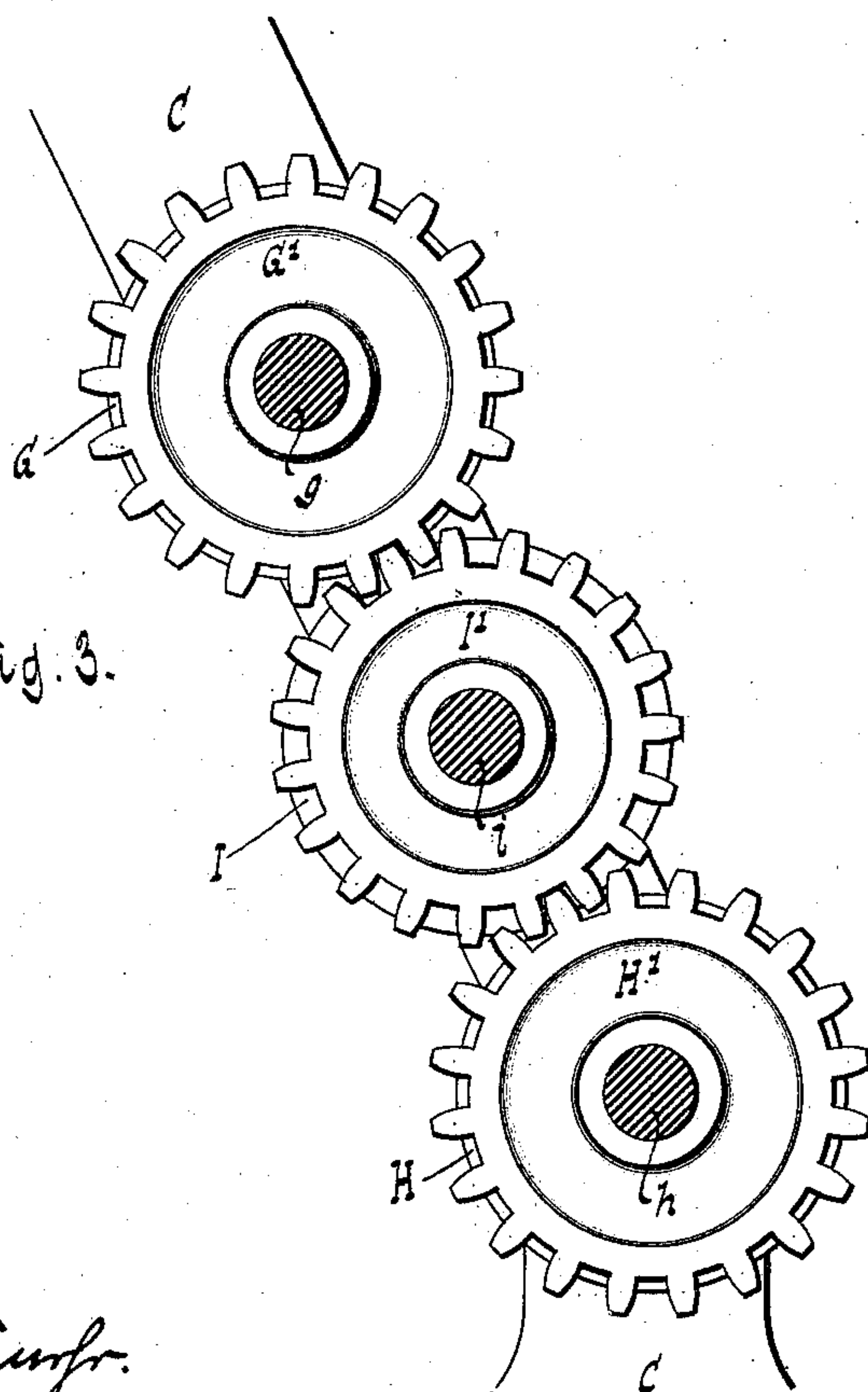


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE P. FENNER, OF NEW LONDON, CONNECTICUT.

INKING APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 372,214, dated October 25, 1887.

Application filed May 27, 1886. Serial No. 203,447. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. FENNER, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented new and useful Improvements in Inking Apparatus for Printing-Machines, of which the following is a specification.

This invention relates to printing presses, and has for its object to provide novel means for increasing the efficiency of such apparatus.

To such end the invention consists in the features of construction and combination of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 represents a side elevation of a portion of a printing-press embodying my improvement. Fig. 2 is a transverse section in the plane $x x$, Fig. 1. Fig. 3 is a detail view, on a larger scale than the preceding figures, of the gear-wheels for rotating the receiving, transmitting, and distributing-rolls, and illustrates their construction.

Similar letters indicate corresponding parts.

In the drawings, the letter A designates the impression-cylinder of a printing-press of well-known construction, and B is the reciprocating type-bed which carries the form. Standards C C, secured to the main frame of the press, support the ink-fount D, and also afford bearings for the several rolls.

E E are form-rolls, which are properly situated to come into contact with the type as the bed reciprocates.

