

(No Model.)

2 Sheets—Sheet 1.

F. M. KING.

# MACHINE FOR SHARPENING SAWS.

No. 437,929.

Patented Oct. 7, 1890.

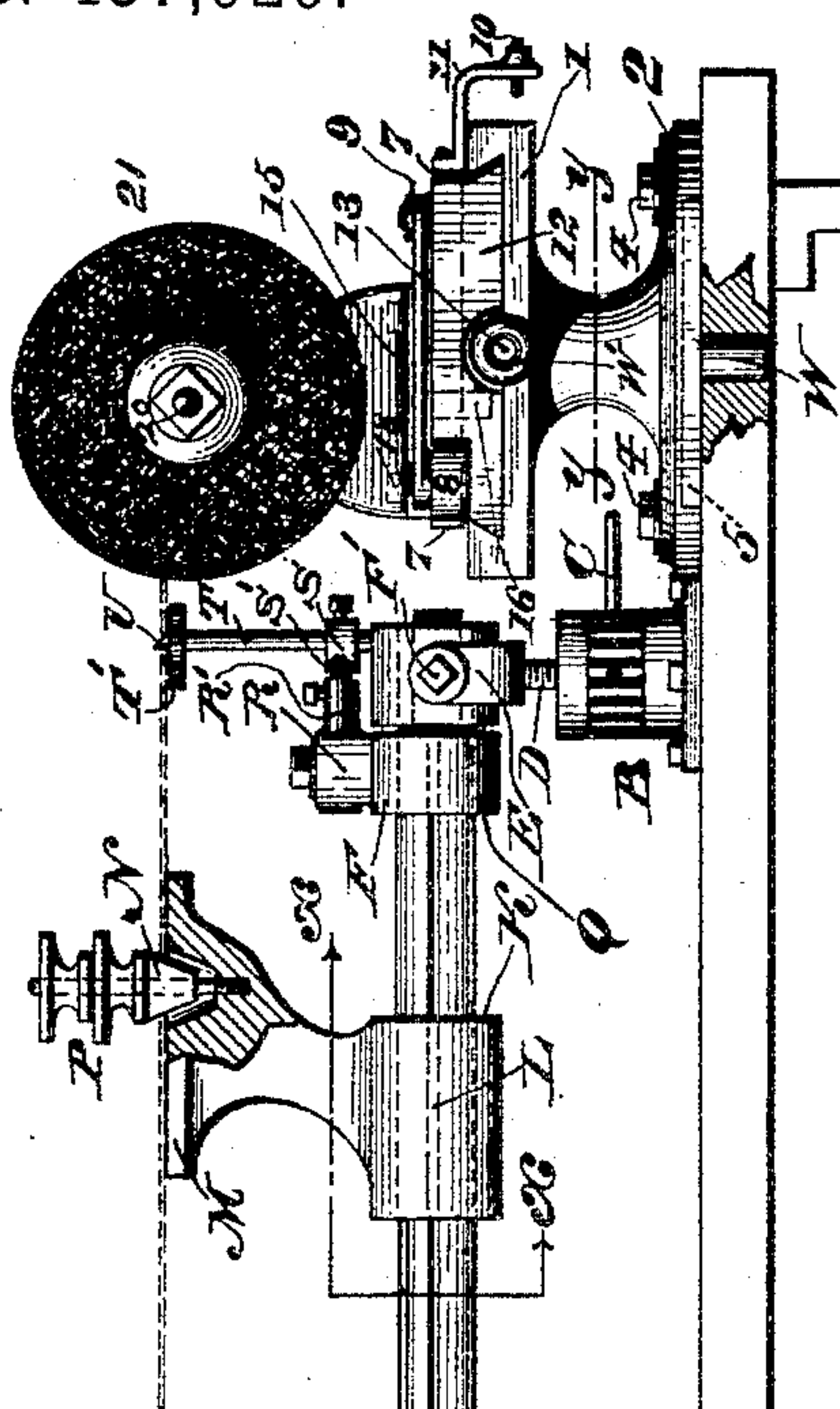


fig.

