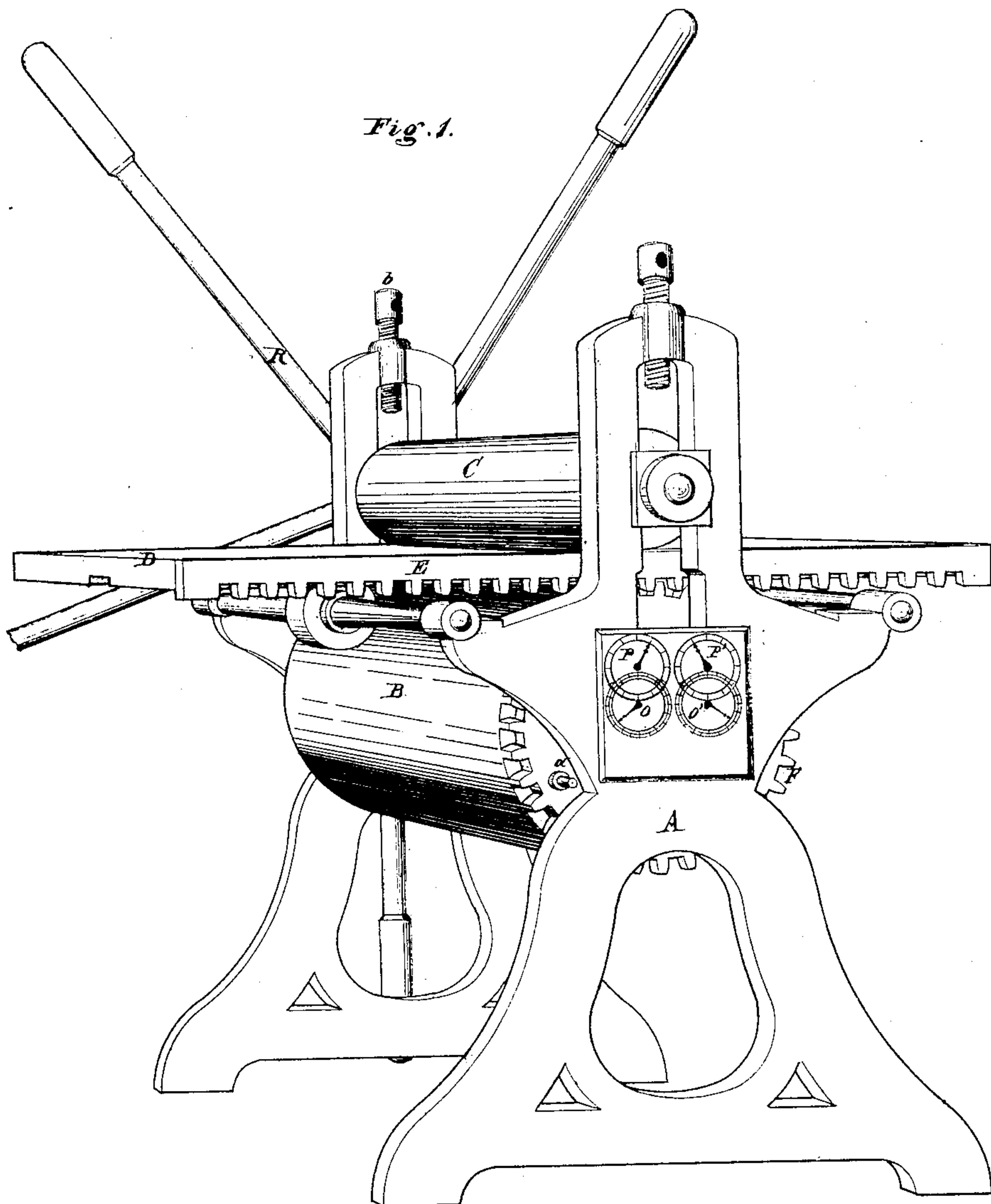


J. L. HARLEY.  
PLATE PRINTING REGISTER.

No. 100,399.

Patented Mar. 1, 1870.



