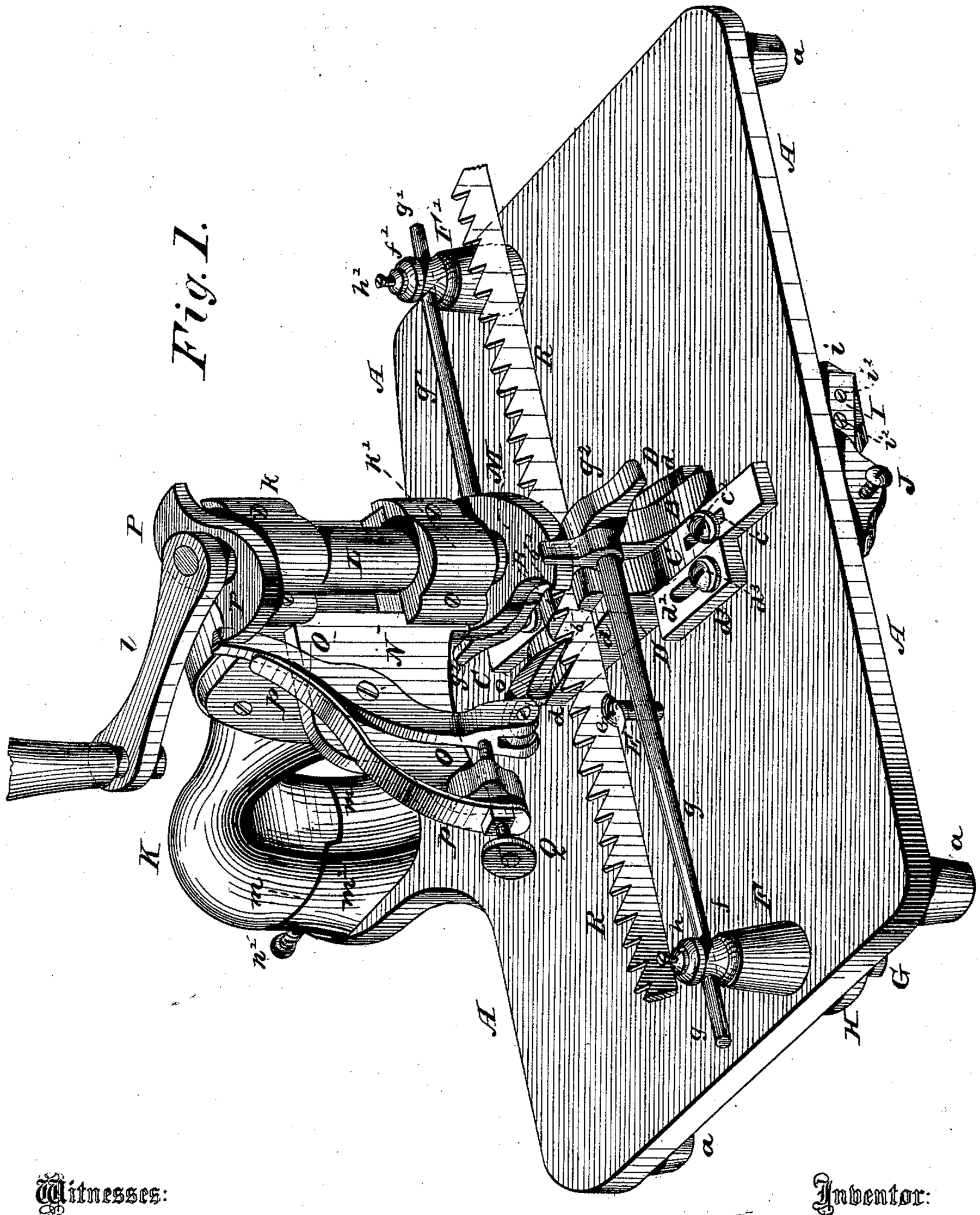
2 Sheets—Sheet 1.

W. T. SMITH.

Saw-Setting Machine.

No. 216,063. Patented June 3, 1879.

Fig. 1.



Witnesses:

Geo. L. Seymour.
F. O. McCleary

Inventor:

Wm. T. Smith.

Per Leggett & Leggett Attorneys.

2 Sheets—Sheet 2.

W. T. SMITH.

Saw-Setting Machine.

No. 216,063. Patented June 3, 1879.

Fig. 2.

