

No. 609,301.

Patented Aug. 16, 1898.

J. W. SCULL.
TOOL SHARPENING DEVICE.

(Application filed Apr. 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig 1

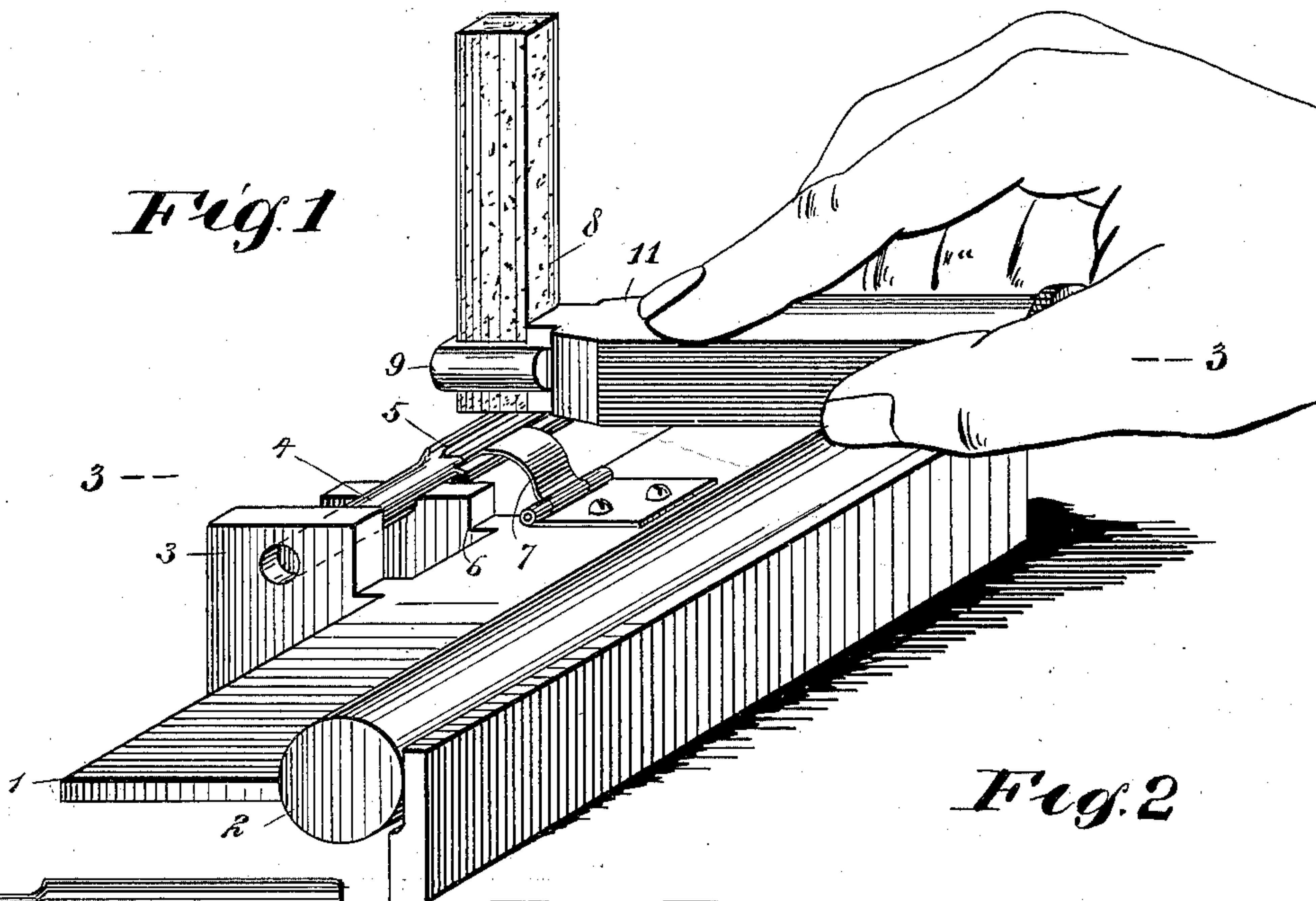