Witnesses:

E. J. Tommae.  
Phil. T. Dodge

Inventor

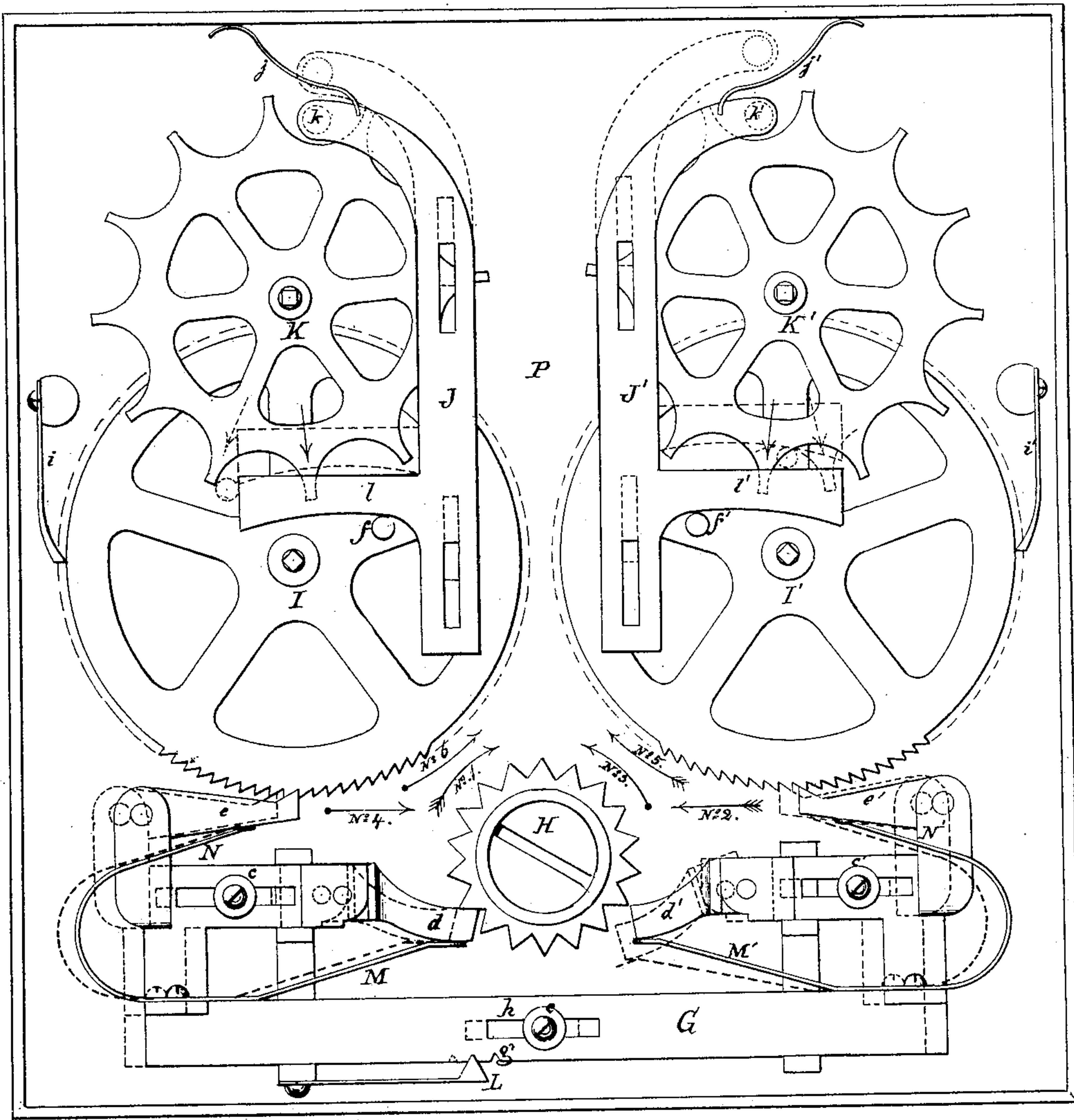
J. L. Harley  
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Fig. 2.



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# United States Patent Office.

JOSEPH L. HARLEY, OF WASHINGTON, DISTRICT OF COLUMBIA.

Letters Patent No. 100,399, dated March 1, 1870.