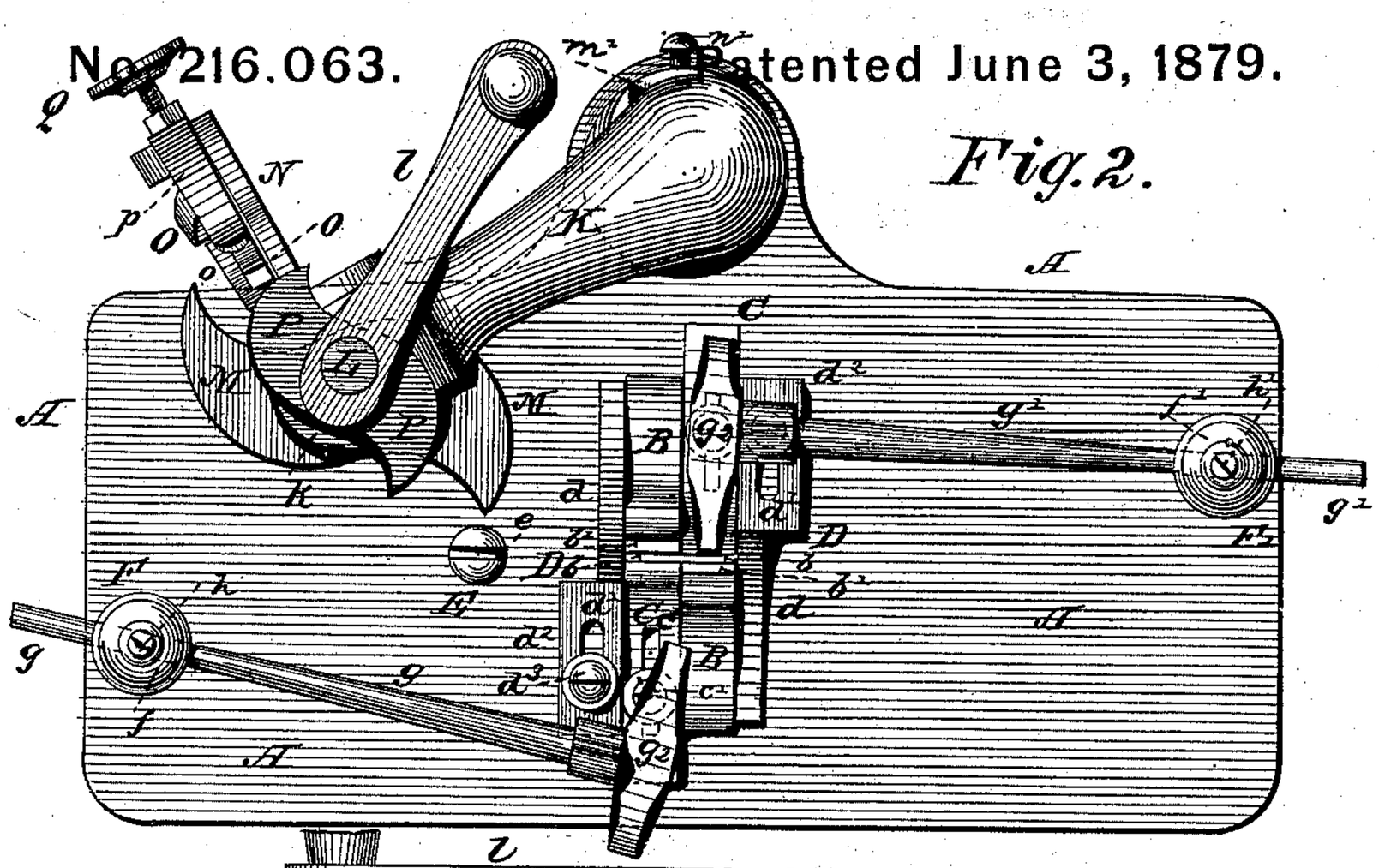


Fig. 3.

