

## Improvement in Tool Heads for Planing Machines.

No. 119,395.

Patented Sep. 26, 1871.

Fig. 1.

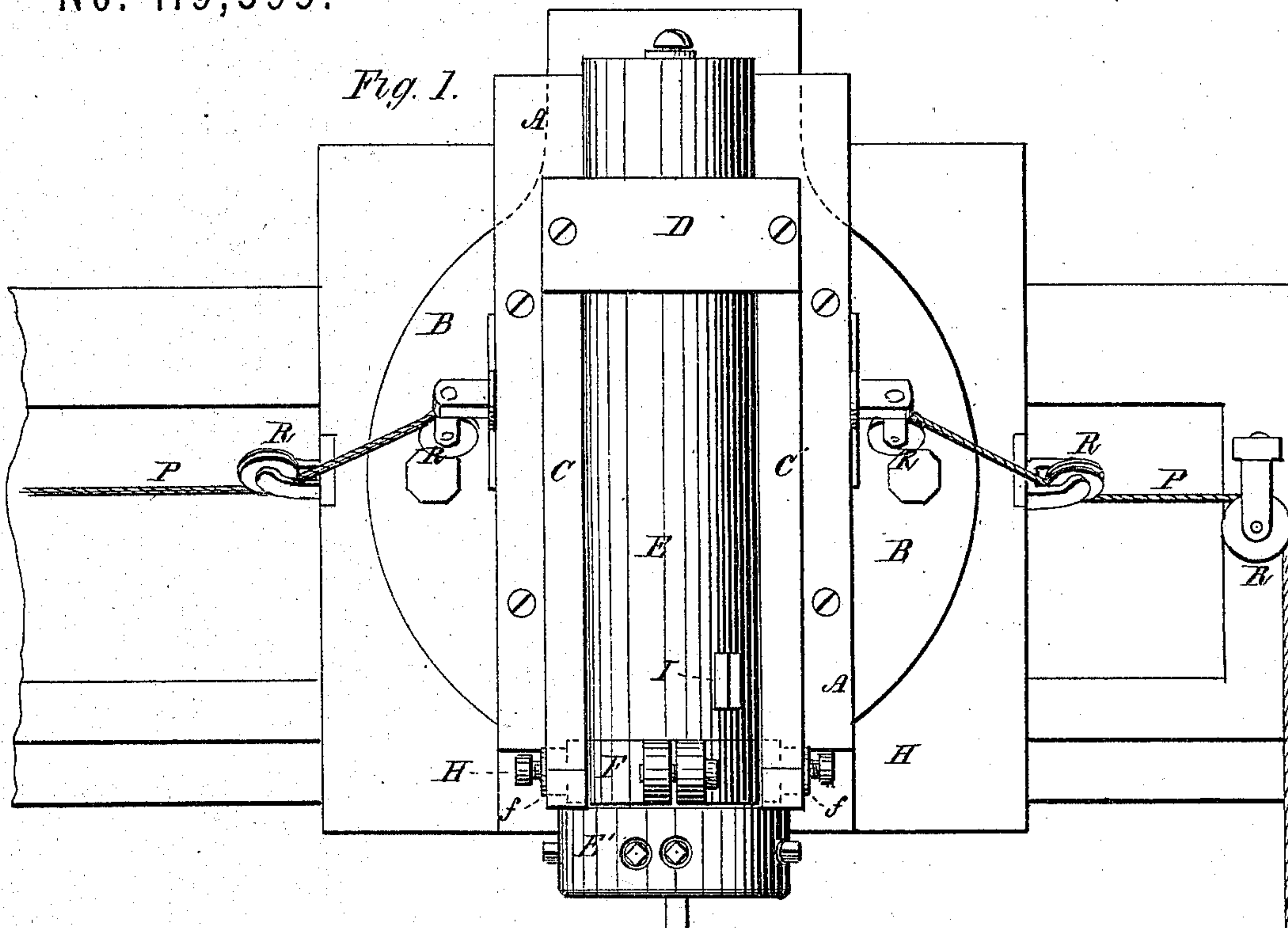
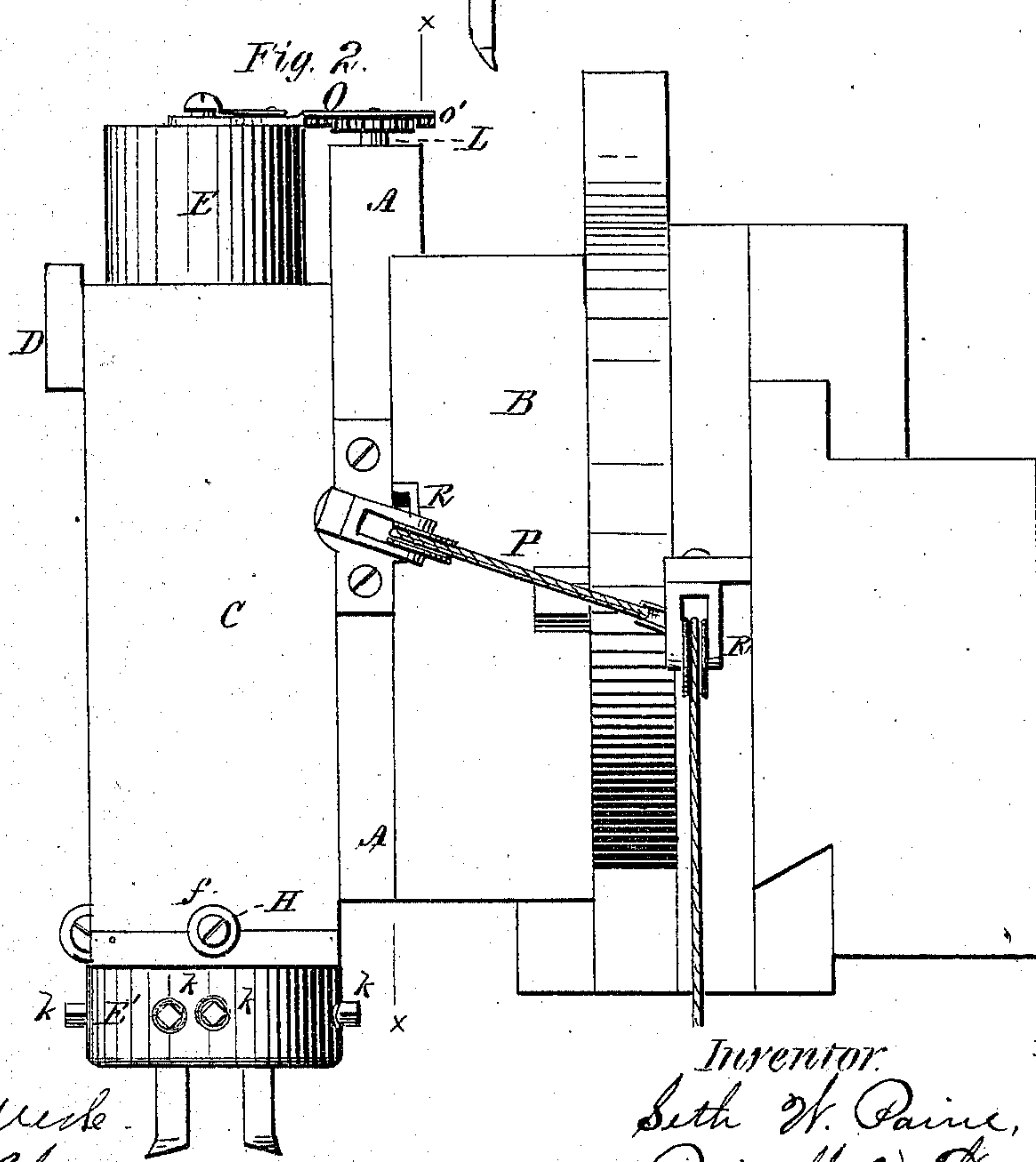


