No. 646,159. Patented Mar. 27, 1900.

S. R. ROBINSON.

SAW SETTING APPARATUS.

(Application filed July 10, 1899.)

(No Model.)

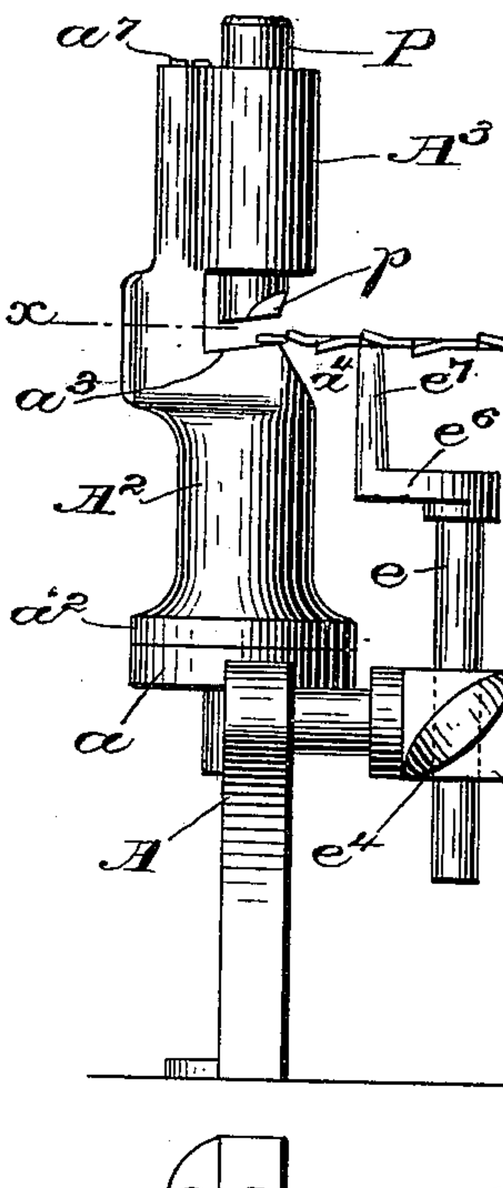

Fig. 1.

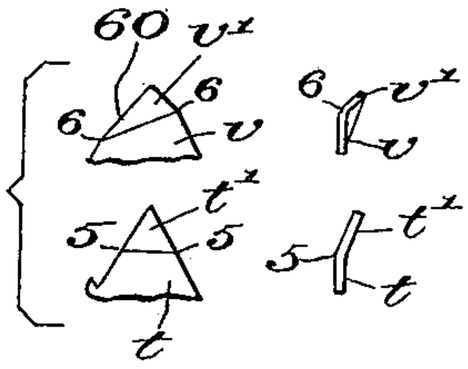

Fig. 5.

