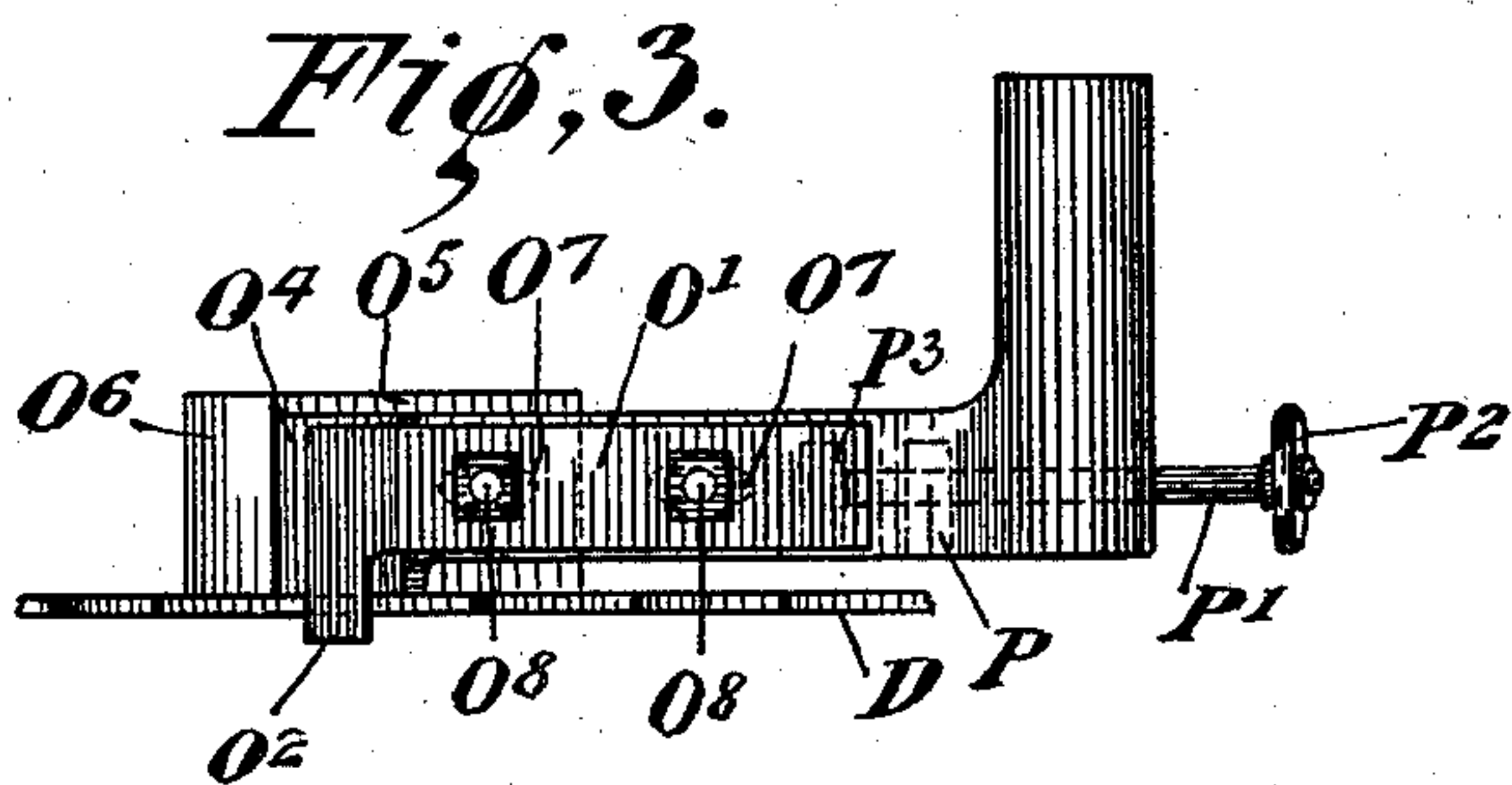
