

(No Model.)

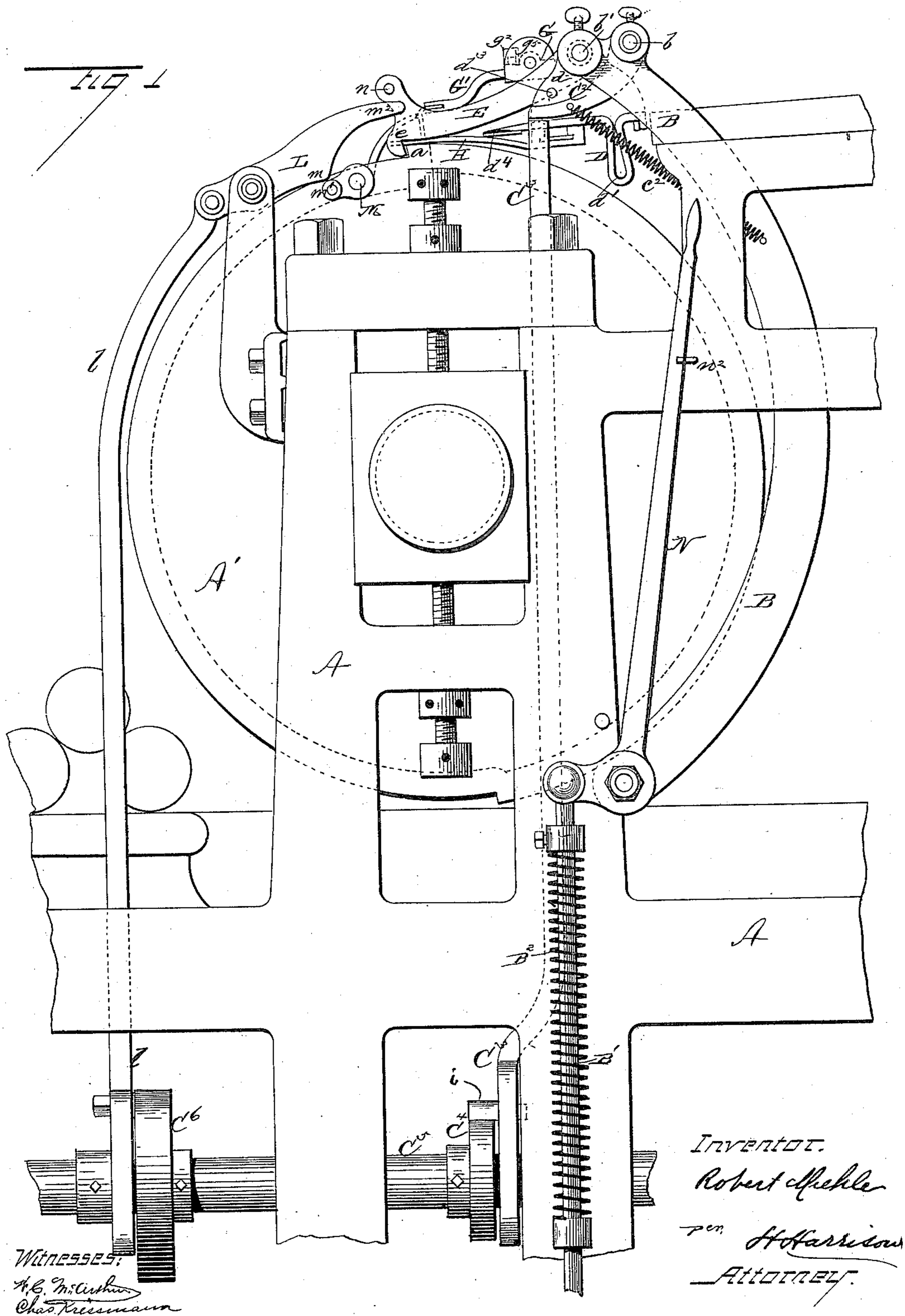
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R. MIEHLE.

REGISTERING MECHANISM FOR PRINTING MACHINES.

No. 363,409..

Patented May 24, 1887.

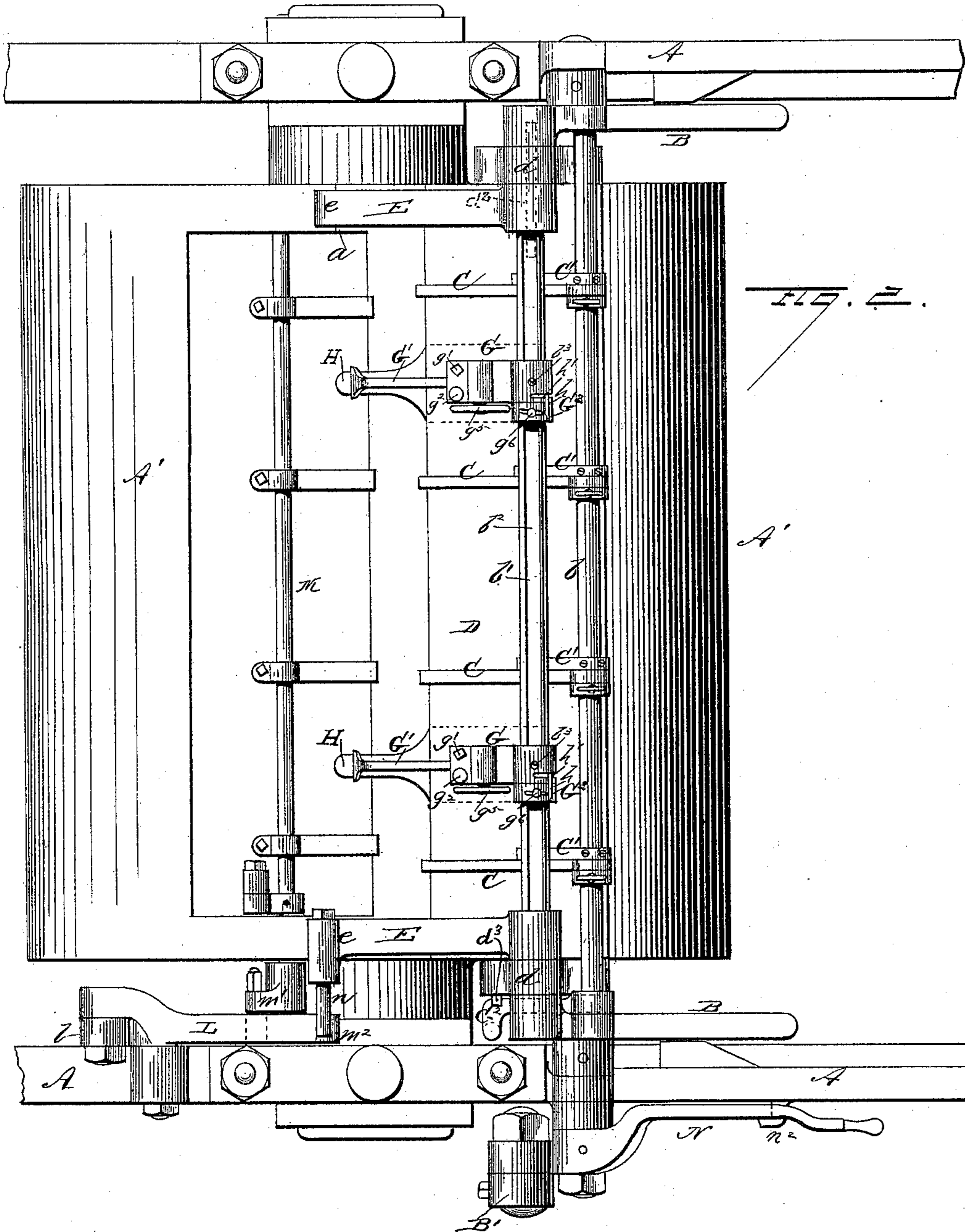


R. MIEHLE.

REGISTERING MECHANISM FOR PRINTING MACHINES.

No. 363,409.

Patented May 24, 1887.



Witnesses:

A. C. McArthur
Chas. Kressmann

Inventor.

Robert Miehle

per

H. Harrison

Attorney.

(No Model.)

