

No. 693,604.

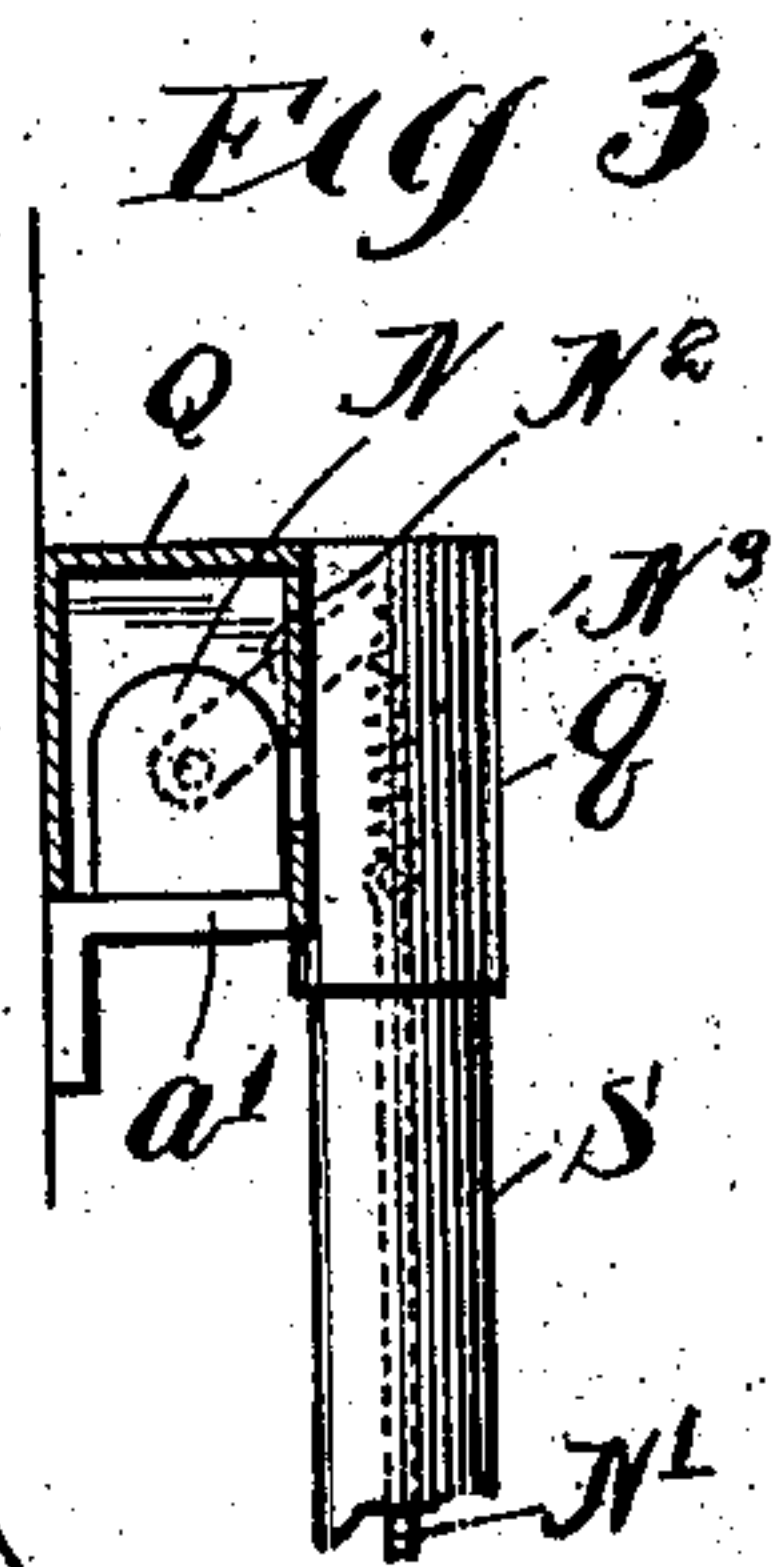
