

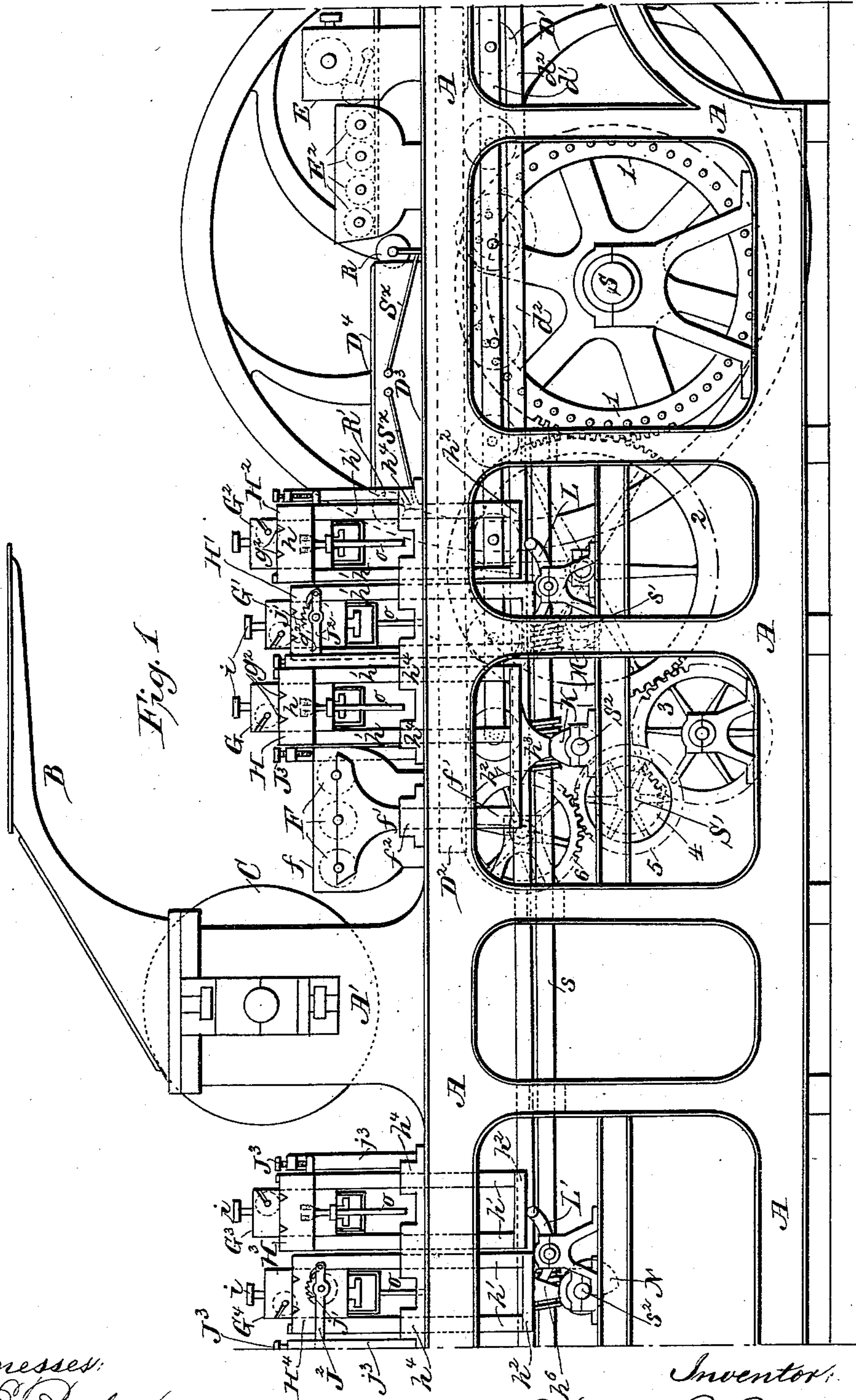
(No Model.)

5 Sheets—Sheet 1.

A. M. MARCILLY, AÎNÉ.  
PLATE PRINTING MACHINE.

No. 379,235.

Patented Mar. 13, 1888.



Witnesses:  
W. C. Foulter,  
C. H. Gallahue

Inventor:  
Alexandre M. Marcilly  
by Henry M. [Signature] his attorney.

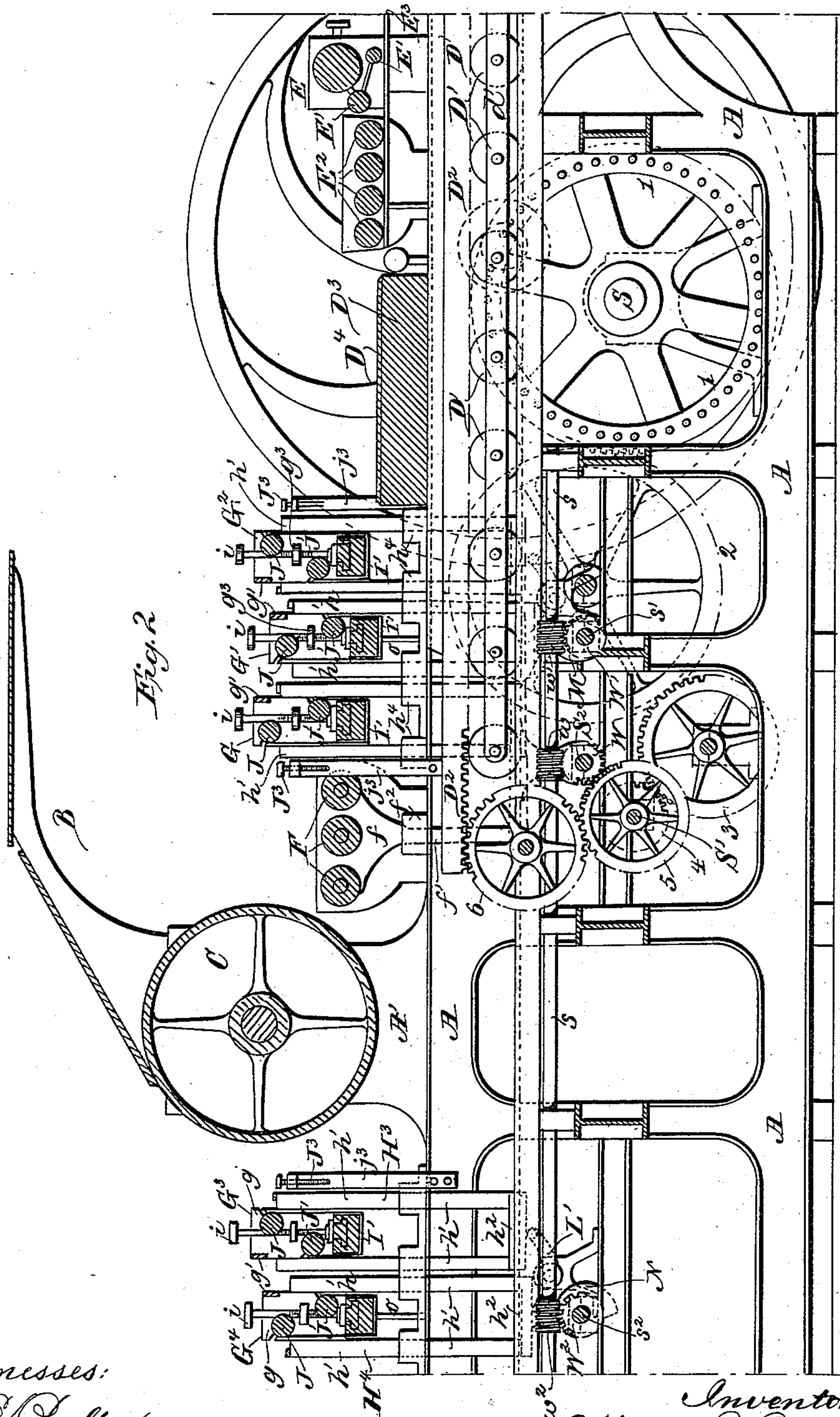
(No Model.)

