(No Model.)

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No. 359,189. Patented Mar. 8, 1887.

FIG. 1.

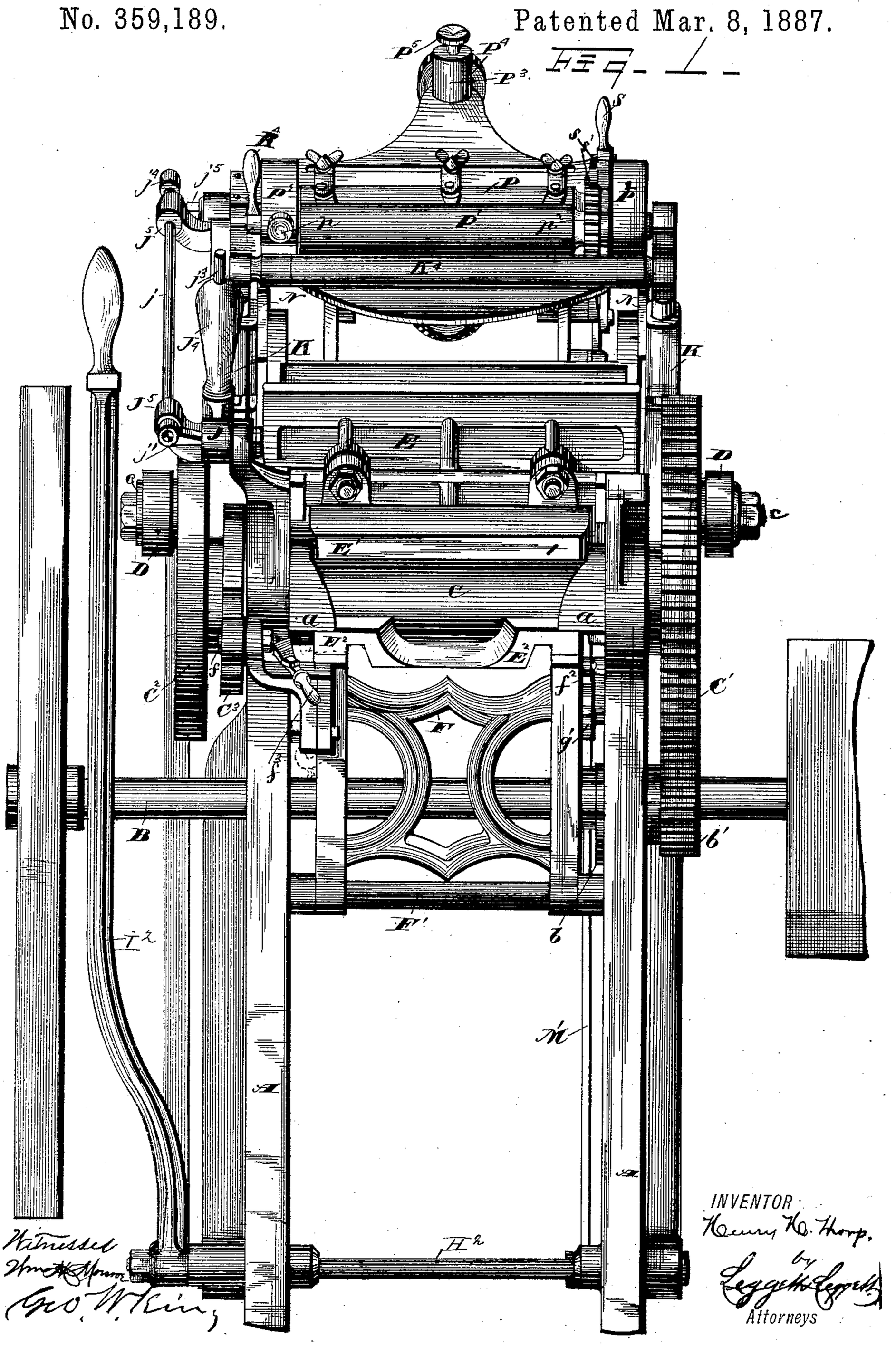

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Fig. 2.