WITNESSES :

L. Nowille,  
C. F. Sagle.

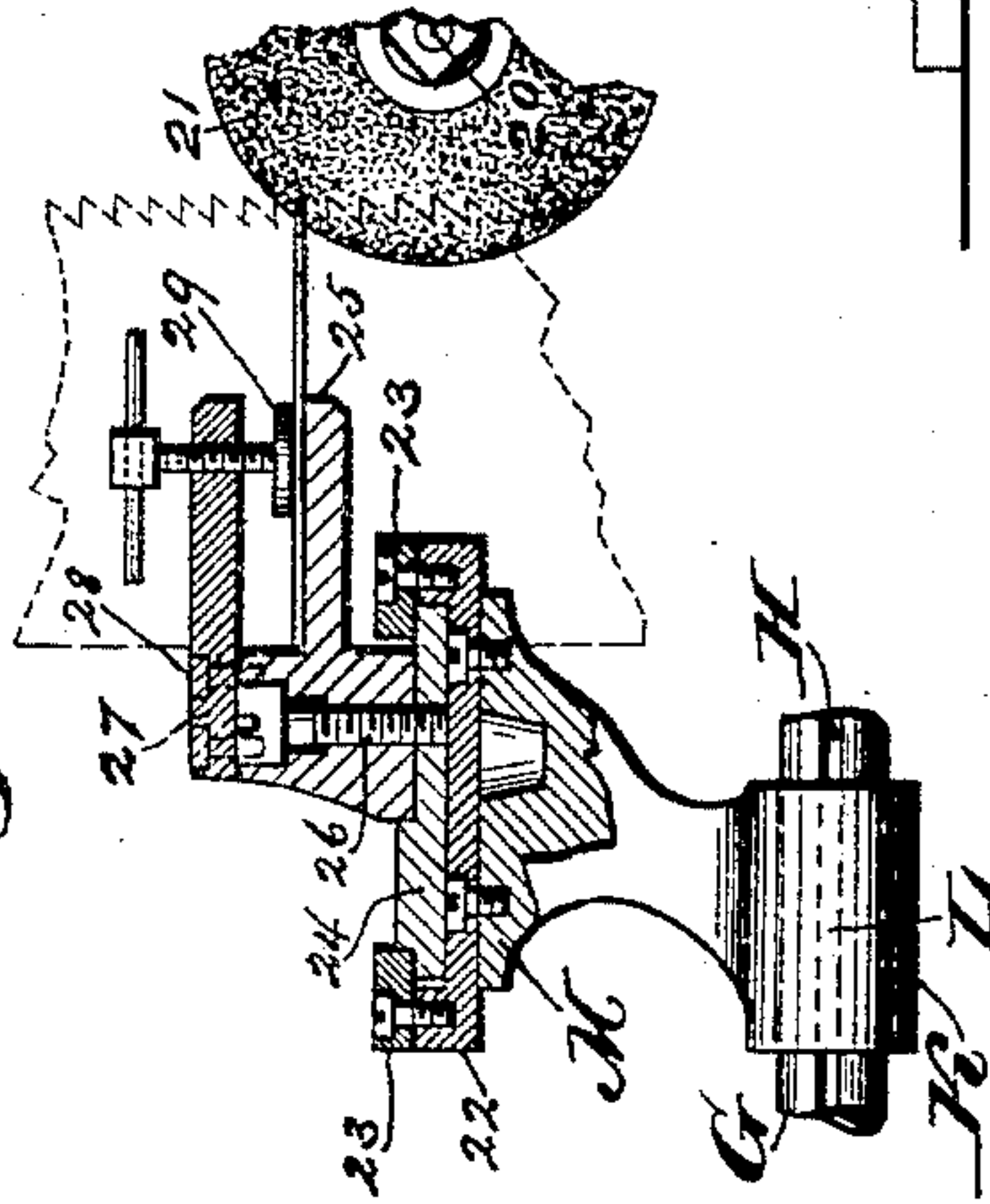