5 Sheets—Sheet 2.

A. M. MARCILLY, AÎNÉ.  
PLATE PRINTING MACHINE.

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Witnesses:  
Chas. E. Faulter.  
L. W. Hallahan

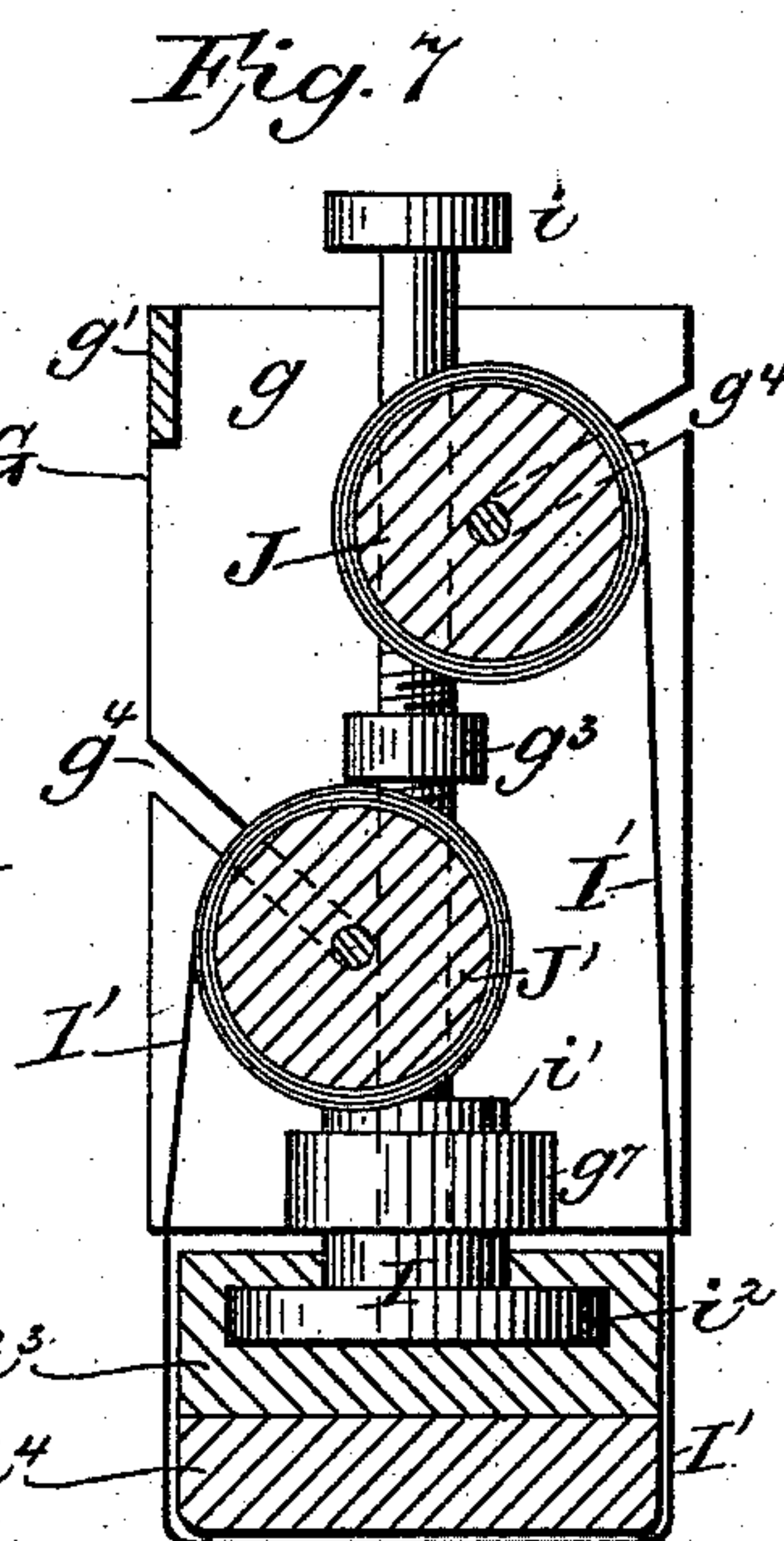
