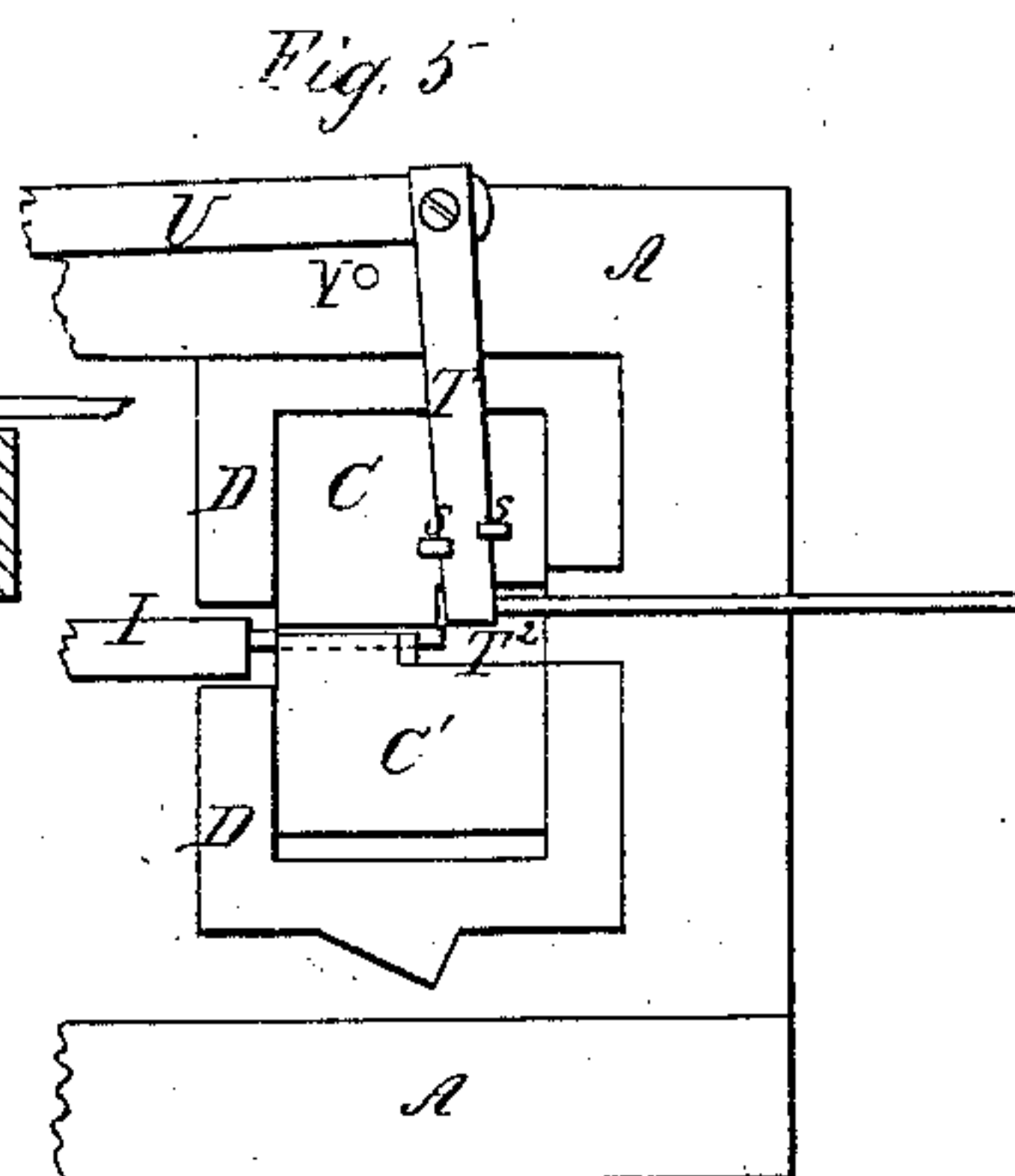