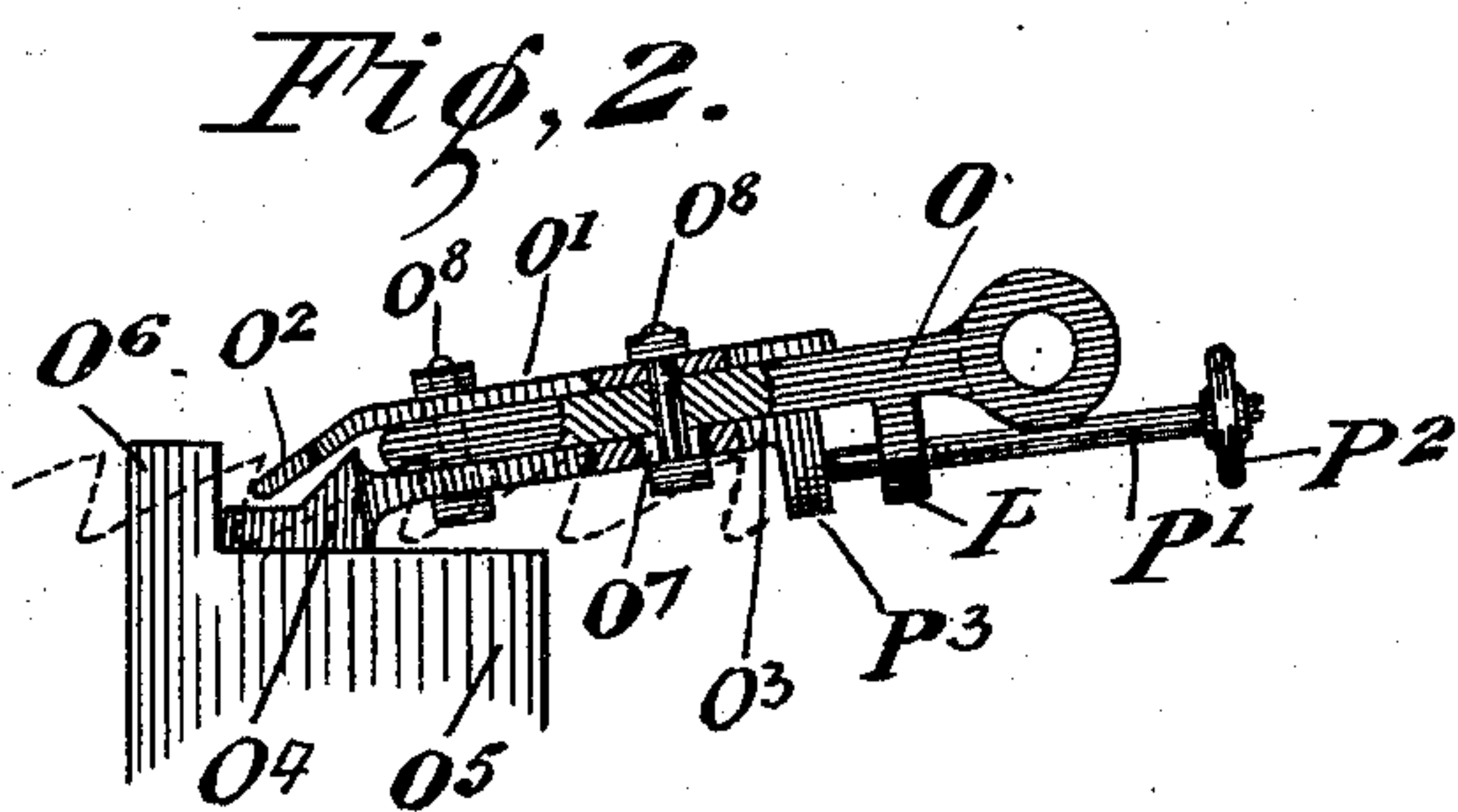