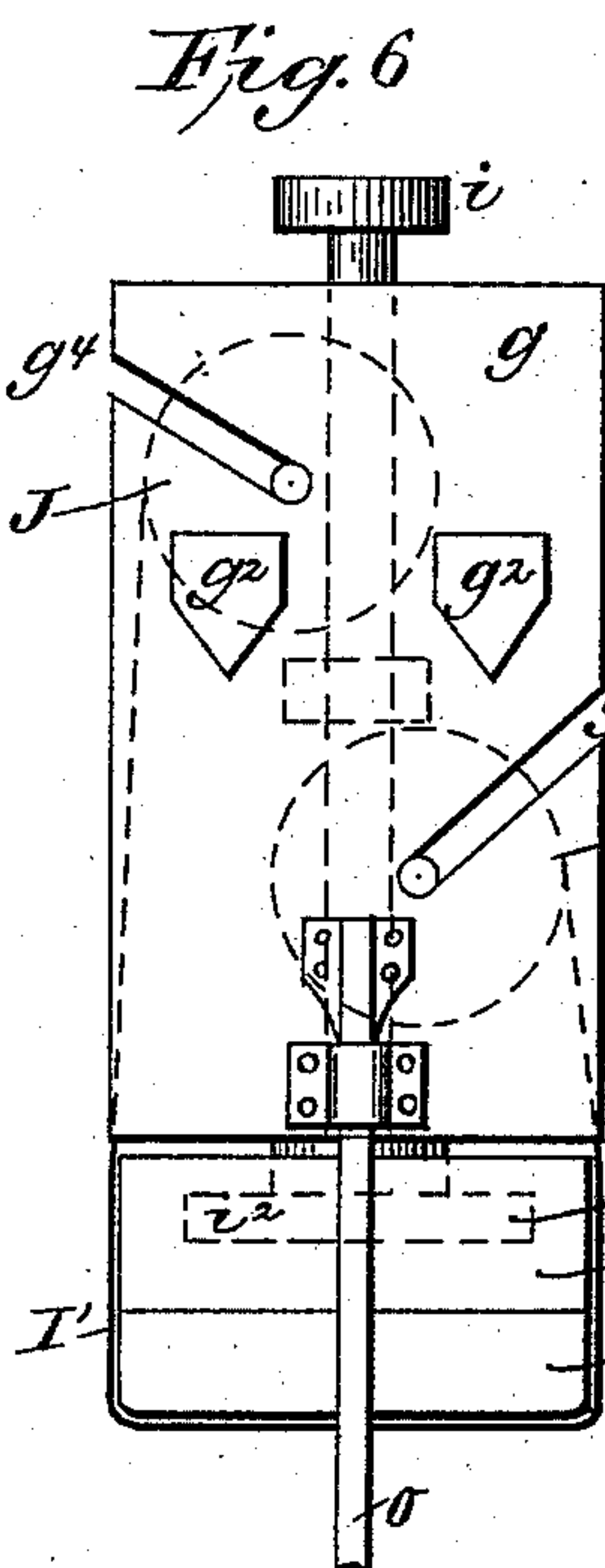
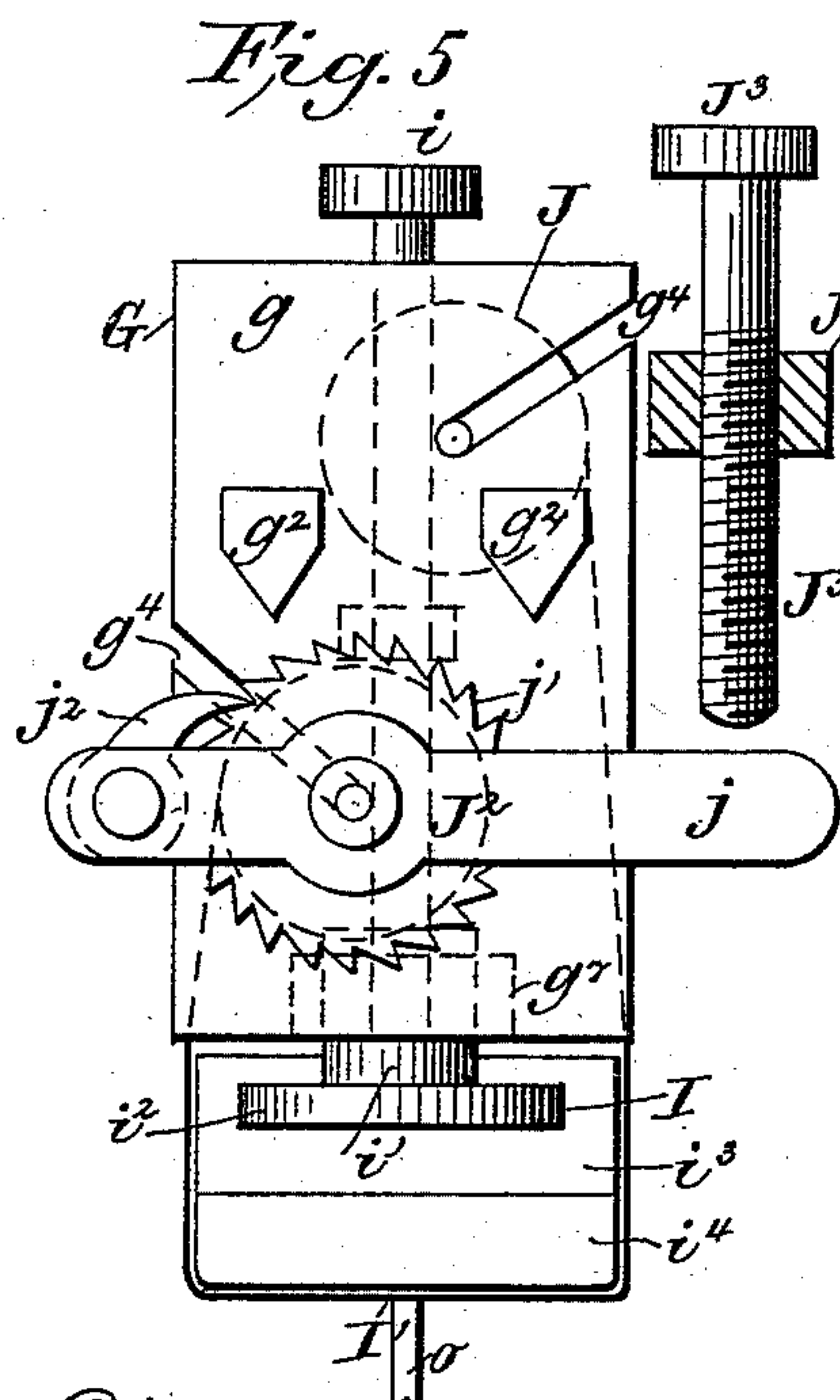
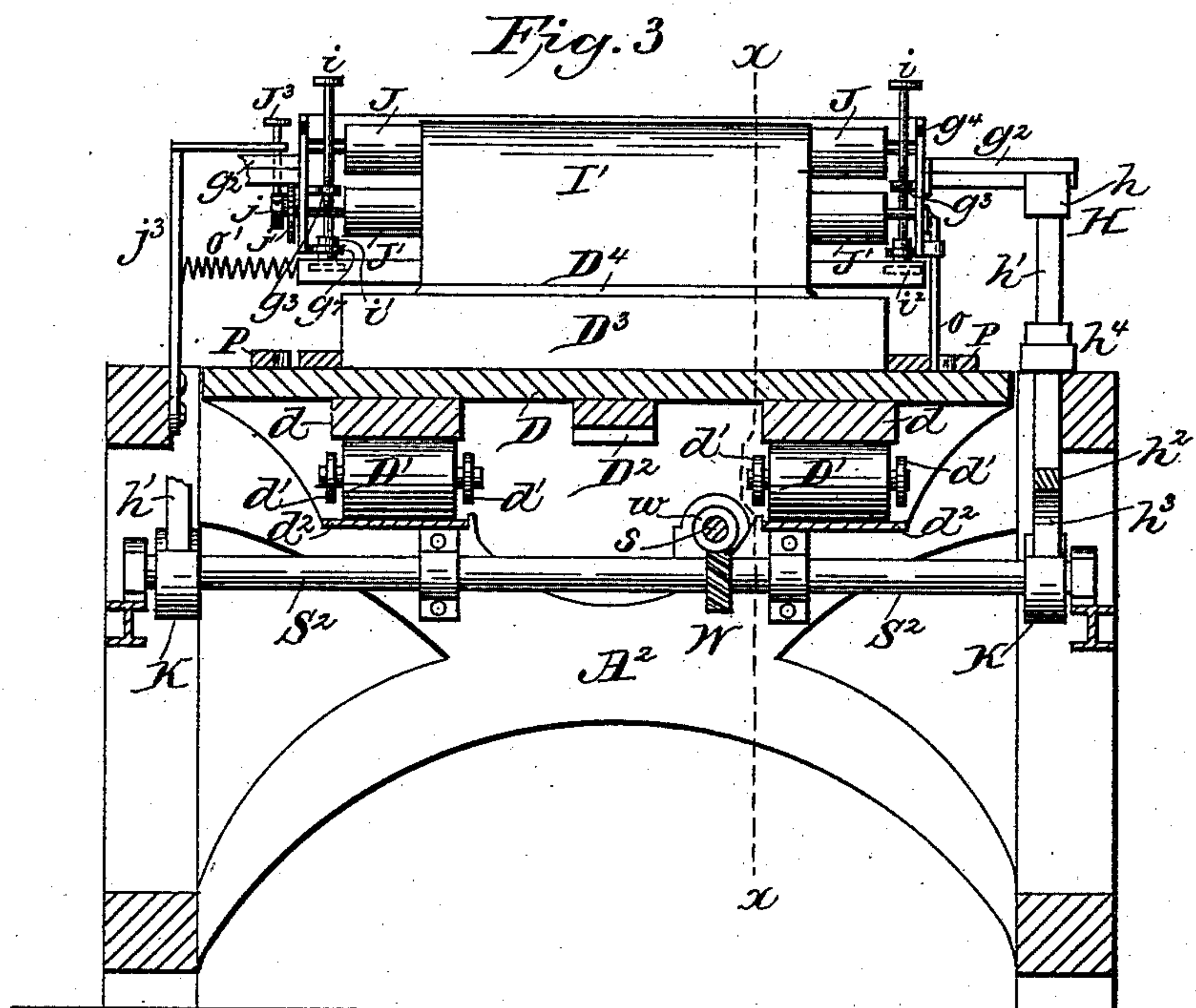
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5 Sheets—Sheet 3.