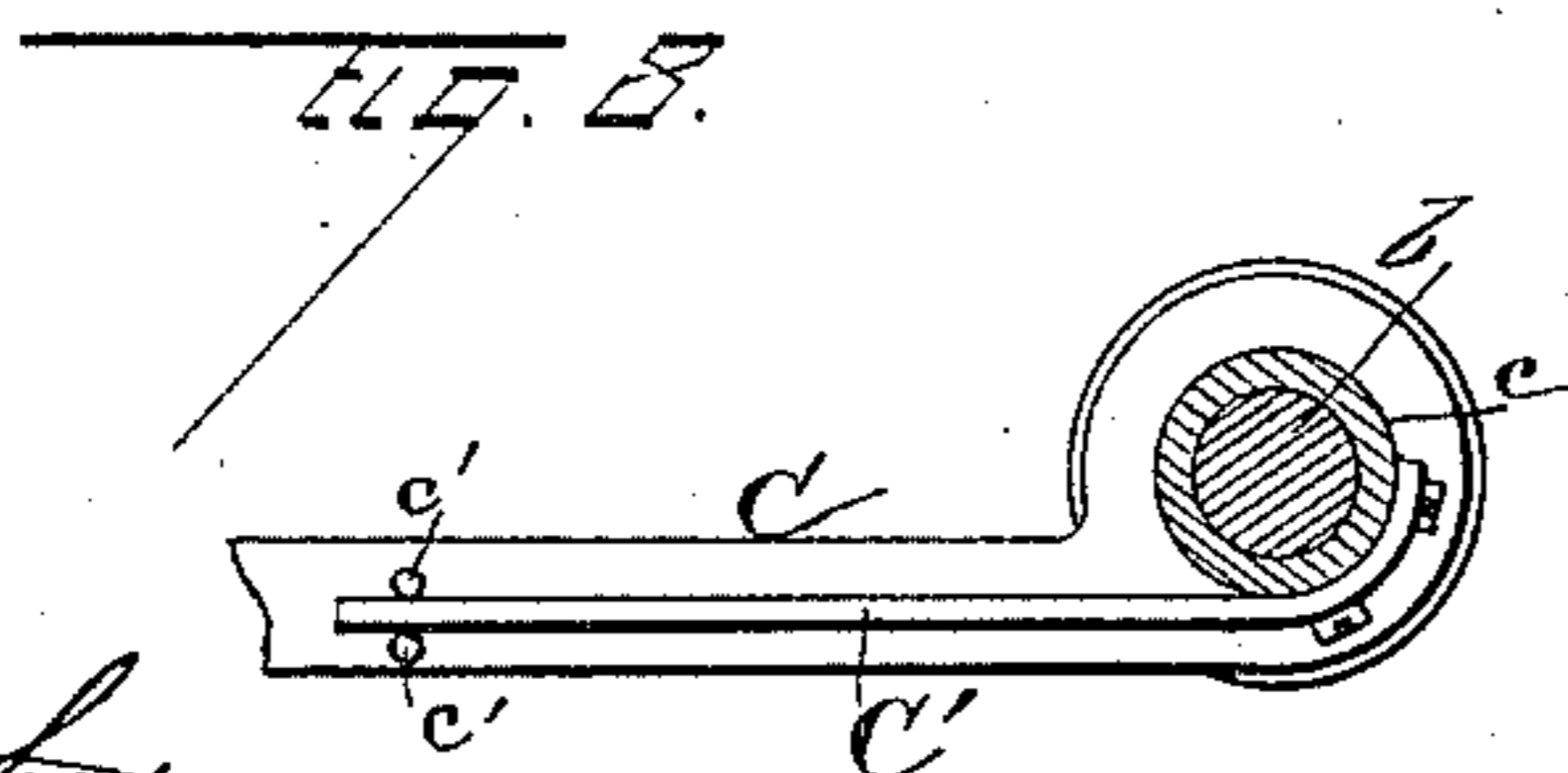
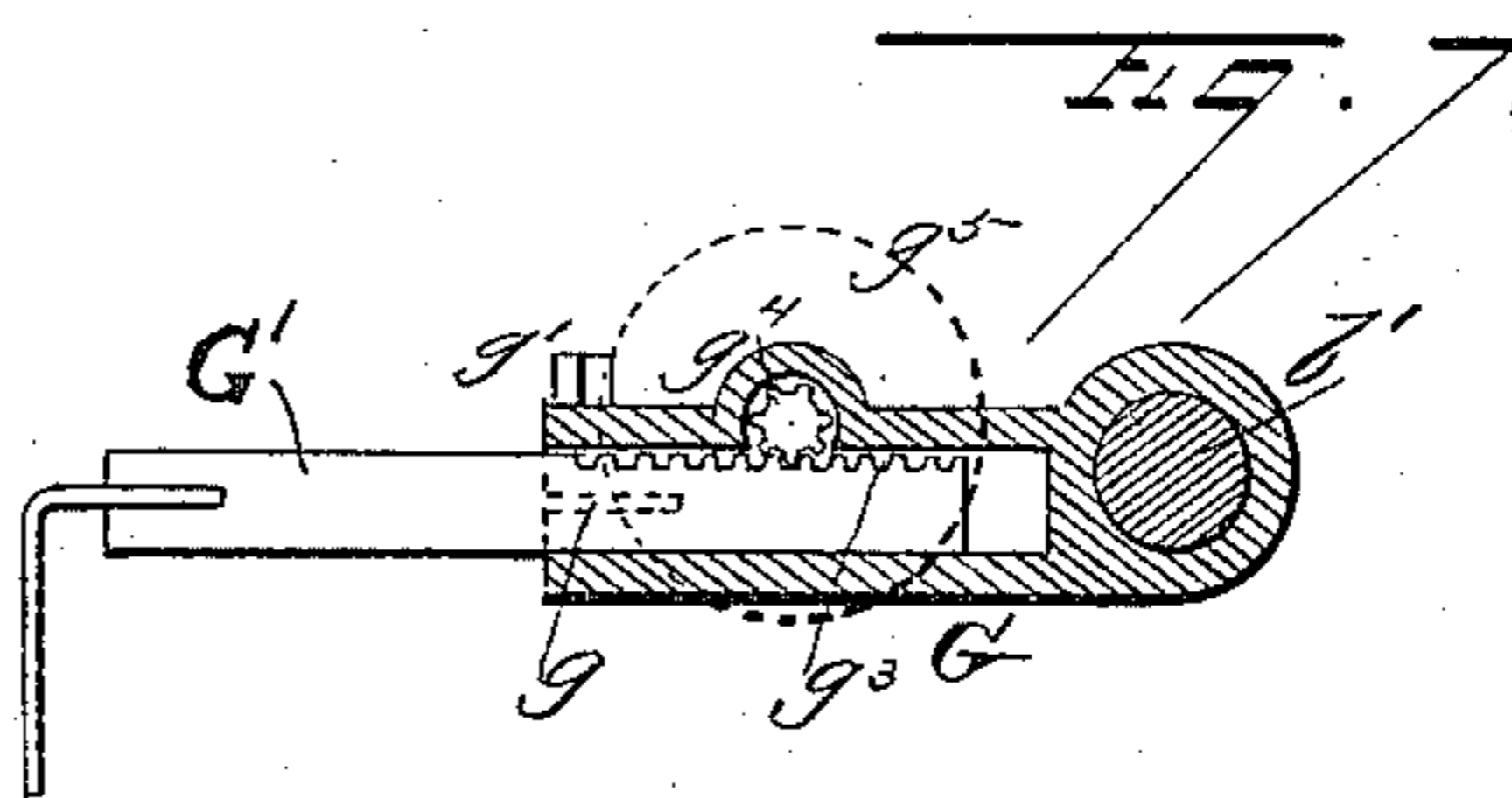
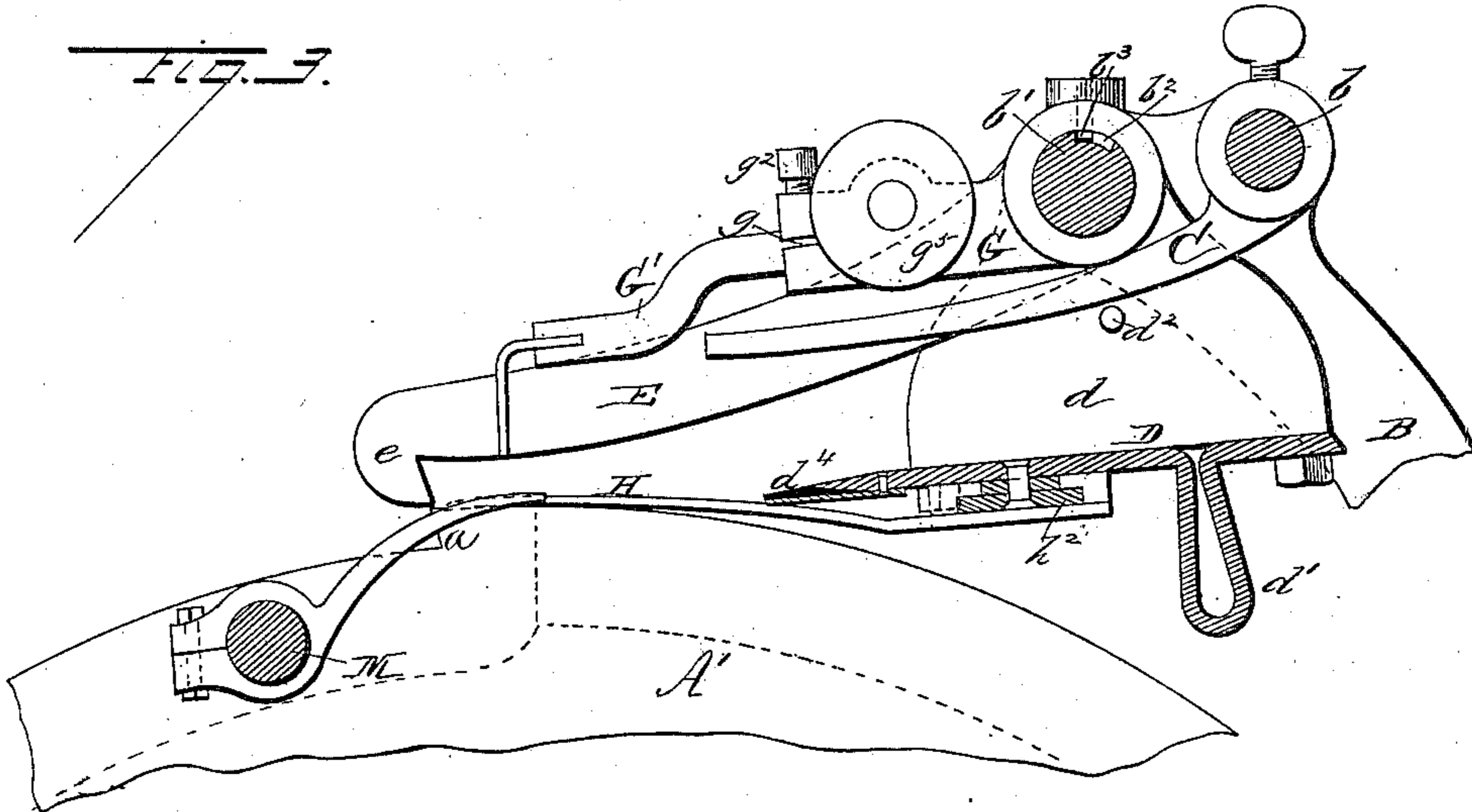
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R. MIEHLE.