## IMPROVEMENT IN PLATE-PRINTING REGISTER.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOSEPH L. HARLEY, of the city of Washington, in the county of Washington, and District of Columbia, have invented certain Improvements in Registering Devices in Connection with Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings.

My invention consists in the novel construction and arrangement of a series of mechanical devices, in connection with suitable dials for registering on their faces the exact movement of its parts, and also, in connecting these mechanical devices with their dials to a hand or other printing-press adapted to the printing of fractional currency, bank notes, or similar articles, for the specific purpose of registering the exact number of times the bed-piece of the press is moved backward and forward, and consequently the exact number of impressions that could or should be taken or made by such movements.

In the drawings—

Figure 1 is a perspective view of the press with my mechanical devices for registering attached, and

Figure 2 is a side elevation, showing my mechanical devices as constructed and arranged.

In constructing and arranging my mechanical devices I make a frame, P, and mount therein a bar, G, shaped as shown in fig. 1, and having pivoted to it four pawls, *d*, *d'*, *e*, and *e'*, and having connected to it four springs, M, M', N, and N', located so as to bear against the under side of the pawls, one under each respectively, for the purpose of holding them in position, and I arrange the bar so that it may be moved in alternate directions on pins C, passing through slots *h*, limiting its movement by a spring-stop, L, which catches into notches *g* on its under side, and which has one end attached to the frame P, all as shown in fig. 1.

In the same frame P I mount a star-wheel, H, two ratchet-wheels I and I' of equal size, having studs *f* and *f'* attached to their faces respectively, two smaller wheels K and K', of equal size, with their peripheries formed in semicircular curves, and two drops J and J'.

These wheels and drops are shaped and arranged in the relative positions as shown in said fig. 1.

To the frame P I also attach the pawls *i* and *i'*, to catch in the ratchet-wheels I and I' respectively, and also the springs *j* and *j'*, to be connected with the upper ends of the drops J and J' respectively.

These drops J and J' have on the inner side of their upper ends a stud, *k*, represented in dotted lines, all as shown in the same fig. 1.

The manner in which these devices operate is as follows:

When the star-wheel H moves in the direction of arrow No. 1, one of its points will bear against the

end of the pawl *d* and slide the bar in the direction of arrow No. 2, while the pawl *e'* will turn the ratchet-wheel I' the distance of one catch or tooth in the direction of arrow No. 5, and at the same time, the wheel I being held stationary by the ratchet *i*, the pawl *e* will be depressed by the pressure of a tooth on this ratchet-wheel I and be carried into the next tooth by the spring N, and while this is being done the pawl *d'* will be pressed down by another tooth of the star-wheel and be carried up behind it by the spring M' as soon as it has turned far enough for the purpose.

When the bar G has been carried far enough to accomplish these results, the point of the star-wheel moving it can pass by the point of the pawl *d* and will move it no further. At the same time the bar is held in position by the stop L, and further continued movement of the star-wheel in that direction cannot affect the position of the ratchet-wheel I'.

The movement of the star-wheel H is now reversed and turned in the direction of arrow No. 3, when one of its points will bear against the end of pawl *d'* and slide the bar G in the direction of arrow No. 4, when the pawl *e'* will be carried back one notch on the ratchet-wheel I', which is held stationary by the pawl *i'*.

At the same time the pawl *e* will move the ratchet-wheel I forward in the direction of arrow No. 6 the distance of one notch, and the pawl *d* will be depressed and dropped back a notch on the star-wheel, and when the bar has been carried far enough to accomplish these results, as before, the point of the star-wheel will pass by and cease to act on the pawl, and the bar will be held by the stop L. In this way the ratchet-wheels I and I' are moved one notch in opposite directions by the movement of the bar G forth and back.

As these ratchet-wheels revolve, the studs *f* and *f'* on their faces, respectively, will come in contact with a projecting arm, *l*, of the respective droppers J and J' and raise them vertically until they (the studs) come in contact with a semicircle in the periphery of the wheels K and K' respectively, when in their onward movement they will turn these wheels just the distance of the length of one of the curves in their peripheries and then pass on away from it.