Fig. 2.



Witnesses.

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Inventor.

*Seth W. Paine, by*  
*Orindle and Gyer, his*  
*Attys.*



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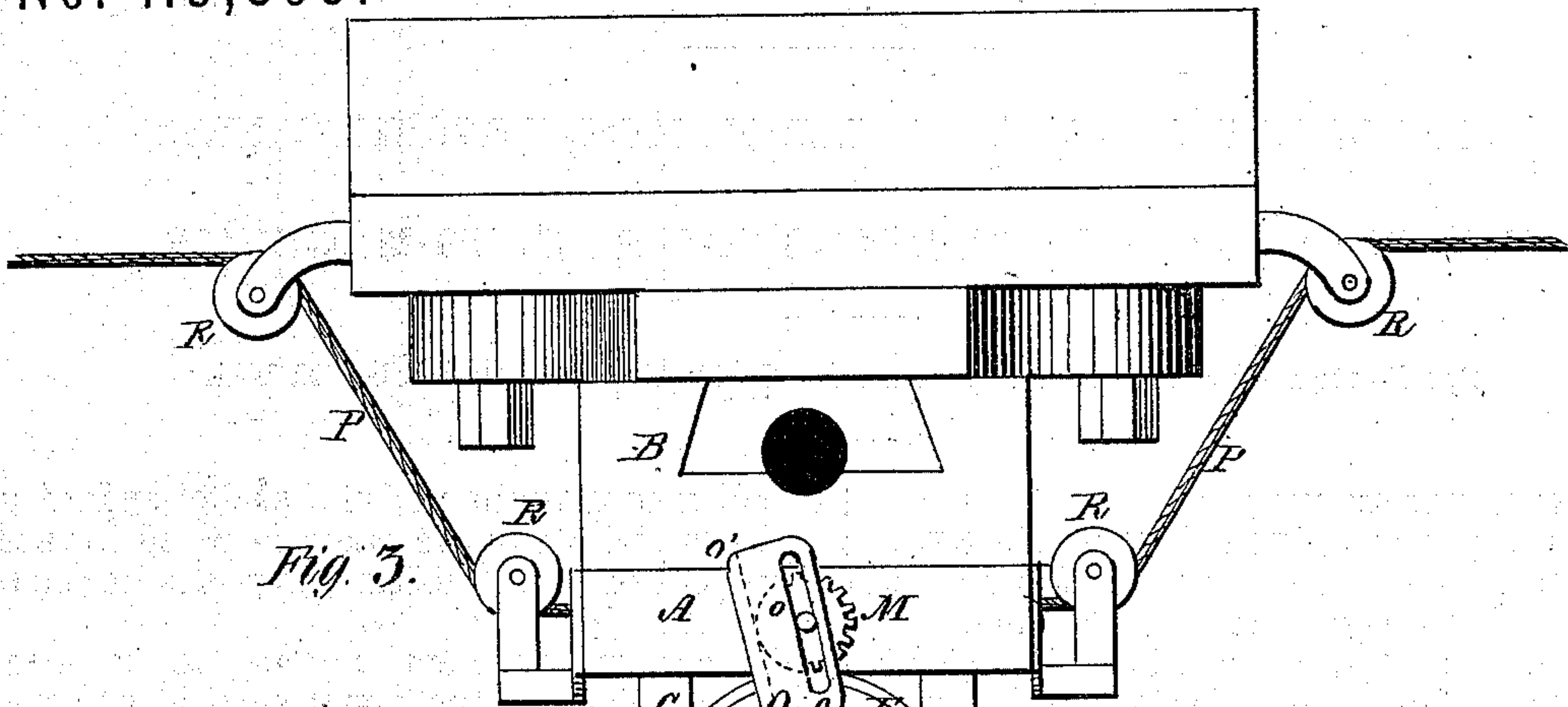


Fig. 3.

