10. METAL TOOLS &c.
Saw making,
Feeding, Clamp feed.

76

Saw making,
Sharpening & gumming,
Rotating tool, Pivoted gate.

Draftsman.

Sheet 1, 3 Sheets.

T. T. Markland, Jr.

Saw Sharpener.

No. 90,010. Patented May 11, 1869.

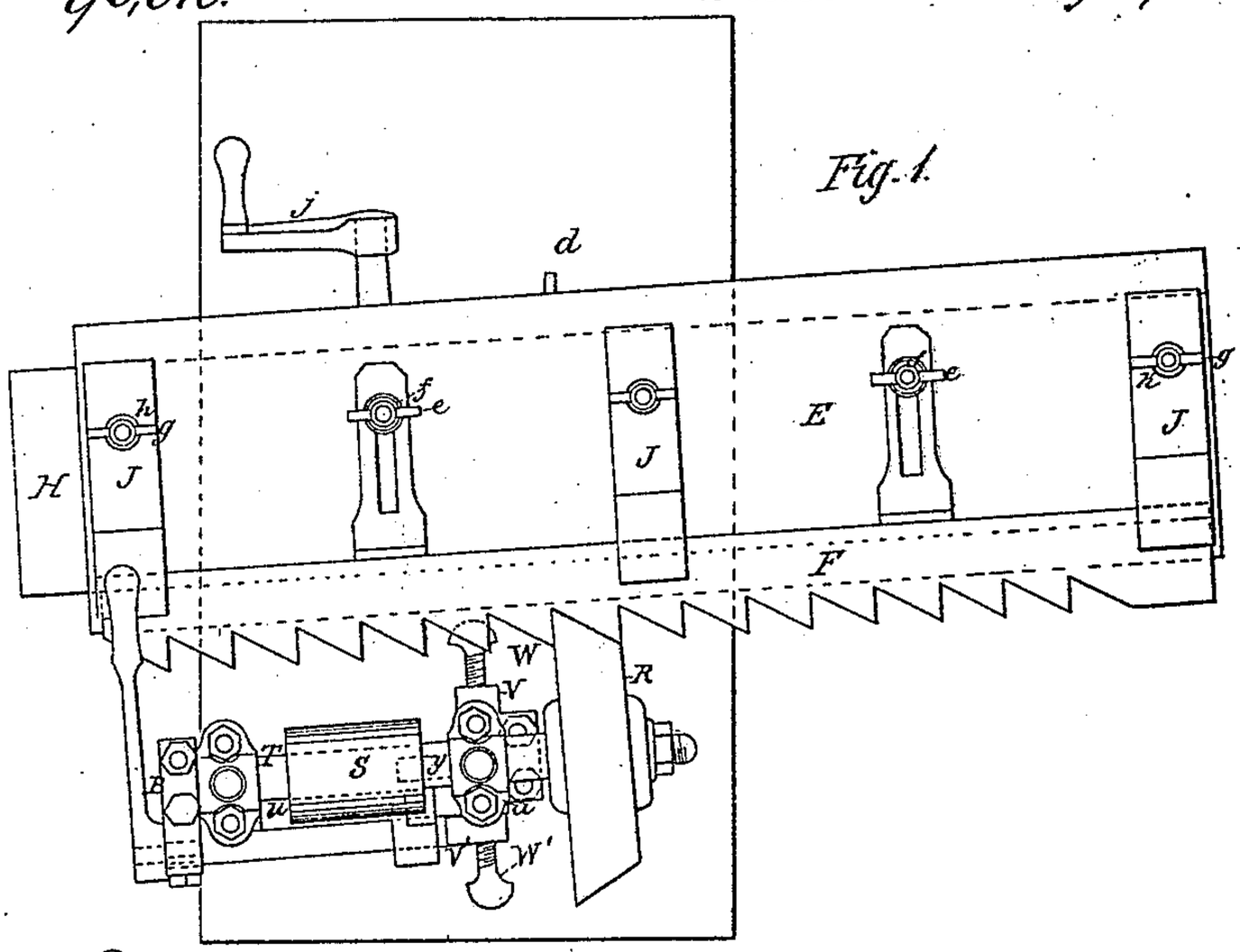

Fig. 1.