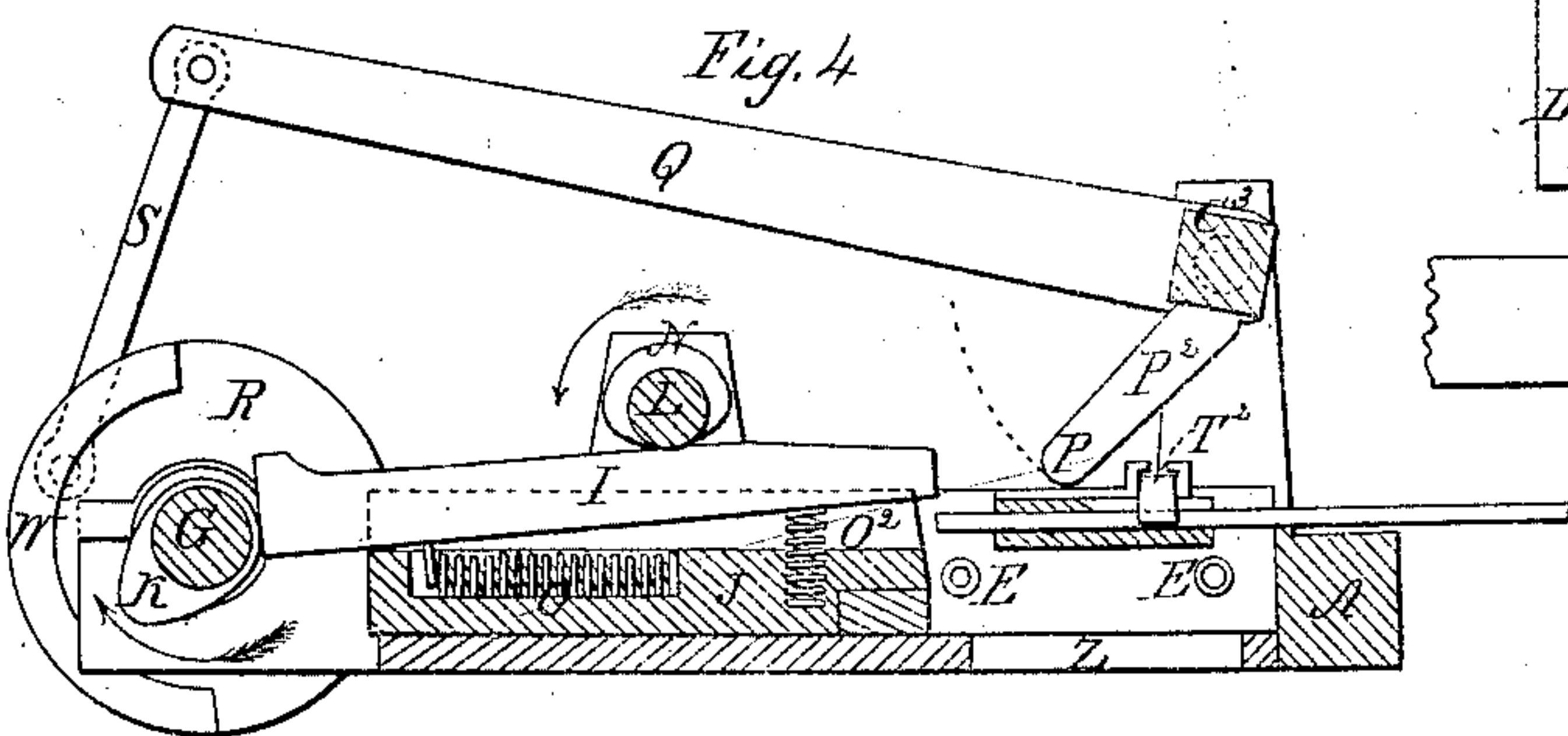
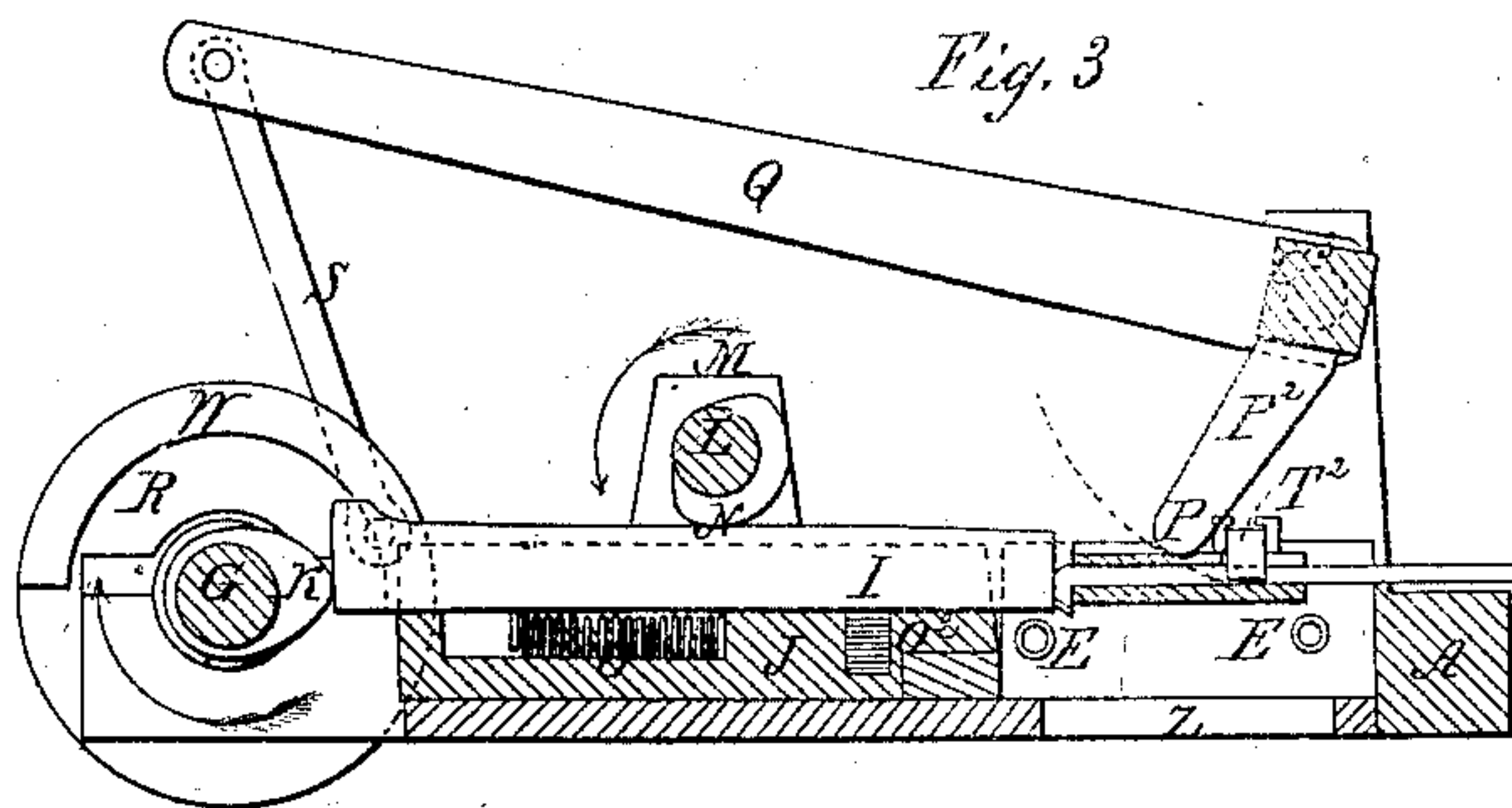