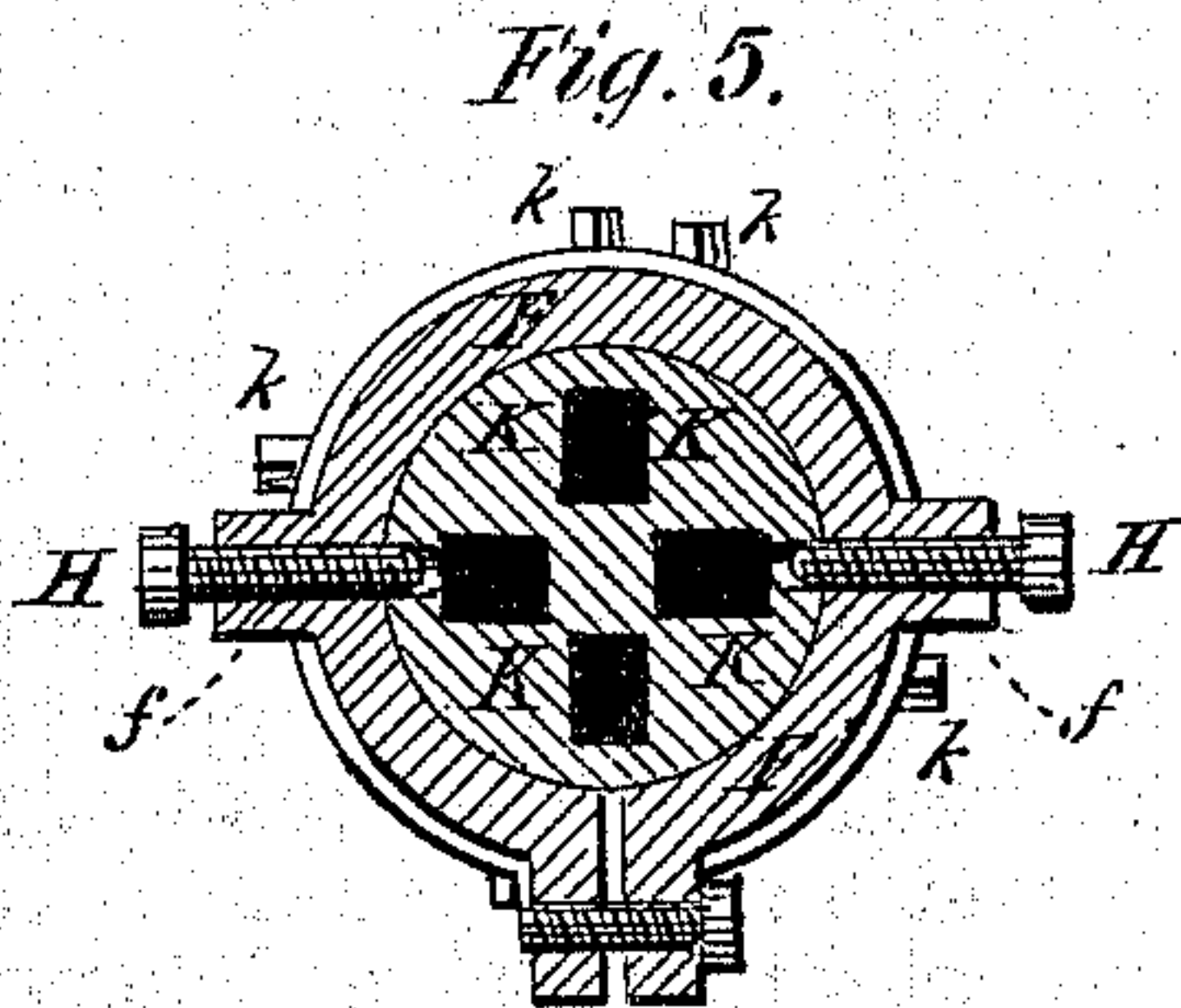


Fig. 5.