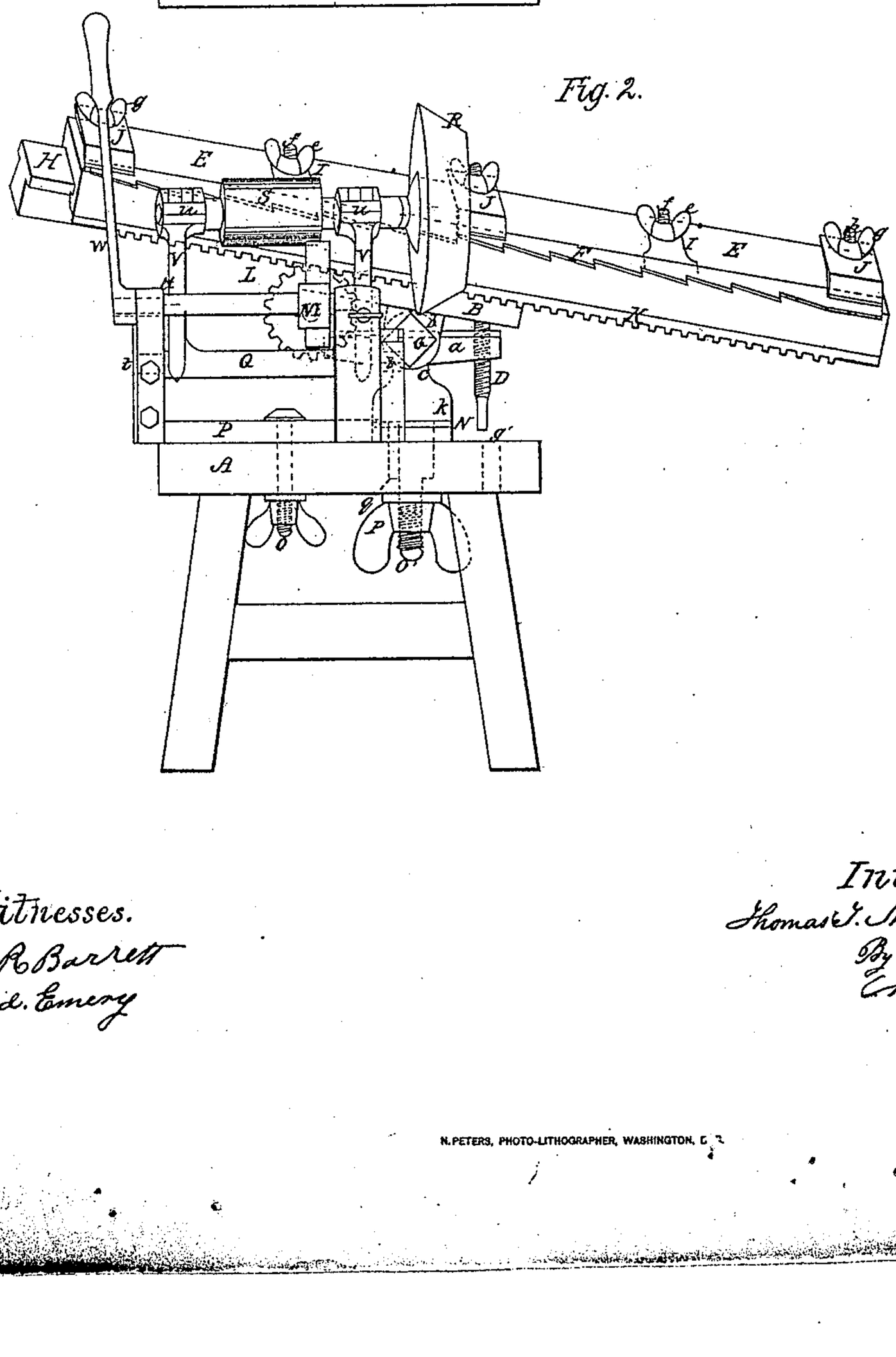

Fig. 2.