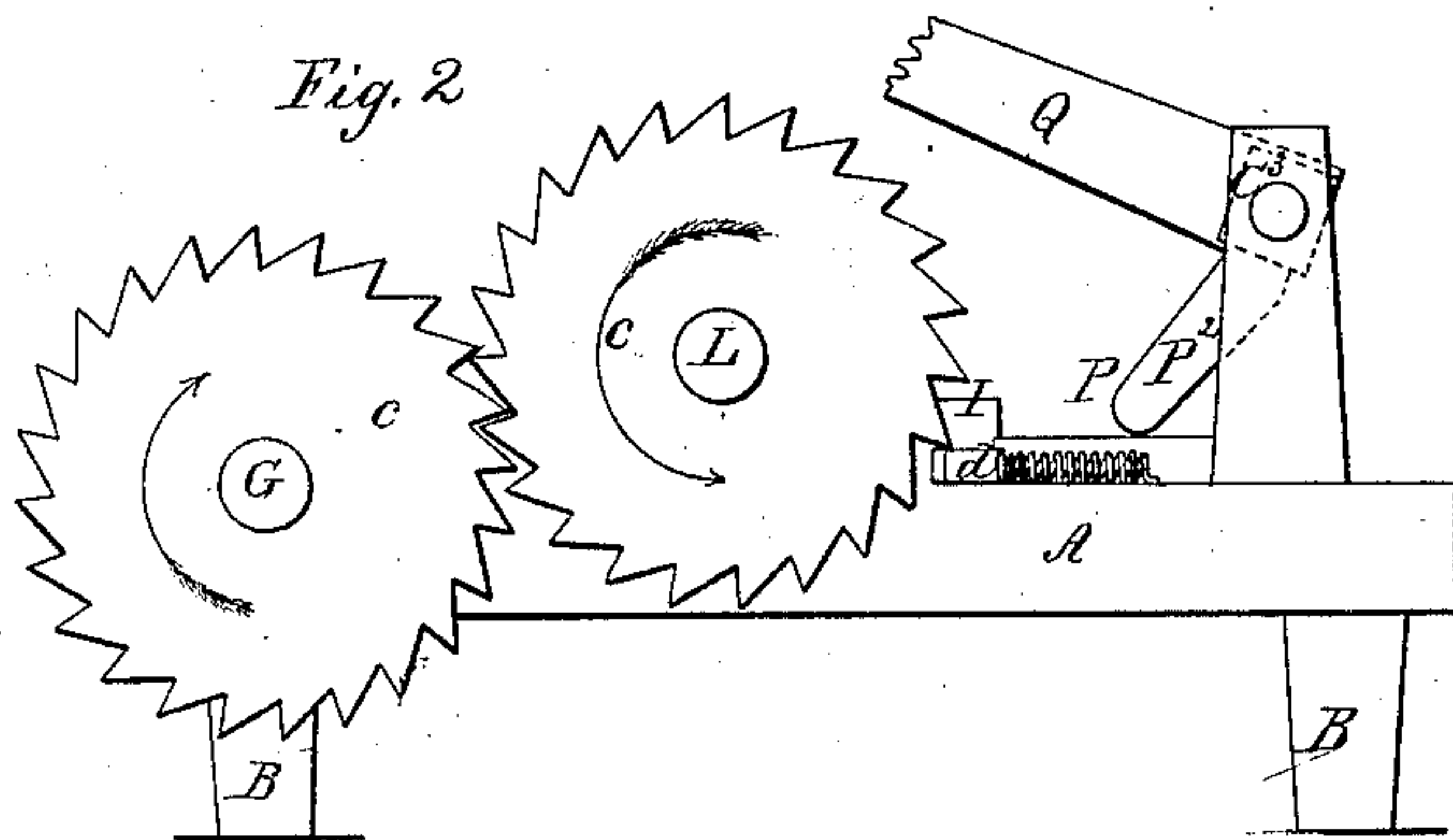