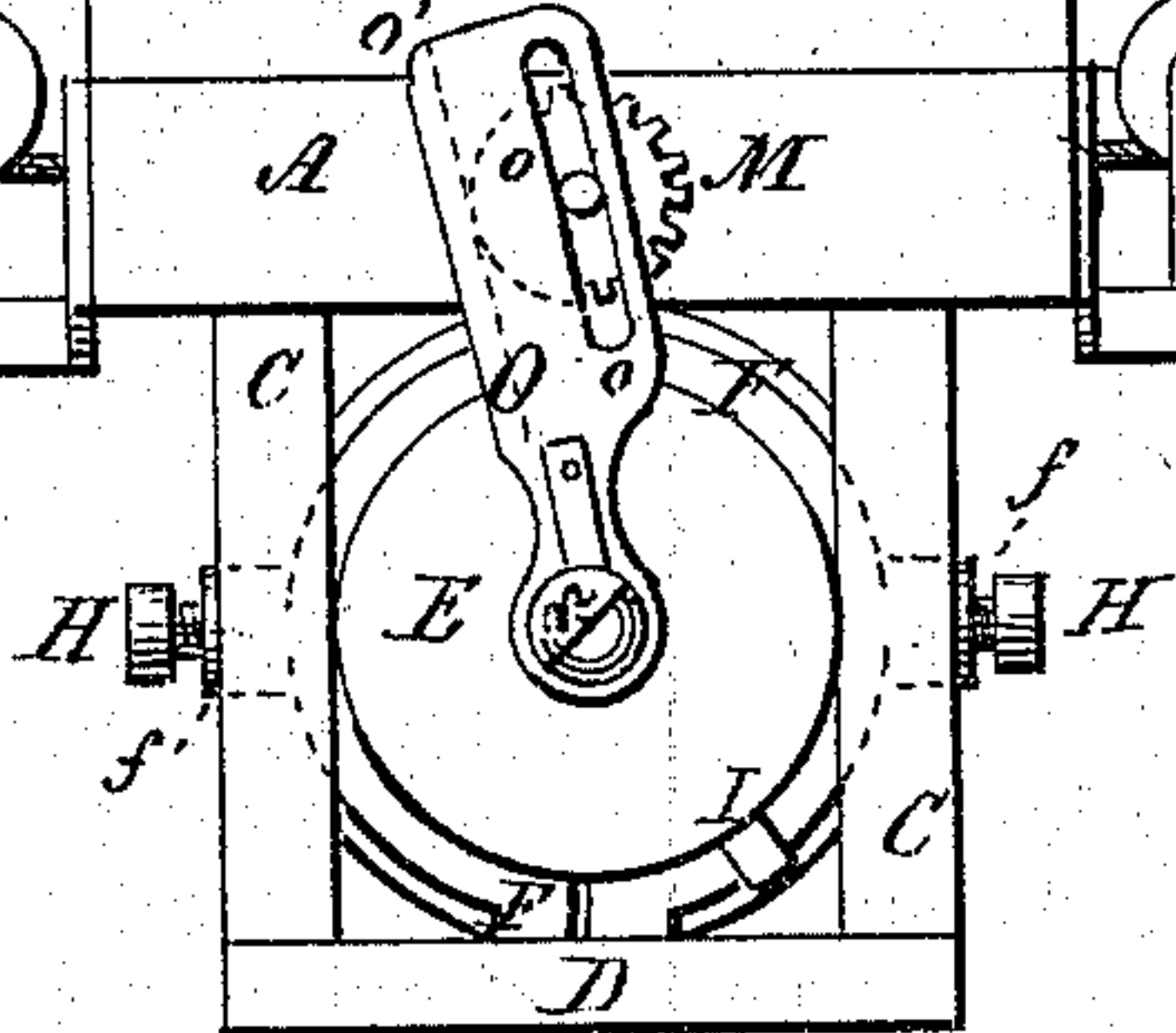


Fig. 4.