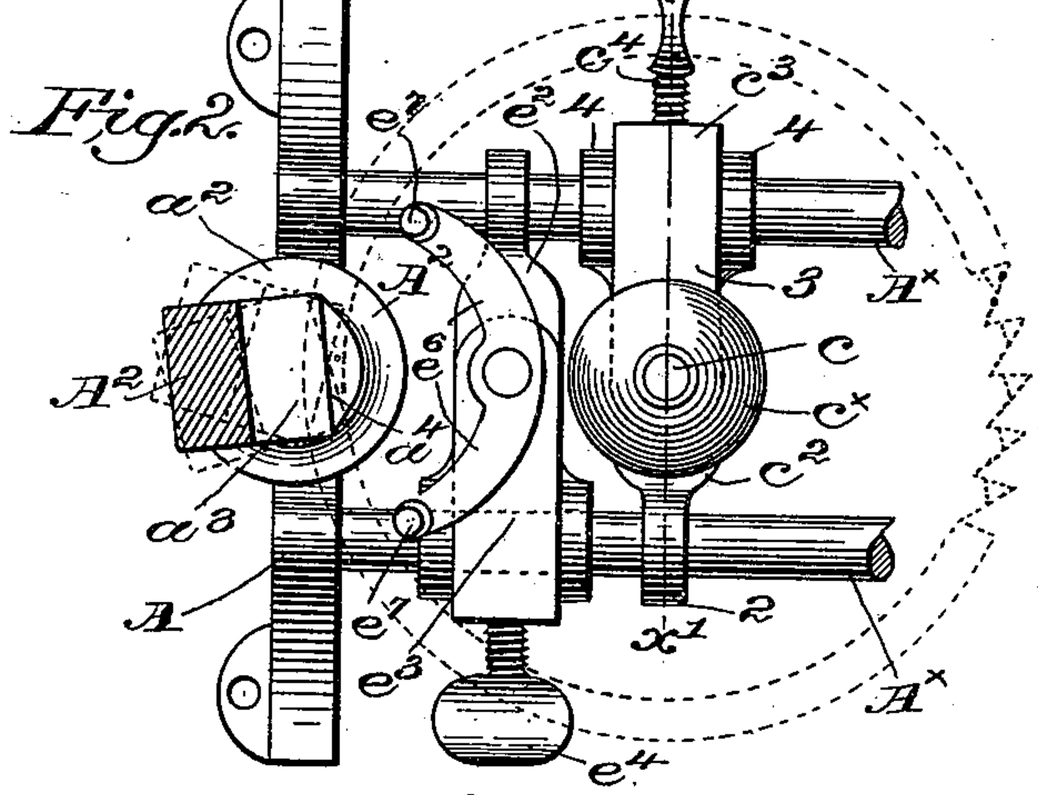

Fig. 2.

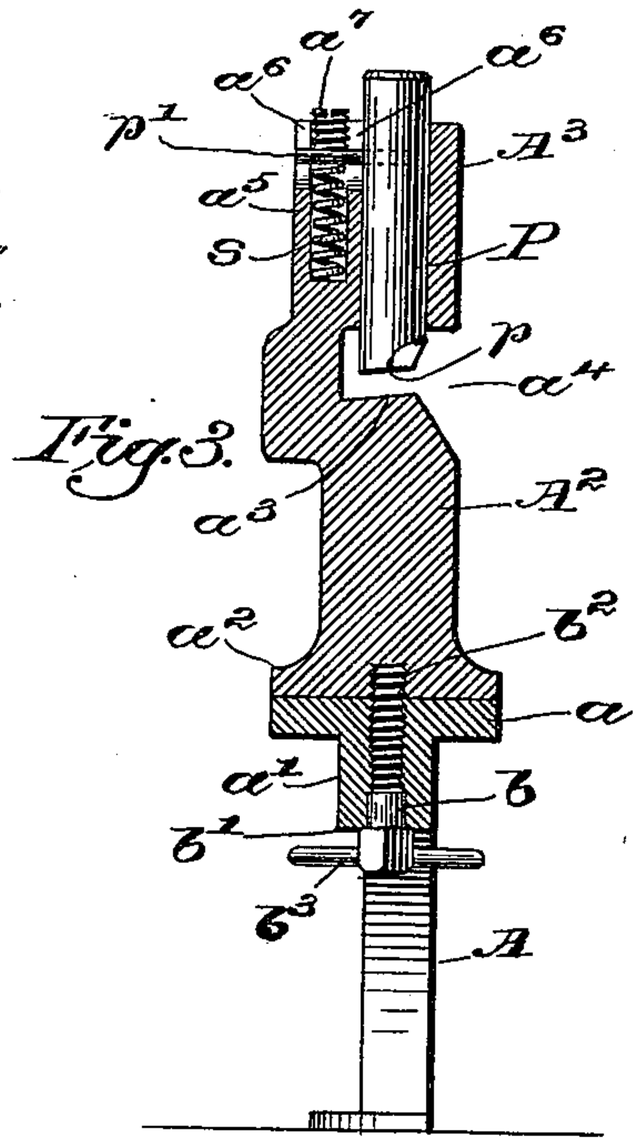

Fig. 3.