Witnesses.
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Inventor.
Thomas T. Markland jr
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Saw making,
Feeding, Clamp feed.

76

Saw making,
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Sheets, 3 Sheets.

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Fig. 3.

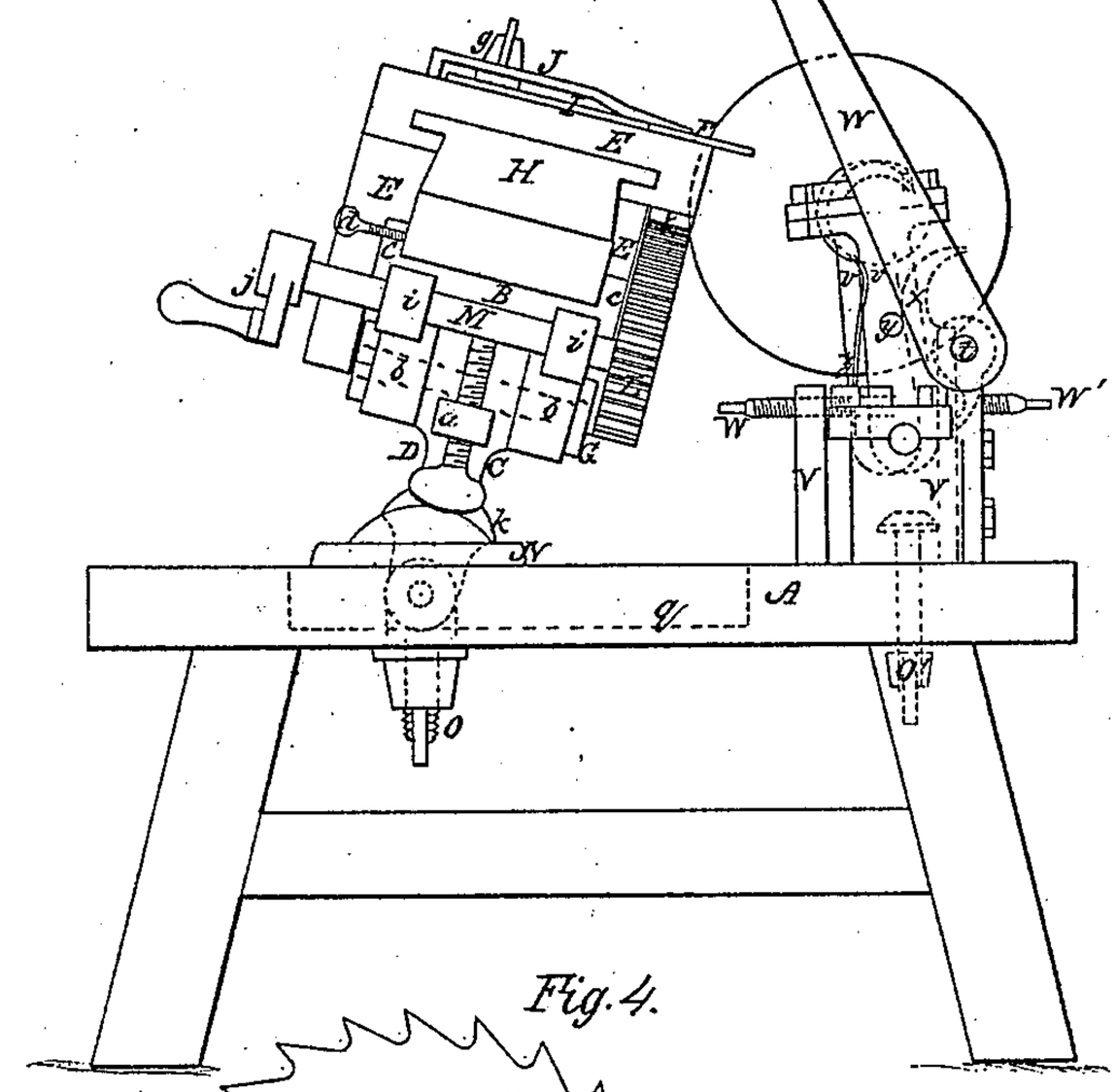


Fig. 10.