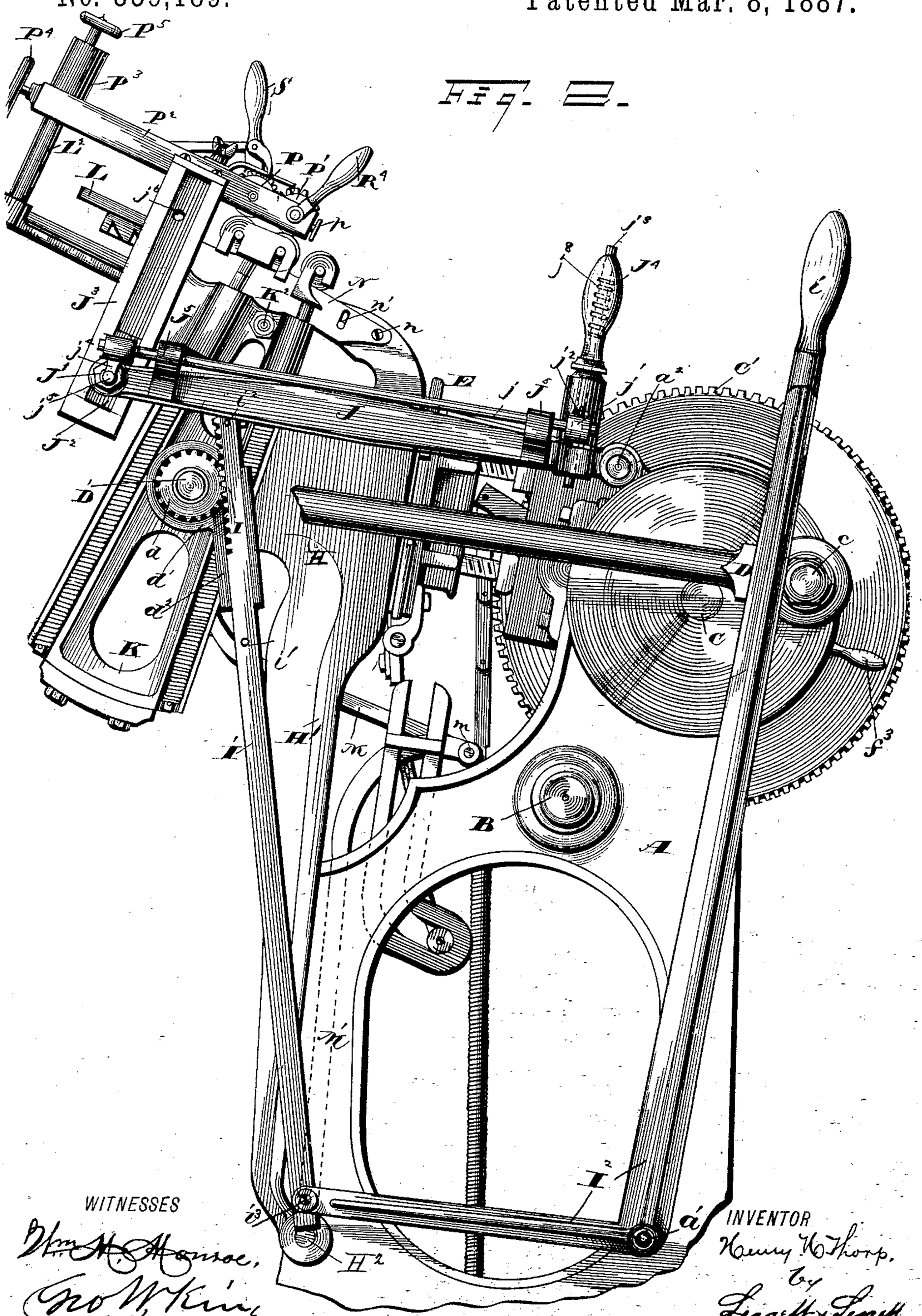

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Fig. 5.

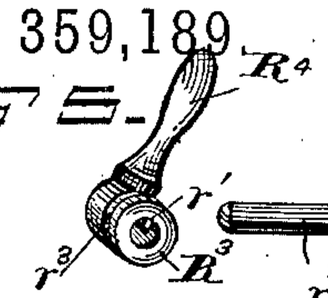


Fig. 4.

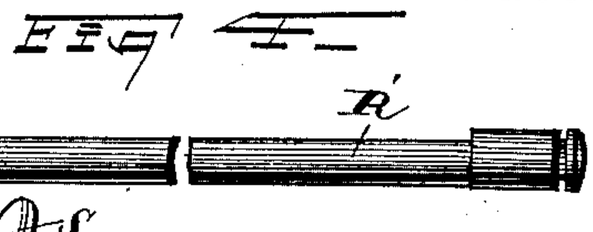


Fig. 6.

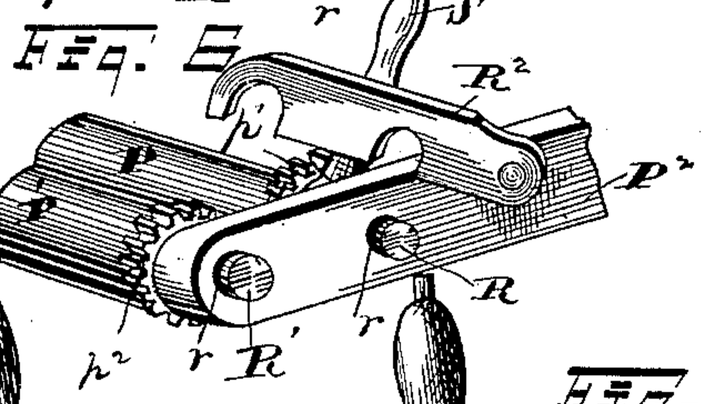


Fig. 3.

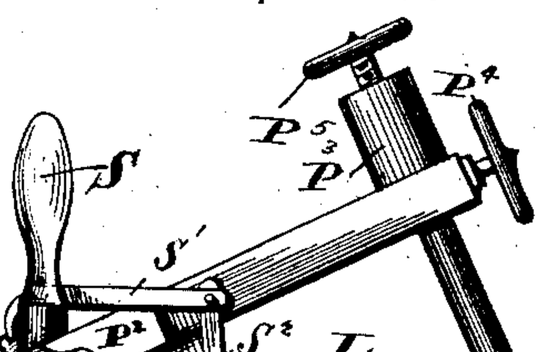
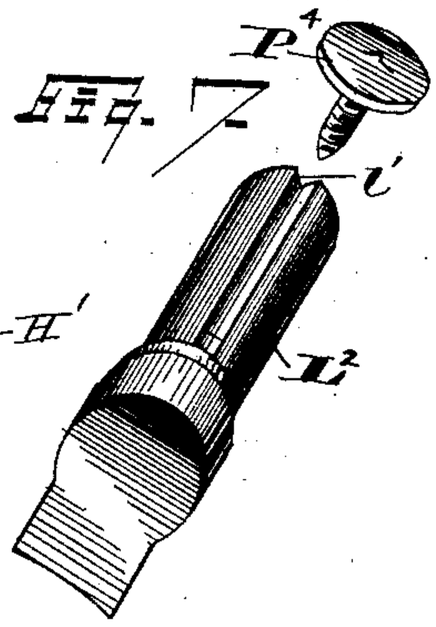


Fig. 7.



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(No Model.) 5 Sheets—Sheet 4.