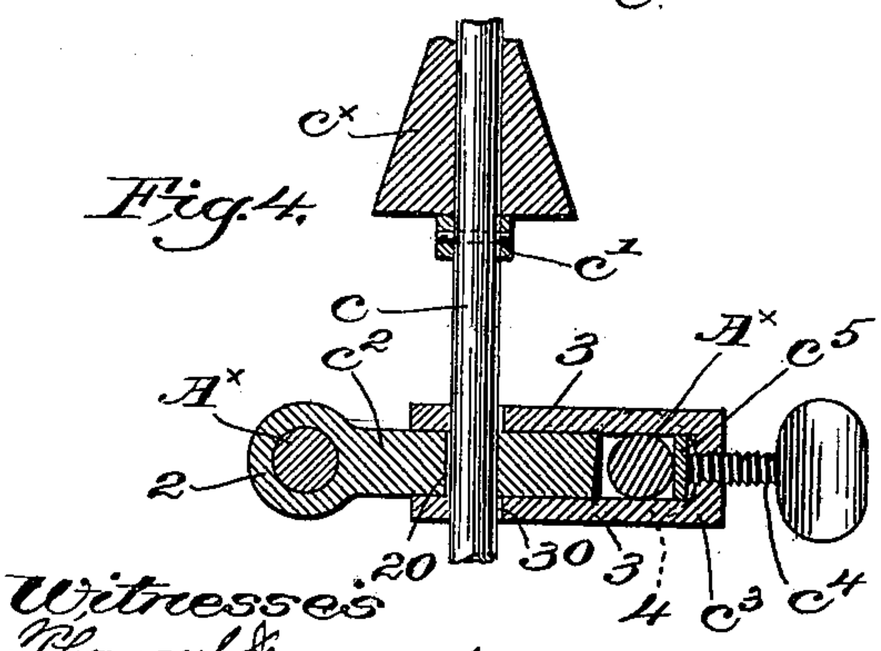

Fig. 4.

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UNITED STATES PATENT OFFICE.

SAMUEL R. ROBINSON, OF ANTRIM, NEW HAMPSHIRE.

SAW-SETTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 646,159, dated March 27, 1900.

Application filed July 10, 1899. Serial No. 723,276. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. ROBINSON, of Antrim, county of Hillsborough, State of New Hampshire, have invented an Improvement in Saw-Setting Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

In setting the teeth of saws it has been customary heretofore to make the set straight across the tooth, substantially parallel to the path assumed by the tooth in passing through the material to be sawed, so that the front and rear edges of the tooth lie in the same plane and are in engagement with the material and no clearance is afforded.

My invention has for its object the production of a novel and effective saw-setting apparatus.

Figure 1, in side elevation, represents a saw-setting apparatus embodying one form of my invention. Fig. 2 is a partial plan view and horizontal section on the line x, Fig. 1. Fig. 3 is a vertical sectional view taken through the anvil and setting-plunger. Fig. 4 is a sectional detail on the line x' x', Fig. 2, of the means for maintaining the saw-support in adjusted position, and Fig. 5 shows in plan and edge view a saw-tooth set in accordance with my invention and also like views of a tooth set in the customary manner.

I have herein shown the frame as comprising upright end pieces A B, adapted to be bolted or otherwise secured to the floor, bench, or other support and rigidly connected by two parallel and horizontal guide-rods $A^{\times}$, the end A being open or arched, as shown in Fig. 3, for a purpose to be described and provided at its top with a preferably circular seat a, from which depends a hollow boss a' into the arched or open portion of the end piece A. Upon this seat is mounted the correspondingly-shaped foot a^2 of the anvil A^2, having a preferably beveled upper face a^3, with a straight front edge or corner a^4, over which the teeth are set. The body of the anvil is rearwardly and upwardly extended to form an arm A^3, overhanging the anvil and forming an upright bearing for a vertically-movable set or plunger P, the lower working face p thereof being beveled to coöperate with the anvil in setting a tooth. Adjacent the bearing and parallel thereto a vertical socket a^5 is made in the arm a^3, transversely slotted, as at a^6, to receive a laterally-extended pin or projection p', Fig. 3, on the plunger, the slot intersecting the plunger-bearing, so that while the plunger can reciprocate it is prevented from rotative movement. A lifting-spring s is inserted in the socket a^5 below the pin p', and above the latter the socket is threaded to receive an adjustable threaded plug or stop a^7, which limits the upward or spring-impelled stroke of the set P. By adjusting the stop the stroke of the set is regulated to the thickness of the teeth to be set, it being most desirable that the face of the set be as near the work as possible before the tooth is set in order that the operator can adjust the tooth properly and accurately upon the anvil.

The set P is struck on its upper end with a hammer in usual manner to swage the tooth down upon the anvil-face over its edge or corner a^4, as will be readily understood.

A bolt b, Fig. 3, shouldered at b' to bear against the lower end of the boss a', is extended up through the latter and threaded at b^2 to engage a threaded socket in the center of the foot of the anvil, the bolt having a suitable handle b^3 on its lower end, by which it may be tightened or loosened. When the bolt is loosened, the anvil may be turned upon it as a center to vary the angle at which the setting-corner a^4 of the anvil is presented to the root of the tooth to be set, as will be explained, different positions of the anvil being shown by full and dotted lines, Fig. 2.