No. 379,235.

Patented Mar. 13, 1888.



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(No Model.)

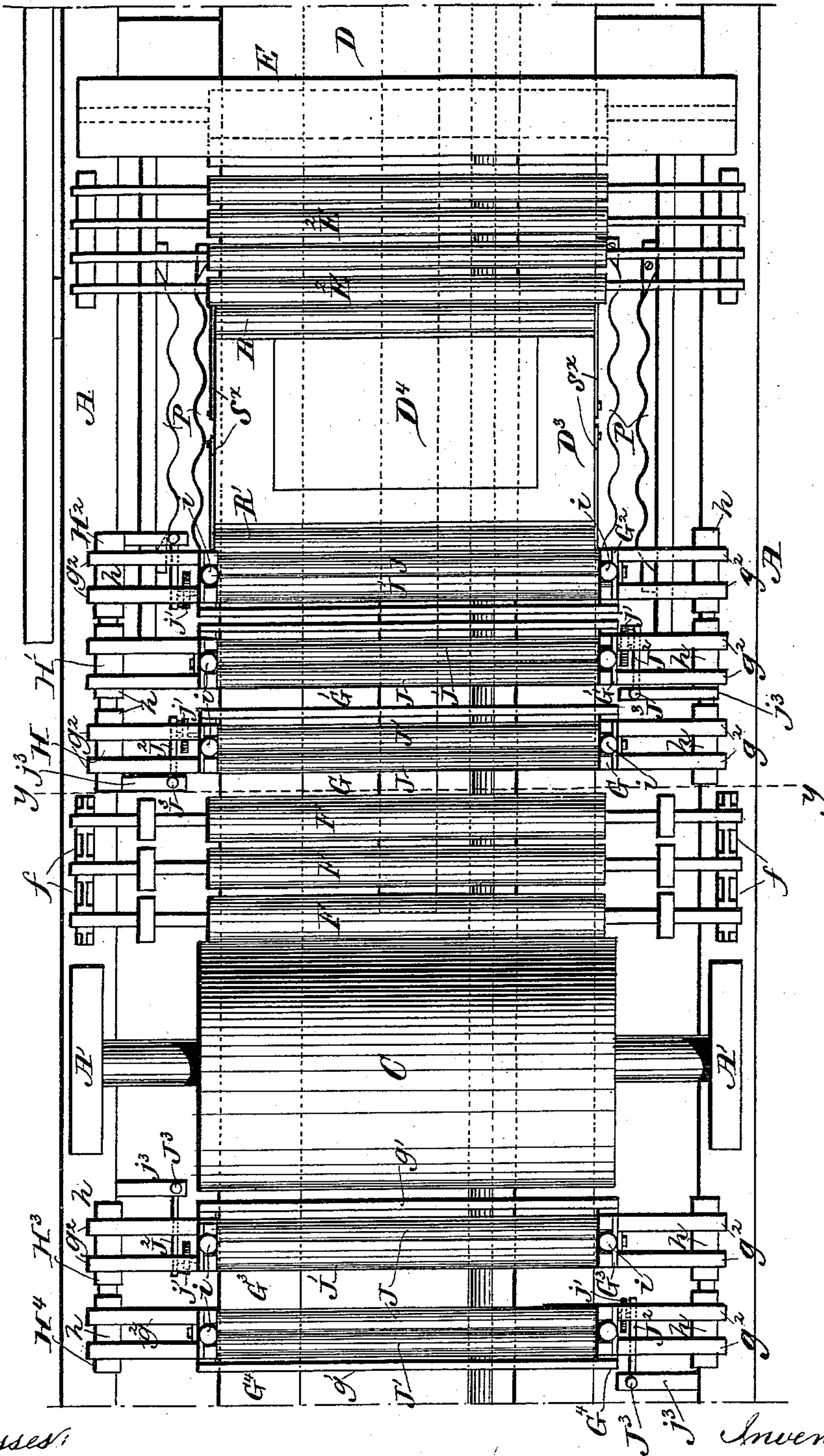
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A. M. MARCILLY, AÎNÉ.  
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Fig. 4



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(No Model.)

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A. M. MARCILLY, AÎNÉ.  
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Fig. 8