REGISTERING MECHANISM FOR PRINTING MACHINES.

No. 363,409.

Patented May 24, 1887.



WITNESSES:

H. C. DeArthas
Chas. Treismann

Inventor.

Robert Miehle

per

H. Harrison

Attorney.

(No Model.)

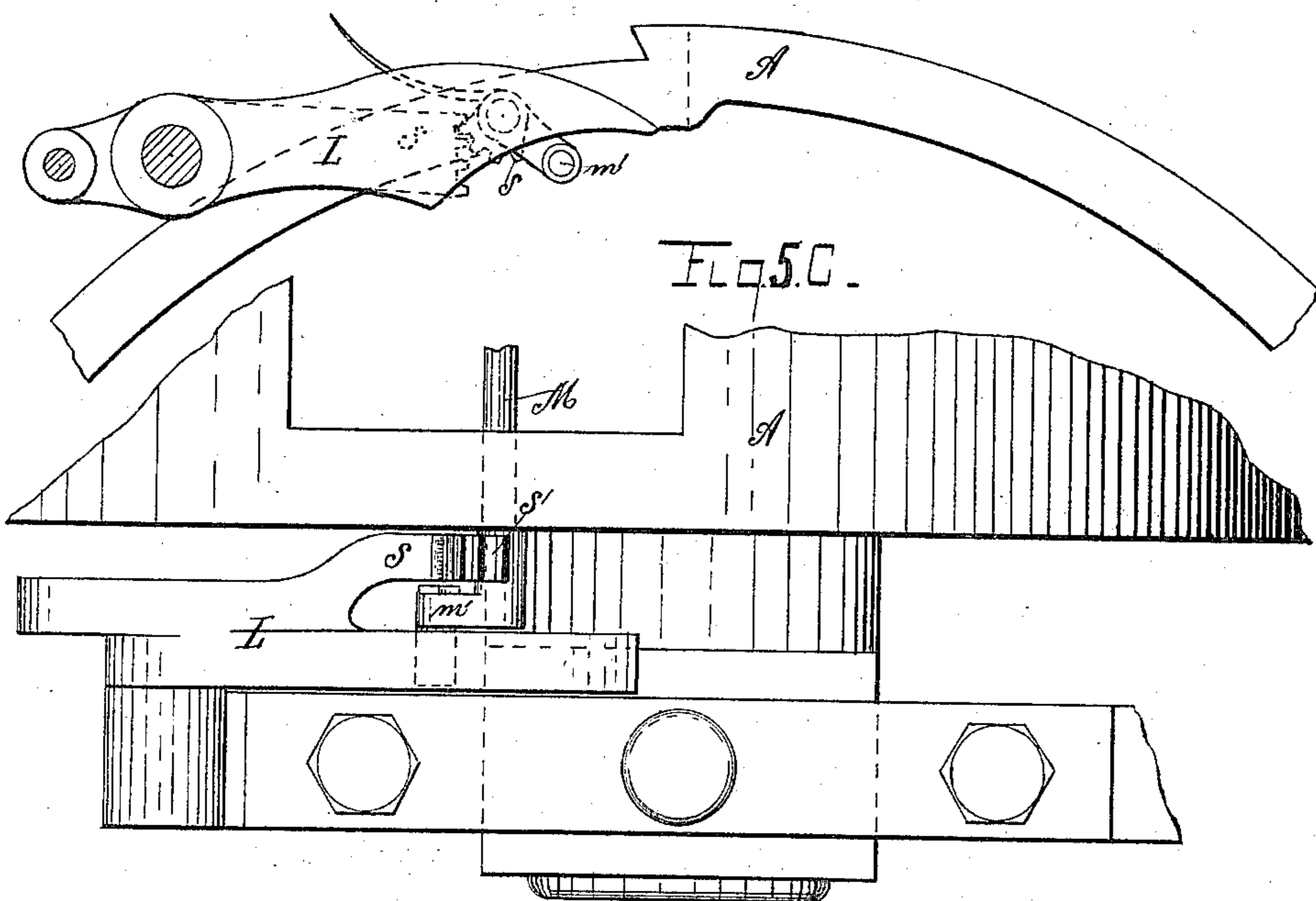
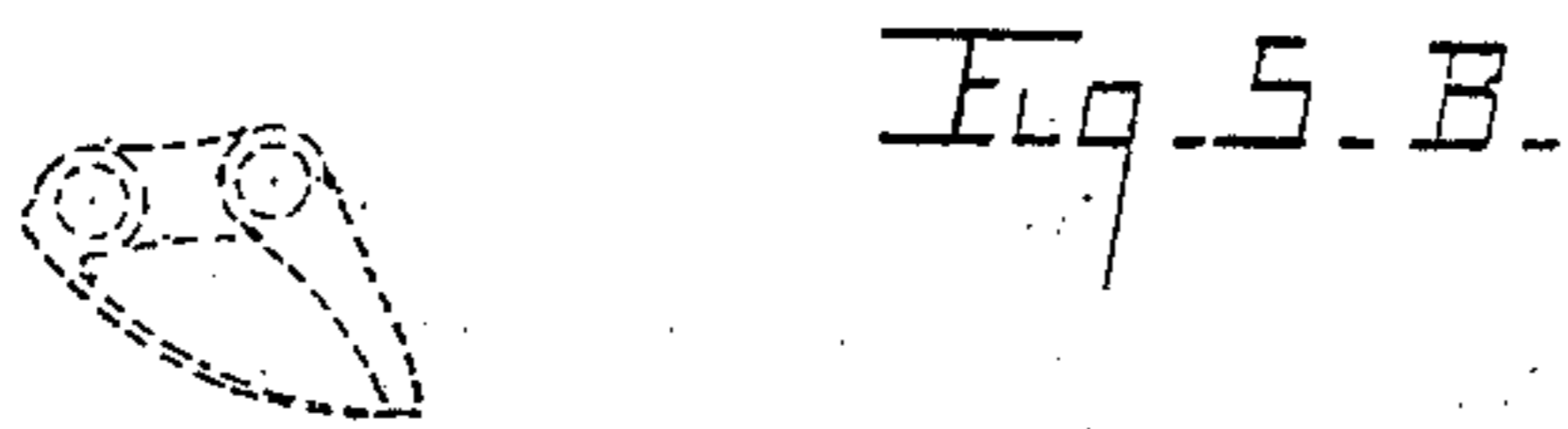
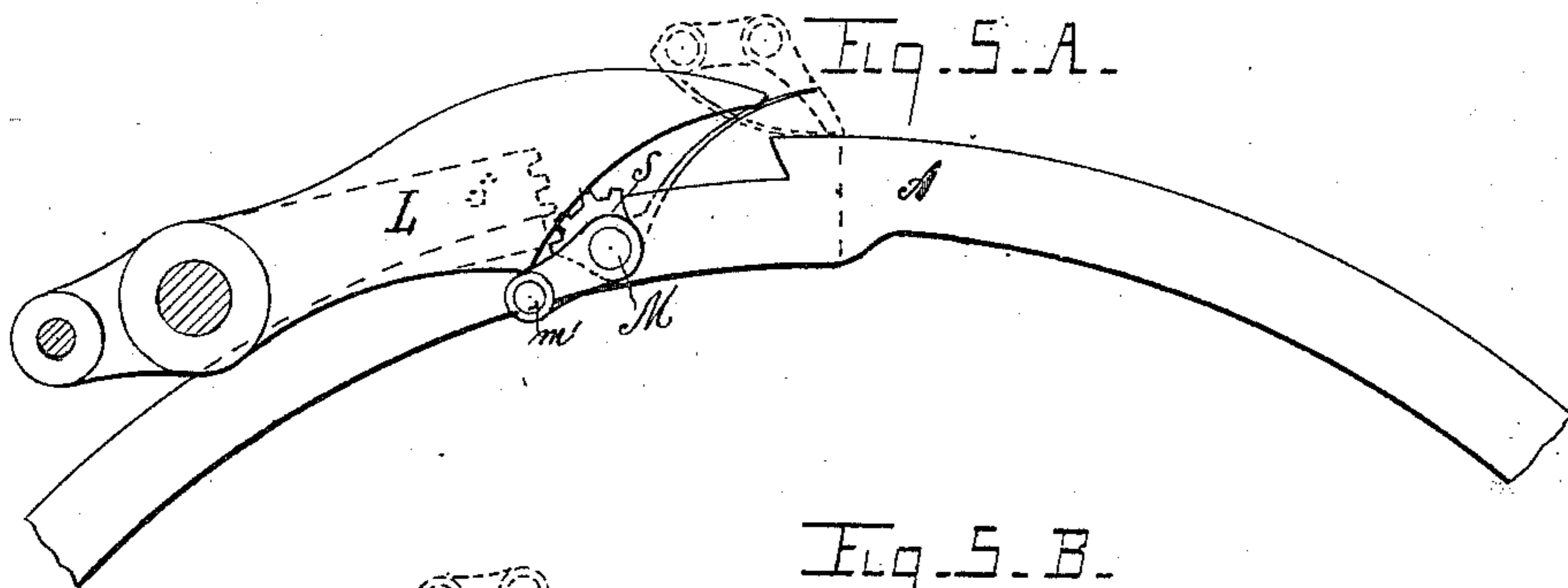
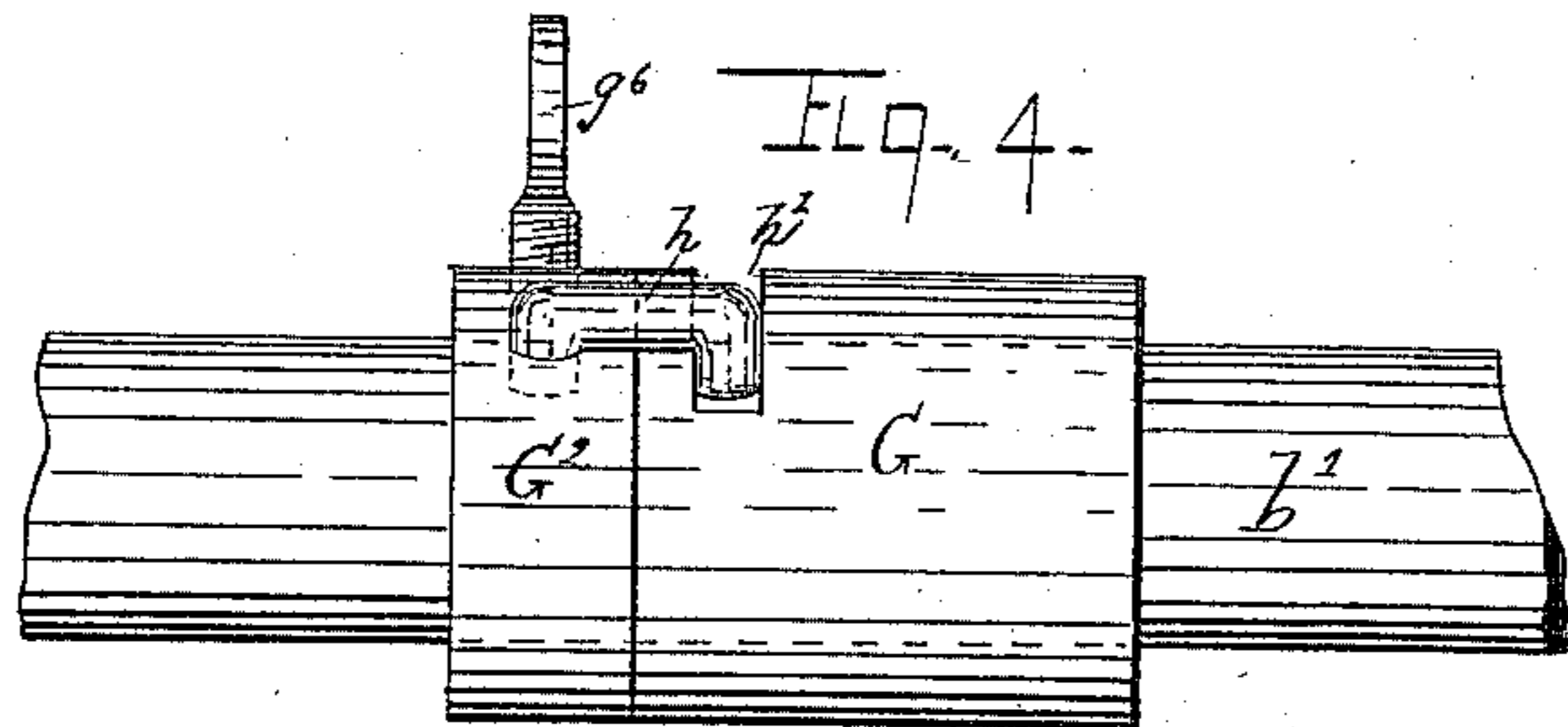
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R. MIEHLE.