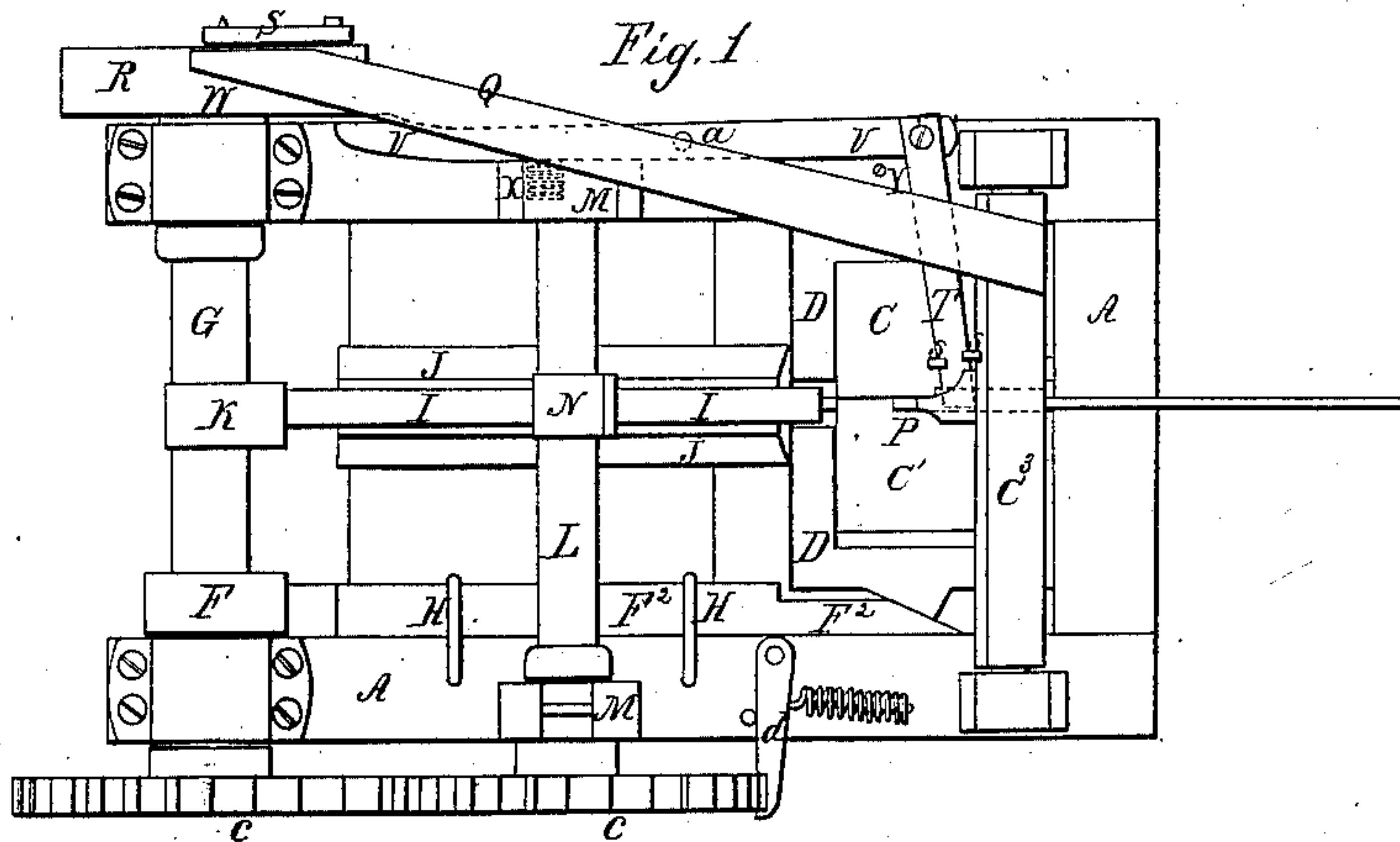