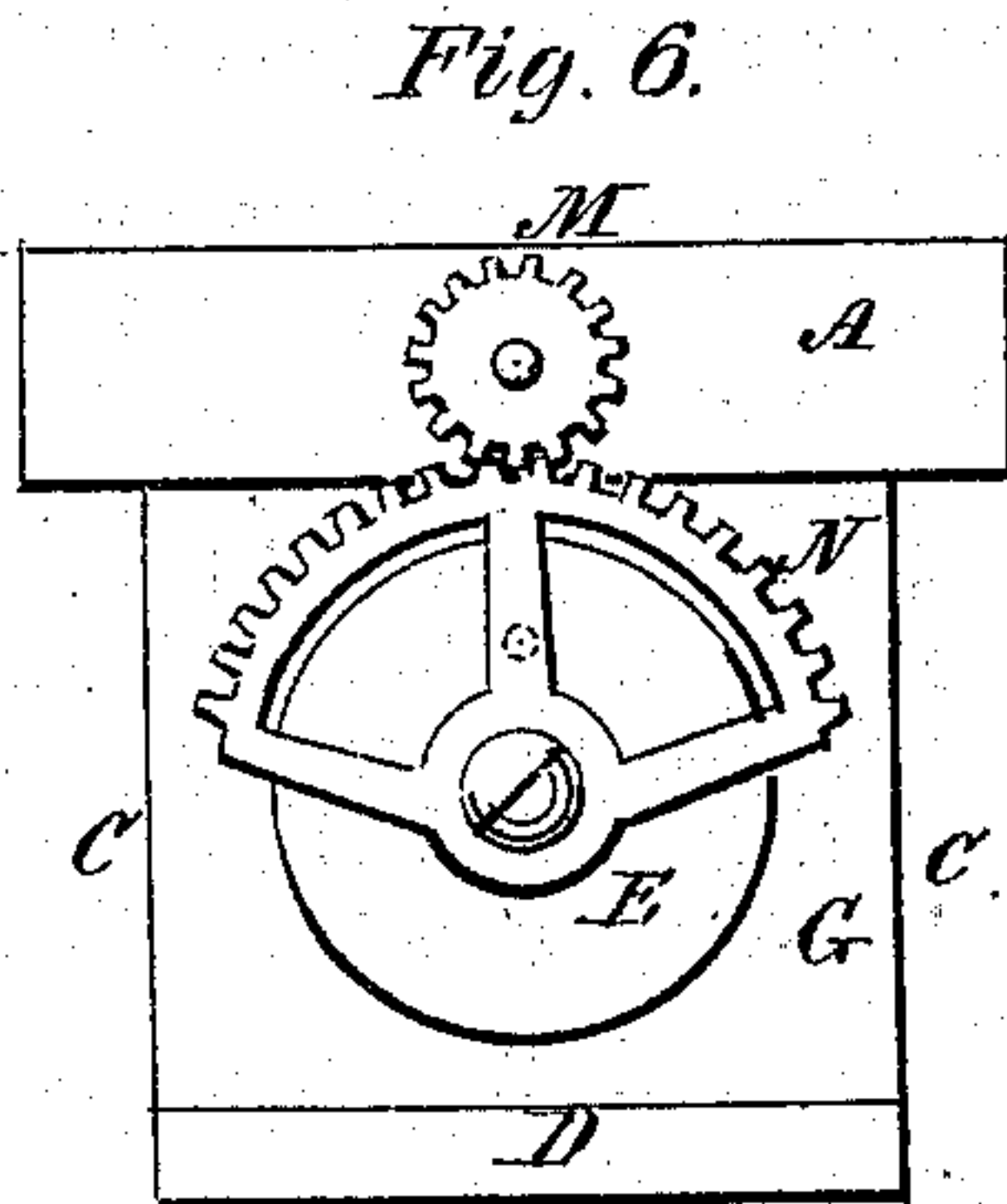
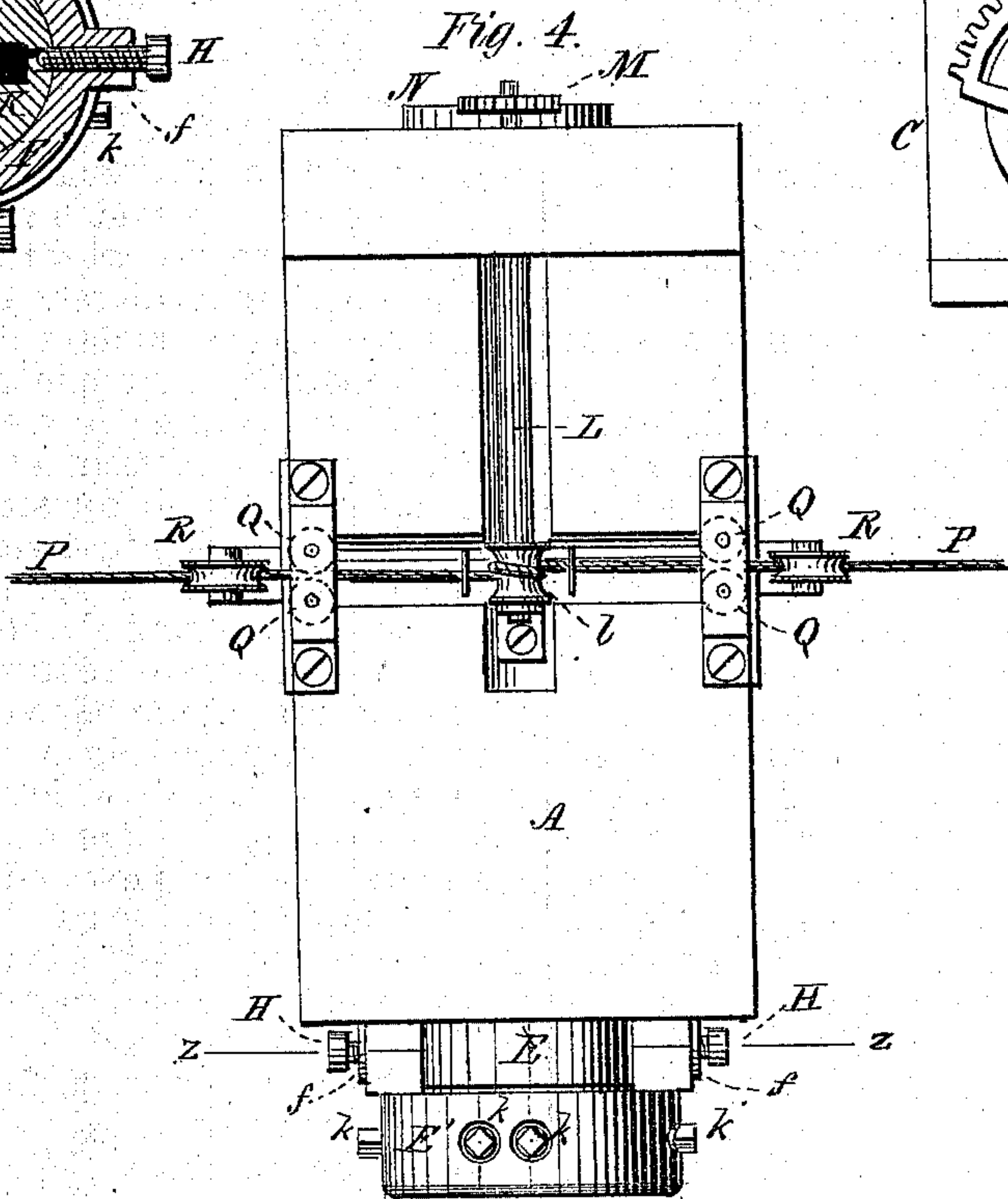