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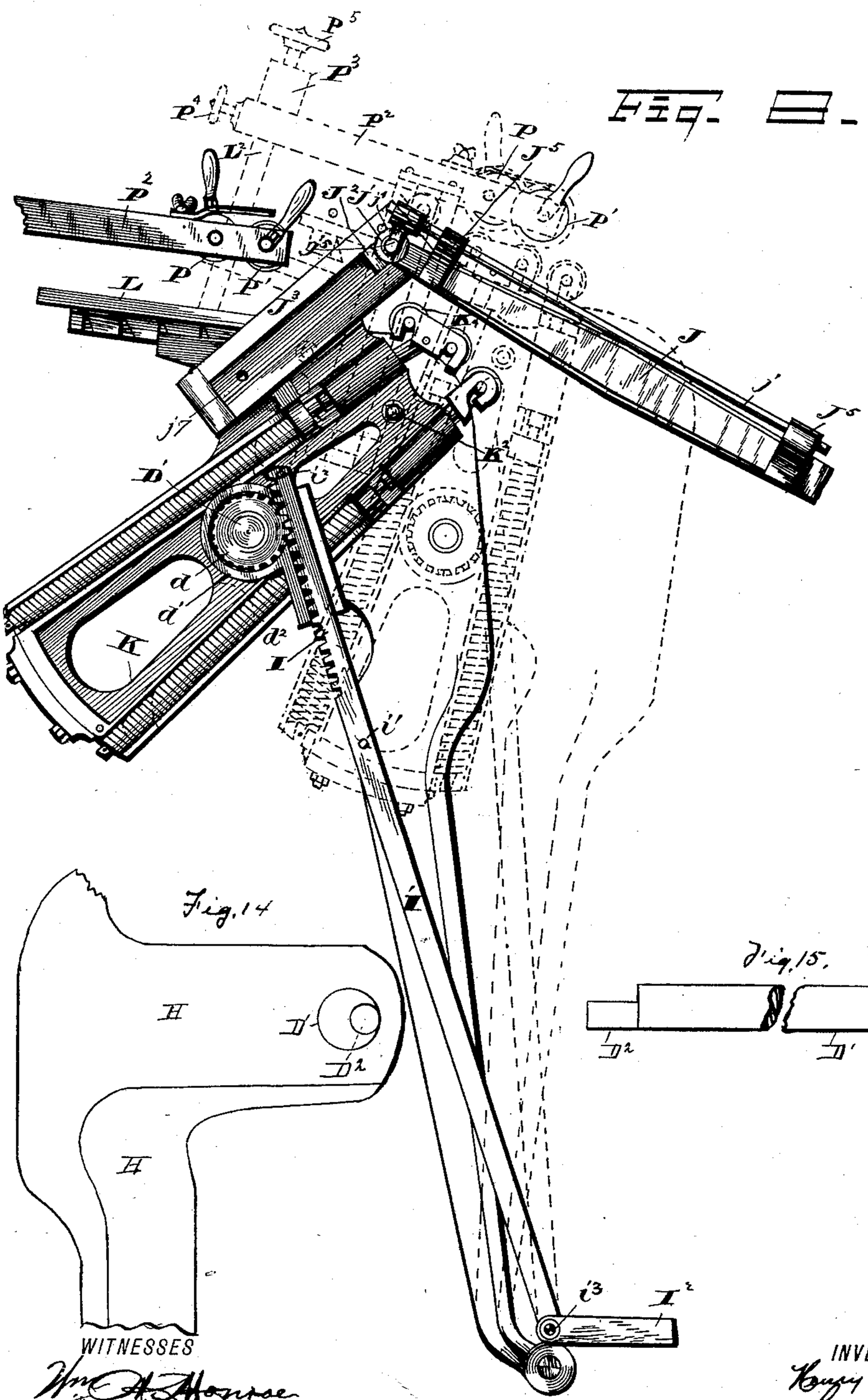

Fig. 14

Fig. 15.

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Fig. 9.

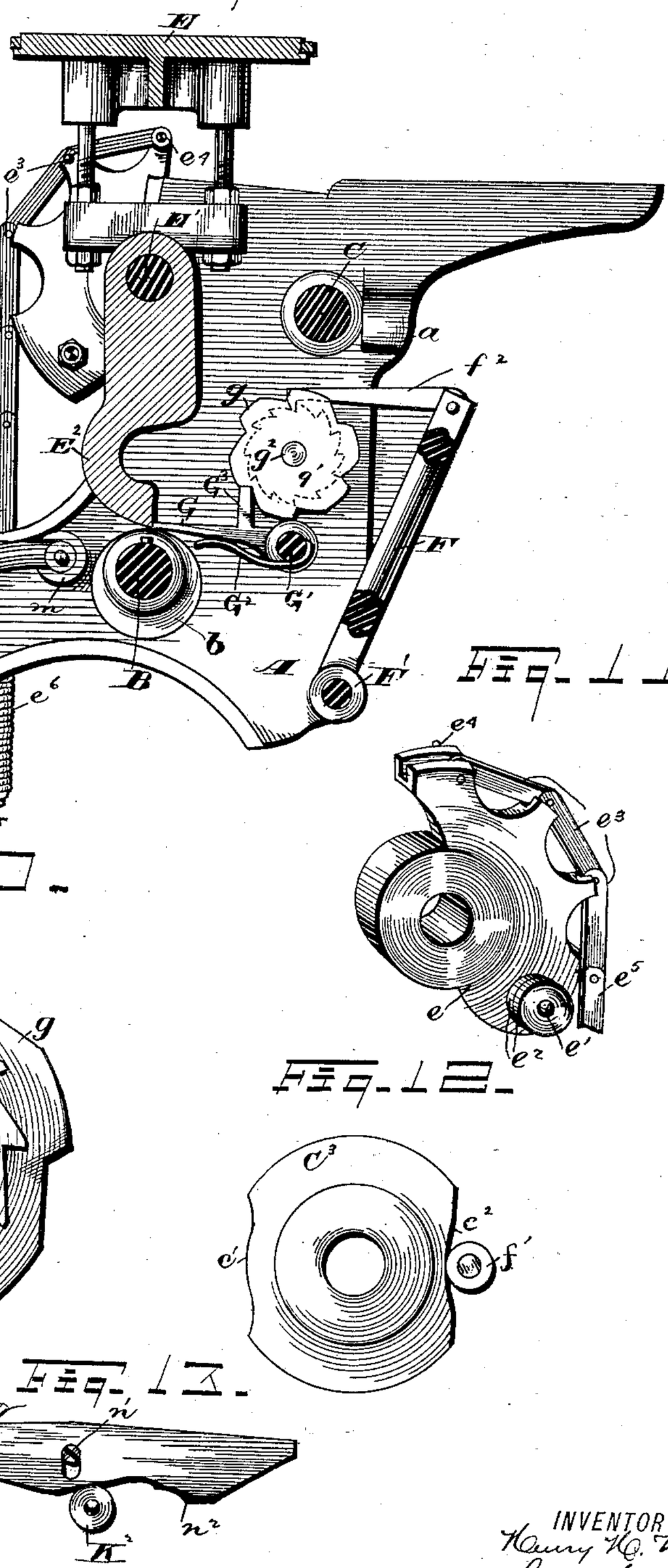

Fig. 11.

Fig. 10.