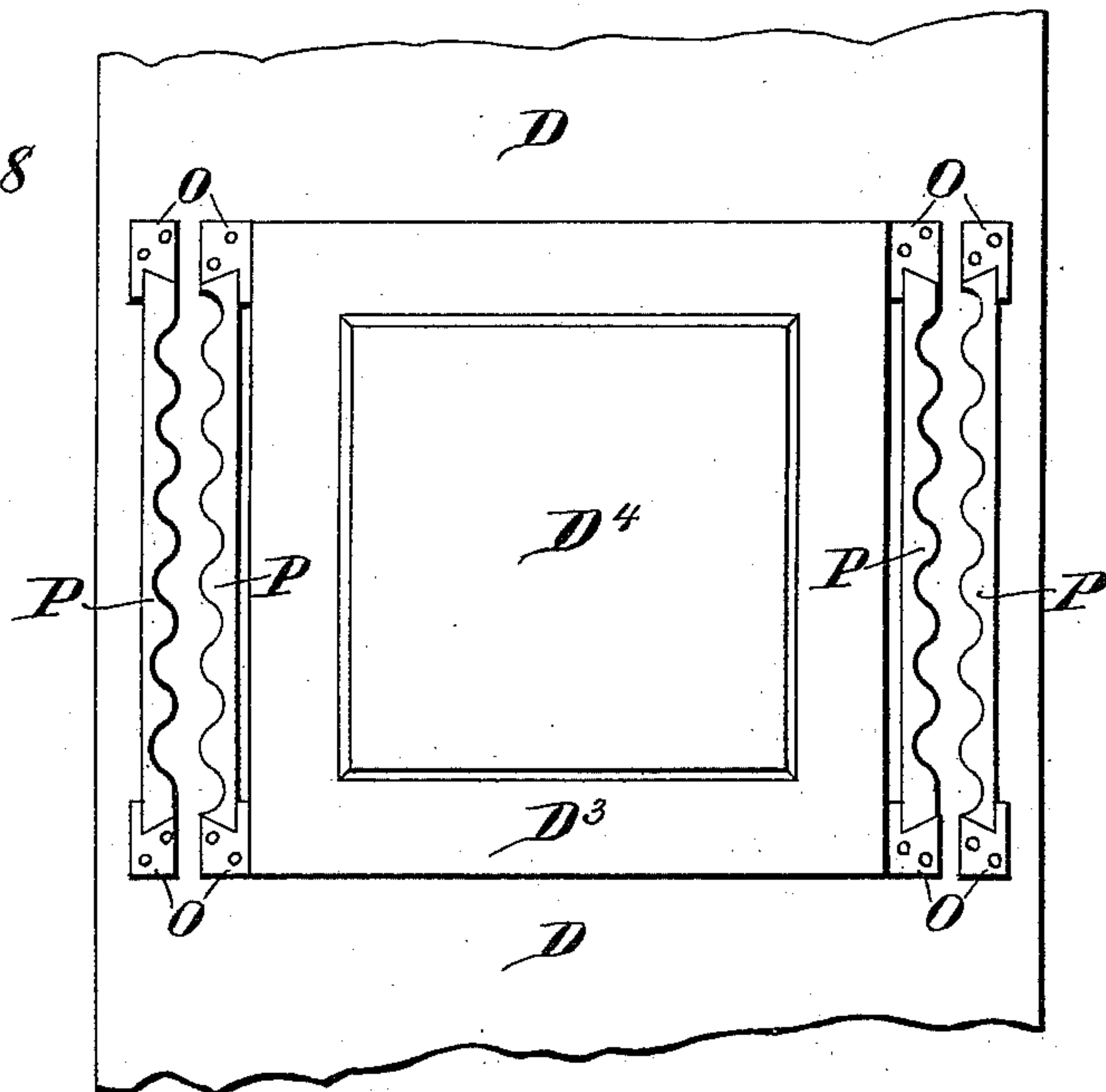


Fig. 9

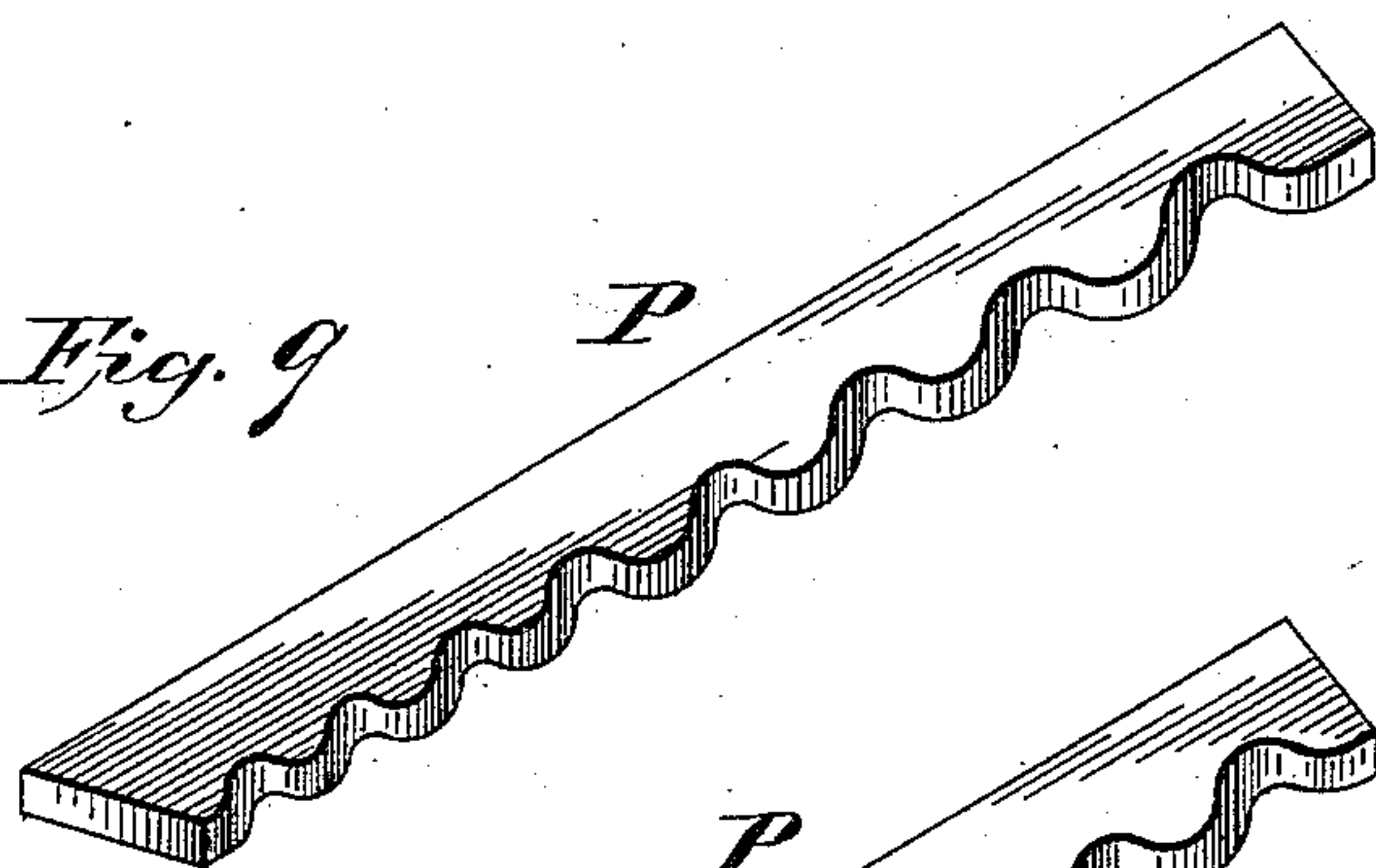
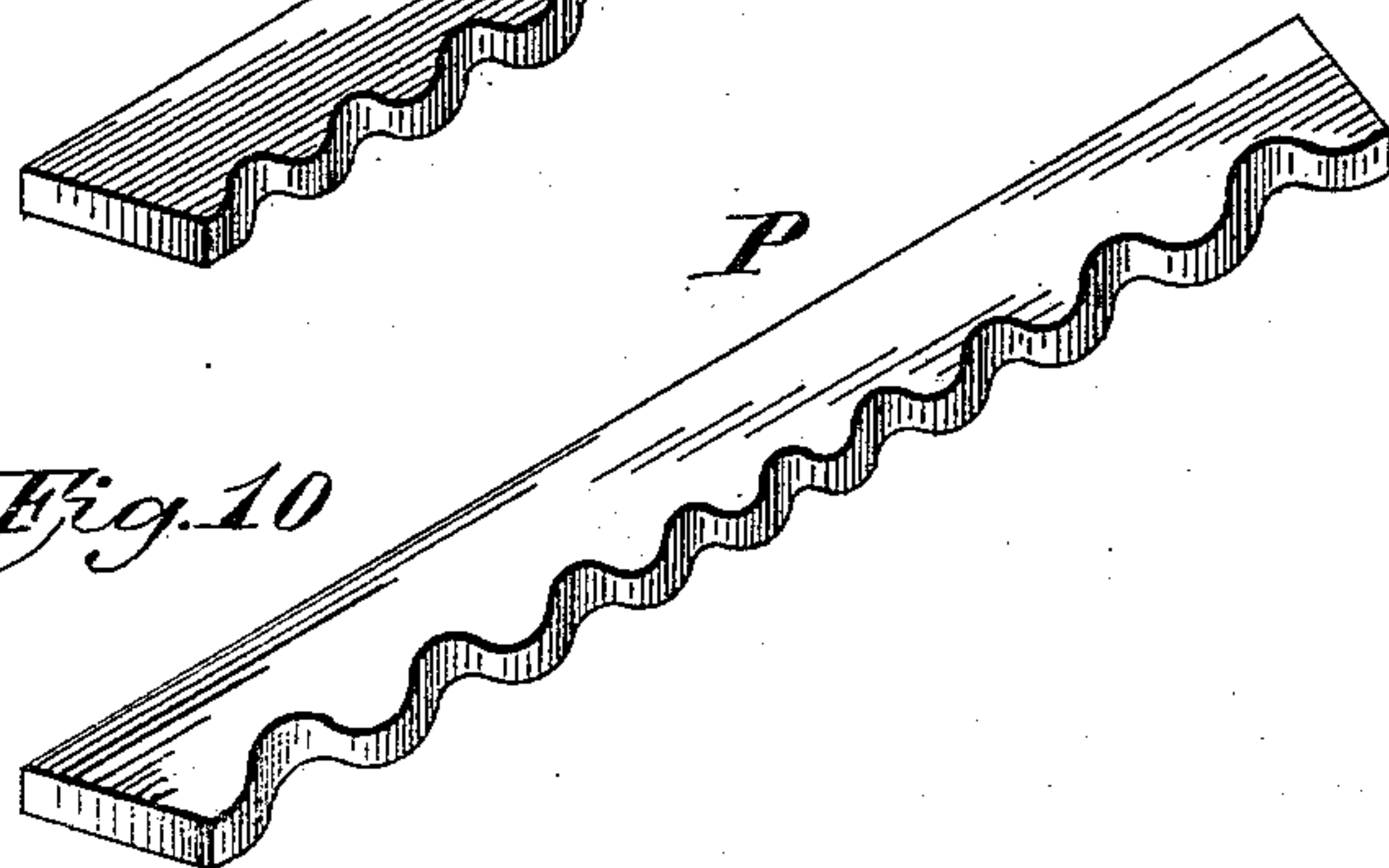