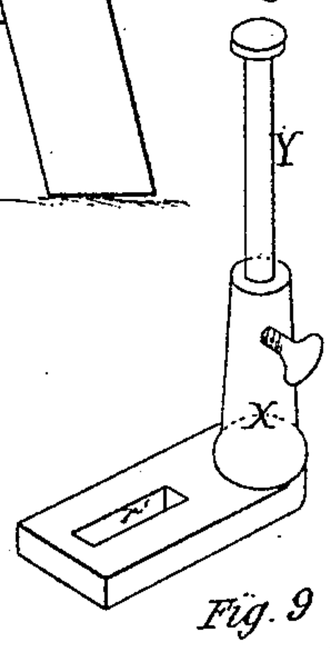


Fig. 9

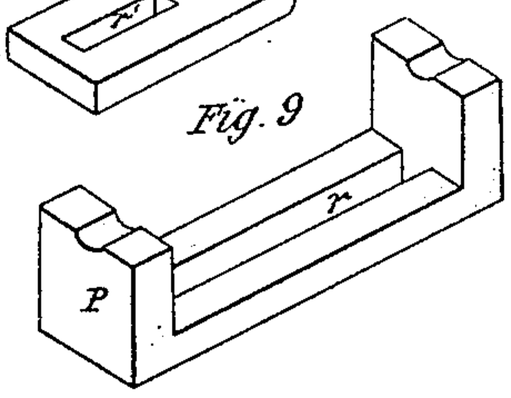


Fig. 4.

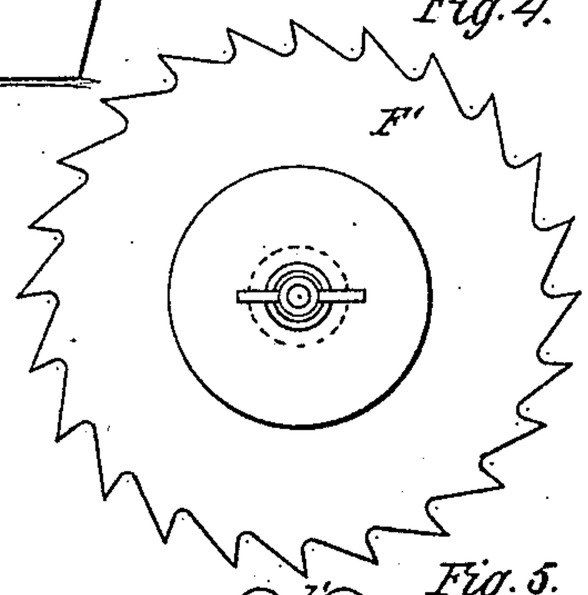


Fig. 5.

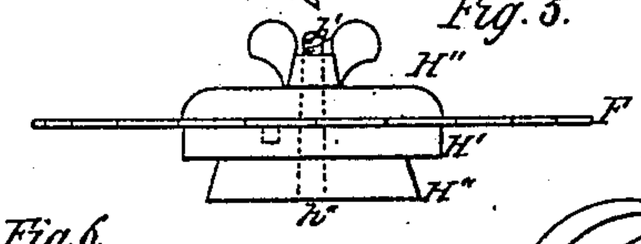


Fig 8.

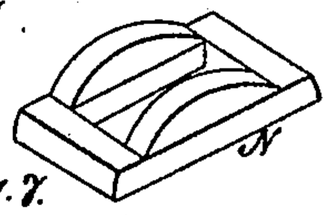


Fig. 6.