Fig. 6.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN TOOL-HEADS FOR PLANING-MACHINES.

Specification forming part of Letters Patent No. 119,395, dated September 26, 1871.

*To all whom it may concern:*

Be it known that I, SETH WHITE PAINE, of Williamsport, in the county of Lycoming and in the State of Pennsylvania, have invented certain new and useful Improvements in Tool-Heads for Planers; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a front elevation of my improved device. Fig. 2 is an end elevation of the same. Fig. 3 is a plan view of said device. Fig. 4 is a rear elevation of the tool-post holder, and a plan view of the lower end of the tool-post on the line *xx* of Fig. 2. Fig. 5 is a horizontal section of said tool-post and its supporting-ring on the line *zz* of Fig. 4, and Fig. 6 is a plan view of the upper end of the same with the reverse gear-  
ing attached.

Letters of like name and kind refer to like parts in each of the figures.

My invention is an improvement in a class of tool-heads for metal-planers, which is designed for operating in either direction upon the work as it is moved back and forth beneath the cutting-tool; and it consists, principally, in the combination of the tool-post, when journaled, with the devices employed for giving to the same a horizontally semi-rotary movement, substantially as and for the purpose hereinafter specified. It consists, further, in the combination of said tool-post, when pivoted, with the means employed for giving to the same an oscillating movement in a vertical plane, substantially as and for the purpose hereinafter shown. It consists, further, in the combination of the journaled tool-post and the devices employed for giving to the same a semi-rotary movement in a horizontal plane with the swiveled pulleys, rollers, and operating-cord used for connecting said devices with the actuating mechanism of the planer, substantially as and for the purpose hereinafter set forth. It consists, further, in the combination of the pivoted tool-post and the devices employed for giving to the same an oscillating movement in a vertical plane with the swiveled pulleys, rollers, and operating-cord used for connecting said devices with the actuating mechanism of the planer, substantially as and for the purpose hereinafter shown and described. It consists, finally, in the

peculiar construction of the socket-end of said tool-post, whereby the same is fitted to receive a number of tools, substantially as is hereinafter set forth.

In my improvement a plate, A, is secured upon the front of the usual vertically-and-radially-adjustable head B, and in turn is provided upon its front side with two vertical flanges, C, which extend horizontally outward, and are connected together by means of a cross-bar, D, secured across their front edges at their upper ends, the whole forming a housing for the reception of the tool-post E. The tool-post E is composed of a cylindrical body, corresponding in diameter to and fitting within the space between the flanges C, and is provided upon its lower end with a head, E', which has a considerably greater diameter than said body, and at its upper side forms a right-angled shoulder that bears against the lower ends of said flanges. Within a corresponding groove cut within the periphery of the tool-post immediately above the head E' is fitted a sectional metal ring, F, provided upon opposite sides with trunnions *f*, which fit into corresponding bearings formed within the flanges C, and, while furnishing a support for said ring and tool-post, permit the same to have a certain degree of oscillation in a vertical plane and in a line with the bed of the planer. Being journaled within the ring F, the tool-post E is capable of a horizontally-rotary movement for purposes hereinafter explained, and when thus operated is sustained in a vertical position by means of a plate, G, which fits into the space between the upper edge of the cross-bar D and the plate A, and is provided with a central opening that corresponds to and receives the upper end of said tool-post. When it is desired to use the oscillating movement of the tool-post the plate G is removed and the rotary motion of said post suspended by means of two set-screws, H, which, passing inward through the trunnions *f*, have, when in place, their inner ends resting within corresponding sockets formed within the periphery of said post. A lug, I, secured upon the body of the tool-post, and striking against the flanges C as the latter is turned in opposite directions, limits the motion of the same to a little more than one-fourth of a revolution. Extending vertically upward from and within the lower end of the tool-post E are four rectangu-