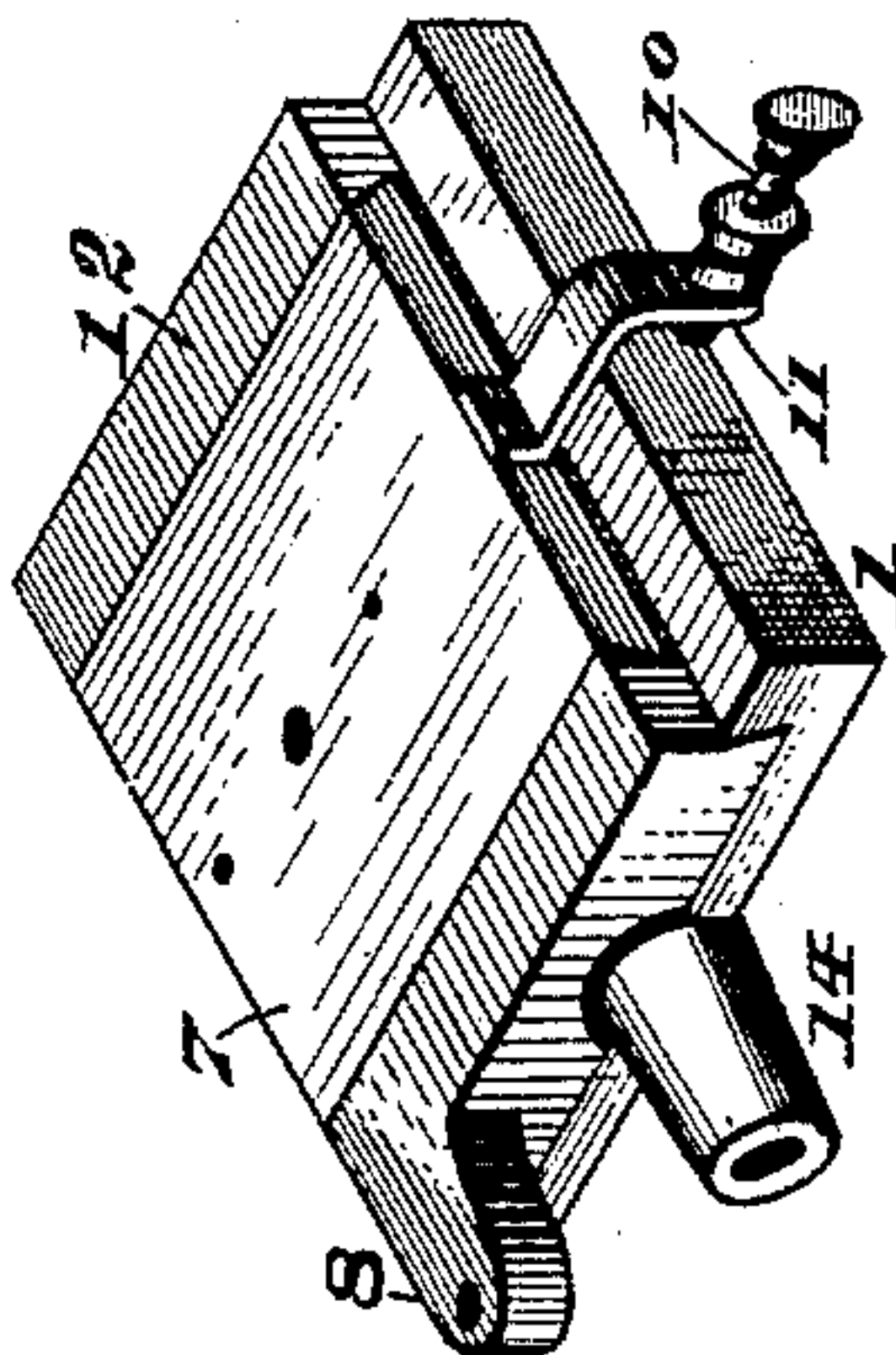