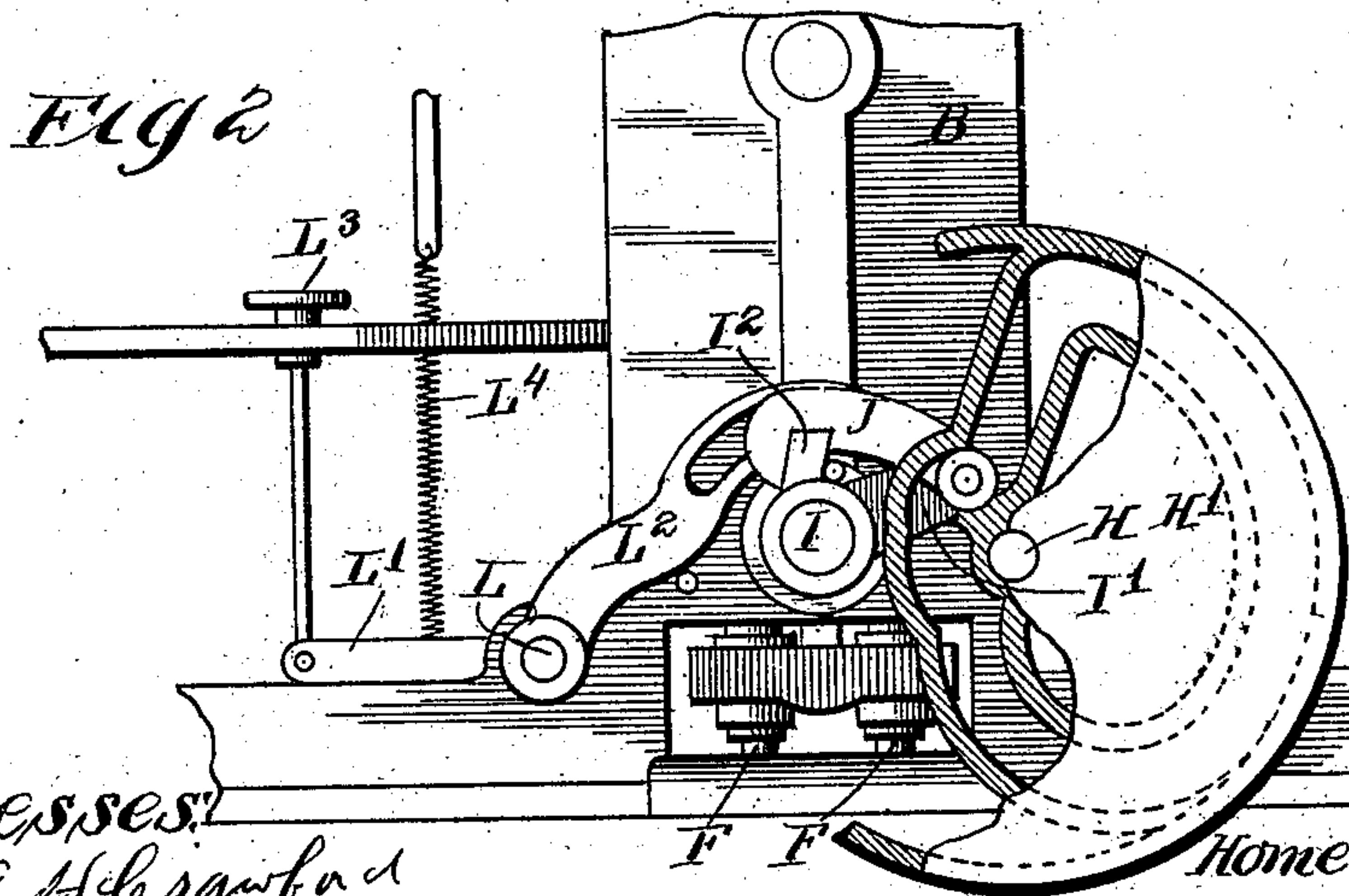