At the same time that the drops J and J' have been raised high enough to allow the studs *f* *f'* to come in contact with the wheels K K' the studs *k* *k'* have been raised high enough to allow the wheels to clear them in turning, and when the studs *f* *f'* leave the wheels K K', they also leave the droppers J J' free to fall, which they do, when the studs *k* in their upper ends will drop into and lock the wheels K K' in position until the studs *f* *f'* come round again to move them, and this movement of the droppers is made positive by the springs *j* *j'* attached to their upper ends.

It will thus be seen that if the wheels I I' be pro-



vided each with one hundred ratchets or notches, and the wheels *k k'* have each twelve semicircular curves in their peripheries, that one revolution of the wheels *I* and *I'* would indicate two hundred movements of the bar *G*, or one hundred each way, and that one revolution of the wheels *K* and *K'* would indicate twelve revolutions each of the wheels *I* and *I'*, or twenty-four hundred movements of the bar *G*, being twelve hundred each way.

These movements are clearly shown by attaching dials *O O'* to the wheels *I* and *I'* and dials *P P'* to the wheels *K* and *K'*, respectively.

This registering device I use in combination with a hand-press having some novelties in its construction, as shown in fig. 2 and hereinafter explained.

This press is of the class of hand-presses used in printing bank notes and similar articles, and consists of a frame, *A*, with an under roller, *B*, and upper one, *C*, mounted therein, and with the bed-plank *D* between them. Also, of the set-screws *b*, for setting the roller *C* and the levers *R*, for operating the press.

To one end of the roller *B* is attached a cog-wheel, *F*, which gears into a ratchet-plate, *E*, fastened to the edge of the bed-plank *D*, as shown in fig. 1, and to the end of the same roller is attached a stop-pin, *a*, to limit the movement of the roller, as shown in the same figure.

The registering-device above described I attach to the printing-press by connecting the star-wheel *H*, by a pin or other suitable device, to the roller *B*, and surround it with a strong metallic case, having, if desired, a door that may be securely locked.

On the front of the dial-plate are dials *O O'*, with hands connected to the wheels *I I'*; also, dials *P P'*, connected to the wheels *K K'*.

It will now be seen that with a press and registering-device thus constructed, arranged, and combined, every movement of the bed-plank will be registered on the faces of dials, in whichever direction it moves, and that as the roller *B* can only move far enough to take a single impression, every time the plate from which the impressions are made is passed between the rolls, becomes duly registered, and must be accounted for, and that it will be impossible for the operators to take any impressions of any kind from the plates by

means of the press without being detected, especially when the dials cannot in any way be reached by the operators.

It will thus be seen that by means of the press, register, &c., thus constructed and arranged, every impression must be accounted for, whether taken upon the paper furnished for the purpose, or taken upon sheets that are not required to be accounted for, since the bed-plank cannot be moved without at the same time moving the roller *B*, which in turn moves the register.

Having thus described my invention,

What I claim is—

1. A registering-device, consisting of the sliding bar *G*, with its pawls *d d'* and *e e'*, star-wheel *H* and ratchet-wheels *I* and *I'*, all constructed and arranged to operate substantially as herein described.

2. In combination with the ratchet-wheel *I*, the stud-pin *f* for operating the drop *J* and wheel *K*, in the manner substantially as herein described.

3. In combination with the star-wheel *H* and sliding bar *G*, with its notches *g*, the stop *L*, or its equivalent, constructed and arranged as described, for the purpose of limiting the movement of the bar *G*, as set forth.

4. The star-wheel *H*, the sliding bar *G*, with its pawls and springs, the ratchet-wheels *I* and *I'*, with their studs *f* and *f'*, the drops *J* and *J'*, with their studs *k*, and the wheels *K* and *K'*, when constructed and arranged to operate as herein described, for the purpose of registering on suitable dial-plates each movement of the bar *G*, as set forth.

5. In combination with a registering device as herein described, a printing-press having its roller *B* provided with a cog-wheel, *F*, and its bed-piece *D* with a ratchet-plate, *E*, for the purpose of securing a register of the movements of the bed-piece, as set forth.

6. In combination with the printing-press having cog-wheel *F* and ratchet-plate *E*, the stop *a*, for the purpose of limiting the movement of the roller *B* and its connections, as set forth.

JOS. L. HARLEY.

Witnesses:

H. B. MUNN,  
PHIL. T. DODGE.