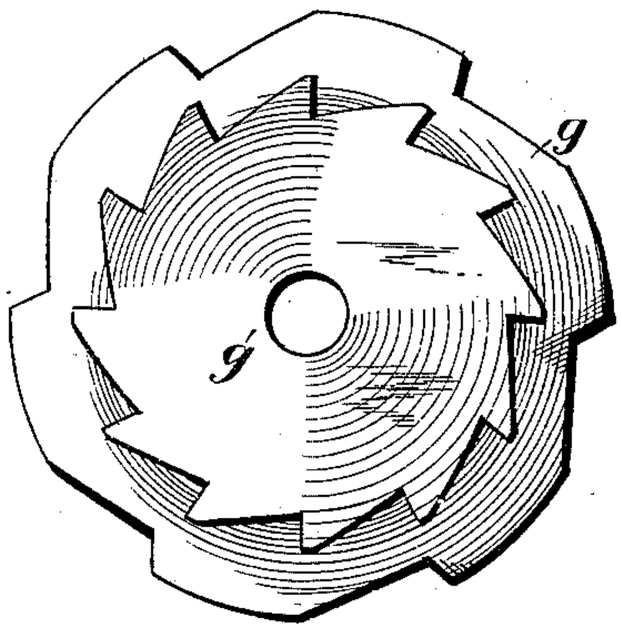

Fig. 12.

Fig. 13.

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UNITED STATES PATENT OFFICE.

HENRY H. THORP, OF CLEVELAND, OHIO.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 359,189, dated March 8, 1887.

Application filed March 30, 1885. Serial No. 160,586. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. THORP, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Printing-Presses; 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 pertains to make and use the same.

My invention relates to improvements in printing-presses belonging to a class of jobbing-presses, the main portions of which are well known and are in common use, the object being to provide improved mechanism for operating the platen, to the end that, first, the platen may operate in the usual manner to receive an impression with each stroke of the machine; second, that the platen may be made to receive impressions only with alternate strokes of the machine, the platen during the intermediate strokes remaining stationary and elevated, by which arrangement a longer time is given in which to place the sheets of paper on the platen, and two or more applications of the inking-rollers to the form is had for each impression taken; and, third, the platen may be held stationary, with its face presenting upward, during any length of time desired. Meanwhile the balance of the machine is in full operation.

A further object is to provide an improved impression throw-off, consisting, essentially, of an eccentric rock-shaft to move the bed forward and rearward in the usual manner of impression throw-offs, but with the roller-frames journaled on the shaft concentric with the wrists that connect with the side arms, to the end that the inking-rollers are not affected by the throw-off, but perform their functions in precisely the same manner and their travel terminates approximately at the same points respectively above and below, whether the bed by the operation of the throw-off is moved forward to receive an impression or is moved rearward to avoid an impression.

A further object is to provide improved mechanism for operating the throw-off, consisting, essentially, of a pinion mounted on the eccentric-shaft, but concentric with the wrists of the shaft, a rack engaging the pinion, and rack-bar pivoted to a shifting lever, and the parts so arranged that the devices remain in place without locking and the shifting lever is not perceptibly moved by the swing of the bed.

A further object is to provide a link-movement connected with the roller-frame and side arm that operates the same, by means of which the throw of the rollers may be limited, to the end that in distributing ink on the disk and rollers the latter will not engage the form.

A further object is to provide, in addition to the usual rotary movement given to the inking-disk while the rollers are on the form, mechanism for causing a second and similar movement of the disk while the inking-rollers are above it or at or near the extreme of the rearward movement, and lifting-levers or equivalent devices for elevating the ink-rollers to allow this second rotary movement of the disk.

A further object is to provide an improved ink-fountain, consisting, essentially, of two co-operating discharging-rollers and suitable mechanism for giving the fountain-rollers an intermittent limited rotary movement, with the parts so arranged and their movements timed that when the inking-rollers are elevated from the inking-disk, as aforesaid, they will engage the rollers of the fountain during a rotary movement of the latter and receive a supply of ink from the same.

With these objects in view my invention consists in certain features of construction and in combination of parts, hereinafter described, and pointed out in the claims.

In illustrating my invention in the accompanying drawings some of the details of the machine that are well known and are not directly connected with my improvements are omitted to avoid complication in the drawings.

In the accompanying drawings, Figure 1 is a front view in elevation of my improved printing-press. Fig. 2 is a view in elevation of the left-hand side of the printing-press. Fig. 3 is a view in elevation of the right-hand side of the printing-press. Fig. 4 is a plan view of the spindle R′. Figs. 5, 6, and 7 are views in perspective, showing details of the ink-fountain. Fig. 8 is a view in elevation from the left-hand side, showing the ink mechanism in position reducing the throw of the rollers, the rearward and forward position of the bed and

the corresponding position of parts being shown, respectively, in solid and dotted lines. Fig. 9 is an elevation, partly in section, of the platen in its elevated position, and of the locking device for holding the platen elevated and the mechanism for actuating the same. The inner side of a portion of the supporting-frame is also shown. Fig. 10 is a view in elevation of the cam-wheel *g* and the ratchet-wheel *g'*. Fig. 11 is a view in perspective of the arm *e* and attachments. Fig. 12 is a view in elevation of the cam-wheel C^3. Fig. 13 is a detached view of one of the lifting-levers. Fig. 14 is a view in elevation of the bed H and shaft D', and Fig. 15 is a view of the shaft.

A represents the supporting-frame, provided with suitable boxes, in which are journaled the driving-shaft B and the crank-shaft C. The driving-shaft usually has a crank in the center for operating the machine by a treadle, (not shown,) and may have a fly-wheel, driving-pulley, or other power-transmitting mechanism attached.

On the shaft B is mounted the cam *b* and the pinion *b'*, the latter engaging the gear-wheel C' of the crank-shaft. On the opposite end of the shaft C is mounted the disk C^2, and this disk and the gear C' are provided, respectively, with wrists *c*, that are in line and connect with the side lever, D, for operating the bed. Between the frame A and the disk C^2 is a cam-wheel, C^3, mounted on the shaft C, the periphery of which is concentric with the shaft, except where the depressions *c'* and c^2 occur, forming cams at this part of the wheel. (See Fig. 12.)