REGISTERING MECHANISM FOR PRINTING MACHINES.

No. 363,409.

Patented May 24, 1887.



Witnesses:
Geo. W. Fritz
Peter P. Lienhart.

Inventor:
Robert Miehle.
per H. Harrison
Attorney.

(No Model.)

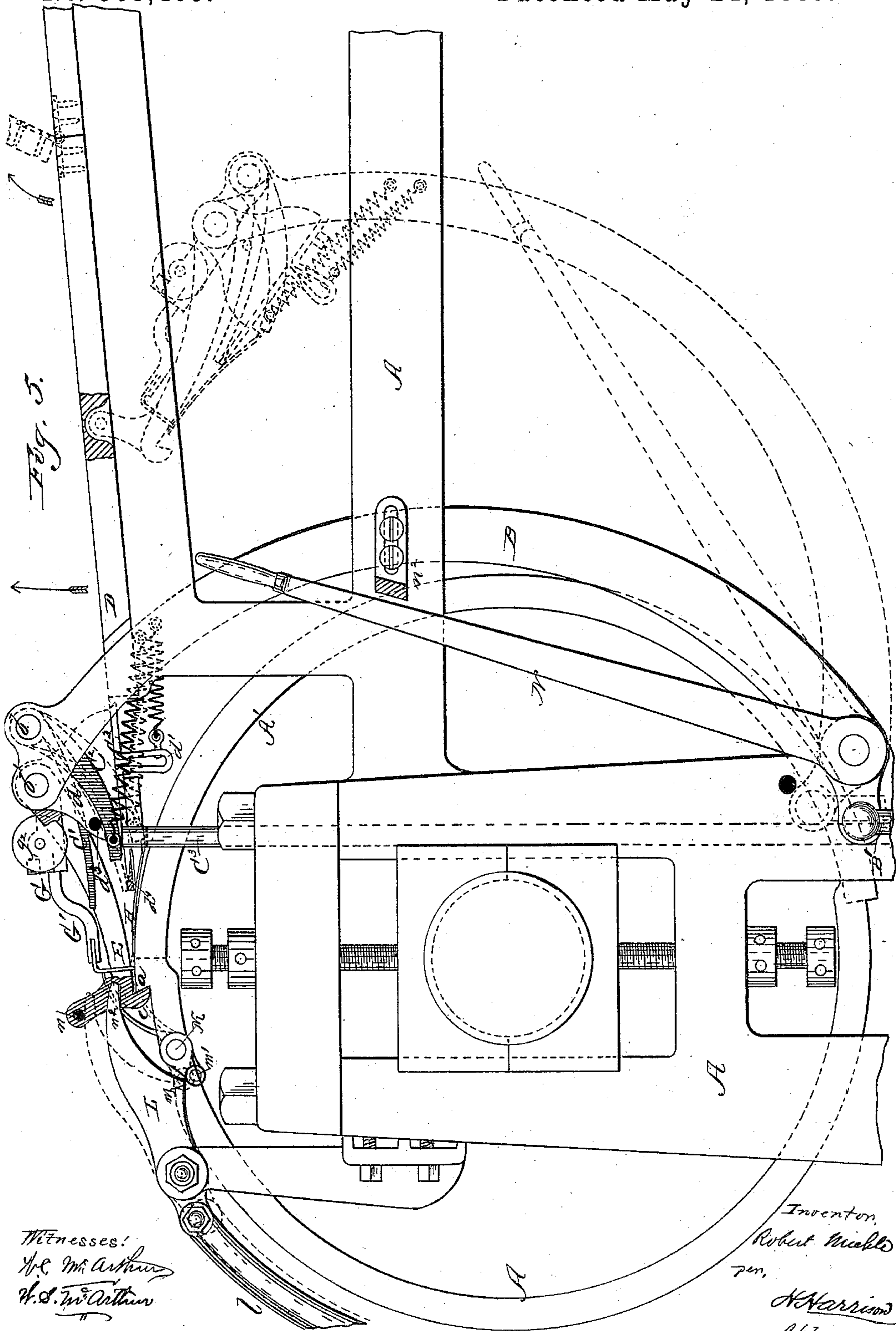
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R. MIEHLE.