lar openings, K, which are arranged radially and at equidistant points from each other, and are each provided with two set-screws, *k*, which pass horizontally inward through the head E' at a right angle with each other, the whole being so constructed as to permit the usual planer-tools to be inserted and confined within said tool-post. In order to enable the desired movements to be given automatically to the tool-post a shaft, L, is journaled in a vertical position within a suitable groove cut in the rear face of the plate A, and is provided near its lower end with a cord-pulley, *l*, and at its upper end with a pinion, M. A toothed-segment, N, secured upon the upper end of the tool-post and meshing with the pinion M, receives and communicates to said post motion from said pinion and the shaft L when it is desired to cause said tool-post to revolve horizontally; but when an oscillating motion of the latter is required said segment is removed, and in its place is substituted a plate, O, provided with a slot, *o*, for receiving the upper end of the shaft L, an end opening for receiving the pivoted screw *n*, and having a toothed rack, *o'*, secured upon its lower side, which rack meshes with the pinion M. As thus arranged, a rotary motion imparted to the shaft L will cause a longitudinal motion of the plate O, which motion will be limited by the length of the slot *o*, and will change the position of the upper end of the tool-post toward or from said shaft. A cord, P, passing once around the pulley *l*, and from thence extending outward in either direction between grooved rollers Q and over swiveled pulleys R, and having its ends connected with suitable reversing mechanism so as to give the necessary movement to the shaft L, and through it and the mechanism described to the tool-post, completes the device, the operation of which is as follows:

When a horizontal surface is to be planed the tool-post is adjusted so as to have an oscillating motion, and suitable cutting-tools placed within the two opposite openings that stand in a line with the bed, said tools being so adjusted as that their cutting-points face in opposite directions and are in substantially the same line horizontally when the post occupies a vertical position. The reversing mechanism being so arranged as to alternately tilt downward one of the tools against the motion of the bed, and raise it when said motion is reversed, one of said tools will always be in the required position and cutting, while the opposite tool will be elevated so much above the work as to remove it from all liability to injury, the positions of said tools being reversed as often as the direction of the bed is changed. When used for planing a vertical surface the tool-post is arranged so as to revolve, and the tools placed in contiguous openings, so that when

said tool-post is turned rearward toward the surface to be cut the front tool shall be in cutting position, and when turned forward in a like direction the rear tool shall be ready for operation. If, now, the machine be set in operation, it will be seen that each tool will be alternately turned to cutting positions as the work moves toward it, and turned from said work as the work moves in an opposite direction or away from said tool, so that while the operation of cutting is continually going on the tools, when not in use, are so far removed from the work as to prevent injury to their cutting edges.

By this construction a planer can be made to perform nearly, if not quite, double the amount of work that can be had from those commonly used, and, while thus advantageous, the additional expense involved is but slight.

Having fully set forth the nature and merits of my invention, what I claim as new is—

1. The combination of the tool-post E journaled within the head, the shaft L, the pinion M, and the toothed segment N, substantially as and for the purpose specified.

2. The tool-post E, pivoted within the head so as to be capable of an oscillating movement in a vertical plane having a line corresponding with the movement of the planer-bed, in combination with said head, the shaft L, the pinion M, and the slotted plate O provided with the toothed rack *o'*, substantially as and for the purpose shown.

3. The means employed for giving to the tool-post E an oscillating movement vertically, consisting of the trunnioned pivoted ring, F, the shaft L, the pinion M, the plate O provided with the slot *o* and toothed rack *o'*, the pulleys *l* and R, the rollers Q, and the cord P, in combination with each other and with said tool-post, substantially as shown and described.

4. The means employed for giving to the journaled tool-post E a semi-rotary movement horizontally, consisting of the shaft L, the pinion M, the toothed segment N, the swiveled pulleys *l* and R, the rollers Q, and the cord P, in combination with each other and with said tool-post, substantially as shown and described.

5. The tool-post E provided with the head E', having within its lower face the openings K and within its sides the set-screws *k*, when the same are constructed and relatively arranged substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of August, 1871.

SETH WHITE PAINE.

Witnesses:

HENRY W. WATSON,  
E. T. TREMAINE.

(66)