I have herein shown a circular saw T sustained upon a conical holder $c^{\times}$, which is rotatable on an upright spindle c, provided with a collar c' for the holder, the spindle being mounted on a carriage movable on the guides $A^{\times}$. Referring to Figs. 2 and 4, the carriage is represented as composed of two members c^2 c^3, the former having an eye 2 at one end to embrace one of the guide-rods $A^{\times}$ and two separated eyes 4 4 at the other end to embrace the other of said guides, the body of said member between the guides entering between the legs 3 of the bifurcated member c^3, which latter straddles the other guide $A^{\times}$ between the two eyes 4. The spindle c passes vertically

through registering holes 20 30 in the two members of the carriage, Fig. 4, so that when the member c^3 is drawn to the right, Fig. 4, it forces the spindle c against the right-hand side of the hole 20 in the member c^2, so that the spindle will be clamped and held at any desired height vertically to regulate the amount of set to be given to the saw. A clamping-screw c^4 passes through a threaded hole in the carriage member c^3 and is shown in Fig. 4 as bearing against a follower c^5, interposed between the clamping-screw and the guide $A^\times$, so that when the screw is turned in it operates to draw the member c^3 to the right, Fig. 4, and through the spindle c the member c^2 is drawn against the left-hand guide $A^\times$, not only tightly clamping the spindle c in vertically-adjusted position, but also holding the carriage on the guides in adjusted position relatively to the anvil, according to the diameter of the saw the teeth of which are to be set. The follower c^5 prevents the screw c^4 from marring the adjacent guide-rod. This makes a very convenient and simple clamping device, rapidly and easily operated. It will be obvious that the saw is supported at the proper height on the supporting means described in such position that one tooth after another can be brought into position on the anvil to be set.

I prefer to provide an auxiliary rest for the saw near its periphery to prevent tipping of the latter on its support, and for this purpose I have herein shown a second carriage e^2 e^3, substantially like the carriage members c^2 c^3 described and mounted in the same way on the guides $A^\times$ and clamped by a clamping-screw e^4, Fig. 2. A vertical spindle e passes through holes in the overlapping parts of the members e^2 e^3 and is held in vertically-adjusted position by the clamping-screw e^4, said spindle having fixed to its upper end laterally-extended arms e^6, carrying upturned fingers e^7 at their outer ends to engage the under surface of the blade. The separation of the fingers and the cone provides for three points of support for the saw, holding the same lightly, yet steadily, during the setting operation.

Referring now to Fig. 5, the tooth t (shown in side and edge elevation) is represented as customarily swaged over or set along the line 5 5, which is substantially parallel to the root of the tooth, the front and rear edges of the swaged portion t' of the tooth lying in the same plane, so that when the tooth passes through the material there is no clearance, and the set portion is in close contact with the material throughout its passage therethrough. In setting the tooth in accordance with my invention the point is swaged over on a line at an angle to the root of the tooth, as along the line 6 6, Fig. 5, so that the front and rear edges of the swaged or set portion v' of the tooth v lie in different planes, the edge 60 denoting the cutting edge, and I thus effect a free clearance as the tooth passes through the stock, greatly reducing the friction and wear and requiring much less power to drive the saw.

With the diagonal or oblique set the saw remains sharper for a much longer time than is possible with the customary setting.

By varying the relative position of the saw-support and swaging edge or corner of the anvil the setting angle can be varied according to requirements, and such adjustment is herein effected by the rotative movement of the anvil on the frame.

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

1. In an apparatus of the class described, an anvil, a coöperating setting member, a saw-support vertically movable and also movable toward and from the anvil, and a single means to control both movements of said support.

2. In an apparatus of the class described, a frame including horizontal guide members, a carriage movable thereon, a saw-supporting spindle vertically movable in the carriage, and common clamping means to maintain the spindle and carriage in adjusted position.

3. In an apparatus of the class described, a horizontally-movable carriage, a vertically-movable saw-support mounted thereon, and means to simultaneously clamp both the said support in vertical and the carriage in horizontal adjusted position.

4. In an apparatus of the class described, an anvil, a coöperating, spring-lifted setting-plunger, and an adjustable stop to limit the upward stroke of the plunger.

5. In an apparatus of the class described, an anvil, an upright bearing having a longitudinal slot, a reciprocable, spring-lifted setting-plunger having a lug to enter and slide in the slot, and an adjustable stop to limit the spring-impelled stroke of the plunger.

6. In an apparatus of the class described, a vertically and horizontally adjustable saw-support, and means including a single clamping-screw, to maintain said support in both vertical and horizontal adjustment.

7. A carriage, a support upon which it is horizontally adjustable, a sliding spindle vertically adjustable relatively to the carriage, and means to simultaneously clamp said spindle in vertical, and the carriage in horizontal, adjusted position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL R. ROBINSON.

Witnesses:
EPHRAIM SIMONDS,
CHAS. H. MARTIN.