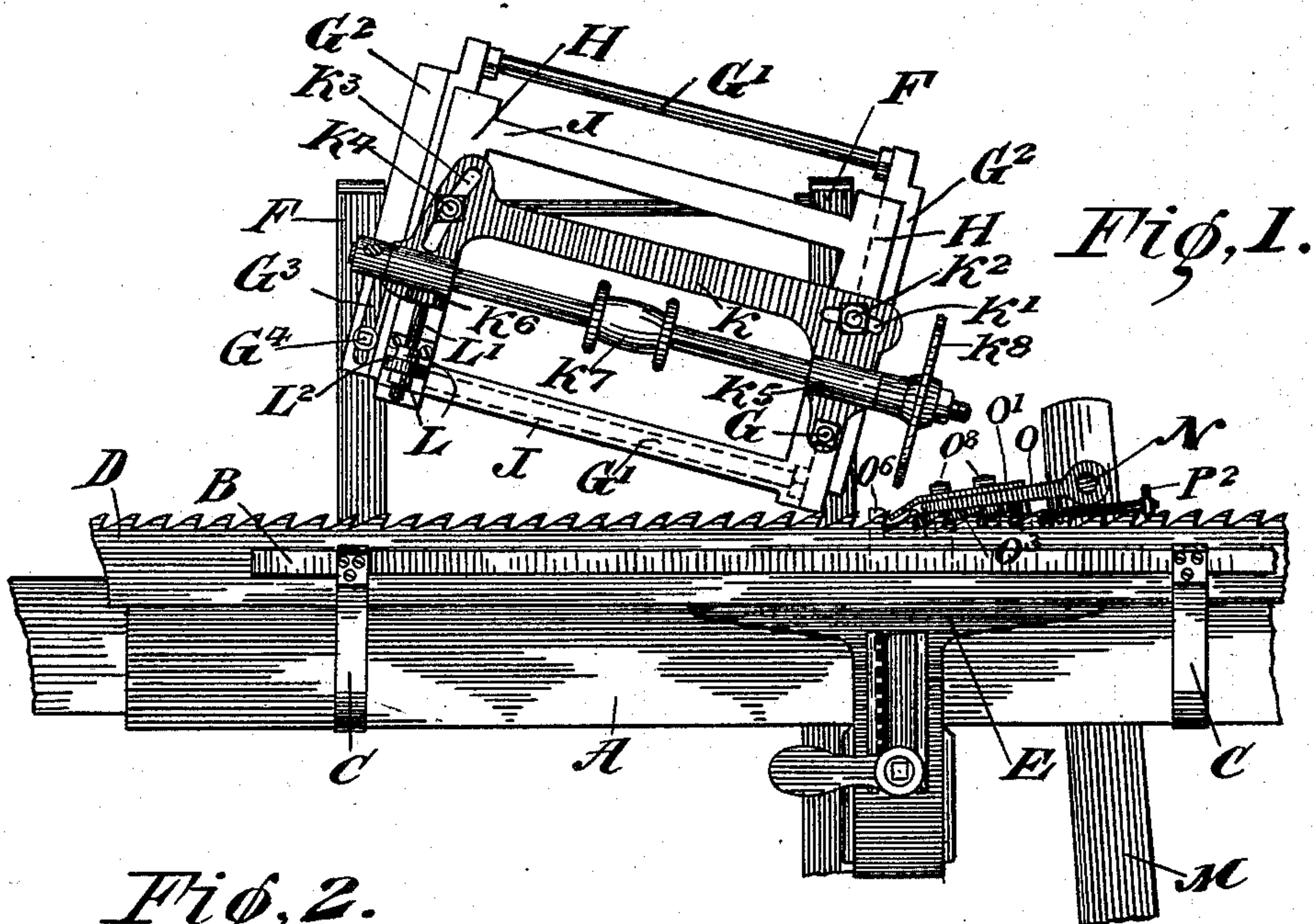