fig. 10.



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INVENTOR:

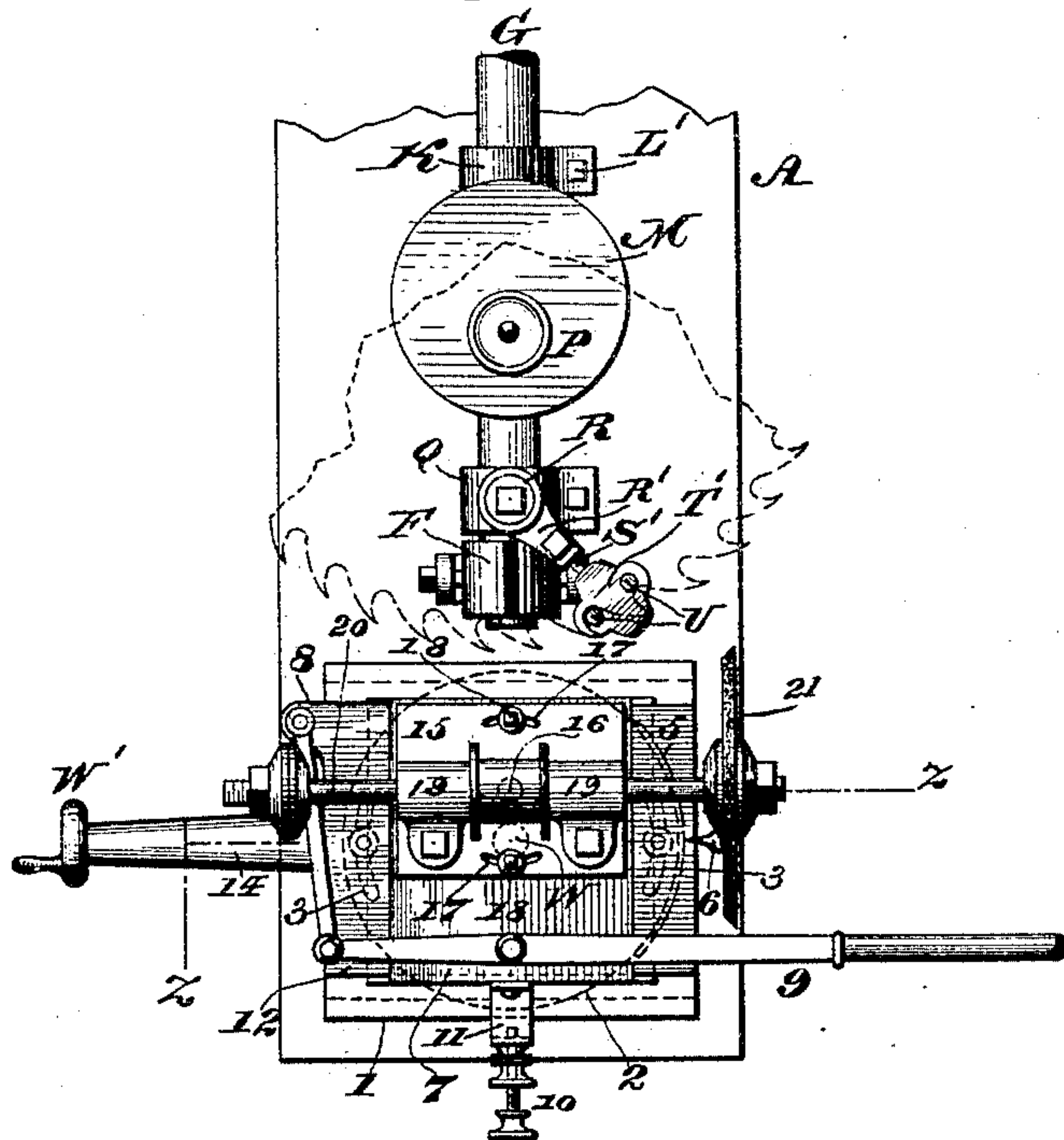
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MACHINE FOR SHARPENING SAWS.