REGISTERING MECHANISM FOR PRINTING MACHINES.

No. 363,409.

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(No Model.)

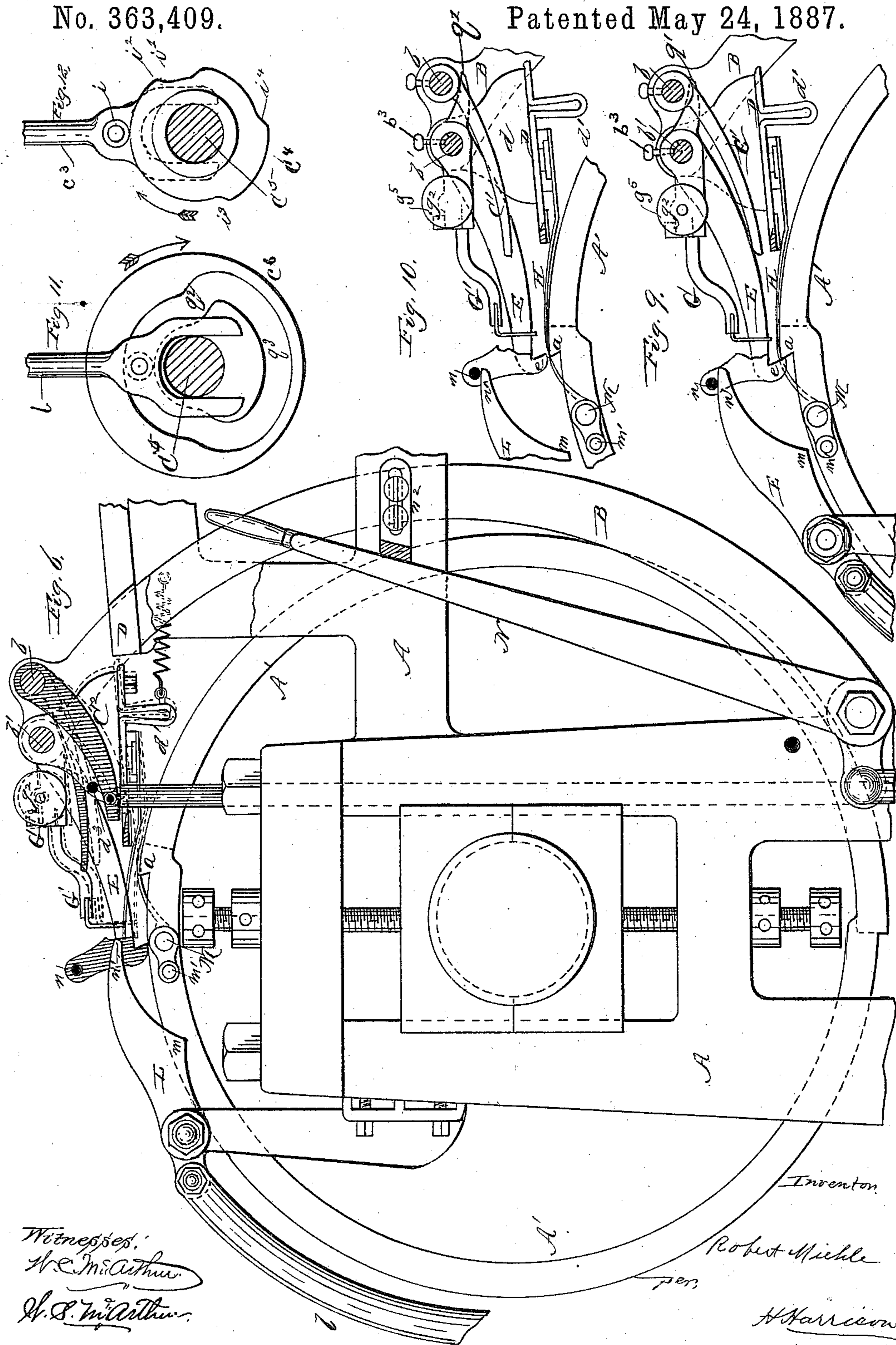
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R. MIEHLE.

REGISTERING MECHANISM FOR PRINTING MACHINES.

No. 363,409.

Patented May 24, 1887.



Witnesses:
H. E. McArthur.
H. S. McArthur.

Inventon.
Robert Michle
Harrison
Attorney.

(No Model.)

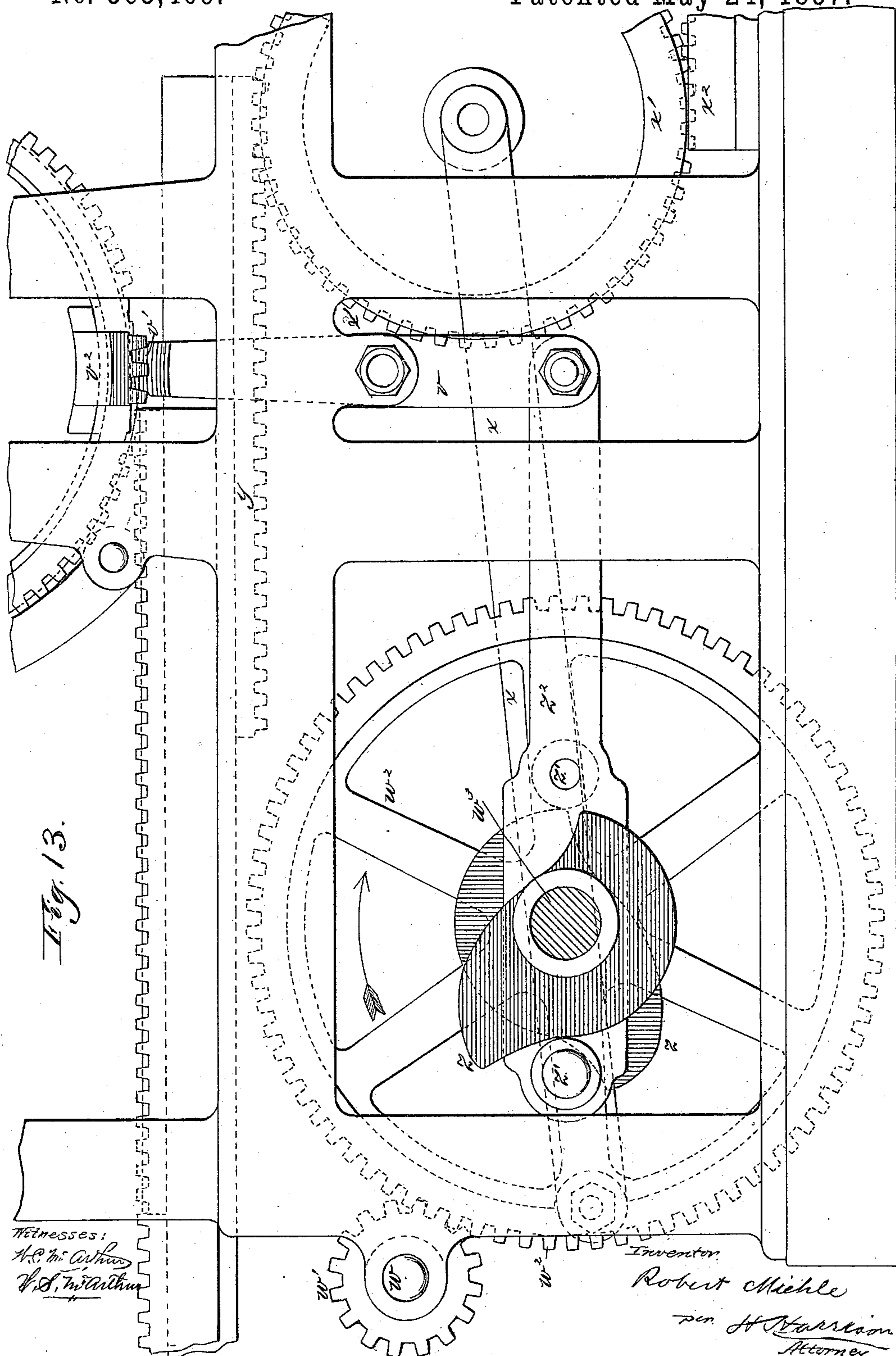
8 Sheets—Sheet 7.

R. MIEHLE.

REGISTERING MECHANISM FOR PRINTING MACHINES.