Fig. 2

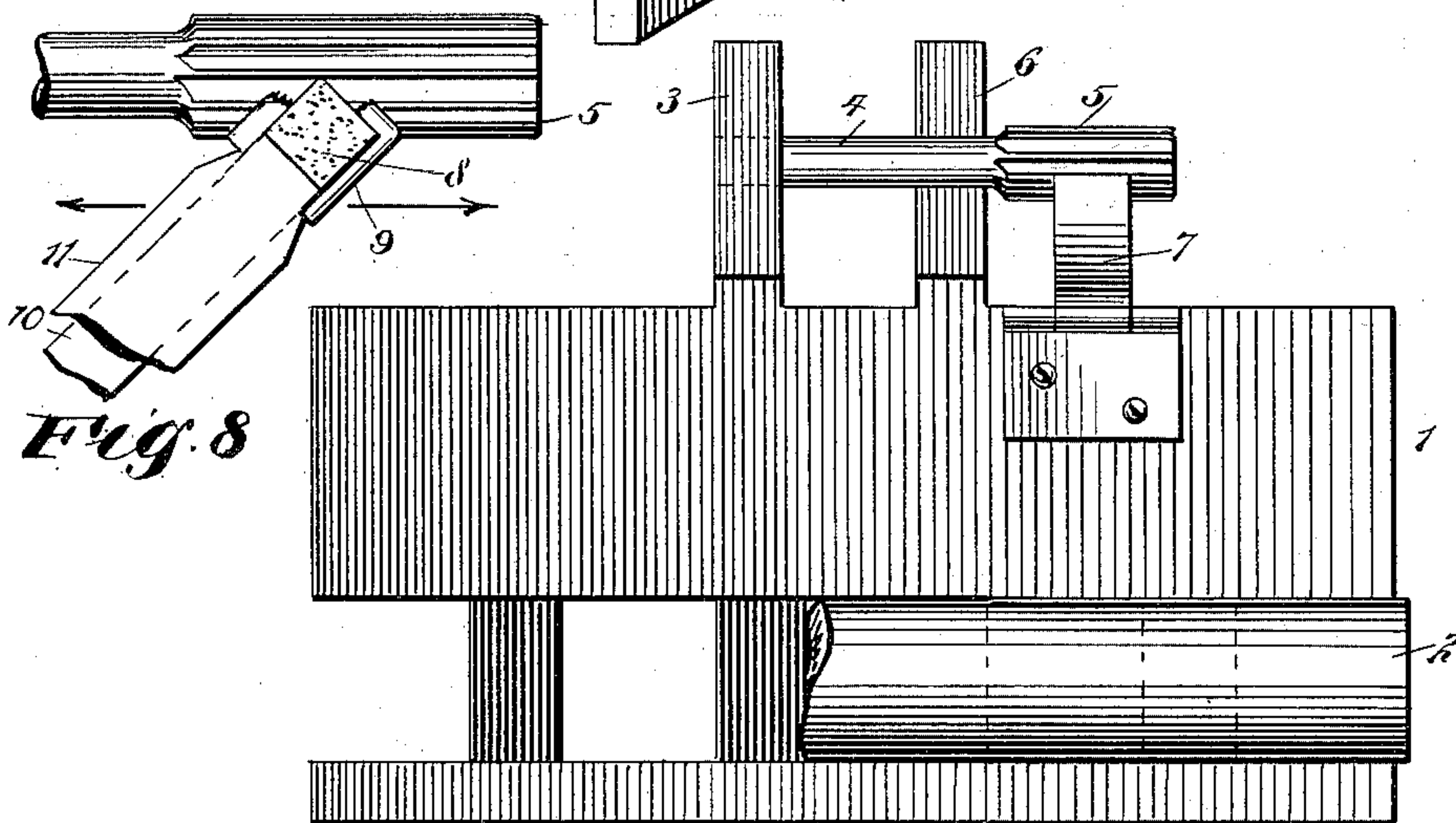
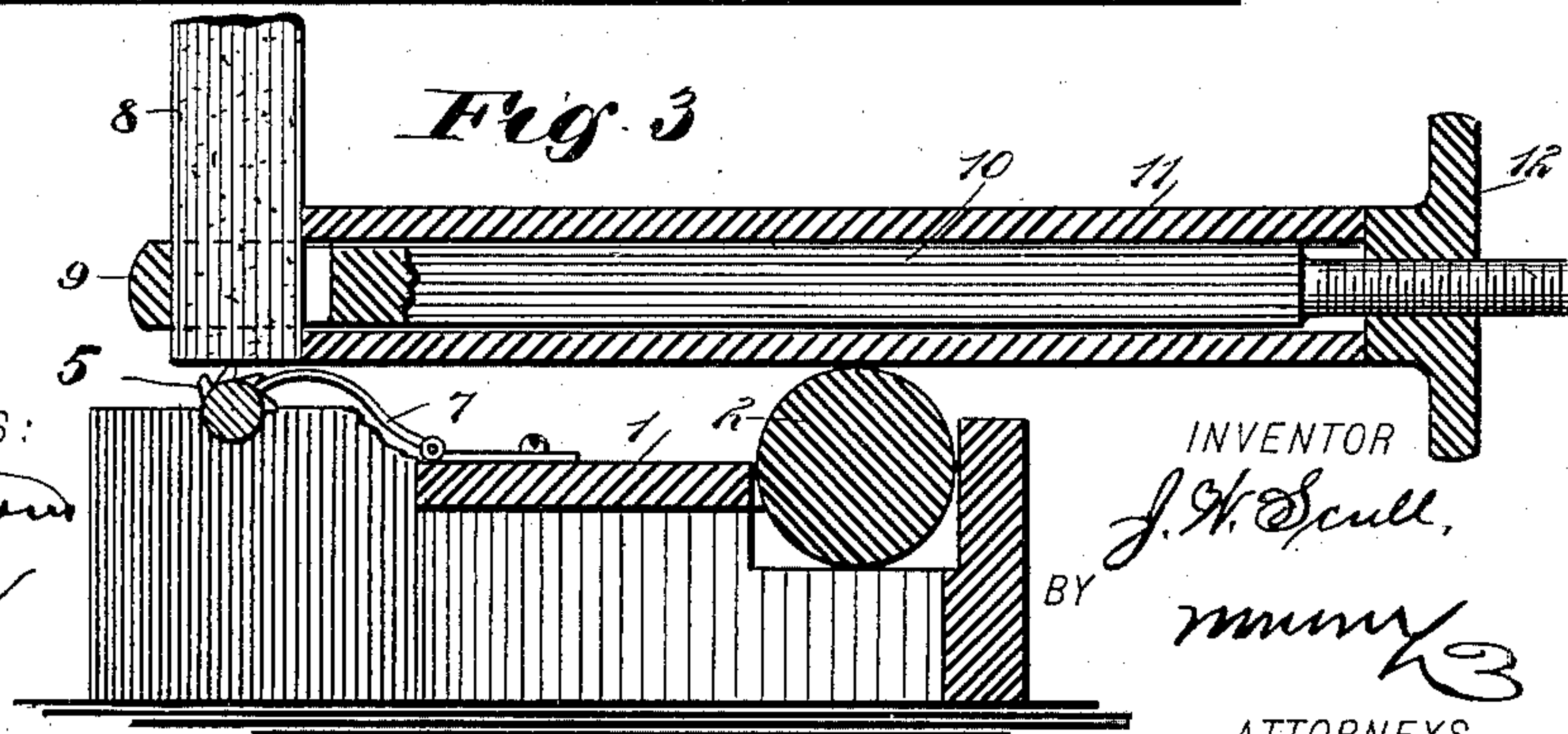