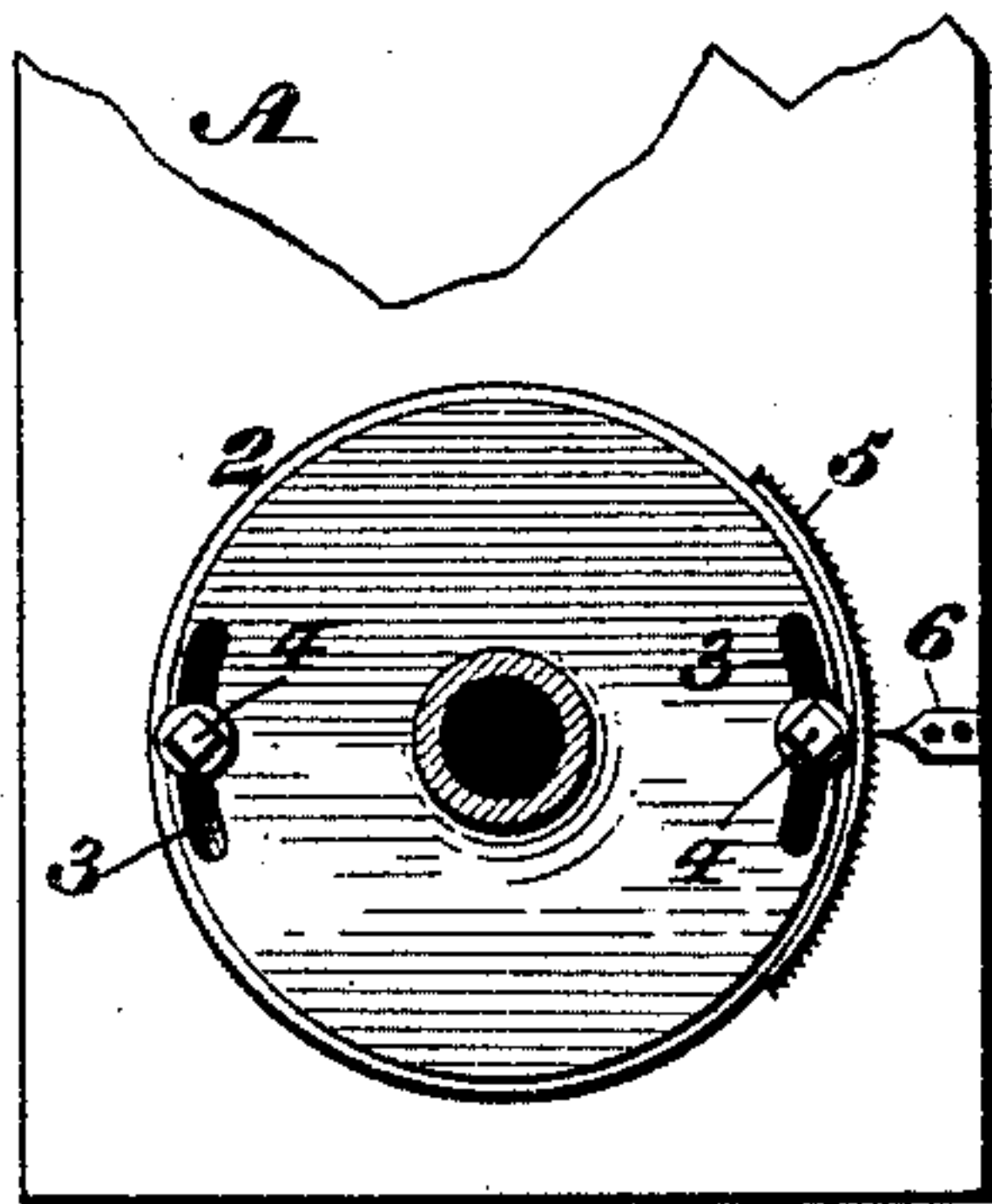
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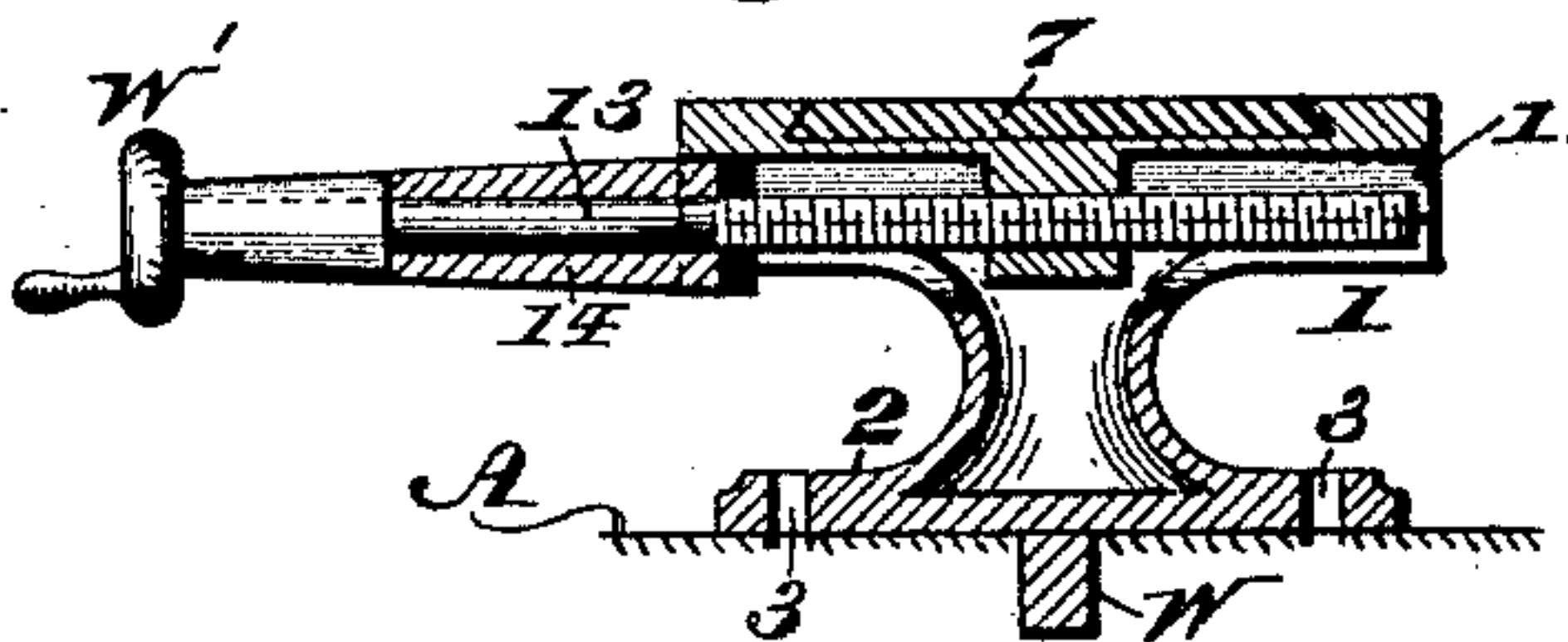
*fig. 2.*