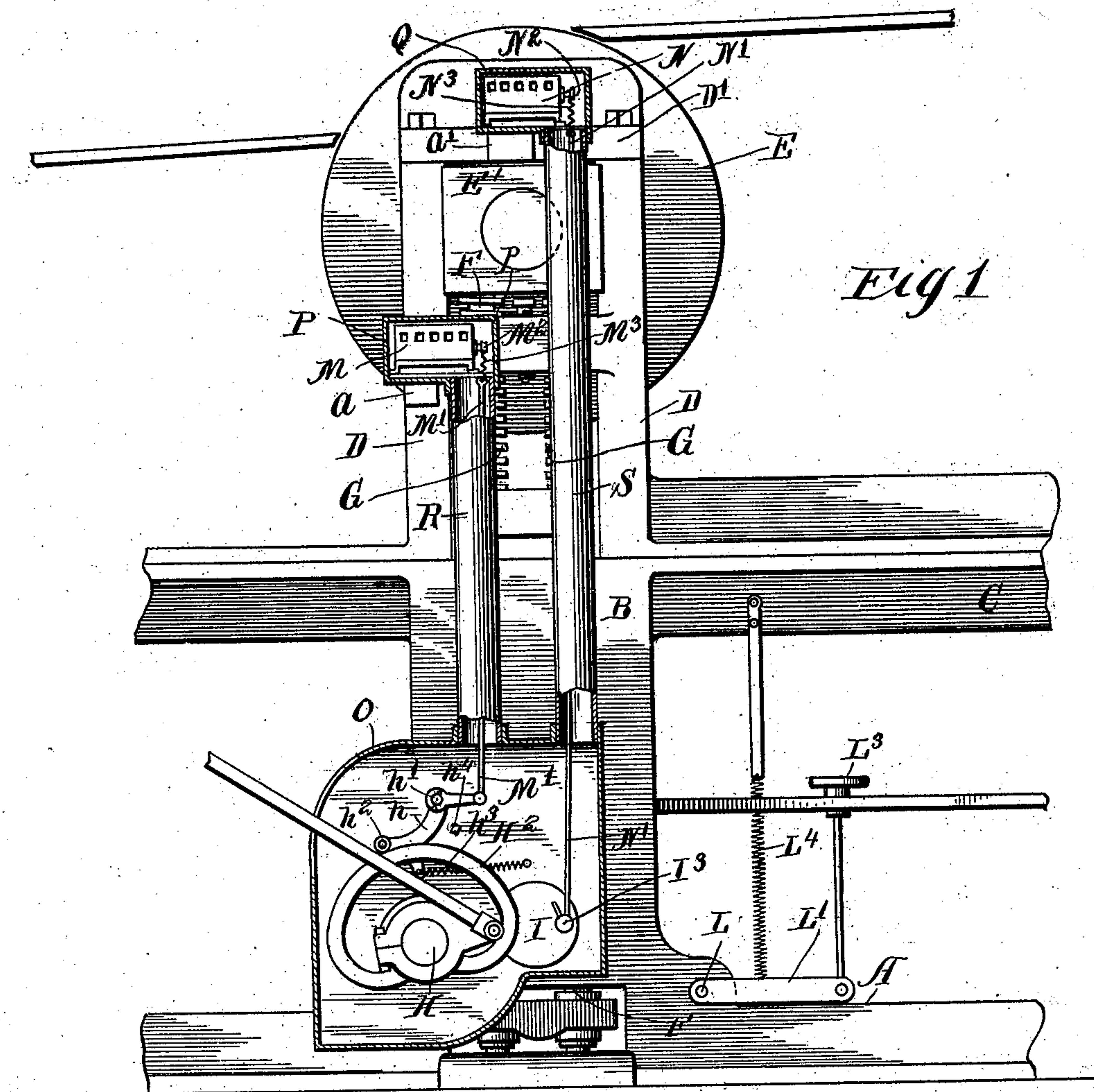
Patented Feb. 18, 1902.