Fig. 8

Fig. 3



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Fig. 4

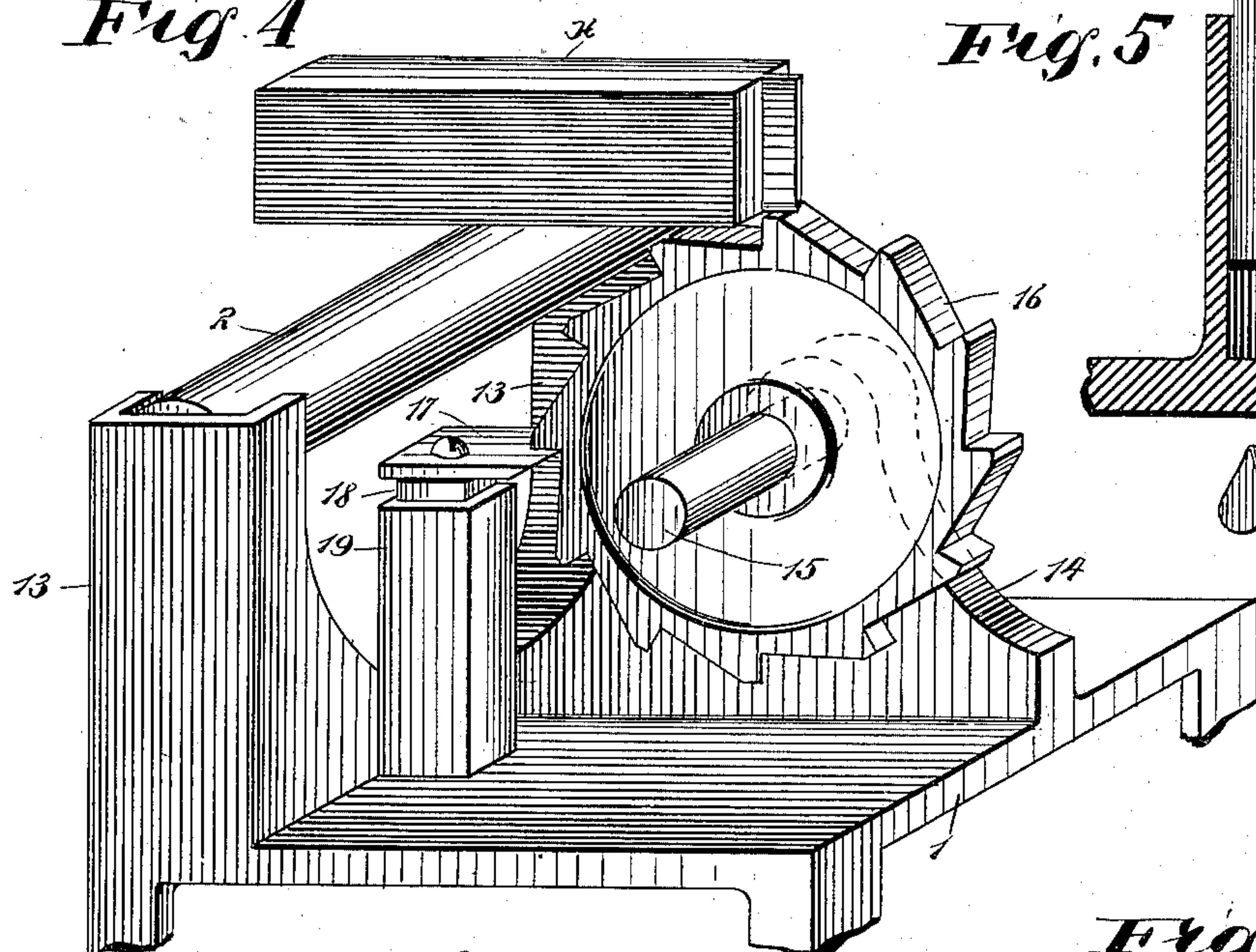


Fig. 5

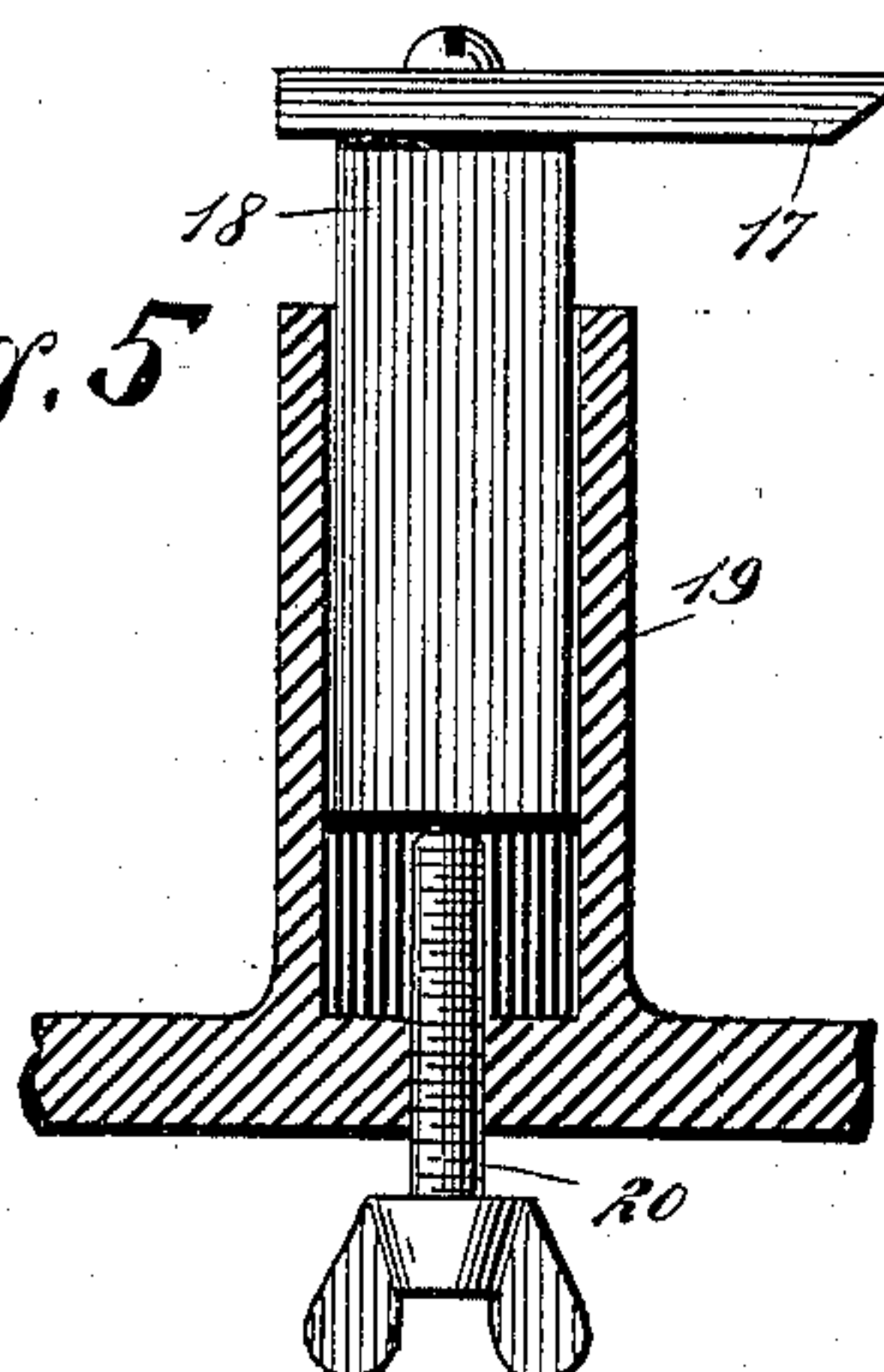