*fig. 4.*

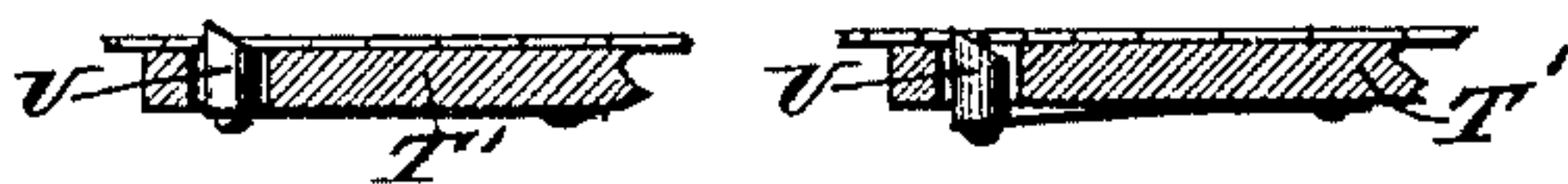


*fig. 5.*

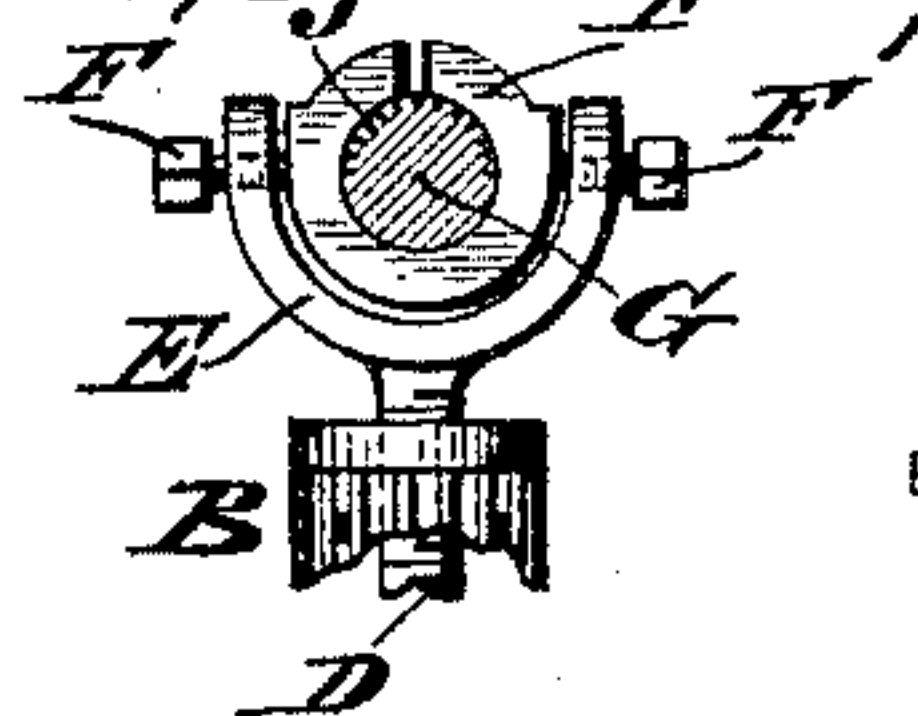


*fig. 6.*

*fig. 7.*



*fig. 9.*



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# UNITED STATES PATENT OFFICE.

FRANCIS M. KING, OF PHILADELPHIA, PENNSYLVANIA.

## MACHINE FOR SHARPENING SAWS.

SPECIFICATION forming part of Letters Patent No. 437,929, dated October 7, 1890.

Application filed November 7, 1889. Serial No. 329,292. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS M. KING, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Saw-Grinding Machines, which improvement is fully set forth in the following specification and accompanying drawings.

This invention consists of improvements in a saw-grinding machine, as follows: First, of devices for adjusting the head or support in different positions; next, an automatic rest; furthermore, of an adjustable table for a grinding-wheel, and, finally, of the construction and combination of the several parts for united service, as will be more fully hereinafter set forth.

Figure 1 represents a side elevation, partially broken away, of a saw-grinding machine embodying my invention. Fig. 2 represents a top plan view of a portion of the machine. Fig. 3 represents a transverse section on the line  $x x$  of Fig. 1. Fig. 4 represents a horizontal section on the line  $y y$  of Fig. 1. Fig. 5 represents a transverse section on the line  $z z$  of Fig. 2. Figs. 6 and 7 represent sectional views of portions of the saw-rest, showing the tooth-stop in different positions. Fig. 8 represents a detail perspective view of a portion of the grinding-wheel table. Fig. 9 represents a transverse section on the line  $x' x'$  of Fig. 1. Fig. 10 represents a section of a portion of the device when employed for grinding gang or long saws.

Similar letters and numerals of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a table supporting the pillow-blocks B, operated by handles C, the screws D of said blocks having stirrups E attached thereto. The said stirrups E support split collars F by means of screws F', which collars are mounted on the ends of a shaft G, formed with a longitudinally-extending groove H, and having scale or graduation marks J at one end adjacent to the one collar F, said scale-marks J being numbered in two directions for a right and left adjustment, the 0 occupying a position in line with the slot in the collar F when the shaft G is in its normal adjustment, and said

numbers 1 2 3, &c., being brought into a similar position with the slot in said collar when said shaft is moved out of its normal adjustment. This construction provides for accuracy in similarly grinding reversed or upper and lower surfaces. On said shaft G is located a split sleeve K, on whose interior is a fin or tongue L, which enters the groove H of the shaft G as a feather. Rising from said sleeve is a head M, having a tapered centering-plug N, which is provided with set-nuts P. As the sleeve K is fitted to the shaft G, the said head M may slide on said shaft and turn with the same when so required.