H. W. HOWE.

REGISTER.

(Application filed Jan. 26, 1901.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## REGISTER.

SPECIFICATION forming part of Letters Patent No. 693,604, dated February 18, 1902.

Application filed January 26, 1901. Serial No. 44,820. (No model.)

*To all whom it may concern:*

Be it known that I, HOMER WARREN HOWE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Registering Devices for Printing-Presses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention embraces certain improvements in printing-presses of that class embracing an impression-cylinder and a reciprocating type-bed or part which carries or supports the type and in which said cylinder and type-bed are adapted to be moved toward each other at the time each impression is made and are separated at other times.

This invention relates more specifically to means for keeping a record of the total number of strokes of the press or operations thereof which occur in the usual running of the same, whether impressions are made or not, and also the number of movements of the mechanism to bring the type-bed and the impression-cylinder into and out of printing engagement, whereby one may readily determine the number of ineffective operations of the press, as well as the number of impressions made, and thereby by subtraction ascertain the number of times the feeder has failed to feed a sheet of paper to such press or otherwise missed impressions.

This invention consists in the matter hereinafter set forth, and more particularly pointed out in the appended claims.

The invention is herein shown as applied to a printing-press having the general construction of the press shown in United States Letters Patent No. 611,923, granted to Robert Miehle October 4, 1898, said press embracing a reciprocating type-bed and a continuously-rotating cylinder, mounted transversely above the bed and adapted to be moved bodily toward and from the bed and which makes two rotations for each complete reciprocation of the type-bed and is moved bodily toward and from the type-bed to bring the type into printing engagement with the bed in the movement of the latter in one direction and to allow the type to pass freely beneath the

cylinder without contact therewith in the movement of the type-bed in the opposite direction, and means for holding the cylinder of the press out of contact at will.

In the drawings, Figure 1 is a side elevation of the central part of a printing-press provided with my invention. Fig. 2 is a detail side view, with parts in section, of the lower part of the press at the side thereof opposite that shown in Fig. 1, showing operative parts of the press there located. Fig. 3 is a detail side elevation of one of the registering devices, showing the casing therefor in section.

In said drawings, A indicates a bed-casting, B one of the main vertical side pieces of the machine-frame, and C one of the horizontally-arranged frame-pieces which are arranged parallel with said bed-casting A and which afford support for the reciprocating type-bed.

E is an impression-cylinder located transversely above the type-bed and connected therewith so as to make two or more rotations during each complete reciprocation of the bed. Said cylinder is supported in bearing-blocks E', which are mounted between uprights D rising from the frame-piece C.

F F are vertical rods secured to said bearing-blocks E' and extending downwardly to points near the bottom of the machine-frame.

G G designate coiled springs, which are located between the bearing-block E' and the machine-frame and tend to hold the cylinder in its elevated position or out of contact with the type-bed.

H designates a rotary shaft, which is connected with the mechanism, by which the type-bed is given a reciprocatory motion, as in the printing-press above referred to, said connections being such that the shaft makes one complete rotation during a complete reciprocation of the bed, and being continuously moved during the operation of the press.

I designates a horizontal transverse rock-shaft, which is mounted in suitable bearings in the vertical frame members. Said shaft is adapted to be rocked in its bearings to depress the cylinder against the action of the spring G by means of suitable connections with the rotary shaft H, such connections consisting in this instance of an arm I', mounted