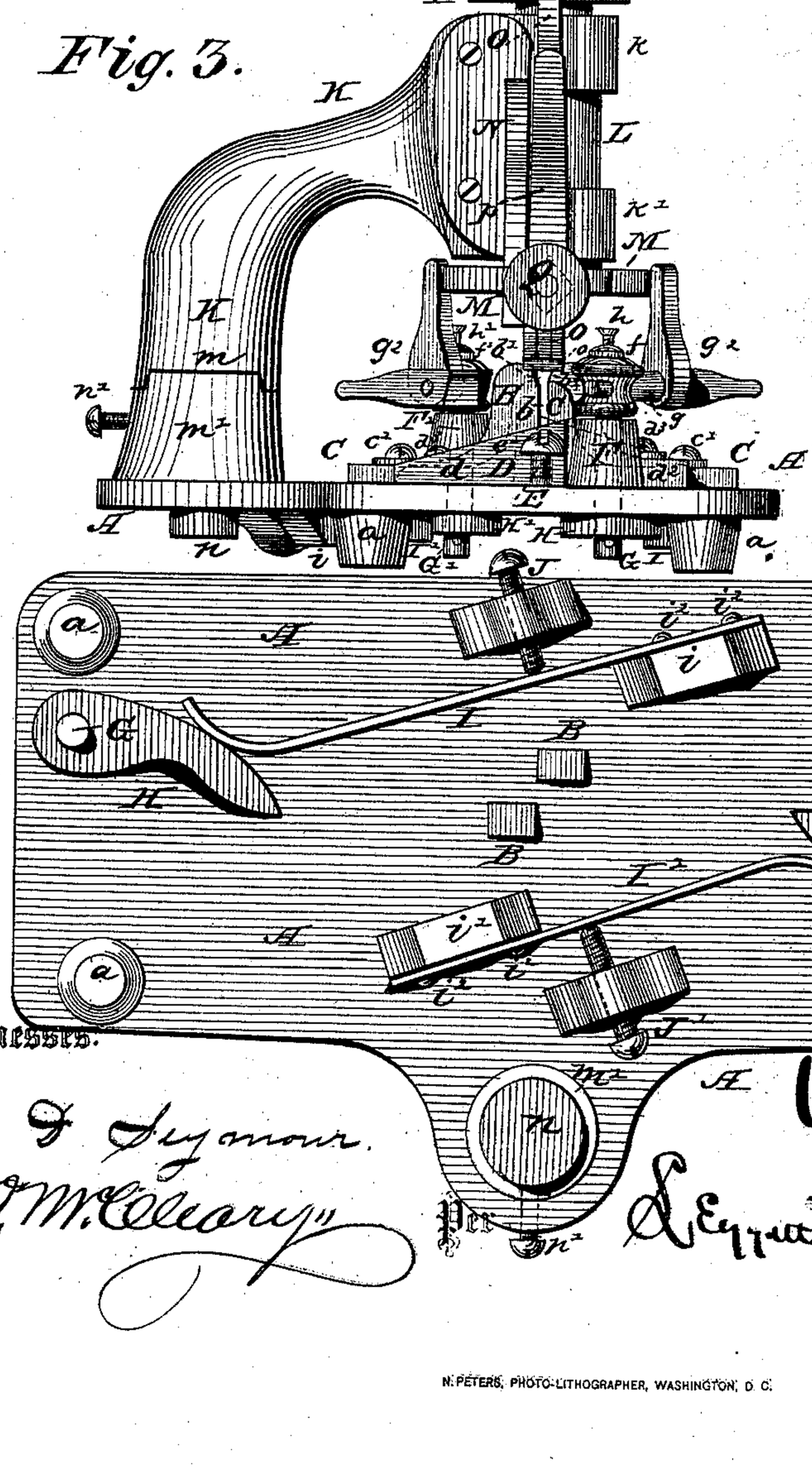


Fig. 4.

Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

WILLIAM T. SMITH, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN SAW-SETTING MACHINES.

Specification forming part of Letters Patent No. **216,063**, dated June 3, 1879; application filed October 10, 1878.

To all whom it may concern:

Be it known that I, WILLIAM T. SMITH, of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Saw-Setting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in saw-setting machines, the object being to provide a machine of such construction that band-saws may be automatically fed to the setting mechanism and every two adjacent teeth of the saw subjected to the blows of separate hammers, which operate automatically and in opposition to each other.

My invention consists in the several details in construction and combination of parts, as will hereinafter appear from the following description and claims.

In the accompanying drawings, Figure 1 is a view, in perspective, of my improved saw-setting machines. Fig. 2 is a plan view with the operating-shaft shifted out of position for operation. Fig. 3 is an end view of the machine, and Fig. 4 is a plan view of the under side of the base-plate.

A represents the base-plate of the machine, which is supported by standards *a*, which latter may be hollow, if desired, and the base provided with bolt-holes registering therewith, to allow the base to be firmly bolted to a bench, the bolts extending down through the base and standards and through the bench, the lower ends being secured by nuts.

To the central portion of base A are rigidly secured the anvil-blocks B. The inner sides, *b*, of the anvil-blocks are located in substantially the same vertical plane, while the working-faces *b'* are arranged at a sufficient distance apart to admit of the insertion of a band-saw of a maximum thickness or gage between the opposing faces *b'* of the anvil-blocks. Opposite the working-faces *b'* of each anvil-block are arranged the laterally-adjustable supports C, each of which is provided with elongated slots *c*, through which are inserted adjusting screws or bolts *c'*. Saw-supports C are adjusted relatively to the anvil-blocks in such a manner that the back of the saw will be held snugly between the anvil-block B and supports C in a vertical position. The anvil-blocks project above the upper edges of the supports C, to allow the hammers to work freely against the anvil-blocks.