F' is the fount-roll, and F is the duct-roll, which is oscillated, by means hereinafter described, to come alternately in contact with the fount-roll F' and a receiving-roll, G. A distributing-roll, H, is in contact with the form-rolls E E, and the ink is transmitted to the same from the receiving-roll G by an intermediate roll, I, which is in contact with both the said rolls.

The rolls E, F, G, H, and I are mounted, respectively, on shafts e, f, g, h , and i , having bearings in the standards C C, and the receiving-roll G and the distributing-roll H are caused to reciprocate alternately in the direction of their lengths by means to be presently described.

The main object of my invention is to uniformly distribute the ink on the rolls, and consequently to the type, which object I accomplish by gearing together the receiving, transmitting, and distributing rolls in such a manner that the superficial velocity of their contact-peripheries is different, thus producing a drag of the surfaces. In other words, if the superficial velocity of the distributing-roll H is taken as a unit, that of the transmitting-roll is greater or less, and the velocity of the receiving-roll is greater or less than that of the transmitting-roll. With this variation in the superficial velocity of the contact-surfaces of the several rolls G H I it is well to construct the same of iron, steel, or other hard metal which is smoothly turned, since composition or felt rolls are liable to be destroyed by the resulting friction between the surfaces in contact. This variation of velocity between the rolls can be produced by employing gears of different diameter and number of teeth.

In the example shown in the drawings the three rolls are geared together by cog-wheels G' H' I', the cog-wheels G' and H' being each provided with twenty teeth, while the cog-wheel I' has nineteen teeth. As the diameters of the rolls are alike, the superficial velocity of the distributing-roll H will be in a measure less than that of the transmitting-roll I, and likewise the superficial velocity of the receiving-roll G will be less than that of the transmitting-roll.

Motion is imparted to the gear H' by a gear-wheel, L, which meshes into the same and is engaged by a rack, L', secured to the reciprocating type-bed, whereby a reciprocating rotary movement of the rolls is obtained. The vibrating motion of the rolls G and H, previously spoken about, is imparted thereto as follows: On the shaft of the roll H is cut a screw-thread, h' , Fig. 2, which engages with a nut formed in one of its bearings, and as the shaft is rotated first in one direction and then in the other the screw-thread works in and out, which causes the reciprocating vibration of this roll H in the direction of its axis. On each of the shafts $g h$ is mounted a grooved wheel, $a a'$, the grooves of which engage with posts or rollers on the ends of a lever, M, that

is pivoted at *m* to a support secured to one of the standards, so that as the roll *H* is thrown in one direction the roll *G* is thrown in the opposite, and vice versa, whereby the distribution of ink is greatly improved. To oscillate the duct-roll *F* so as to bring it alternately in contact with the receiving-roll and the fount-roll, it is provided with bearings in two levers, *N*, (one on each side of the machine,) which are mounted each on a shaft, *n*, that operates in the standards *D*, and to which an oscillating motion is imparted by a cam, *n'*, Fig. 1, on the type-bed, or by any other means such as are usually employed for this purpose.

In printing machines where the various rolls are rotated by frictional contact and thereby moved with the same superficial velocity, the ink is not distributed between the individual rolls with such equality as when the rotating surfaces act with a continual drag upon each other—that is to say, when there is a difference between the superficial velocity of such surfaces—the distinction being this, that when the rolls rotate with the same superficial velocity the material of the same is merely pressed together as the elements of contact of the two peripheries move at the same speed; but when there is a difference in this respect the elements of contact move past each other to produce a moving or frictional contact of the surfaces, one on the other, whereby the ink is more thoroughly distributed. The vibration of the receiving and distributing rolls, in combination with the rolls geared together, as described, produces an increased result in regard to the effectiveness of the apparatus.

It is obvious that the transmitting-roll *I* can be omitted and the receiving-roll *G* brought directly in contact with the distributing-roll

H; but a more efficient distribution is obtained by the use of an intermediate roll.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an inking apparatus for printing-presses, the combination of the ink-fount, the form-rolls, a roll, *I*, rolls for supplying ink to the same, and a distributing-roll, *H*, in contact with the roll *I* and the form-rolls *E E*, the said roll *I* and the distributing-roll having different superficial velocities, substantially as described.

2. In an inking apparatus for printing-presses, the combination, with the ink-fount, the fount-roll, the oscillating duct-roll, and the form-rolls, of the receiving-roll *G*, the distributing-roll *H*, in contact with the form-rolls, the transmitting-roll *I*, in contact with the receiving and distributing rolls, the said receiving, transmitting, and distributing rolls having a different superficial velocity from their respective contact-rolls, and means, as described, for imparting an alternating reciprocating motion to the rolls *G* and *H*, substantially as and for the purpose set forth.

3. The combination, with an ink-fount, a fount-roll, a duct-roll, and form-rolls, of a distributing-roll, *H*, in contact with the latter, a receiving-roll, *G*, and a transmitting-roll, *I*, in contact with the receiving-roll and the distributing-roll, the said transmitting-roll *I* having a superficial velocity different from the superficial velocities of the receiving and distributing rolls *G H*, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

GEORGE P. FENNER. [L. S.]

Witnesses:

EDWARD T. BROWN,
GEORGE COLFAX.