loosely on the end of the rock-shaft I, a cam-wheel H' on the shaft H, provided with a cam-groove, which is engaged by said arm of the rock-shaft, and a dog J, pivoted to the outer end of the arm I' and adapted to engage a radial arm I<sup>2</sup>, rigidly attached to said rock-shaft. With this construction said shaft I is rocked in its bearings once during each rotation of the cam and each complete reciprocation of the bed. A tripping mechanism is employed, which acts to throw said dog J out of engagement with the arm of the rock-shaft, so that the movement of said dog will have no effect on the rock-shaft, such tripping mechanism being employed to enable the operator to prevent the depression of the impression-cylinder at any time desired—as, for instance, when no sheet is to be fed to the press. Said tripping mechanism consists of a rock-shaft L, to one end of which is attached a foot-lever L' and to the other end of which is rigidly attached a cam or arm I<sup>2</sup>, which is adapted, when the shaft L is rocked, to lift the dog J out of engagement with the radial arm I<sup>2</sup> of the rock-shaft I, as set forth in the above-mentioned patent. Said foot-lever L' is desirably connected with a footpiece L<sup>3</sup> in position to be accessible to the operator, and the shaft is normally held in position to hold the outer end of the cam-arm depressed by means of a coiled spring L<sup>4</sup>.

Referring now to the application of my invention to a printing-press of the character thus briefly described, these parts are constructed as follows: M designates a registering device of common form, which is located conveniently on a shelf *a*, attached to one of the uprights D. Said registering device is adapted for actuation from the rotary shaft H, and, as herein shown, is connected by means of a connecting-rod M' with a rocking dog *h*, which is pivoted on a stud *h'*, attached to the outer face of the frame side piece B. Said dog *h* is provided with a stud *h*<sup>2</sup>, which engages a cam H<sup>2</sup>, attached to the rotative shaft H. The stud *h*<sup>2</sup> is held in position to engage the larger part of the cam by means of a spring *h*<sup>3</sup>, and a stop *h*<sup>4</sup> on the frame serves to limit the movement of the dog under the action of the spring, so that the said stud *h*<sup>2</sup> is in contact with the cam during a part only of its rotation. The said cam, in connection with its associated spring, gives movement to the stud *h*<sup>2</sup> inwardly and outwardly at each complete rotation of the shaft H, so that the rod M' will be given vertical movement necessary for actuating the registering device M at each operation of the press by which an impression is made. The rod M' is attached at its upper end to an actuating-arm M<sup>2</sup> on the registering device. A spring M<sup>3</sup> is interposed between the upper end of the rod or wire M' and the said actuating-arm of the registering device, said spring being provided for the purpose of preventing sudden jars coming upon the actuating-arm and the mechanism of the registering device.

Said registering device may obviously be otherwise actuated from the type-bed or its actuating mechanism—as, for instance, its actuating-arm may be arranged to be directly engaged by the bed or a part carried thereby. Said registering device M, connected as described, serves to register each rotation of the shaft H, and consequently each complete reciprocation of the type-bed, so that the dial of said device at any given time will indicate the number of complete oscillations of the press. I propose also to provide the press with a registering device which is adapted for actuation by a part of the printing-press which is actuated only at the time the cylinder is moved toward the type-bed, so that not only will the number of operations of the press be recorded, but also the number of its effective operations, or those in which the cylinder is brought into printing position with relation to the type-bed. For this purpose I provide a second register N, which in the type of press shown will conveniently be connected with the rock-shaft I, which acts to depress the cylinder. Said second register N is located conveniently on a shelf or ledge *a'*, attached or made integral with the top cam-piece D', attached to the uprights D. Said registering device is actuated from the rock-shaft through the medium of a connecting rod or wire N', connected at its lower end with a dog I', which is pivoted on the side of the frame and is provided with a stud I<sup>3</sup> on the outer end of the rock-shaft I and at its upper end with an arm N<sup>2</sup>, connected with the mechanism of the registering device. A spring N<sup>3</sup>, similar to the spring M<sup>3</sup>, is interposed between said connecting rod or wire and actuating-arm of the registering device for the same reason as before explained. The registering device N, connected as thus described, will record each movement of the rock-shaft as the same is actuated through the medium of the cam-wheel H', and if a sheet of paper be fed to the press during each operation of the same the record of said registering device N will correspond with the record of the registering device M. If, however, for any purpose the action of the impression-cylinder be interrupted through the medium of the tripping mechanism described, the rock-shaft I being at such time at rest, the registering device N will not be actuated, and its record will remain the same, while each succeeding rotation of the shaft H and reciprocation of the type-bed will be recorded, for the reason that said parts are actuated continuously during the operation of the machine. It will be seen, therefore, that while the registering device M shows the number of complete operations of the press the registering device N will only show the number of impressions made or effective operations thereof—that is to say, the number of operations in which the cylinder is depressed into its printing position, and therefore the number of impressions made. With these