E is the platen, that is adjustably mounted on the trunnion E', that is journaled in suitable boxes of the frame A. The trunnion has curved arms E^2, (see Fig. 9,) that, when the platen is in position presenting toward the form, extends under the crank-shaft, and the extreme ends abut against the lugs *a* of the frame A and limit the downward movement of the platen. As this occurs the swinging frame F, that is pivoted on the rod F', is drawn rearward by a spring, (not shown,) and the ends of the frame F fit under the arms E^2 and lock the platen while the impression is made. The frame F has a laterally-projecting wrist, *f*, on which is journaled the roller *f'*, that travels on the periphery of the plate C^3, and the parts are timed so that the depression *c'* allows the frame F to be drawn rearward to lock the platen, as aforesaid.

On the end of the trunnion E', outside of the journal and next to the gear C', is mounted an arm, *e*, (see Fig. 11,) that has a laterally-projecting wrist, *e'*, with roller e^2 mounted thereon, that operates in grooves in the rear face of the gear C', and actuates and controls the movement of the platen. The arm *e* on the periphery is in the form of a sector of a sprocket-wheel, and is engaged by the links e^3, that at one end are pivoted to the arm *e* at e^4, and at the other end are connected with the rod e^5, that has a spiral spring, e^6, for depressing the rod and drawing the platen downward. The rod is supported and slides endwise through suitable lugs extending laterally from the frame. (See Fig. 3.)

Heretofore the platen has usually been both raised and lowered by means of a single roller, e^2, operating in a cam-groove, c^3, on the inner face of the gear C'. There were some objectionable features in such construction—to wit, in the movements of the platen there were some positions of the latter in which there was little pressure brought to bear on the said roller, and consequently the roller would slide unless it was well lubricated and turned easily on its axle; also, in lowering the platen, when a point was reached where the latter would descend by gravity, the roller changed from contact with the wall on one side of the cam-groove to the other wall, and any lost motion would allow a sudden descent of the platen, more or less, according to the lost motion aforesaid. As an improvement on such former construction, I provide two or more rollers, e^2, so that if they should become flattened at any point one of the rollers may be turned on its axis, so as to separate the flattened portions; also, the tension of the spring e^6 always causes a pressure on these rollers, by reason of which the rollers are less liable to slide and be flattened.

The cam-groove, in elevating the platen, acts against the spring e^6, and as soon as the platen is elevated the spring draws the rollers e^2 to the opposite or outer side of the cam-groove, taking up any lost motion, by means of which the descent of the platen is regular, its downward movement being of course controlled by the outer wall of the cam-groove. The spring e^6 also performs another important function.

In addition to the usual cam-groove, c^3, on the gear C', (see dotted lines, Fig. 3,) I have arranged an annular groove, c^4, concentric with the shaft C, and in open relation with the cam-groove c^3 at both ends of the latter.

The relation of parts is such that when the platen reaches its elevated position the rollers e^2 will have entered the annular groove c^4, and without the action of the spring e^6 the roller would continue to operate in the annular groove, and the platen would remain stationary. This is the case when the platen is locked in its elevated position, as hereinafter described, but without such locking the spring would draw the platen downward and cause the rollers e^2 to again enter the cam-groove at the commencement of such downward movement. In ordinary printing, the platen, as heretofore, is turned down to receive an impression with each stroke of the machine. There are times—for instance, while the ink is being distributed on the ink disk and roller—that no impression is required. I have therefore invented a locking device to hold the platen in its elevated position, the rollers e^2 during such times traveling in the annular groove c^4; also, in some classes of work—for

instance, when two or more impressions are had in different colors—ample time is required for accurately adjusting the paper on the platen, and it is also desirable in many cases to have the inking-rollers pass twice over the form for each impression taken. I have therefore devised certain mechanism for operating the locking device last mentioned, by means of which the platen is lowered to receive an impression with alternate strokes of the machine, and during the intermediate stroke the platen remains in its elevated position. This locking device and mechanism will be next described.

An arm, G, (see Fig. 9,) is pivoted on the rod G′, that is secured to the frame A. This arm extends rearward and is pressed upward by the spring G^2. When the platen is in its elevated position, the end of the arm G engages one of the arms E^2 and locks the plate. The arm G has a toe, G^3, extending upward, and is engaged by the small cams on the periphery of the cam-wheel *g*. This wheel is connected or integral with the ratchet-wheel *g′*, and both are journaled on a stud, g^2, that is secured to the frame A. The movement of the wheel *g* controls the locking-arm G, the cams on the wheel, as they engage the toe G^3, holding down the locking-arm, so that the arms E^2 of the platen swing over without contact, or, when the toe can enter a space between the cams, the arm G, actuated by the spring G^2, may rise up and engage the arm E^2 whenever the latter is at the extreme of its rearward movement, in which position alone the locking can occur. The wheel *g* is moved by means of a hook-pawl, f^2, that is pivoted to the swinging frame F and engages the ratchet-wheel *g′*. The ratchet has twice as many notches as there are cams on the wheel *g*, and the frame F and the pawl f^2 must make two strokes and move the ratchet-wheel two notches to move the cam-wheel *g* from one cam to another in operating the toe G^3 and locking-arm G. The frame F, as aforesaid, is moved rearward by a spring whenever the depressions in the cam-wheel C^3 will allow such a movement, after which, of course, the frame is swung forward to the place of starting by the cam-wheel C^3. The depression *c′* is shallow and allows the frame to swing rearward far enough to lock the arms E^2 while the impression is being made, as aforesaid, but does not allow the frame to swing far enough to operate the ratchet-wheel *g′*, and the pawl f^3 slides backward and forward on the face of a ratchet-tooth, but cannot reach far enough to hook over and engage the tooth. The depression c^2 is deeper, and allows the frame F to swing rearward far enough for the pawl f^2 to engage a ratchet-tooth.