*M. Hardaway.*

*Spike Machine.*

*N<sup>o</sup> 8,342.*

*Patented Sept. 9, 1851.*





# UNITED STATES PATENT OFFICE.

M. HARDAWAY, OF TROY, NEW YORK.

## HOOK-HEADING MOTION FOR SPIKE-MACHINES.

Specification of Letters Patent No. 8,342, dated September 2, 1851.

*To all whom it may concern:*

Be it known that I, MOORE HARDAWAY, of the city of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements on the Machine for Making Hook-Headed Spikes; and I do hereby declare the following to be a full and clear description of the construction and operation of the same, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1, represents a plan or top view of the machine. Fig. 2, is a side elevation of ditto. Fig. 3, is a vertical longitudinal section,—the header having headed the spike and the pointing die shown as pointing the same. Fig. 4, is also a vertical longitudinal section, the header being in a position to descend to bend the end of the rod downward. Fig. 5, is a sectional view, showing the position of the steel cutting plate, after a piece of iron of the proper length has been cut from the rod, headed, pointed, and ready to be delivered from the dies.

The same letters of reference indicate the same parts where they occur on the above figures.

My improvement consists in the employment of a header in such a manner that when the rod of iron shall have been fed into the dies, the header will be made to descend and bend the end of the rod downward, and after a limited pause in the movement of the header, be made to advance horizontally and press said rod against the dies and thus form the hook head.

A, is the frame supported upon legs B, B. C, C', are the dies secured in bed plates D, D, the die C' being made to open by means of helical springs E, E, to discharge the spike and closed by the action of a cam F against a horizontal bar F<sup>2</sup> confined by staples H, within which it slides.

I, is the header for forming the head of the spike confined in a bed J, in the center of the frame and extending longitudinally from the dies C, C', to the main cam shaft G, to receive the action of a cam K, thereon for imparting to the header at the proper interval the forward movement to complete the formation of the hook head.