The sleeve K may be clamped on the shaft G by means of screws L', which when loosened permits said sleeve to be moved in longitudinal directions thereon. On said shaft G is also mounted a split sleeve Q, having a tongue engaging the groove H as a feather. A collar R is adjustably attached to the upper part of said sleeve Q, which is formed with a tubular arm R' to receive a shank S', adapted to have a telescopic adjustment in said arm R', and which is attached to a set-collar S, adjustable on an upright T. On the upper end of said upright T is secured a rest T' for the periphery of a saw, fitted within which rest are spring-actuated stops U, whose upper faces are beveled and bear against the base of the saw-teeth during the operation of grinding the same.

A table 1 is located adjacent to the end of the shaft G and has a bed-plate 2, constructed with a depending post W, entering a socket on the table A of the machine, whereby said table may be rotated or partially rotated. The said base-plate 2 is also formed with slots 3, which receive set-nuts 4, secured to the table A, to limit the rotation of said plate 2, and consequently of the table 1. A graduated plate 5 is connected to the periphery of the plate 2 and is engaged by an index 6. The said scale is numbered in two directions, commencing with 0 in the center, thereby readily obtaining an equable degree of adjustment of said plate when operating on oppositely-situated surfaces or edges.

The table 1 is formed with a recess to receive a sliding plate 12, said parts being dovetailed, the plate being operated by a screw-



rod 13, passing through a boss 14, formed with a table 1, said rod having connected with it a crank-wheel W' for operating purposes. The plate 12 has also connected with it by a dovetailed joint a sliding plate 7, whose movement is at a right angle to said plate 12, the latter being constructed with an ear 8, to which is attached a lever 9, the said lever being mounted on the plate 12 and serving to move the plate 7 toward and away from the head M. On the plate 7 is swiveled a plate 15, which is formed with a depending post 16, which enters a socket in the plate 7. Slots 17 are formed in the plate 15 and receive the screw-bolts 18 to retain the adjustment of said plate 15. An arbor 20 is supported by bearings 19, attached to the plate 15, and on one end thereof is mounted a grinding-wheel 21, said shaft being operated by suitable power.

To the front end of the plate 7 is attached an arm 11, supporting an adjustable stop 10, adapted to limit the sliding movement of said plate to any required degree by striking the adjacent edge of the table 1.

While it is evident that the machine may be used for grinding either circular or gang saws, it is more especially adapted for such purpose for circular saws, and the operation of the machine in the latter capacity is as follows: The sleeve K is loosened to slide on the shaft G and the tapered centering-plug N removed from its position. A saw V (shown in dotted lines) is now mounted on the head M and the said centering-plug N replaced, when by means of the set-nuts P the saw is centered. The head M and sleeve K are moved on the shaft G until the saw supported thereby is engaged by the grinding-wheel 21, and the sleeve K is then clamped to the shaft G to hold the saw in position. It is evident that a saw of any diameter may be supported by head M. The rest T' is next adjusted to bring one stop-tooth U thereof into the base of the space between two saw-teeth and temporarily hold the saw against revolution while grinding a tooth. When the saw-teeth are consecutively brought to bear against the wheel 21, they ride over the beveled upper ends of the said stops U, which readily yield, owing to their spring attachment or support. The two stops U are both used in sharpening crosscut-saws. The saw is thus firmly secured against accidental revolution or displacement, and the adjustment of the same to cause an angular grinding is attained by loosening the split collars F and turning the shaft G to the required degree, as designated by the scale-marks J, and said collars F are again securely tightened by the screws F'. By means of the construction heretofore described the head M and rest T' will be turned with the shaft G and cause the supported saw to assume an angle to the grinding-wheel 21. The movement of the slide-plate 7 is next regulated by the adjustment of the stop 10, and the grinding-wheel 21, duly set in mo-

tion, is brought to bear upon the teeth of the saw, the effect of which is evident. It may be necessary at times to transversely adjust the grinding-wheel 21 relatively to the saw, and this is accomplished by rotating screw-rod 13, thereby moving said wheel 21 and its supports in either direction across the table A. The said grinding-wheel 21 may be also adjusted at an angle to the longitudinal direction of the table A or the shaft G in either one of two ways—viz., by loosening the set-bolts and nuts 4 and turning the base-plate 2 of table 1 in either direction—when all the parts carried by said table will be turned therewith, and the slide-plate 7 be then operated in a plane at an angle to the true horizontal plane, or the shaft 20 and wheel 21 may be adjusted independently of their supports by turning the plate 15 in either direction. These adjustments are for the purpose of accommodating the varying angle of the teeth of different forms of saws. This latter adjustment is convenient in sharpening crosscut-saws, and the double-numbered scales J and 5 are also intended for use in accurately and equally sharpening the teeth of said form of saw, as by this means the exact degree of cut of the wheel 21 may be ascertained in sharpening one set of teeth, and a like degree be obtained when the parts are reversed and the saw turned over to sharpen the other set of teeth thereof.