Fig. 6

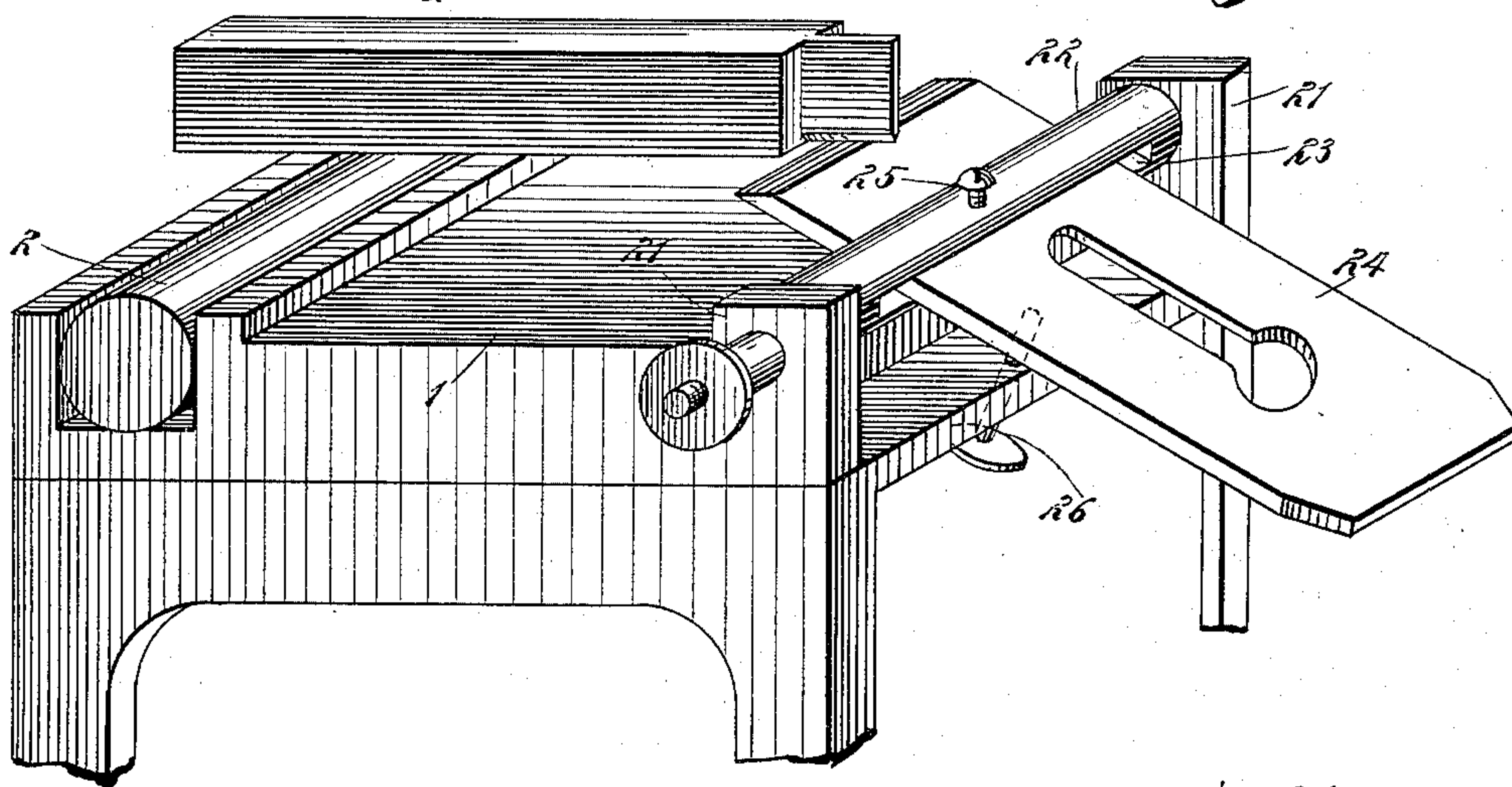
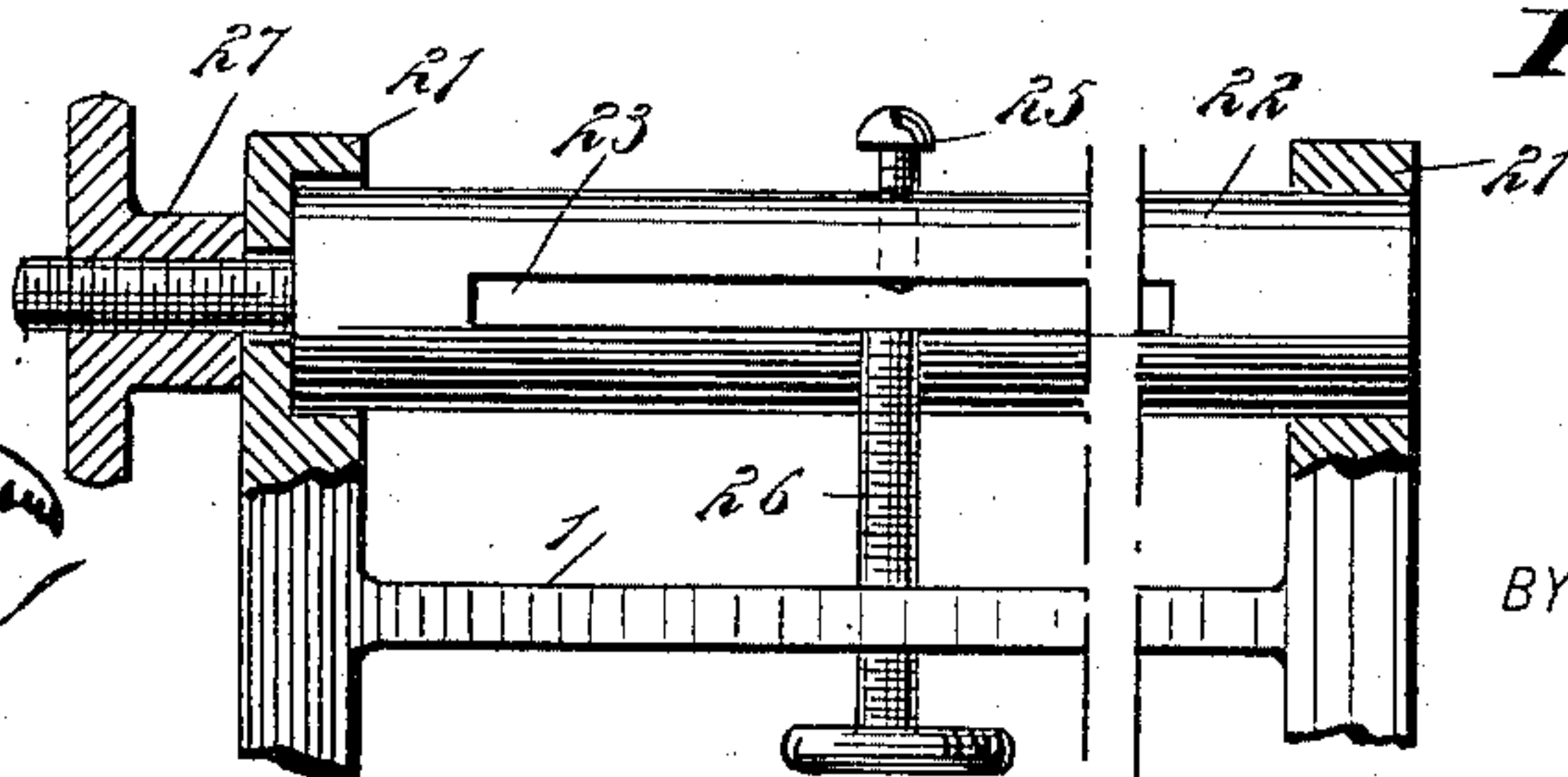