(No Model.)

E. B. RICH.  
SAW SHARPENING MACHINE.

No. 416,748.

Patented Dec. 10, 1889.



Witnesses:  
Charles P. Chapman,  
Francis M. Ireland

Inventor  
Elisha B. Rich.  
By his Attorney Francis M. Parker



# UNITED STATES PATENT OFFICE.

ELISHA B. RICH, OF CHICAGO, ILLINOIS.

## SAW-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 416,748, dated December 10, 1889.

Application filed March 25, 1889. Serial No. 304,726. (No model.)

*To all whom it may concern:*

Be it known that I, ELISHA B. RICH, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Saw-Sharpener Machines, of which the following is a specification.

My invention relates to saw-sharpening machines, and has for its object to provide means for adjusting the stroke of the feed-finger and means for adjusting the angle of the grinding-wheel. I have shown only such parts of my devices as would be necessary to illustrate it. This object I accomplish by means of the mechanism illustrated in the accompanying drawings, wherein—

Figure 1 is a front view of a portion of a saw-sharpening machine. Fig. 2 is a detail part sectional view of the finger and stop, and Fig. 3 is a plan view of the same.

Like parts are indicated by the same letter in all the figures.

A is the saw-carriage, having secured thereto the grip-bar B on the spring-standards C C. On the carriage is the adjustably-secured ledge E, upon which the saw D rests.

F F are standards rising from the frame, and to them is pivoted at G a frame composed of the rods G' G' and the side bars G<sup>2</sup> G<sup>2</sup>, one of these bars provided with the slot G<sup>3</sup>, so that it can be adjustably secured to the frame by the pin G<sup>4</sup>. This slot is the arc of a circle whose center is at the point G. Secured so as to slide on the bars G<sup>2</sup> G<sup>2</sup> is the frame composed of the side bars H H and the cross-bars J J. On the bars H H is secured the piece K, pivoted also at G, and secured by means of the slot K' and bolt K<sup>2</sup> to one side bar H and by means of the slot K<sup>3</sup> and bolt K<sup>4</sup> to the other side bar H. On this piece K are the two bearings K<sup>5</sup> K<sup>6</sup>, carrying the pulley K<sup>7</sup> and the grinding-wheel K<sup>8</sup>.

L L are screw-threaded fixed nuts, through which passes the screw-threaded bolt L', which bears against a portion of the plate K; and L<sup>2</sup> is a thumb-piece connected with such screw-threaded rod, whereby it can be turned to adjust the angle of the arbor on the sliding frame composed of the bars H H and J J.

M is a rocking lever, to which is pivoted at

N the feed-finger O. The feed-finger O consists of the body proper with a plate O' secured on top thereof and having a lateral projection O<sup>2</sup> to engage the saw-tooth at a place somewhere between its point and base; also, a lower piece O<sup>3</sup>, provided with the forwardly-projecting point O<sup>4</sup>, which rides upon the base O<sup>5</sup> and engages the stop O<sup>6</sup>, being a little in advance of the point O<sup>2</sup>. This piece O<sup>3</sup> is secured by means of the slot O<sup>7</sup> O<sup>7</sup> and the bolts O<sup>8</sup> O<sup>8</sup> to the body O, so as to be adjustable therealong.

P is a lug on the body O, through which passes the screw-bolt P', having the handle P<sup>2</sup> at its outer extremity and adapted to impinge at its inner extremity against the lug P<sup>3</sup> on the piece O<sup>3</sup>.