No. 363,409.

Patented May 24, 1887.



(No Model.)

8 Sheets—Sheet 8.

R. MIEHLE.

REGISTERING MECHANISM FOR PRINTING MACHINES.

No. 363,409.

Patented May 24, 1887.

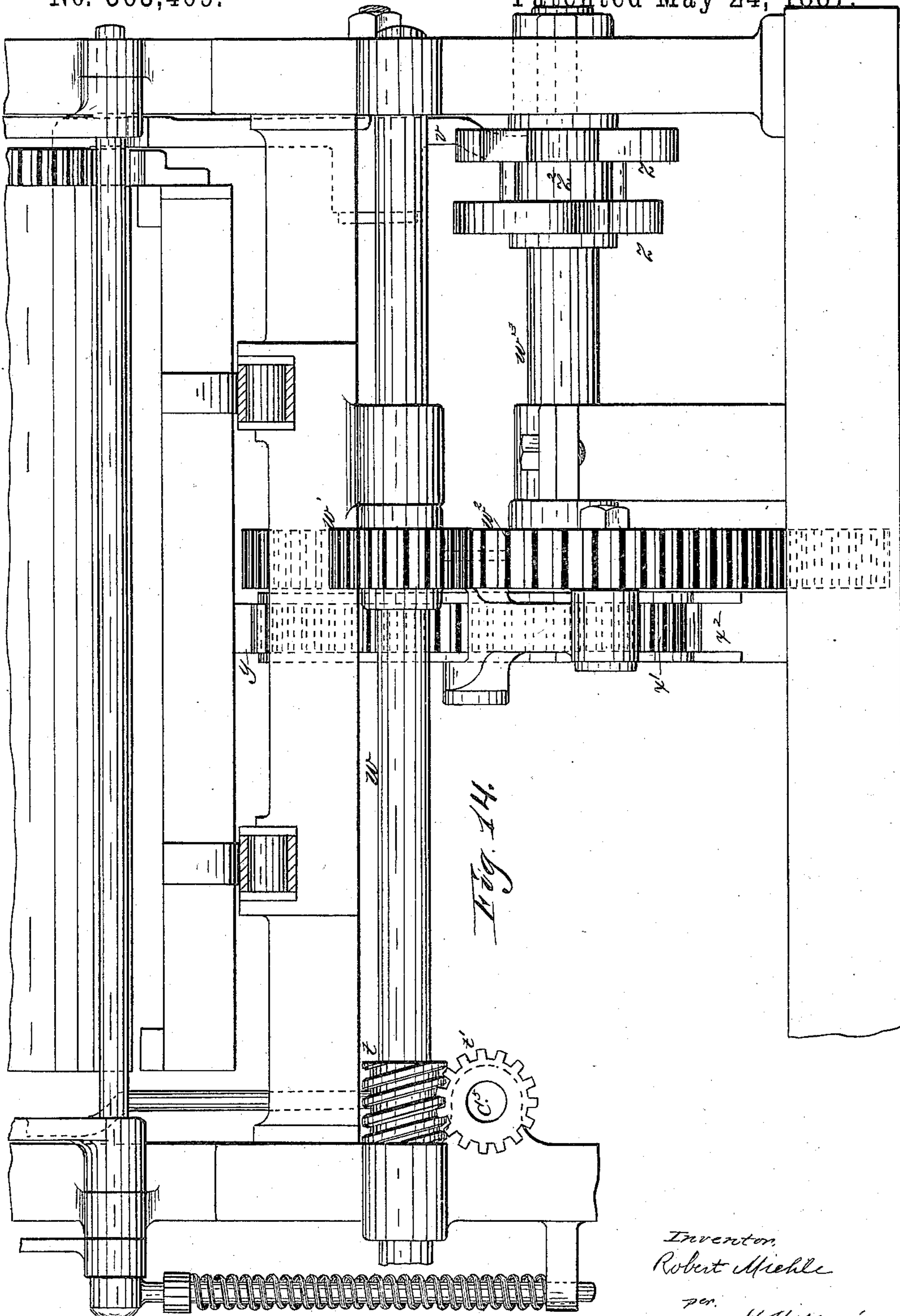


Fig. 14.

Witnesses:
R. M. Arthur
W. B. M. Arthur

Inventor,
Robert Miehle

per. *H. Harrison*
Attorney.

UNITED STATES PATENT OFFICE.

ROBERT MIEHLE, OF CHICAGO, ILLINOIS.

REGISTERING MECHANISM FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 363,409, dated May 24, 1887.

Application filed January 16, 1885. Serial No. 153,111. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MIEHLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Printing-Presses, of which the following is a specification, to wit:

This invention relates to printing-presses; and it consists in certain peculiarities of the construction and arrangement of the registering devices, whereby a more perfect register is obtained, as hereinafter fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a printing-press embodying my invention. Fig. 2 is a top plan view of the same. Fig. 3 is an enlarged vertical longitudinal section of my invention. Fig. 4 is an enlarged side view lengthwise of the rock-shaft b^2 , showing the means for preventing the guides G moving sidewise. Fig. 5 is a side elevation illustrating the raising and lowering of the clamping-arms and the opening and closing of the cylinder-grippers, also showing the whole registering device thrown back below the feed-board. Fig. 5^A is an illustration showing the position of the cylinder-grippers at the time the delivery-grippers are about to draw the sheet from the cylinder. Fig. 5^B shows the cylinder-grippers swung entirely open to allow the sheet being delivered. Fig. 5^C is a top plan view of part shown in Figs. 5^A and 5^B. Fig. 6 is a side elevation illustrating the forward end of the feed-board in its raised position. Fig. 7 is a view of the adjustable guide-arms or gages which register to the feeding of the paper to the cylinder. Fig. 8 is a similar view of one of the spring-actuating clamping or holding arms for detaining the sheet in position after being fed till it is seized by the grippers upon the cylinder. Figs. 9 and 10 are similar views illustrating the disengagement of the devices from the cylinder and raising of the feed-guides. Fig. 11 is a side view showing the groove of the disk which operates the cylinder-grippers, feed-guides, and the arms which engage with the cylinder. Fig. 12 is a side view of the disk which operates the clamping-arms and the forward end of the

feed-board. Fig. 13 is a side view of the lower rear end of the press; and Fig. 14 is a rear elevation of the same, showing the devices usually used for operating the parts of a press of this character.

I have represented herein what is known as a "stop-cylinder" press, but do not desire to confine the invention to a press of this nature.

A represents a press-frame of any desired or suitable form, in which is mounted an impression-cylinder, A', operated by any suitable mechanism, the means herein shown being the well-known crank-movement, but any other may be preferred.

In the operation of these presses the cylinder is stopped during the forward motion of the bed to allow the next sheet to be properly fed to a guide or guides set at the proper points, and when it is again time for the cylinder to move forward these guides are lifted out of the way as the sheet is seized by the gripping-fingers and drawn into the press to receive the impression. In such cases, while the press was new, it was possible to stop the cylinder at the same exact point, thus obtaining an accurate feed and register of the sheet; but when the press had been used sufficient for its mechanism to become slightly worn, the cylinder does not always stop at the same point in relation to the feed-guides when placed above the cylinder and having their bearings adjacent to or upon the side frames of the press. This I obviate as follows:

The impression-cylinder is upon each side at its periphery formed with a small shoulder or projection, a , with which engages an arm connected to the feeding and gaging devices, as will be presently explained. A lever-arm, B, is fulcrumed on the press-frame on each side, which levers extend upward and carry on their upper ends a pair of transverse rock-shafts, b b' , on which the guide and clamp arms are placed; and the lower end of one of the levers is connected to a vertically-sliding rod, B', upon which is placed a spring, B², which tends to hold these levers always in their proper position, while allowing their upper ends to be drawn forward, as hereinafter described. The levers B are firmly secured upon the ends of a rod passing through the press in rear of the impression-cylinder, and are therefore moved together without any tendency to twist at their upper ends.

Upon the rear transverse rock-shaft, b , are loosely placed a series of forwardly-extending arms, C , which serve to hold the sheet clamped firmly upon the forward end of the feed-board, and beside these arms upon the shaft are secured collars c , each carrying a spring-arm, C' , the outer end of which lies between two pins, $c' c'$, upon the side of the adjacent clamping-arm, as fully shown in Fig. 8. Upon one end of the rock-shaft is secured an arm, C^2 , connected by a spring, c^2 , to the arm B , and the end of which lies upon the upper end of a rod, C^3 , extending downward and connected at its lower end to an operating disk or cam, C^4 , upon a driving-shaft, C^5 , as seen in Fig. 1. This rod is lifted or lowered by the motion of this disk, and in turn lifts the arm C^2 , or allows it to fall by the action of its spring. This rocking of the shaft lifts or lowers the clamping-arms, and it will be at once seen that as these are loose upon the shaft, but engaged with the spring-arms C' , the shaft is allowed to move sufficiently to fully drop all of the clamps should they not be set quite evenly or should the surface beneath them be slightly uneven, those which strike first being only held the tighter as the shaft moves on to bring down the others, and the spring-arms being free to bend, their outer ends slide freely between the pins $c' c'$.