Fig. 7



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JAMES WILLIAM SCULL, OF ELIZABETH, NEW JERSEY.

TOOL-SHARPENING DEVICE.

SPECIFICATION forming part of Letters Patent No. 609,301, dated August 16, 1898.

Application filed April 12, 1898. Serial No. 677,345. (No model.)

To all whom it may concern:

Be it known that I, JAMES WILLIAM SCULL, of Elizabeth, in the county of Union and State of New Jersey, have invented a new and Improved Tool-Sharpening Device, of which the following is a full, clear, and exact description.

This invention relates to devices for sharpening tools, particularly milling tools or cutters.

By the ordinary method of sharpening a milling-tool—that is, by drawing a hone back and forth along its cutting edge—the edge is made irregular, and consequently the surface operated on by the tool is left rough.

The object of my invention is to provide a simple device for sharpening the tool and by means of which a perfectly even edge will be left on the tool, so that the surface of the work operated upon will be even and smooth, which is obviously desirable for the surface of cams or the like used in light-running machinery.

I will describe a tool-sharpening device embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of a tool-sharpening device embodying my invention. Fig. 2 is a plan view of a portion thereof. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is a perspective view showing a modification. Fig. 5 is a detail section of a tool-stop employed with the construction shown in Fig. 4. Fig. 6 is a perspective view showing another modification. Fig. 7 is an end elevation thereof, partly in section; and Fig. 8 is a plan view showing the preferable manner of operating the hone over the tool.

Referring first to Figs. 1, 2, and 3, 1 designates a bed-plate, at one side of which is a rest for a hone-carrying clamp, to be hereinafter described. This rest consists of a cylinder 2, of hard metal—such, for instance, as steel—and seated in a recess formed in the base-plate. The object in making the rest cylindrical is so that as the surface becomes worn by the movement of the hone-carrying

clamp over the same the rest may be slightly rotated to present a new surface, as it is particularly necessary that the top plane of this rest should be on the same horizontal plane as the tooth of a cutter being operated upon by the hone.

At the side of the base-plate opposite the rest 2 is a support for the tool to be sharpened. As here shown, this support consists of a block 3, having a hole to receive the shank 4 of a milling-tool 5, and another block 6 is provided in its upper edge with a notch to receive a portion of said shank, as plainly indicated in the drawings.

To prevent the milling-tool from rotating in the direction of the rest 2 while a cutting edge is being sharpened, I employ a stop, which in this example consists of a latch 7, pivoted to the bed-plate 1 and adapted to be moved into engagement with a tooth of the cutter.

The sharpening instrument consists of a hone 8, which has its opposite ends trued up and made at a direct right angle to the length of the hone. This truing up may be done by holding the end of the hone against an emery or similar grinding disk. Of course while such truing up takes place the body of the hone must be held on a bed or support perfectly level and directly at right angles to the surface of the grinding device. The object in truing up both ends of the hone is to prolong its usefulness before it becomes necessary to regrind it, and it may be here stated that in running the hone along the tooth of a cutter one corner of an end will first be used, as plainly indicated in Fig. 8. When this corner becomes worn or rounded, the hone may be turned around and another corner used, and this may be continued until the four corners have become uneven or useless. Then the hone may be reversed end for end and the corners of said reversed end employed, as before stated.