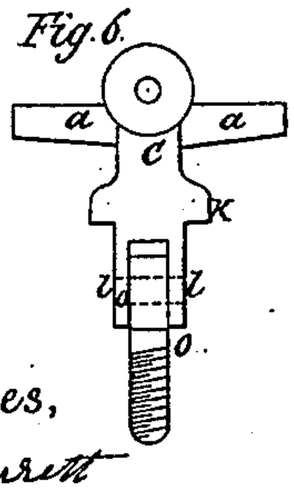
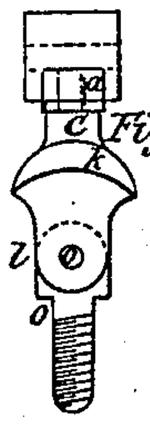


Fig. 7.



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Saw Sharpener.

No. 90,010. Patented May 11, 1869.

Fig. 11.

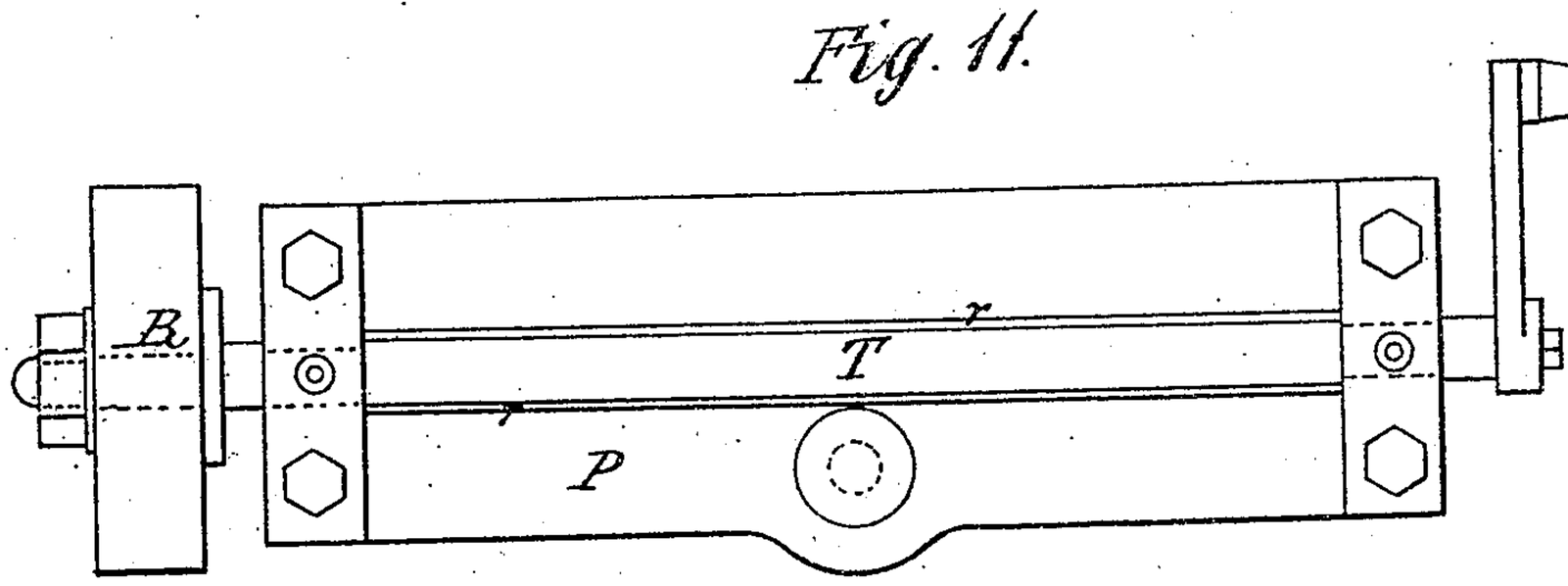
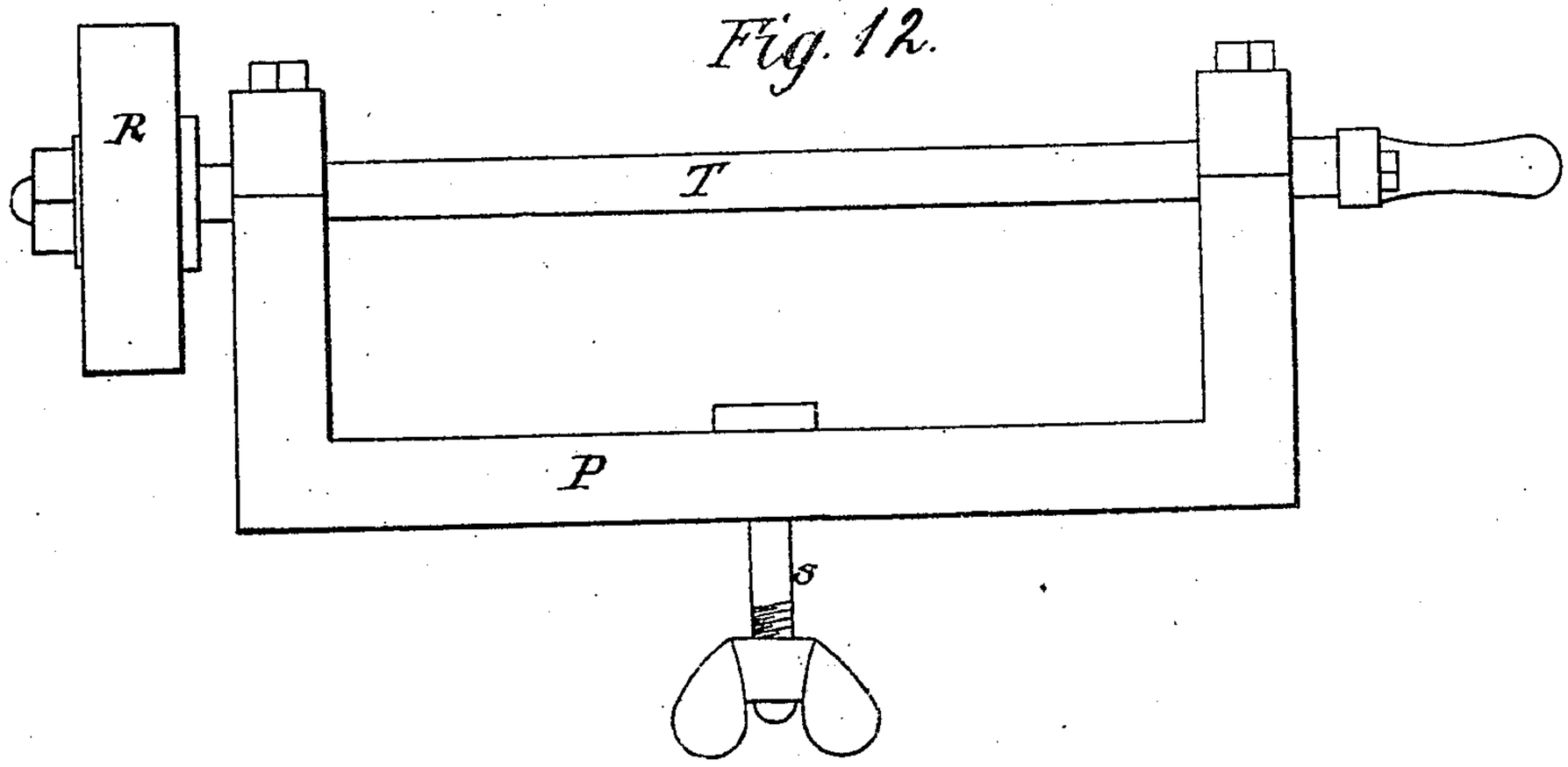


Fig. 12.