The use and operation of my invention are as follows: The angle of the grinding-wheel arbor with respect to the sliding frame on which it is secured is varied at will by adjusting the bolts K<sup>2</sup> K<sup>4</sup> and operating the thumb-piece L<sup>2</sup> and screw-rod L'. This will change the angle of the grinding-wheel with reference to the sliding frame on which it is secured and make that angle adjustable. The several bolts and nuts and slots are provided in order that the arbor may have a firmly-established position when fixed therein. The entire frame which supports the sliding frame may also be changed in its angle by adjusting the bolt G<sup>4</sup>. The independent motions of the arbor and the frame which supports the sliding frame are about the same center as G, so that the grinding-wheel is in any case in substantially the proper position, and can be adjusted either as to its angle to the sliding frame or as to the line of motion of the sliding frame independently. The rocking lever M causes the feed-finger to reciprocate along the bed-plate O<sup>5</sup>, and to finish the stroke and accommodate for the lost motion in the working parts connected with the lever M, I provide a fixed stop O<sup>6</sup> and a forwardly-projecting point O<sup>4</sup> to engage the same.

It is found that in the sharpening of saws in a machine of the character shown in the drawings the power required to move the saw the requisite distances to successively bring the teeth under the grinding-wheel



greatly varies according to the condition of the surface of the saw and its thickness. Thus upon one portion of a given saw a certain power will be used by the lever in moving the finger and throwing the saw far enough to bring the next tooth under the grinding-wheel. In the next position, or further on in the work of grinding the saw, it will be found that a great deal more power is required, owing to the gummed or otherwise interfering condition of the saw and the fact that it is bound by the saw-carriage and the spring-block. The ordinary adjustment of the throw of the finger is made by and upon the mechanism which operates the lever; but when it is remembered that great accuracy is required in bringing the saw-tooth into position, as it is desired to remove but a very slight portion of the tooth in the grinding process, it will be seen that on account of the variance in the power required to move the saw the proper distance it will become necessary to have mechanism whereby the lost motion in the joints of the various parts may be taken up, and this I accomplish by means of the mechanism or structure of the feed-finger, for by changing the piece  $O^3$ , and hence the relative position of the two points  $O^4$  and  $O^2$ , by means of the bolts and slots the feed can be regulated, and in the event of the saw being retracted in its progress the stroke may be slightly lengthened by retracting the bar  $O^3$ , so that the part  $O^2$  will move forward a slightly-greater distance before the point  $O^4$  encounters the stop  $O^6$  than would have been the case without such adjustment.

I claim as new and desire to secure by Letters Patent—

1. In a saw-sharpening machine, a feed-finger provided with an adjustable point and a side projection elevated above the bottom of the point, so as to strike the tooth above the base.

2. In a saw-sharpening machine, the combination of a pivoted feed-finger having a side

projection and an independently-adjustable point with reference to such projection, with a stop against which the point strikes.

3. In a saw-sharpening machine, the combination of the saw-carriage, pivoted feed-finger, a stop on the carriage, and an adjustable point on such feed-finger whereby the relative positions of the two points of the feed-finger may be changed at will.

4. In a saw-sharpening machine, the combination of a saw-carriage bearing a stop, a pivoted feed-finger whose point strikes the stop, and an adjusting device to adjust such point on the feed-finger so as to take up the lost motion of the joints and spring of the parts and cause the finger to feed a uniform distance whether the saw pulls hard or easy.

5. In a saw-sharpening machine, the combination of a grinding-wheel arbor with a sliding frame, to which it is angularly adjustably secured, and a supporting-frame for said sliding frame, which is angularly-adjustably secured with reference to the path of the saw.

6. In a saw-sharpening machine, the combination of a grinding-wheel arbor with a sliding frame, to which it is angularly-adjustably secured, and a supporting-frame for said sliding frame, which is angularly-adjustably secured with reference to the path of the saw, both the supporting-frame and the grinding-wheel-arbor frame pivoted on a common axis.

7. In a saw-sharpening machine, the combination of a grinding-wheel arbor with a piece on which it is secured, said piece pivoted at one end to the sliding frame and resting at its other end against a bolt, so as to be adjustable about said pivot to change the angle of the arbor with reference to its supporting-frame.

Signed this 22d day of March, 1889.

ELISHA B. RICH.

In presence of—

FRANCES W. PARKER,  
CELESTE P. CHAPMAN.