The rock-shaft b' is upon each end provided with a hanger, d , which are placed loosely thereon, from the under side of which is suspended the forward end of the feed-board D . This I prefer to make of metal, as indicated, and provide it with a transverse fold, d' , to give it the requisite stiffness without adding to its weight. One of the hangers d is provided with a pin, d^2 , which projects both inside and outside of said hanger. The outside portion engages the lever-arm B to prevent the feed-board from swinging too far by the spring q as these arms are thrown back, which will be hereinafter described, while the inner portion of this pin may be made of sufficient length to allow of the clamping-arms being slipped over and rested upon it when it is not desired to use them, as is sometimes the case. These arms being connected to collars which are adjustable upon the shaft, and secured by set-screws, it is evident that when these screws are loosened and the arms slid out of the way they can rest upon this pin and be held stationary without in any way interfering with the action of the shaft. The other hanger d is provided with a pin, d^3 , which is engaged by the operating-arm C^2 on the rock-shaft, and lifts the feed-board and its guide-rests to allow ample room for the delivery of the printed sheet at the top of the cylinder.

Each end of the rock-shaft b' is provided with a projecting arm, E , which are represented as formed with hooked ends e . These ends rest normally upon the ends of the cylinder, and as it revolves they are engaged with the shoulders a of the same, and the whole mechanism moves forward with the cyl-

inder till it stops, and thus always preserves the same relative position between the cylinder and guides and feeding devices. On the same rock-shaft are placed the sheet-guides G , which consist of arms preferably placed loosely on the shaft, which has a slight motion independent of them. The arms G are made hollow, and their outer ends are split longitudinally, as at g , and provided on one side of the base with a set-bolt g' , and on the other with a thumb-screw, g^2 , as shown clearly in the drawings. In each hollow arm is placed an extension, G' , the outer end of which is bent down to gage the point to which the sheet is fed, and the inner end formed with a series of rack-teeth, g^3 , with which engages an operating-pinion, g^4 , having a thumb-wheel, g^5 , on the hollow arm. By this arrangement the gage or guide-arm is extended or retracted to the desired point to which the sheet of paper is to be fed, and the set-bolt g' is screwed down till the split end of hollow arm clamps the extension with friction sufficient to prevent its being accidentally moved or slipping too freely, while the thumb-screw g^2 is used to firmly clamp the extension after being properly set. To enable these guides or gages to be adjusted laterally upon their shaft, I form this shaft with a longitudinal groove, b^2 , of sufficient width, and each arm G is provided with a pin or screw, b^3 , which projects into said groove, but does not occupy its full width or depth, thus enabling the arms to have a slight motion independent of the rock-shaft, as will be clearly shown in Figs. 3, 9, and 10. On the shaft b' , beside each arm G , is placed a collar, G^2 , secured firmly, but adjustably, by means of a set-screw, g^6 , and formed or provided with a small finger, h , which projects over the rear end of the arm and engages a short peripheral slot, h' , therein, thus preventing any tendency of the guide-arm to slip sidewise, while permitting its oscillating motion independent of the shaft, as before described. This will be seen by reference to Figs. 2 and 4.

The forward end of the feeding-board D is provided with a transverse strip of rubber or leather, d^4 , upon which the clamping-arms C rest when lowered and clamp the sheet. This is exactly the reverse of the mode usually employed, in which the rubber or leather is placed upon the clamping-arms. It is evident that when pressed down the paper clings to the rubber, and when this is placed upon the arm any movement of the latter changes the position of sheet, but when placed on the feed-board the arm slips easily over the paper, which is held stationary wherever it is placed, and is thus always in proper position for being drawn into the press. The outer ends of the guide-arms rest upon the ends of projecting plates or arms H , the rear ends of which are adjustably secured upon a transverse guide, h^2 , on the under side of the feed-board, as in Fig. 3.

To lift the mechanism from contact with the

cylinder at proper intervals, I provide a dog or lever, L, which is pivoted upon an offset of the main frame, and has its rear end connected by a rod, l , with a cam or disk, C^6 , upon the driving-shaft, before mentioned. The other end of this dog is formed with a shoulder, m , which, in its lowest position, contacts with an arm, m' , on the end of the gripper-shaft M, as in Fig. 1, to lift the gripping-fingers, and also with a point, m^2 , which, when the dog is lifted, engages a pin, n , in one of the hooked arms E to lift it and with it the guide-arms, &c., as shown in Figs. 9 and 10. The grippers are thrown down again in the usual way by springs, which it was not thought necessary to show.

To hold the arms B from being thrown too far back by their spring connection when released from engagement with the cylinder, but at the same time to allow of their being turned back out of the way when desirable, I provide a hand-lever, N, connected to move with these levers, which engages with a lug, n^2 , on the press-frame. This stops the backward spring of the devices at this point; but when, in preparing the press for work, it is necessary to remove the mechanism carried by the arms B, the hand-lever is simply sprung around the lug n^2 and the whole device swung back out of the way, as shown in dotted lines in Fig. 5; but to allow the device being thrown back, as just described, the hinged portion of the main feed-board is raised out of the way, as indicated by the arrows and dotted lines in Fig. 5. To arrest the arms E from swinging in a downward direction when the device is thrown back, one of the said arms may be provided with an extension-lug, as q' , as shown in Figs. 9 and 10, which bears against the transverse rods b when the arms E are not supported by the dog L or the lower part of the cylinder's periphery.

The practical operation of the mechanisms above described is as follows, beginning at the time the cylinder is just coming to a stop, after the impression has been taken: In order to more clearly describe the several operations of the various parts, I will ignore the sheet supposed to have just been printed, which is delivered to the front of the press as the cylinder arrives at its stopping-point, as well as the raising of the guide-rest to prevent smutting as the sheet is thus delivered. As the cylinder is turned forward to almost its stopping-point, the grippers on shaft M are raised by the engagement of the arm m' with the point m upon the dog L, which movement continues until the cylinder comes to a stop; but just before the cylinder becomes stationary, or before it completes the last eighth part of an inch of its movement or so thereof, the projections a upon the cylinder's periphery engage the hooked points e of the arms E. Now, as the cylinder completes its movement it will be seen that the arms B are drawn forward with the same, as well as the guides G and the other connections thereon, as shown in Fig. 5. The feed-guides G are now in their proper position for the

feeding of the sheet of paper, which operation is performed while the bed is traveling forward to almost the end of its stroke. At about this time the clamping-arms C are allowed to fall and press upon the sheet of paper by the action of the vertical rod C^3 , which is lowered as the stud i passes to the lowest part, i' , on the face of the disk C^4 , which is shown in Fig. 12. The dog L is now brought into rapid action by the lowering of the vertical rod l , which is operated by the incline q^2 of the groove q^3 in the disk C^6 , as shown in Fig. 11. As the rear end of the dog L is being drawn down by the rod l the forward end is raised out of engagement with the arm m' upon the gripper shaft M, which allows the grippers to fall by the action of a spring, (which it was thought unnecessary to show,) the pressure of which tends to hold the sheet firmly against the cylinder. The dog L at this point has a position just between the arm m' and the pin n upon the arm E, as shown in Fig. 5, so that the continued motion of the dog L will engage the pin n and lift the hooked arms E, which are firmly secured upon the rock-shaft b' , as well as the feed-guides G, by the engagement of the points of the screws b^3 against the side of the groove b^2 in the rock-shaft b' , as shown in Figs. 9 and 10. It will be seen that the hooked ends e will not allow the arms B to spring back to rest through the connection with hand-lever N against the stop-lug n^2 on the press-frame until the hooks e have been raised sufficiently by the dog L to clear the projections a on the cylinder, as shown in Figs. 9 and 10. It will also be seen that the feed-guides G have ample clearance from the edge of the sheet of paper before such action of the arms B takes place.

It must not be inferred by the description that the spring B^2 forces the arms B back so that the lever N will rest against the stop-lug n with any great pressure, which would cause the hooked arms E to be disengaged from the cylinder with difficulty. This is just the reverse in practice, as the spring is just set to overcome the weight of the device from having any tendency to move the lever N away from the stud n^2 and at the same time move the device back when disengaged from the cylinder.

While the above operation is taking place the disk c^4 is also in action upon the friction stud i with the incline i^2 , which causes the vertical rod C^3 to raise the arm C^2 upon the rock-shaft b , thereby raising the clamping-arm C. The sheet is then ready to advance with the cylinder as it is started by the cylinder-starting mechanism to engage with the bed as the same is started upon its backward movement to make the impression. As the sheet is passing around with the cylinder, and the grippers are about to pass beneath the guide-rests H, as shown in Fig. 5, the disk c^4 again acts upon the stud i with the incline i^3 , which causes the vertical rod c^3 to raise the arm C^2 still higher so that it will engage and

force the pin d^3 upon the hanger d upward, as shown in Fig. 6, which imparts a slight swinging motion to the same, as well as the guide-rests H, and elevates the same sufficiently to not touch the freshly-printed surface of the sheet as it passes beneath the same, which they would do if in their normal position for arresting the feed-guides, as the same should press against the surface of the cylinder so that the sheet will lie flat thereon. The disk C^6 has also come into action at the time the grippers arrive at a point below the guide-rests, so as to cause the dog L to drop to its downward position, which allows the arms E to fall so that they will engage the projections a upon the cylinder while the same is finishing the last eighth of an inch or so of its movement before coming to a stop, as heretofore described.