D are adjustable saw-rests. They are each formed with an inclined upper supporting-edge, *d*, and have elongated openings d^1 through their lower portions, d^2, for the engagement therewith of an adjusting bolt or screws, d^3.

Adjustable rests D are placed on opposite sides the anvil-blocks B, and by moving the rest toward or from the anvil-blocks the saw, which is supported in the inclined upper edges, *d*, is raised or lowered to the desired point of adjustment.

E represents a combined saw-supporting and guide block, and is secured to the base in such position that the groove *e*, formed in the upper end thereof, shall be in line with the openings between the anvil-blocks and laterally-adjustable supports.

If desired, a block, E, may be secured to the base-plate on the opposite side of the anvil-blocks.

F F' are hollow standards, located at opposite ends of the base-plate A, and serve as bearings for the upright shafts G G'. To the upper ends of shafts G G' are secured the hubs *f f'*, the lower ends of which rest upon the upper ends of the hollow standards F F'. Hubs *f f'* are each provided with a horizontal opening for the reception of the outer ends of the hammer-shafts *g* g^1, the latter adapted to be longitudinally adjusted and secured in desired position by means of the set-screws *h h'*.

To the lower ends of the shafts G G' are secured arms or fingers H H', upon the outer ends of which rest the outer or free ends of the springs I I', the opposite ends of which are attached to blocks or lugs *i* i^1 by screws i^2, or in any manner desired. The tension of springs I I' is regulated by means of set-screws J J', which bear upon the springs.

The inner and adjacent ends of the hammer-shafts *g* g^1 have hammers attached there-

to in any suitable manner. Hammer-shafts *g* g^1 are also provided with fingers or abutments g^2, for a purpose hereinafter explained.

K is a goose-neck, the lower end of which is attached to the side of the base-plate *a*, while its upper end is provided with shaft-bearings *k k'*, which serve to support a vertical operating-shaft, L.

M is a double-faced cam attached to the lower end of the vertical shaft L, the latter being turned by means of a crank, *l*, attached to its upper end, or a belt-pulley may be employed in lieu of the crank and the machine driven by any suitable motive power.

To a flange, N, projecting from the goose-neck is pivoted a feed-lever, O, to which movement is imparted by a double-faced cam, P, attached to the upper end of shaft L.

A feed-pawl, *o*, is pivoted to the lower end of lever O. The upper end of the feed-lever is kept in contact with the cam P by means of the spring *p*, the upper and free end of which bears against the upper end of the feed-lever.

The pawl of the feed-lever is regulated by the set-screw Q, which serves as an adjustable abutment for the feed-lever.

The goose-neck is made in two parts and connected by an angular joint, *m*, the upper section being furnished with a shank, *m'*, which extends down into a socket, *n*, and is removably secured therein by means of a set-screw, *n'*.

The operation of the machine is as follows: A band-saw, R, is placed between the opposite faces of the anvil-blocks, and the supports C then adjusted to hold the saw firmly in a vertical position. The saw-rests D are then adjusted transversely to raise or lower the saw to such a position that the saw-teeth will be located at the desired height on the working-faces of the anvil-blocks. The saw is then inserted in the grooved block E, which serves to keep the saw in a horizontal plane, and prevent it from being raised when operated upon by the feeding mechanism. As the vertical shaft L is turned the periphery of the cam M strikes the fingers or abutments g^2 on the hammer-shafts and forces the hammers away from each other until the fingers g^2 are released from the points or ends of the cam projections, when the hammers are caused to strike a blow in opposite directions. One hammer sets one tooth to the right, and the opposite hammer sets the adjacent tooth to the left.

This method of setting the teeth of a saw not only enhances the value of the machine, on account of the rapidity with which the work is accomplished, but all twisting the saw-blade is avoided, as the tendency of the blow of one hammer to twist the saw-blade is counteracted by the force of the blow of the opposite hammer, and hence, while the saw-blade is not affected in the slightest by the rapid continuous blows of the setting-hammers, the saw-teeth are set at the precise angle desired.

The force of the blows delivered by the hammers is easily regulated by varying the adjustment of the set-screws which bear upon the springs I I'.