Fig. 10



Witnesses:  
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L. M. Hallahan

Inventor:  
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by Henry M. [unclear] his attorney.

# UNITED STATES PATENT OFFICE.

ALEXANDRE MARIE MARCILLY, AÎNÉ, OF PARIS, FRANCE.

## PLATE-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 379,235, dated March 13, 1888.

Application filed March 31, 1886. Serial No. 197,320. (No model.) Patented in France January 23, 1885, No. 166,613; in Belgium February 8, 1886, No. 71,898; in Germany February 10, 1886, No. 36,925, and in England February 27, 1886, No. 2,886.

*To all whom it may concern:*

Be it known that I, ALEXANDRE MARIE MARCILLY, Aîné, a citizen of the French Republic, and a resident of Paris, in the French Republic, have invented certain new and useful Improvements in Plate-Printing Machines, (for which I have obtained Letters Patent in France, No. 166,613, dated January 23, 1885; in England, dated February 27, 1886, No. 2,886; in Belgium, dated February 8, 1886, No. 71,898, and in Germany, dated February 10, 1886, No. 36,925;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates more particularly to that class of printing-presses for printing from steel or other engraved plates; and it has for its object to render these presses more efficacious in their functions.

To these ends the invention consists, essentially, in a peculiar arrangement of the wipers and in the means employed for imparting to each wiper a peculiar reciprocating movement.

The invention further consists in the combination, with the wipers, of means whereby the undulating or irregular movement thereof may be varied at will, according to the nature of the work, the dimensions of the plate printed from, or the rapidity with which the wiping is to be done or effected.

The invention further consists in certain details of construction and combinations of parts, substantially as hereinafter fully described, and as set forth in the claims.

Referring to the drawings, Figure 1 is a side elevation of so much of a printing-press as will suffice to illustrate my invention. Fig. 2 is a vertical longitudinal section taken on line  $xx$  of Fig. 3. Fig. 3 is a vertical transverse section taken on line  $yy$  of Fig. 4, the bed-plate being shown with the printing-plate under the wiper-frame  $G'$ . Fig. 4 is a top plan view of the machine, the feed-board being removed. Figs. 5 and 6 are opposite end elevations, and Fig. 7 a vertical transverse section,

of one of the wiper-carriages. Fig. 8 is a top plan view of the printing-plate and its support and a portion of the bed, showing the guide-strips by means of which the wiper-carriages are reciprocated horizontally; and Figs. 9 and 10 are isometric views of two of said strips.

In the above drawings, A indicates the main frame of the press, of such a construction as to accommodate the operating devices; B, the feed-board; and C, the impression-cylinder, adjustable vertically in the bearing-standards  $A'$  in the usual well-known manner.

D indicates the bed, to the under side of which are secured two rails,  $d$ , that rest on a series of rollers,  $D'$ , coupled together by longitudinal bars  $d'$ , Figs. 1, 2, and 3. These coupled sets of rolls travel on ways  $d''$ , Fig. 3, supported from the cross-braces  $A''$  of the main frame.

To the under side and centrally of the bed D, between the rails  $d$ , is secured a rack-bar,  $D''$ , with which meshes a driving-wheel, 6, driven from the main shaft S by a gear-wheel, 1, meshing with a like wheel, 2, which latter meshes with a like wheel, 3. The gear-wheel 3 meshes with a smaller gear-wheel, 4, on shaft  $S'$ , which latter also carries a like wheel, 5, that drives the wheel 6, above referred to, as shown in Figs. 1 and 2.

To the bed D is secured the block  $D^3$ , that carries the printing-plate  $D^4$ .

The usual or any preferred form of ink fount or well, E, transfer-rolls  $E'$ , inking-rolls  $E''$ , and inking-table  $E^3$  are employed. (See Figs. 1 and 2.)

On the right of cylinder C is arranged the inking-frame  $f$ , in which are mounted the inking or spreader and distributing rolls F. The frame  $f$  is supported from standards or arms  $f'$ , that pass through guide sleeves or blocks  $f''$ , secured to the main frame A. The lower end of the standards or supporting-arms  $f'$ , at opposite ends of the roller-frame, is connected to a rod or bar,  $h^2$ , for the purpose of imparting to the frame a periodical vertical reciprocating movement, as hereinafter explained.