In operating upon crosscut-saws it is necessary to have two stops U, in order to compensate for the reversal of the saw and consequent change in the angle of the teeth thereof. By adjusting the pillow-blocks B the saw may be readily adjusted vertically on a plane with the center of the grinding-wheel 21, or above and below said plane, if desired. The upright T of the rest T' has also a vertical adjustment to support the periphery of the saw.

Fig. 10 represents an attachment to be applied to the head M, and consists of a base-plate 22, having rims 23 to form guides for an adjustable plate 24 mounted therein. To the said plate 24 is connected a portion of a table 25 by a screw 26, said table 25 carrying an arm 27, which latter is secured to the top thereof by screws 28, and provided with a clamp.

The arm 29 is adapted to hold a gang or long saw on the table 25, the latter being adjustable in various directions, and when it is required for use the centering-plug N is removed and the base-plate 22 attached to the head M.

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

1. In a saw-grinding machine, the combination of a grooved rotatably-supported shaft or bar and a saw-supporting head having a feather in connection therewith to fit the grooved shaft or bar and adjustable independently of and on the shaft in a longitudi-



nal direction and rotatably together with said shaft, substantially as described.

2. In a saw-grinding-machine, a longitudinally-grooved bar or shaft supported adjacent to its ends by split clamping-collars and having circumferential scale-marks adjacent to one of said collars and a saw-supporting head having a split clamping-sleeve with a feather therein engaging the groove of the shaft, whereby the said head may be independently adjusted longitudinally on said shaft and the shaft and head be unitedly rotated, and by means of the aforesaid scale-marks the angle of rotation of said parts ascertained, all combined substantially as described.

3. In a saw-grinding machine, the combination of a table or base, pillow-blocks on said table adjustably supporting saddles, clamping-collars adjustably held by said saddles, an elongated bar or shaft mounted in said collars, and a saw-supporting head movably fitted on said shaft, substantially as described.

4. In a saw-grinding machine, the combination of a table, a shaft adjustably supported on said table to have a semi-rotatable movement in either one of two lateral directions and having a longitudinal groove therein, a saw-supporting head having a clamping-sleeve with a feather therein adapted to move in the groove of the shaft, and a second sleeve having a feather therein, also fitting the groove of the shaft, and having a horizontally and vertically adjustable saw-rest mounted therein, all combined substantially as described.

5. In a saw-grinding-machine, a table, a shaft or bar adjustably mounted on said table, a saw-supporting rest longitudinally and laterally adjustable on said shaft or bar, and a peripheral saw-rest consisting of a sleeve having a feather, also fitting in the groove of said shaft and formed with a collar in the upper part thereof, a horizontally-projecting sleeve, an upright carrying a rest proper, a sleeve adjustable on said upright, and a rod adjust-

able in said latter sleeve, said parts being combined substantially as described.

6. In a saw-grinding machine, an adjustable rest for the periphery of a saw having spring-actuated stop-teeth formed with beveled upper ends, substantially as described.

7. In a saw-grinding machine, the combination of a grinding-wheel supporting-table having a slot, a transversely-adjustable plate mounted in said slot of the table, and a slide-plate mounted in said adjustable plate and having a movement at a right angle to said transversely-adjustable plate, the adjustability and movement of said parts allowing the grinding-wheel to be arranged relatively to a saw, substantially as described.

8. In a saw-grinding machine, the combination of a table 1, a sliding plate 7, supporting a shaft on which is mounted a grinding-wheel, and having an ear 8, an operating-lever 9, and a stop-pin 10, substantially as described.

9. In a saw-grinding machine, the combination of a saw-supporting head adjustable longitudinally and transversely at an angle, a shaft or bar on which said head is mounted, a peripheral rest for the saw, also mounted on said shaft and longitudinally adjustable, a grinding-wheel, a sliding support for said wheel, a laterally-adjustable plate on which said sliding support is held, and a semi-rotatable table holding the said laterally-adjustable plate, substantially as described.

10. In a saw-grinding machine, a grinding-wheel supporting-table having a semi-rotatable movement, a gage applied to the base-plate of said table in a vertical position, and a horizontally-disposed index secured to the support of said table and engaging the said gage, substantially as described.

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Witnesses:

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