Directly above the header and near the middle thereof is a shaft L, having its bearings in studs M, mounted on the frame, and

containing a cam N, for imparting to the header the descending movement.

Beneath the header and on the bed J there is secured a helical spring O, for imparting to the header its receding movement after having been relieved from the cam K, and near its frontward end is a helical spring O<sup>2</sup> for elevating the same after the formation of the spike, in a position to form the head of the succeeding spike, as shown in Fig. 4.

P is a steel die attached by any convenient means to the end of an arm P<sup>2</sup> projecting downward from the horizontal transverse shaft C<sup>3</sup>, having its bearings in studs mounted on the frame, and having its end made convex for pointing the piece of iron to complete the spike by passing over the same.

From the horizontal transverse shaft C<sup>3</sup> there extends a lever Q, connecting with a cam wheel R, on the main cam shaft G by a rod S, by which the rock shaft and pointing die are actuated. The device for separating a piece of iron of the proper length from the rod to form the spike consists of a horizontal steel plate T, bent at right angles at its inner end to form the cutter T<sup>2</sup> and also a continuation of the face of the stationary die C, after the piece of iron has been separated from the rod, by the outward movement of the cutting plate which is connected to the end of a vibrating bar U, extending rearward to receive the action of a cam W, on the wheel (R) and confined near its center to the frame A, by a pin (a) on which it vibrates, so that when the cam W, is made to act on the rear end of the bar U, its frontward end will be forced outward and with it, the steel cutting plate T, and thus separate the piece of iron from the rod simultaneously with the frontward movement of the pointing die.

The inward movement of the cutting plate T, after the bar U, shall have been relieved from the cam W, is effected by means of a helical spring X, confined in the stud (M) of the shaft (L) and made to press against the bar (U) and bear its rear end outward—the inward movement of the cutting plate being governed by a pin Y, near the frontward end of the bar—and its inner end being held in its proper position by two staples (s, s,) during its movement. The cam shafts (G) (L) for actuating the



header I, are geared by toothed wheels (*c, c*) one of which being provided with a spring dog (*d*) which passes over the teeth of the same, during its rotation, and prevents it  
5 turning back during the action of the cam shafts.

Operation: The header I being in the position seen in Fig. 4 and the dies *c c'* opened;—the rod of iron (previously heated  
10 to a red heat) is fed between the same, and the inside of the right-angled end of the steel cutting plate T beneath the end of the header—the main cam shaft G is then rotated, and the piece of iron clamped be-  
15 tween the dies *c, c'*, by the action of the cam (F). At this moment the cam (N) on the shaft (L) is made to act upon the header and bear it downward and with it, bend the  
20 the cam (K) on the cam shaft (G) is made to act against the end of the header I, and force it frontward and with it, the bent end of the piece of iron against the end of the  
movable die and thus forms the hook head  
25 see Fig. 3. The cam (W) on the wheel (R) is then made to act on the end of the bar (V) and press it inward, and force its frontward end with the cutting plate T, outward, and thus separate the piece of iron  
30 to form the spike from the rod—there being a recess in the stationary die to receive the end of the rod and rightangled portion of the cutting plate—so as not to interfere with the movement of the pointing die after the  
35 separation. During this operation the end of the lever (Q) is drawn down by its con-

vexion with the cam wheel R and the steel pointing die, is made to move frontward in the arc of a circle and pass over the end of the spike and reduce it to a point and thus  
40 complete its formation—the pointing being effected from the upper side of the piece of iron and simply by the passage of the rounded end of the steel die over the same.  
45 The movable die C' then opens and the header rises and recedes, and the cutting plate T, is made to move inward and the rod of iron is again fed between the dies—when the same operation is repeated, and  
50 so on the spikes being made in succession, and delivered from the dies through the opening, Z.

Having thus described my improvements on the machine for making hook headed spikes, what I claim as new and of my own  
55 invention and desire to secure by Letters Patent, is,—

The employment of a header, made to have a descending and afterward a horizontal frontward movement for the purpose  
60 of first bending the end of the piece of iron downward and then forcing it horizontally against the end of the die C' and thus form a hook head as described and represented.

In testimony whereof I have hereunto  
65 signed my name before two subscribing witnesses.

MOORE HARDAWAY.

Witnesses:

WM. W. TICE,

H. R. BALDWIN.