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Francis Hughes

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By his Attorney
Stephen Usteck

United States Patent Office.

THOMAS T. MARKLAND, JR., OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 90,010, *dated May* 11, 1869.

IMPROVEMENT IN SAW-SHARPENING DEVICE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, THOMAS T. MARKLAND, Jr., of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Machines for Gumming and Sharpening Saws, Harvester-Cutters, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention is an improvement on my machines for sharpening saws, patented April 2, 1867, and consists mainly—

First, of the combination of the grinding-wheel with an adjustable and movable swivel-head, for bringing the wheel on an angle with the teeth or cutters.

In the second place, in the combination of an actuating cam and reacting spring with the movable head and oscillating frame, which supports the shaft of the grinding-wheel, in such a manner that the wheel, by means of the cam and hand-lever, may alternately be thrown into contact with the teeth, or cutters, and thrown therefrom by means of the spring.

In the third place, in the combination and arrangement of a segmental bed-plate, with a slot in the supporting-bench, and the base of the standard of the saw-rest, which is curved to fit the bed-plate, so as to provide for giving any requisite lateral bevel to the edge of the teeth, or cutters.

Fourth, in the combination and arrangement of a rack and pinion with the portable rest and slide, to which a straight saw is attached, for giving a longitudinal movement to the same.

It consists, fifthly, in an adjustable and swivel-rest, with the supporting bench, for supporting circular saws at a point near the edge of the grinding-wheel.

In the accompanying drawings, which make a part of this specification—

Figure 1 is a plan of the improved machine.

Figure 2 is an end elevation of the same.

Figure 3, Sheet No. 2, is a side elevation.

Figures 4 and 5 are a top and edge view of a circular saw, F, in connection with the device for connecting it with the reversible rest, consisting of the dovetail base H‴, clamping-head H′ and H″, screw-bolt *h′*, and nut *g′*.

Figures 6 and 7 are views, at right angles with each other, of the movable base *k* of the reversible rest B and standards C.

Figure 8 is an isometrical view of the segmental bed-plate N.

Figure 9 is a like view of the slotted swivel-head P.

Figure 10 is a like view of the adjustable swivel-rest *x*.

Figure 11, Sheet No. 3, is a plan of the swivel-head P, shaft T, and grinding-wheel, in combination, without the intervention of the oscillating frame Q.

Figure 12 is a side elevation of the same.

Like letters in all the figures indicate the same parts.

A is an ordinary bench, which supports the several parts of the machine.

B is a reversible portable bed for holding the saw. It has a standard, C, which has cross-arms *a a*, that are provided with set-screws D D, for regulating the angle of the front of the teeth, or cutters, the clamping-board E, which supports a straight saw, F, as in figs. 1, 2, and 3, being thrown on an angle longitudinally in one direction, and held by means of the said screws D D; and when every other tooth is ground, then the bed B is reversed in the other direction, for grinding the other teeth.

The rest is made to turn either way, as described, by being connected with the standard C, by means of the lugs *b b*, which project from the under side of the rest and the bolt G.

The rest B has dovetail ribs *c*, between which a board, H, is held by means of the tightening-screw *d*.

The saw F is placed with its back edge against the front ends of the adjustable guards I I, which are confined to the board E by means of the nuts *e e*, on the vertical screws *f f*. The saw is held firmly on the board by means of the clamps J, nuts *g*, and screws *h*.

For giving a longitudinal movement to the saw, to bring the teeth successively in place to be ground, I provide a longitudinal rack, K, which is fast to the sliding board E and pinion, L, on the front end of the shaft M, which is supported by means of the lugs *i i* that project from the rest B. There is a handle, *j*, on the other end of the shaft, for giving motion thereto

I provide for giving the lateral bevel to the back edge of the teeth of the saw F, by connecting the curved base *k* of the standard C with the segmental bed-plate N, and confining-screw O, which is jointed to the base *k* by means of the lugs *l l* and pin *o*, the whole being confined to the bench A by the tightening-nut *p* beneath the bench, as seen in figs. 2 and 3.