It will be observed that although the two locking devices—the frame F and the arm G—both operate on (one or both of) the arms E^2, the frame F locks these arms while they are presenting forward, and the arm G locks the arms E^2 when the latter are presenting downward, so that the two locking devices never interfere with each other, especially as neither locking device can lock the arms E^2 while the latter are absent on a different part of their travel. When the arms E^2 are swung forward, the notch *c′* allows the frame F to swing rearward and lock the arms E^2, as aforesaid. The frame also swings rearward when the notch c^2 comes round; but there are no arms E^2 present at the time to be locked. The operation of these parts will be as follows: Suppose one of the cams on the wheel *g* is engaging the toe G^3, so as to hold down the locking-arm G. The platen, in such cases being free, would descend with the stroke of the machine and receive an impression; but during this stroke the notch c^2 will have passed the roller *f′*, and the frame F will have made a stroke, which will have moved the ratchet-wheel *g′* one notch and moved the cam-wheel *g*, so that instead of the cam that engaged the toe G^3 and held down the arm G and allowed the platen to operate, there will be opposite the toe the space between this and the succeeding cam, in which case, as the platen is elevated, the arm G rises and locks it, and the platen remains stationary during the next stroke of the machine. During this last stroke the ratchet is moved another notch, and at the next stroke of the machine a cam on the wheel *g* again holds back the arm G, and the platen is again operated, and so on, the platen turning down to receive an impression with every second stroke of the machine, and, as aforesaid, the roller e^2 operating in the annular groove c^4, while the platen remains elevated and stationary.

If desired, the ratchet-wheel *g′* might have three or four times as many teeth as there are cams on the wheel *g*, in which case the platen would operate with every third or fourth stroke of the machine.

The pawl f^2 could be pivoted farther down on the frame F, so as to reduce the throw of the pawl to correspond to the smaller size of the teeth of the ratchet-wheel.

A hand-lever, f^3, is pivoted to the frame F with the handle presenting forward and the short arm thereof extending rearward beyond the frame. When the lever f^3 is in the position shown in Fig. 1, the short arm thereof is presenting toward the adjacent part of the frame A, and forms a stop that limits the rearward movement of the frame F and allows it to swing only far enough to lock the platen in its depressed position, but not far enough to actuate the ratchet-wheel *g′*. The pawl f^2 meantime rides on the back of the ratchet-teeth, but is not moved quite far enough to hook over and engage a tooth. When, therefore, the lever f^3 is in the position shown in Fig. 1, or "thrown on," the ratchet-wheel *g′* and the locking device connected therewith remain stationary, and the locking-arm G is either elevated, continuously locking the platen in the elevated position of the latter, or the lever G is depressed, leaving the platen free to move with every stroke of the machine, ac-

cording to the position that the lever G may be in when the lever f^3 is thrown on. For instance, suppose the lever f^3 had been "thrown off"—that is, the handle thereof had been moved to the left hand—so that the short arm of the lever would not engage the frame A, but would move past it without contact, in which position of parts the platen would, as aforesaid, turn down with every second stroke of the machine. Now, if the lever f^3 is thrown on while the arm G is depressed, this arm will remain in its depressed position and the platen will turn down with every stroke of the machine. If, on the contrary, the lever f^3 is thrown on while the arm G is elevated, this arm will remain elevated and continuously lock the platen in its elevated position. In shifting the lever f^3 it can be thrown off at any time when the short arm thereof is not pressing against the frame A. In throwing on the lever f^3, if the operator wishes the platen to move with every stroke of the machine, he throws the said lever on while the platen is depressed, in which position of the platen the arm G is necessarily depressed, or the platen would not have turned down. On the other hand, if the operator wishes to stop the movement of the platen, he waits until the platen is turned up, when it will be locked by the lever G, as aforesaid, during one stroke of the machine. Now, while the platen is thus elevated and locked, if the lever f^3 is thrown on, the platen will remain continuously elevated so long as the lever f^3 is left on. When the lever f^3 is on, the rearward movement of the frame F, caused by the depressions c^2, is inoperative, but cannot well be avoided without complicating the parts. We have then, first, the platen operating with every stroke of the machine, as in ordinary printing; second, the platen operating with every second stroke of the machine, (or with every third or fourth stroke, according to the number of teeth in the ratchet-wheel g',) as is desirable with the finer grades of work; and, third, the platen held stationary in its elevated position while the balance of the machine is in motion for distributing ink or for other purposes. All of these changes are controlled, as aforesaid, by the lever f^3.

I will next describe the impression throw-off. The bed H, on which the form is placed, is rigidly attached to the arms H′, that are pivoted on the rod H^2, passing laterally from side to side of the frame A. A rock-shaft, D′, is journaled at its opposite ends or wrists, D^2, in the side arms D, and the intermediate portion of said shaft, which is formed eccentric to the ends or wrists D^2, is supported in boxes on the rear face of the bed H. Thus it will be seen that when the shaft is turned by the rack-bar and pinion the bed is moved toward or away from the platen, according to the direction of movement of the shaft. The roller-frames K are pivoted on the shaft D′ on either side of the bed, but are concentric with the shaft D′, by which arrangement, when the shaft D′ is turned forward to cause an impression, as in printing, or is turned rearward to avoid an impression, the throw of the ink-rollers is not changed. If the roller-frames were journaled on the shaft D′ where it was concentric with the wrists D^2, when the shaft was turned back for the throw-off, the frames K would be moved back, and the side arm J, having its forward end pivoted at a fixed point, would cause the rollers to descend too far and collide with the arms H′, and on the upward movement the rollers would not travel far enough on the ink-disk; but by reason of the frames K being eccentric with the wrists D^2 the rollers, as aforesaid, have substantially the same travel, whether the impression throw-off is on or off.

The mechanism for turning the shaft D′ for the throw-off is as follows: Near one end of the shaft D′, and next inside of the wrist D^2, and concentric with the wrist, is mounted the pinion *d*. A housing, *d′*, fits easily around the periphery of the pinion, and has attached a sleeve, d^2, in the chamber of which operates the rack I. The rack, as it slides endwise in the sleeve, is held by the latter in position engaging the pinion. The teeth of the rack are preferably cut on the face of the rack-bar I′, although the rack might be made separate and secured to the bar. The bar I′ at the lower end is pivoted at i^3 to the lateral arm of the lever I^2 of the bell-crank variety. This lever is pivoted on the stud *a′*, that extends laterally from the frame A, the upright arm of the lever terminating in a handle, *i*. Pins *i′* and i^2 project from the rack, and, by engaging, respectively, the upper and lower end of the sleeve d^2, limit the throw of the rack, so that the pinion is given a half-revolution.