Again, the hammer-shafts are adapted to be axially adjusted, so that the faces of the hammer may be raised or lowered in order to act upon any portion of the tooth. The longitudinal adjustment of the hammer-shaft is provided for the purpose of enabling the blows to be delivered on any desired part of the saw-teeth, regardless of the size of the saw-teeth. In fine saws, for instance, the hammers are adjusted very close to each other in order to strike the sides of two adjacent teeth. If a band-saw with coarse teeth—or, in other words a saw having a less number of teeth to the inch—should be placed in the machine, after it had been properly adjusted for setting the teeth on a band-saw having a greater number of teeth to the inch, the hammers would not strike the teeth squarely, so as to set them in a proper manner. Hence a longitudinal adjustment of the hammer-shafts is provided, so that the hammers may be adjusted toward or from each other.

The feeding mechanism is arranged to be operated when the hammers are forced away from the saw. This is accomplished by securing the feed-actuating cam to the shaft in such relative position to the hammer-actuating cam that the upper end of the feed-lever will be forced outward when the hammers are being carried away from the saw. As the upper end of the feed-lever is forced outwardly the pawl pivoted to its lower end, and which engages with the saw-teeth, is carried toward the anvil-blocks, thus moving the saw longitudinally the required distance. The throw or movement of the feed-lever is regulated according to the character of the saw to be operated upon. If the saw-teeth are fine and of a large number to the inch, the set-screw is turned inward toward the lower end of the feed-lever to limit its backward movement and prevent it from feeding the saw too rapidly. If the teeth are coarse, the set-screw is adjusted accordingly, so that the feeding-pawl may always recede a sufficient distance to engage the proper tooth to feed the saw forward the required distance.

By means of my improvement the teeth of band-saws may be set very rapidly, as well as in a perfectly uniform manner. My improved machine is of simple and durable construction, and may be operated by an unskilled hand.

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

1. In a saw-setting machine, the combination, with suitable anvil-blocks and a rotary cam located over said anvil-blocks, of a pair of hammers adapted to be actuated in the plane of the saw-teeth by means of said superposed cam, substantially as set forth.

2. In a saw-setting machine, the combination, with suitable anvil-blocks and a rotary cam located over said anvil blocks, of a pair

of hammers adapted to be actuated in the plane of the saw-teeth and in opposite directions by means of said cam and springs provided with tension adjustments connected with the shafts of said hammers, substantially as set forth.

3. In a saw-setting machine, the combination, with suitable anvil-blocks, means for holding the saw, and a rotary cam located above the anvil-blocks, of a pair of hammers adapted to be moved in opposite directions in a horizontal plane by said cam, vertical shafts supported in hollow standards attached to the base of the machine, and hammer-shafts having their outer ends secured in axial and longitudinal adjustment within perforated hubs attached to the upper ends of said vertical shafts, substantially as set forth.

4. In a saw-setting machine, the combination, with suitable anvil-blocks and a rotary cam located above the same, of a pair of hammers adapted to be moved in opposite directions in the plane of the saw-teeth by said cam, of vertical shafts to which the hammer-shafts are attached, said shafts having arms secured to their lower ends, and springs provided with tension-regulating devices, arranged to engage with said arms, substantially as set forth.

5. In a saw-setting machine, the combination, with suitable anvil-blocks, of laterally-adjustable saw-blade rests, the latter constructed with inclined upper edges for raising or lowering the saw-blade, substantially as set forth.

6. In a saw-setting machine, the combination, with anvil-blocks and a double-faced cam located over said anvil-blocks and secured to the lower end of a vertical shaft, of fingers or abutments attached to the hammer-shafts in close proximity to the hammers, said cam adapted to engage with the fingers or abutments and move the hammers in opposite directions in the plane of the saw-teeth, substantially as set forth.

7. In a saw-setting machine in which the saw is fed in the plane of the hammers, the combination, with suitable anvil-blocks and a cam located above said anvil-blocks and secured to the lower end of a vertical shaft, of feeding mechanism actuated by a cam attached to said vertical shaft, substantially as set forth.

8. In a saw-setting machine, the combination, with suitable anvil-blocks, a cam located above said anvil-blocks and attached to the lower end of a vertical shaft, and a pair of hammers adapted to be moved in the plane of the saw-teeth by said cam, of a cam attached to the upper end of said vertical shaft, a pivoted feed-lever, the upper end arranged to rest upon the upper cam, the lower end of said feed-lever having a pawl pivoted thereto, and means for regulating the throw of said feed-lever, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of October, 1878.

WILLIAM T. SMITH.

Witnesses:
E. A. ROBBINS,
SAML. S. WALLACE.