The longitudinal slot *q* in the bench A, through which the confining-screw O is passed, is made of suitable width to receive the lugs *l l* of the curved base *k*.

If desired, the segmental bed-plate N may have a plate projecting from its under side into the slot *q*, as an easy guide in the adjustment of the rest, or the latter may be moved to or from the emery-wheel, by means of a rack and pinion.

The standard C and confining-screw O are represented in detail in figs. 6 and 7, and the segmental bed-plate N in fig. 8.

P represents an adjustable swivel-head, for supporting the grinding-wheel.

It has a longitudinal slot, *r*, as seen in detail in fig. 9, to provide for adjusting the head at any desired angle with the saw, so as to bring the flat surface of the grinding-wheel in line with the front edge of the teeth.

The confining-screw O′, which passes through the slot *r*, is round beneath the head P, to admit of its turning freely and accurately in the bench A in the adjustment of the head.

There is an oscillating frame, Q, whose journals *t t*, are supported by the head P, as represented fully in figs. 2 and 3.

The grinding-wheel R and driving-pulley S are on the revolving-shaft T, which has supporting-boxes *u u* at the ends of the upright arms *v v* of the oscillating frame Q.

There is a shaft, U, which is provided with a lever, *w*, and cam, *x*, for throwing the grinding-wheel against the teeth, or cutters, for grinding the same.

The cam bears against the stationary pin *y*, which projects from the oscillating frame Q.

At the completion of the grinding of each tooth, or cutter, the lever *w* is released from the same, and the spring *z* bears the frame Q outwards to take the grinding-wheel from the teeth, or cutters.

The upright V is provided with a set-screw, W, as a guide for the inward throw of the oscillating frame Q, which is brought to bear on the end of the screw. The outward throw of said frame is regulated by the set-screw W′ in the upright V′.

When the edge of the grinding-wheel R is not large enough to bear over the whole back edge of the tooth, a sliding motion is given to the saw, as the wheel revolves, and is gradually brought in and out from between the teeth.

In sharpening circular saws, the boards E and H are removed from the bed B, and the clamping-heads H′ and H″, between which the saw F′ is confined, are placed on the board H‴, which occupies the place of the board H, there being a central pin, *h″*, which turns in a corresponding hole in the board, the said pin being on the end of the bolt *h′*.

To give a firm support to circular saws at a point near the edge of the grinding-wheel, I use a swivel-rest, X, as seen in fig. 10, there being a longitudinal slot, *r′*, through which a bolt for confining the head to the bench is passed, the bolt being placed in the hole *q′*. The vertical rod Y in the rest has a rounded bead, to receive the saw at any angle. The rod is confined in its altitudinal position by means of the screw Z.

When desired, the oscillating frame Q may be dispensed with, and the journals of the shaft T supported in suitable bearings in the ends of the head P; and instead of the pulley S, the shaft may be revolved by means of a handle on the rear end of the shaft T.

This arrangement is represented in figs. 11 and 12, Sheet No. 3. The confining-bolt *s* may be placed in a hole in the base of the swivel-head, as represented, instead of in the slot *r*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The construction and arrangement herein described, of the cam *x*, oscillating frame Q, lever *w*, and swivel-head P, for the purpose set forth.

2. The construction and arrangement herein described, of the segmental bed-plate N, and jointed confining screw-bolt O, for the adjustment of the reversible bed B, to give the required lateral bevel to the back edge of the teeth, or cutters.

3. The construction and arrangement herein described, of the clamping-board E, guide-board H, rack K, pinion L, bed B, and standard C, in connection with segmental bed-plate N, and jointed confining screw-bolt O, for the purpose set forth.

In testimony that the above is my invention, I have hereunto set my hand and affixed my seal, this 3d day of June, 1868.

THOS. T. MARKLAND, JR. [L. S.]

Witnesses:

STEPHEN USTICK,

JOHN WHITE.