The eccentricity of the shaft D′ is slight, usually about one-eighth of an inch, giving a one-fourth-inch throw, and the arrangement of parts is such that when the impression is taken the shaft is on its forward center as related to the throw-off movement, and the pressure of the platen has therefore no tendency to turn the shaft, and consequently the lever I^2 requires no locking, and can be quickly operated—a matter of some importance in cases of emergency—as, for instance, in preventing an impression—whereas if the lever had first to be unlocked more time would be required. The length and position of the short arm of the lever I^2 is such that the pivoted point i^3, in printing, is a trifle above the axis of the rod H^2 and a trifle below the rod in its reverse position, and the bar I^2 is held approximately radial with the rod H^2, by reason of which the swinging of the bed does not move the handle *i* perceptibly.

The side arm J, for operating the roller-frame, is pivoted in the usual manner at a fixed point, a^2, on the frame A. The other end connects with the wrist J′. This wrist, instead of being rigidly attached to one of the roller-frames K, is integral with a sliding block, J^2, that slides in the link J^3, that is rigidly attached to the roller-frame K. When the block J^2 is at the bottom of the link, the ink-

rollers operate in the usual manner, passing over the ink-disk when the bed swings forward, and over the form when the bed swings rearward. When it is desired to distribute ink on the rollers, the custom heretofore has been to lay the form aside, so that it would not be filled up with ink. With my improvement, when the block J^2 is raised to the top of the link, the rearward movement of the rollers remains about the same; but the forward and downward movement is limited, so that the rollers only pass off of the ink-disk, in order that the disk may turn, but do not pass over the form.

The mechanism for moving the block in the link and for holding it in its two positions is as follows: The side arm J has a handle, J^4, attached, extending upward, by means of which the block may be shifted. The arm J has lugs J^5 extending outward and upward, in which is journaled the spindle j, that has an arm, j', extending laterally through a slot, j^2, in the handle, and is pivoted to the thumb-piece j^3, that operates in a central chamber in the handle, and protrudes above the end of the handle. The spindle has a depending arm, j^4, at the other end, that is connected with the pin j^5, that extends laterally through the center of the wrist J' and the block J^2, and enters holes j^6 and j^7, respectively, above and below in the back wall of the link. A spiral spring, j^8, (see dotted lines, Fig. 2,) inside of the handle J^4, holds the thumb-piece j^3 elevated, by means of which the pin j^5 is retained in whichever hole in the link it may have been placed. By depressing the thumb-piece the pin is withdrawn from the hole in the link, after which the block may be shifted in the link by means of the handle J^4.

The ink-disk L is mounted, in the usual manner, on a spindle journaled in the frame of the bed, and the ratchet-teeth l^5 on the under side of the disk are engaged by a pawl, l^6, that is pivoted to the weighted lever l, and the latter, when the rollers are on the form, is engaged by a pin, K', of the roller-frame, by means of which the ink-disk is rotated a short distance. All of these parts are of the usual construction, and operated as heretofore. With this construction alone the ink-rollers would pass up over the ink-disk, and then return over the same part on the disk. This is not desirable, and I have added certain new devices that cause a movement of the ink-disk after the rollers have passed rearward, by means of which, as the rollers again return forward, they travel over a new path on the disk. These devices are as follows:

M is a rod pivoted to the lever l, and curved forward and downward, so as not to interfere with the bed, and at the downward end is pivoted to the rod M', that in turn is pivoted at the lower end on the rod H^2. The pivotal pin at the joint of these two rods extends laterally and has mounted thereon the roller m. As the bed swings forward to give an impression, the rods M and M' are of course carried with it, and just as the inking-rollers are at the end of the upward and rearward movement the roller m is engaged and pressed rearward a trifle by the cam b, and the rods M and M', acting as a toggle-joint, elevate the lever l and turn the ink-disk. The shaft B, on which the cam is mounted, revolves with considerable speed, so that the cam is soon out of the way, after which the lever l and the rods M and M' return by gravity to their normal position, and before the cam comes around again the bed has swung back so far that the cam does not engage the roller m. The turning of the ink-disk while the ink-rollers are above it necessitates the employment of some means to elevate the rollers from the disk, so that the latter may turn easily.

N are lifting-levers, pivoted, respectively, at n on either side of the bed-frame and extend rearward and upward, as shown. Pins n', extending from the bed-frame, limit the depressions (by gravity) of the levers. As the ink-rollers approach the end of the rearward movement, pins K^2, extending laterally from the respective roller-frames, engage the inclines n^2 on the lower sides, respectively, of the levers N and lift these levers, that, engaging the collars on the spindles of the ink-rollers K^4, elevate the latter, and this occurs just in time to allow the disk to be turned by the action of the cam b, as aforesaid. As the rollers commence their movement forward the levers N are released and the rollers again engage the ink-disk, and will of course have a new path across the latter.

The lifting of the ink-rollers serves another purpose in connection with the ink-fountain, that will next be described. Heretofore an ink-fountain for such purpose usually consisted of a single roller and a broad knife arranged longitudinally alongside of the roller and inclined laterally with the edge or lower side engaging or in close proximity to the roller, to regulate the discharge of ink that was placed in quantity upon the knife and roller. There were several objections to such construction, among which were the following, to wit: The thicker portions of the ink were kept back, and would not feed between the knife and rollers unless the two were separated so far that the thinner portion of the ink would feed too fast, and if the ink was quite thin the knife would have to be kept in actual contact with the roller to properly regulate the discharge, and such contact would cause the roller to move hard; also, as the ink became reduced in quantity some of it would adhere to and dry onto the knife, that consequently had frequently to be cleaned, and considerable ink was wasted in consequence thereof.

My improved fountain has two rollers, P and P', that are journaled on removable spindles R and R', that are held in the frame P^2. This frame at the rear terminates in a socket, P^3, that fits on the pin L^2, extending up from the ink-disk frame. This pin has a longitudinal V-shaped groove, l', at the rear, and the socket