The hone is held in a clamp consisting of a yoke 9, having a shank portion 10 extended longitudinally through a handpiece or tube 11, which is rectangular in cross-section, as is also the shank 10. The outer end of the shank 10 is screw-threaded, and a thumb-nut 12 engages with this screw-threaded portion. Obviously

by operating the thumb-nut 12 the hone may be firmly clamped in the yoke and against the end of the handpiece.

It is necessary in my method of sharpening tools that the lower end of the hone be in a direct plane with the lower surface of the handpiece. Therefore in setting the hone it is well to place it flat upon a table or the like, then insert the hone, and adjust the clamp.

In the operation of this device the tool is placed in position, as indicated in Fig. 1, and then the hone, with its handpiece resting upon the rest 2, is moved backward and forward on the flat surface of the cutter-tooth. Then from time to time a leveling-tool is to be rested upon the rest 2 and slid along the flat surface of the tooth to thus ascertain when said surface is on a level with the rest 2. The hone may be moved back and forth with the right hand, while the left hand of the operator holds the shank of the tool being operated upon. After sharpening the cutting edge the stop 7 is to be lifted or turned back to allow the tool to be rotated one step for operation upon the next cutting edge.

The device shown in Fig. 4 is adapted for sharpening channel milling-tools or the like. This device consists of a base 1, at one side of which are standards 13, in which a cylindrical rest 2 is rotatively mounted. From a riser 14 on the bed 1 extends a mandrel 15, upon which the tool 16 to be sharpened is placed. The stop for the tool in this instance consists of a dog 17, adapted to engage with one of the cutting-teeth of the tool. This dog has a shank 18 extended downward through a box 19 on the base 1, and an adjusting-screw 20 passes through a tapped hole in the base and engages with the shank 18. Obviously by moving the shank upward or downward the cutting-tool may be adjusted to bring one of its cutting edges to be sharpened on a direct horizontal plane with the highest point of the rest 2. It may be ascertained when these parts are on the same plane by means of a leveling device x , having a knife-edge to engage on the cutter-tooth. The operation of sharpening a tool in this instance by means of the hone is the same as before described. After sharpening one tooth or cutting edge the tool is to be moved outward on the mandrel, then rotated one step, and moved back into engagement with the dog, so that the next tooth may be operated upon.

In Fig. 6 I have shown the device as arranged for sharpening chisels, plane-irons, or the like. This example consists of a base 1, having a rotatively-mounted rest 2 at one

side similar to the rests before described, and mounted to rock in uprights 21 is a tool-holder 22. This tool-holder has a slot 23, through which the tool 24 is designed to be inserted and held by a set-screw 25. By rocking the holder 22 the flat surface rearward of the cutting edge of the tool may be brought on a horizontal plane with the top surface of the rest 2, the leveling instrument x being employed to ascertain when the tool is in proper adjustment. A stop, here shown in the form of a screw 26 extended through a tappet-hole in the base 1, engages against the under side of the tool and may be used for making the fine adjustments of the tool. After adjustment the limit-screw 27 on an outwardly-extended threaded portion of the holder 22 is to be turned to clamp said holder rigidly in place. The operation of sharpening a tool by means of a hone is substantially the same in this case as in the former examples. Obviously in using a hone a suitable oil must be employed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A tool-sharpening device comprising a support for a tool and a rest for a hone-holder consisting of a rotatively-mounted part, the upper surface of which is on a horizontal plane with the edge of the tool operated upon by the hone, substantially as specified.

2. A tool-sharpening device, comprising a base, a tool-holder on said base, a movable stop on the base for holding the tool from rotation, and a rotatively-adjustable rest on the base, substantially as specified.

3. A hone-holder, comprising a tubular handpiece, a yoke for receiving the hone and having a shank extended through the tubular handpiece, and a nut engaging the threaded portion of said stem, substantially as specified.

4. A tool-sharpening device, comprising a bed-plate, a cylindrical rest seated in a depression at one side of said bed-plate, an upright at the opposite side of said bed-plate having a hole to receive the shank of a tool, another upright near the first upright and having a depression to receive the shank of a tool, a stop for the tool mounted on the bed-plate, and a hone-clamp for holding a hone along the cutting edge of a tool, substantially as specified.

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Witnesses:

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