On the right of the roller-frame  $f$  are arranged three wiper-frames,  $G$   $G'$   $G''$ , and on the left of the cylinder two or more like frames,



$G^3 G^4$ . These frames being all constructed alike, a description of one of them will therefore suffice. The frame is composed, essentially, of two vertical end pieces,  $g$ , and a top or cross piece,  $g'$ . From each end piece project two supporting-arms,  $g^2$ , preferably prism or wedge shaped in cross section, from which the frame is supported, said arms resting on correspondingly-shaped bearings formed in blocks  $h$  of a supporting-frame,  $H$ , presently to be described. Each end piece,  $g$ , has on its inner face a projecting lug or bearing,  $g^3$ , provided with a screw-threaded opening in which works the adjusting screw-rod  $i$  of the wiper-carrier  $I$ . This carrier consists of a socketed portion,  $i'$ , connected with the screw-rod  $i$  and provided with a head or flange,  $i^2$ , to which is secured the wiper-block  $i^3$ , that extends from one end of the frame  $G$  to the other. The socketed portion  $i'$  of the sleeve is held in position and guided by a bearing,  $g^7$ , on the end wall of the wiper-frame, as shown in Fig. 7. Below this wiper-block is arranged the wiper-pad  $i^4$ , held in position by an endless wiper-cloth,  $I'$ , or, preferably, by a wiper-cloth the bulk of which is wound on a roller,  $J$ , to which one end of the cloth is secured, said cloth passing thence to another roller,  $J'$ , also mounted in the frame  $G$  below roller  $J$ , to which the other end of the cloth is secured and upon which it is wound, as hereinafter described.

By means of the screw-rods  $i$  at each end of the frame the tension of the wiper-cloth  $I'$  can be adjusted with great nicety according to the work in hand. The roller-bearings are so arranged that both rollers  $J$  and  $J'$  may be readily removed for the purpose of changing the wiper-cloth, or the latter and the wiper-pad, if required, said bearings communicating with an angle-slot,  $g^4$ , formed in the end walls,  $g$ , of the frame, as shown in Figs. 5, 6, and 7.

Upon one of the journals of the lower roll,  $J'$ , is secured a ratchet-wheel,  $j'$ , and upon said journal is fulcrumed a lever,  $J^2$ , that carries a pawl,  $j^2$ , which engages the teeth of the ratchet  $j'$ , and by means of which the wiper-cloth is wound on the roll  $J'$  when the wiper-frame is moved upward, the arm  $j$  of lever  $J^2$  then coming in contact with the lower end of a screw,  $J^3$ , that works in a bearing,  $j^3$ , secured to the main frame  $A$ . (See Figs. 1, 2, 4, and 5.)

The wiper-frames have a vertical reciprocating motion in order to bring them into position for wiping the plate  $D^4$  and move them out of the way of said plate when wiped. This movement is imparted to the wiper-frame  $G$  and simultaneously to the roller frame  $f$  by means of cams  $K$  on a cross-shaft,  $S^2$ , which shaft also carries a worm-wheel,  $W$ , that meshes with a worm,  $w$ , on a longitudinal shaft,  $s$ , arranged below the bed-plate.

Each cam  $K$  serves as a support for a foot,  $h^3$ , depending from a connecting bar or rod,  $h^2$ , that connects the standard  $f'$  of the roller-frame  $f$  with the standards  $h'$  of the supporting-frame  $H$ , that supports the wiper-frame,

the arrangement being the same at opposite ends of roller-frame  $f$  and supporting-frame  $H$ , or at opposite sides of the press. The standard  $h'$  being, like standards  $f'$ , guided in suitable guide blocks or pieces,  $h^4$ . It is obvious that as the cams rotate they will cause the roller-frame  $f$  and frame  $H$ , and with the latter the wiper-frame, to alternately and gradually rise and fall. The amplitude of the upward movement of the parts described is sufficient to allow the printing-plate to pass freely under them.

The frames  $G'$  and  $G^2$  are elevated and lowered through the medium of their supporting-frames  $H'$   $H^2$  by a curved lever,  $L$ , fulcrumed in a bearing secured to the main frame, and whose arms carry rollers that impinge upon the connecting-bar  $h^2$ , that connects the lower end of the standard  $h'$  of each frame  $H'$   $H^2$ , from which standards the bearing-blocks  $h$  are supported.

A cam,  $M$ , on cross-shaft  $s'$  impinges upon one of the arms of lever  $L$ , thereby elevating, for instance, the frame  $H'$ , the frame  $H^2$  descending, the cams  $K$  and  $M$  being so timed that when frame  $H'$  is at the limit of its downward movement—that is to say, when the wiper-frame  $G'$  is wiping the plate the frames  $H$  and  $H^2$  and wiper-frames  $G$  and  $G^2$  are elevated—the wipers of these frames being then out of operation or idle.

The frames  $H^3$  and  $H^4$  of the wiper-frames  $G^3$  and  $G^4$  at the left of the cylinder  $C$  are reciprocated by means substantially like those described in reference to frames  $H'$  and  $H^2$ . Upon a cross-shaft,  $s^2$ , is secured a cam,  $N$ , that impinges upon one arm of a curved lever,  $L'$ , fulcrumed in a suitable bearing secured to the main frame; or one of the arms of lever  $L'$  is in this case pivotally connected with a foot-piece,  $h^6$ , and the cam  $N$  made to operate on the foot-piece, as shown; or said cam may be of sufficient diameter to act both on the foot-piece and lever-arm. The cross-shafts  $s'$  and  $s^2$  are revolved by means substantially the same as those employed for revolving cross-shaft  $s$ , each of said shafts  $s'$   $s^2$  carrying a worm-wheel,  $W'$   $W^2$ , respectively, that mesh with worms  $w'$   $w^2$  on shaft  $s$ , as more plainly shown in Fig. 2.

It is well known that the clearness of a print depends largely upon the wiping of the plate, and that the wiping is effected by a peculiar motion, the geometrical figure described being somewhat of an ellipse, or a more or less flattened ellipse. Many means have heretofore been devised to impart this motion to the wipers mechanically. One of the objects of my invention is to produce this peculiar motion in a simple way, and also to provide means whereby the amplitude of the motion may be varied according to the size of the plate or according to the nature of the work in hand.

To the bed  $A$  are secured blocks  $O$ , between which are held guide strips  $P$ , that extend the full length of the block  $D^3$ , that supports the



printing-plate D<sup>1</sup>. The proximate faces of these guide-strips P are undulating and are secured to the bed D, so as to form an undulating guideway between them, as shown in Fig. 4, and more plainly in Fig. 8, the detached strips being shown in Figs. 9 and 10. To one end of the wiper-carriage is secured a rod, o, that projects between the strips, so that as the bed advances a horizontal undulating reciprocating motion similar to that of the printer's hand will be imparted to the wiper-carriages. Each carriage has one such rod at one or the other end—that is to say, if the rod o of carriage G is at one end the rod of carriage G' will be at the other—so as not to interfere with the winding mechanism for the wiper-cloths, and so as to reciprocate the carriages in opposite directions. A spring, o', at the end opposite to that where the rod o is secured tends to draw the carriage to one side, as shown in Fig. 3, said spring being secured to one of the standards h' of the supporting-carriage H, or to the standard or bracket j<sup>3</sup> for the screw-stop J<sup>3</sup>, as shown in Fig. 3. The undulating strips P P are made interchangeable on the bed-plate by means of the blocks O, Fig. 8, between which said strips are held, so that strips having undulations of greater or less amplitude may be employed to correspond with the amplitude the wiper-carriages are to have, as will be readily understood. By this means the amplitude of the wiper-carriages may be varied as found best suited for the work in hand by correspondingly varying the undulations of the strips P. Thus, for instance, a comparatively slow undulating motion may be imparted to the wiper-carriages G G<sup>2</sup> and a more rapid motion to the carriage G' by using on one side of the bed two strips to form a track the undulations of which are of greater amplitude than the track formed by the strips in the opposite side of the bed; or the amplitude of motion of the wiper-carriages may be varied by using strips of correspondingly-varying undulations. Thus the rapidity of the motion of the wiper-carriages G G<sup>2</sup> may be increased or decreased as the plate passes under them, while the motion of carriage G' may be slow and uniform, or may gradually increase or decrease, according to the work to be done.