It will be noticed that when the hooked arms E are dropped and the guide-rests H are raised, the guides G are also held up by the rests, as the groove b^2 in the rock-shaft b' allows of an independent movement to the guides G, so that they will not be pressed downward when the shaft is rocked by the lowering of the arms E. The continued motion of the cylinder now brings the arm m' into engagement with the point m on the dog L, which opens the grippers and releases the sheet, which has been grasped by the delivery-grippers or other means which may be employed for delivering the same upon the receiving-table at the front of the cylinder.

In order to allow the sheet being drawn past the cylinder-grippers, as just stated, the same must receive a movement, as indicated in Fig. 5^A and Fig. 5^B, so as to allow the sheet being drawn past the same. The dog L in these figures is provided with a segmental gear, S, which engages the small segmental gear S' upon the gripper-shaft M, which, by an additional downward movement of the forward end of the dog L, through the cam-disk C^6 , opens the cylinder-grippers, as shown in Fig. 5^B. As the sheet is passing outward with the delivery mechanism, the movement of which is usually very rapid, the attendant is passing the next sheet to be printed forward to the feed guides, and when the full width of the sheet has passed beneath the guide-rests H the same are lowered to their normal position by the lowering of the vertical rod c^3 through the action of the disk C^4 as the stud i passes down the incline i^4 , which allows the hangers d to swing back in their normal position through the action of the spring c^2 .

It will be seen that as the guide-rests H are dropped the feed-guides G also drop by their own weight, as the same are loose upon the rock-shaft b' . The attendant now adjusts the sheet to the feed-guides ready for the next impression, after which these several operations of the devices are repeated—namely, the lowering of the clamping-arms, the closing of the grippers, and the simultaneous raising of the engaging-arms and feed-guides and the raising of the clamping-arms, after which the sheet is

printed and delivered past the guide-rests without smutting the same.

It is evident that the arms which carry the guides and attendant devices may be pivoted to swing away from the feed-board, in which case the guide-rests are placed on the main feed-board, as usual.

As heretofore stated, the particular construction of the press and its operating devices to which these improvements may be applied is not material; but I have herein shown such of the lower parts of the press as will give a clear idea of one form of machine with which it is contemplated to use my invention. Thus, in Figs. 13 and 14 I have shown a side and an end view, respectively, of such a press. The main driving-shaft w of the press is journaled transversely at or near its rear end, and is provided with a spur-pinion, w' , which drives a gear, w^2 , on a cranked shaft, w^3 . This cranked shaft is by a pitman, x , connected to a spur-gear-wheel, x' , which is reciprocated longitudinally by its pitman, and is turned or caused to roll during such movement by engagement with a stationary rack, x^2 , secured in the lower part of the press-frame. The reciprocating bed of the machine is provided with a rack, y , on its under side, and this meshes with the rolling-gear, and is by it given a reciprocation, as will be understood by reference to Fig. 13. The cranked shaft w^3 also carries a pair of cams, $z z$, which act upon suitable studs, z' , on a sliding yoke, z^2 . These cams are each formed with a concentric portion and a cam portion, which act to hold the yoke firmly stationary or to project it backward or forward at proper intervals. The end of this sliding yoke is connected to a lever, v , fulcrumed on the main frame, and having its upper end formed with teeth v' , which engage similar ones, v^2 , on the cylinder. When these are engaged and the yoke held stationary, the cylinder is stopped and locked thereby, and when the yoke is again moved the rocking of the lever starts the cylinder and engages it with the rack on the bed, which revolves it in unison as it moves.

Upon the main driving-shaft w is a worm, t , which engages and drives a worm-wheel, t' , on the longitudinal shaft C^5 , which by its cams imparts the proper motions to the registry devices heretofore described.

As before stated, I do not desire to confine myself to this construction, but will change it as deemed advisable in the practical utilization of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a printing-press, the combination, with the impression-cylinder, of feed-guides and their rock-shaft, said rock-shaft having a slight movement imparted to the same along with the cylinder at the time the latter is about to stop to receive the next sheet, substantially as and for the purpose set forth.

2. The combination, with the cylinder of a

printing-press provided with a shoulder or projection, of a movable rock-shaft carrying the guide-arms, provided with an arm engaging the projection on the cylinder, whereby the shaft and its guides move with the cylinder a short distance, substantially as and for the purpose set forth.

3. The combination, with the cylinder of a printing-press, formed or provided with a shoulder or projection on its periphery, of a movable feed-board, a shaft from which it is hung, and arms upon said shaft, engaging the cylinder to cause them to move forward together, substantially as and for the purpose set forth.

4. The combination, with the feed-guides of a printing-press and a rock-shaft upon which they are carried, provided with arms for engaging the cylinder, of the impression-cylinder provided with the usual sheet-grippers, and a dog for engaging these grippers, and devices, substantially as shown, for operating this dog to first release the grippers, and then disengage and lift the feed-guides, substantially as and for the purpose set forth.

5. In a printing-press, a feed-board provided with a strip of rubber at its forward end, in combination with a paper-clamp resting upon this strip, substantially as and for the purpose set forth.

6. In a printing-press, a clamping-arm placed loosely upon a rock-shaft, in combination with a spring-arm secured upon the same shaft and having its end loosely engaged with the clamping-arm, substantially as and for the purpose set forth.

7. In a printing-press, a rock-shaft provided with guide-arms having a slight motion independent of the shaft, in combination with a movable feed-board provided with projecting guide-rests, substantially as and for the purpose set forth.

8. In a printing-press, a guide-arm formed in two parts, one of which telescopes within the other and is formed with rack-teeth on its rear end, and a regulating toothed pinion inclosed within the hollow arm, the said arm being provided with a slit, and two set-screws passed through said split arm, whereby one screw is used to control the movement and the other to clamp the parts when set, substantially as and for the purpose set forth.

9. In a printing-press, the combination, with the impression-cylinder formed or provided with a shoulder or projection on its periphery, of a pair of spring-actuated lever-arms pivoted on the main frame and carrying a pair of rock-shafts in their upper ends, a series of clamping-arms on one of said shafts, a feed-board hung upon the other shaft and provided with a strip of rubber or similar material, a series of guide-arms secured upon and having a motion independent of this shaft, and a pair of arms connected to said shaft and engaged with or disengaged from the cylinder at intervals, substantially as and for the purpose set forth.

10. In a printing-press, a longitudinally-grooved rock-shaft and a guide-arm upon the same, formed with a groove in its pivotal end and provided with a pin engaging the grooved shaft, in combination with a collar adjustably secured upon said shaft and provided with a finger engaging the grooved guide-arm, substantially as and for the purpose set forth.

11. In a printing-press, the combination, with the impression-cylinder, of a hinged feed-board provided with a pin or stop at one end, a rock-shaft carrying the clamping-arms and provided with an arm and an actuating-rod connecting this arm with a cam or disk on a driving-shaft, whereby the clamps and feed-board are lifted at proper intervals to avoid the cylinder, substantially as and for the purpose set forth.

12. In a printing-press, the combination, with the impression-cylinder, of the feed-guides, a hinged feed-board carrying the guide-rests, and means, substantially as described, for lifting and lowering the feed-board at stated intervals, substantially as and for the purpose set forth.

13. In a printing-press, the combination, with the impression-cylinder formed or provided with a projection or shoulder on its periphery, of a pair of spring-actuated lever-arms secured upon a shaft running through the frame and carrying a rock-shaft in their upper ends, guide-arms secured thereon, and arms connected thereto and engaged with or disengaged from the cylinder at intervals, substantially as and for the purpose set forth.

14. In a printing-press, a pair of lever-arms hinged on the main frame and carrying the feed-board and feed-guides on their upper ends in unison with the motion of the cylinder, in combination with a stop or lug on the side of the press, and a spring-handle secured to the lever-arms and engaging the stop, whereby the arms are held in proper position for use, but may be thrown back to remove the devices when desired, substantially as and for the purpose set forth.

15. In a cylinder printing-press, the combination, with the impression-cylinder, (which is stopped to receive the sheets,) the feed-guides, and their rock-shaft, of the said rock-shaft and feed-guides having a slight movement imparted to the same by the cylinder at the time the cylinder is about to stop to receive the sheet, and of the said feed-guides receiving a lifting movement out of the way of the sheet by a rocking movement which is imparted to said rock-shaft by a cam to allow the sheet to pass with the cylinder-grippers, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT MIEHLE.

Witnesses:

FRANK JOHNSON,
W. S. MCARTHUR.