records before the person who has charge of said press it will be easy to determine the number of ineffective operations of the press, or those in which no impression was made, such result being obtained by deducting from the number representing the whole number of movements of the press the number which represents the effective operations thereof.

This, as will be readily appreciated by persons acquainted with this art, is of great importance, as it enables the superintendent of a printing establishment to keep an account of the work which is being done by the man under him, it being obvious that if through carelessness or idleness the operator of the press fails frequently to feed a sheet thereto such omission will be apparent from the records of the registering devices. Heretofore it has been common to register only the number of each complete operation of the printing-press resulting in the printing of a sheet or making of an impression, and while the superintendent can readily keep himself informed as to whether a press is running either by visual observation or by the sound made by the press he has been unable to keep informed as to the regularity with which the press is fed, the diligence of the feeder, or the number of impressions made in a given time as compared with the possible capacity of the press, as he has had no convenient or ready means of ascertaining the number of operations which have been ineffective or which have not resulted in the printing of a sheet.

As before stated, I contemplate using my invention on all types of printing-presses which contain a continuously-actuated part which operates one of the principal elements of the press—as, for instance, the devices by which the impression-cylinder and type-bed are brought into and out of engagement when making impression or printing and which is connected with the other of said main elements to bring the same into its operative or printing position, and I do not therefore wish to be limited with respect to the application of my invention to the special form of press illustrated.

It is desirable in the use of a registering device of the character described that the same should be protected from interference by the workman operating the press. I therefore provide in connection with the parts described inclosing means for the several parts described, as follows: O indicates a metal casing or inclosure which is attached to the side of the main frame of the press and surrounds the cam  $H^2$  and dog  $h$  and also the end of the rock-shaft I, said casing being constructed to completely inclose said parts. Casings P and Q are also arranged to inclose or surround

the registers M and N, said casings being provided with openings through which the indicating-numbers of the registers can be seen and with outwardly-projecting parts  $p$  and  $q$  inclosing the actuating-arms  $M^2$  and  $N^2$  of said registers. To inclose and protect the connecting-rods  $M'$  and  $N'$ , metal tubes R and S are attached at their lower ends to the casing O and at their upper ends to the outwardly-projecting parts  $p$   $q$  of the casings P and Q.

The parts of the registering devices being covered and pivoted by the inclosures described their operation cannot be affected or interfered with by the operator of the press, and the said registering devices are therefore entirely under the control of the owner of the establishment or foreman having charge of the press.

I claim as my invention—

1. In a printing-press, the combination with a continuously-movable part which actuates one of the principal elements of the press, and an intermittingly-movable part which is connected with another principal element of the press, of a registering device actuated by said continuously-movable part, and a second registering device actuated by said intermittingly-movable part.

2. In a printing-press, the combination with a reciprocatory type-bed, a rotative impression-cylinder, and means for moving said cylinder toward and from the said bed, of a registering device which is connected with and actuated by said bed or its actuating mechanism, and a second registering device which is connected with and actuated by the means for moving said cylinder toward the type-bed.

3. In a printing-press, the combination with a continuously-movable part which actuates one of the principal elements of the press, and an intermittingly-movable part which is connected with another principal element of the press, of a registering device actuated by said continuously-movable part, a second registering device which is connected with said intermittingly-movable part, and a casing or inclosure surrounding both of said registering devices and the moving parts through which they are connected with said continuously and intermittingly movable parts of the press.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 8th day of January, A. D. 1901.

HOMER WARREN HOWE.

Witnesses:

WARREN B. HOWE,  
ROY J. CARRIER.