a pointed set-screw, P^4, to engage the said groove and bring the rollers of the fountain parallel with the inking-rollers below. The head of the socket has a set-screw, P^5, the end of which abuts against the end of the pin L^2 for adjusting the fountain vertically. By loosening the set-screw P^4 the fountain may be swung laterally out of the way without loosening its vertical adjustment, and when returned near to its place, by tightening the screw P^4, the lateral adjustment of the fountain-rollers will be again perfect. The spindles R and R′ are held endwise in the frame P^2 by the yoke R^2, that is pivoted to the frame, and when turned down, as shown in Fig. 3, engages annular grooves *r* on the respective spindles. When the yoke is elevated, as shown in Fig. 6, the spindles may be withdrawn, leaving the rollers free to be removed for cleaning. The spindle R′ is eccentric, as shown in Fig. 4, and the small end fits in the hub R^3, that in turn is journaled in the left-hand side of the frame P^2. The hub has attached a hand-lever, R^4, for turning the hub, that, by means of a spline, r', engages a groove, r^2, on the spindle, turning the latter also, and by means of the eccentricity of the spindle the roller R′ is adjusted to or from the roller R to regulate the discharge of ink. The hub R^3 has an outside annular groove, r^3, that, when the hub is in position in the frame, receives the point of the thumb-screw *p*, that serves two purposes: first, to hold the hub in position endwise, and by tightening the thumb-screw to hold the hub from turning after the roller R′ has been adjusted to give the required feed for the ink. The rollers P and P′ have, respectively, attached engaging-gears p' and p^2. A small hand-lever, S, is mounted on the spindle R, and has a laterally-projecting pin, *s*, on which is pivoted the pawl *s*′, that engages the teeth of the gear p'. An arm, S′, extends rearward from the lever S, that in turn is pivoted to the rod S^2, that in turn is pivoted to the lever *l*. By this arrangement of parts the rollers P and P′ are turned a short distance simultaneously with each rotary movement of the disk, the said rollers and disk being both actuated from the lever *l*.

The vertical adjustment of the fountain by means of the thumb-screw P^5 is such that when the inking-rollers are lifted from the disk by the levers N, as aforesaid, they come in contact with the fountain-rollers, and as this occurs as the fountain-rollers are turned, the ink-rollers are also turned by friction with the fountain-rollers, and receive ink from the latter. The fountain-rollers are of course turned again when the ink-rollers are on the form, by reason of which when the inking-rollers are again brought in contact with the fountain-rollers they engage a fresh-inked surface on the latter. The two fountain-rollers, operating together, as aforesaid, have a tendency to crush and grind the ink, whereas with the one roller and knife the thick portions of the ink are held back by the knife and accumulate on the latter; also, with the two fountain-rollers no portion of the ink is left to dry; but on the contrary, whatever ink may be left on the bottom of the rollers that is not transferred to the inking-rollers is carried around and added to the mass of ink above, and a mere nominal percentage of ink is wasted.

I make no claim in this application to the particular construction of ink-fountain herein shown and described, as the same forms the subject-matter of my application, No. 179,789, filed October 13, 1885.

What I claim is—

1. In a platen printing-press, the combination, with a platen and a locking device, substantially as set forth, for holding the platen elevated, of mechanism, substantially as described, for controlling the locking device, whereby the platen can continuously be locked or left free, or locked with the alternate strokes of the machine and left free with the intermediate strokes, at the will of the operator, substantially as set forth.

2. In a platen printing-press, a swinging frame for locking the platen in its depressed position, a lock device, substantially as described, operated automatically from the swinging frame for locking the platen in its elevated position, a cam-wheel for operating the swinging frame, with depressions or cams on the wheel of unequal depth or throw, to operate, respectively, the two locking devices, substantially as set forth.

3. In a platen printing-press, the combination, with a platen, a swinging frame forming a lock for the platen, and a second locking device, substantially as described, operated by the swinging frame, of an adjustable stop adapted to limit the throw of the swinging frame and render the second locking device inoperative, substantially as set forth.

4. In a platen printing-press, a swinging locking-frame and a second locking device, substantially as set forth, respectively for locking the platen in two positions, a cam-wheel for throwing on or off the second locking device, and a ratchet and pawl operated from the swinging frame to actuate the cam-wheel, and so arranged that the second locking device is operated only with alternate strokes of the machine, substantially as set forth.

5. In a platen printing-press, a swinging locking-frame, a cam-wheel arranged to give alternately longer and shorter movements to the frame, a second locking device, substantially as set forth, that is actuated by the frame only with its longer stroke, and a stop that may be thrown on or off and arranged when operative to limit the movement of the frame to its shortest throw, substantially as set forth.

6. In a platen printing-press, the combination, with a disk having a cam-groove and an annular groove, as described, of a platen, a wrist-pin connected therewith, a roller mounted on the wrist-pin, and a spring for drawing the platen downwardly, substantially as set forth.

7. In a platen printing-press, the combina-

tion, with a wheel having a cam-groove and suitable mechanism, substantially as described, operating in said cam-groove for elevating the platen and controlling its downward movement, of a spring connected with the platen or its attachments, arranged to depress the platen, substantially as set forth.

8. In a platen printing-press, an impression throw-off consisting, essentially, of a shaft journaled at its ends in side arms and provided with an eccentric between said ends, the said eccentric portion resting in bearings in the bed, a pinion mounted on said shaft, a rack engaging the pinion, roller-frames mounted on said shaft, and devices, substantially as described, for reciprocating the rack and rotating the pinion and shaft, substantially as set forth.

9. In a platen printing-press, the housing d', terminating in the sleeve d^2, in combination with a rack operating in and guided by the sleeve, and pins projecting from the rack arranged to engage the sleeve respectively above and below to form stops to limit the throw of the rack, substantially as set forth.

10. In a platen printing-press, a shaft journaled in side arms and provided with an eccentric portion for operating the bed and impression throw-off, a gear and rack for rotating the shaft, and a rack-bar integral with or attached to the rack and pivoted to a shifting-lever, the parts being arranged substantially as described, whereby the said rack-bar is always held approximately radially with the axis of the bed, to the end that the shifting-lever is not moved perceptibly by the swinging of the bed and attachments, substantially as set forth.

11. In a platen printing-press, the combination, with lifting-lever N, for lifting the inking-rollers, of mechanism, substantially as described, for rotating the inking-disk during such elevation of the inking-rollers, substantially as set forth.

12. In a platen printing-press, the combination, with an ink-fountain consisting of co-operative rollers and mechanism, substantially as described, for rotating the rollers simultaneously with the rotation of the ink-disk, of inking-rollers and mechanism, substantially as described, for elevating the same, and so arranged that the inking-rollers, when elevated, are brought in contact with the fountain-rollers, substantially as set forth.

13. In a platen printing-press, the combination, with inking-rollers and frame and a link, of a side arm pivoted to the machine-frame and adjustably secured to the link, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 29th day of February, 1885.

HENRY H. THORP.

Witnesses:
CHAS. H. DORER,
ALBERT E. LYNCH.