In Figs. 9 and 10 I have shown several strips P, by means of which the relative motion of the wiper-carriages may be varied or their individual motion varied. This, combined with the arrangement for winding on the wiper-cloths of the carriages, whereby a clean surface of cloth is brought in contact with the printing-plate, is as effective a mode of wiping and polishing as that heretofore done by hand.

R and R' are rollers covered with some suitable textile fabric capable of retaining a comparatively large volume of water. These rollers are pivoted to ends of levers S<sup>x</sup> S<sup>x</sup>, respectively, that are fulcrumed upon the block D<sup>3</sup>. The rollers are alternately elevated and depressed as the wiper-carriages are depressed

and elevated to keep the wipers in a sufficiently-moist state to wipe the plate properly.

The operation generally of the machine, although it may be well understood from what has been said hereinabove by those versed in this branch of the arts, may be briefly described to be as follows: Assuming that the plate has just passed from the impression-cylinder under the inking-rolls F and has been inked in, the said inking-rolls and the wiper-carriages G G<sup>2</sup> being then at the limit of their downward movement. As the printing-plate passes under the wiper-cloths of carriages G and G<sup>2</sup> it is wiped in one direction by both wipers—that is to say, the wiping of the plate proceeds alternately from the left to the right of the plate. In its return movement, after having passed from under the wiper-carriage G<sup>2</sup> and the motion of the bed is reversed, the said plate will not be wiped by the cloths of carriages G G<sup>2</sup>, said carriages being then in an elevated position, as well as the spreader and distributing-rolls. The plate will, however, be wiped by the cloth of wiper G' and in a direction the reverse of that of the wiper-cloths of carriages G G<sup>2</sup>, since the bar o, that imparts that motion to the carriage G', is on the side opposite to that of the bars of carriages G and G<sup>2</sup>. It will thus be seen that in its movements from and back to the point stated—i. e., from the inking-rolls and back thereto—the plate is first wiped from one edge to the other, or from left to right, by the wipers from carriages G G<sup>2</sup>, and then in opposite directions, or from right to left, by the wiper of carriage G'. The same operation is repeated on the opposite side of the cylinder C, the plate passing first under the wiper-carriage G<sup>3</sup>, the wiper of which wipes it in one direction, then moves to the limit of its traversing motion to the left, and is again wiped on its return movement by the wiper of carriage G<sup>4</sup>. The completely-wiped plate now passes under the impression-cylinder for taking the impression, as usual.

Of course the machine may be simplified by dispensing with one set of wipers, thereby reducing the dimensions and cost of the machine very materially, and it will answer all purposes for ordinary work, while the amount of work done is also increased, in view of the increased rapidity of the operation of wiping. When, however, fine work is to be done, one set of wipers I find will not be sufficient.

Having described my invention, what I claim is—

1. In a plate-printing press, the combination, with a reciprocating bed, of a wiper comprising a wiper-pad, a wiper-cloth, a cloth-carrier, a winding-roll operating to unwind the cloth from said carrier, and a frame in which said parts are mounted, arranged above the bed, and adapted to reciprocate vertically and horizontally, substantially as described.

2. In a plate-printing press, the combination, with the reciprocating bed and a stationary abutment, of a wiper comprising a wiper-pad, a wiper-cloth, a cloth-carrier, a



winding-roll, a ratchet rigidly secured to the journal thereof, a pawl-lever loose on said journal and lying in the plane of the abutment, and a carriage for said devices arranged above the bed, having a horizontal and vertical movement, substantially as described.

3. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers reciprocating intermittingly and successively in a plane at right angles to the plane of motion of the bed as said bed passes under the same, substantially as and for the purpose specified.

4. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers reciprocating intermittingly and successively and at a different speed in a plane at right angles to the plane of motion of the bed, substantially as and for the purpose specified.

5. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wiper-carriers having a reciprocating motion controlled by and at right angles to the motion of the bed, and having their initial of motion in reverse directions, whereby the wiping of the plate is first started in one direction by one or more of the wipers and in a reverse direction by the other wiper or wipers, substantially as and for the purpose specified.

6. In a plate-printing press, the combination, with the reciprocating bed, of a wiper adapted to reciprocate in a plane at right angles to the plane of motion of the bed, the motion of the wiper being controlled by the motion of the bed, substantially as described.

7. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers adapted to reciprocate in a plane at right angles to the plane of motion of the bed, the said motion of the wipers being controlled by the motion of the bed to reciprocate the wipers successively, substantially as described.

8. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers having a variable motion controlled by the motion of the bed in a plane at right angles to the plane of motion of said bed, substantially as and for the purpose specified.

9. In a plate-printing press, the combination, with the reciprocating bed, of a wiper-carrier reciprocating at right angles to the motion of the bed at a differential speed controlled by

the bed, substantially as and for the purpose specified.

10. In a plate-printing press, the combination, with the reciprocating bed, of a plurality of wipers having a vertical and horizontal reciprocating motion in planes at right angles to the plane of motion of the bed, the horizontal reciprocation of the wipers being controlled by the reciprocation of the bed, substantially as described.

11. In a plate-printing press, the combination, with the reciprocating bed, of connected ink-roll and wiper-carriers having a synchronous vertical reciprocating motion above the bed, said wiper carrier having an independent horizontal reciprocating motion, substantially as described.

12. In a plate-printing press, the combination, with the reciprocating bed and a wiper-carrier provided with a foot or bar, *o*, of strips *P*, secured to the bed and arranged to form between them a groove into which the bar *o* projects, said strips having their proximate faces of undulating form, substantially as and for the purpose specified.

13. In a plate-printing press, the combination, with the reciprocating bed and a wiper-carrier provided with a foot or bar, *o*, of interchangeable strips *P*, secured to the bed and arranged to form between them a groove into which the bar *o* projects, said strips having their proximate faces of undulating form, the amplitude or degree of undulations varying in each pair of strips, substantially as and for the purpose specified.

14. In a plate-printing press, the combination, with the reciprocating bed and a plurality of wiper-carriers provided with a foot or bar, *o*, at alternate opposite ends, of a pair of strips, *P*, secured to the bed on opposite sides of the block that supports the printing-plate, said strips having their proximate faces of undulating form and arranged to form a groove into which said bar *o* projects, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of February, 1886.

ALEXANDRE MARIE MARCILLY, Aîné.

Witnesses:

ROBT. M. HOOPER,  
JOSEPH PETKOUSKIE.