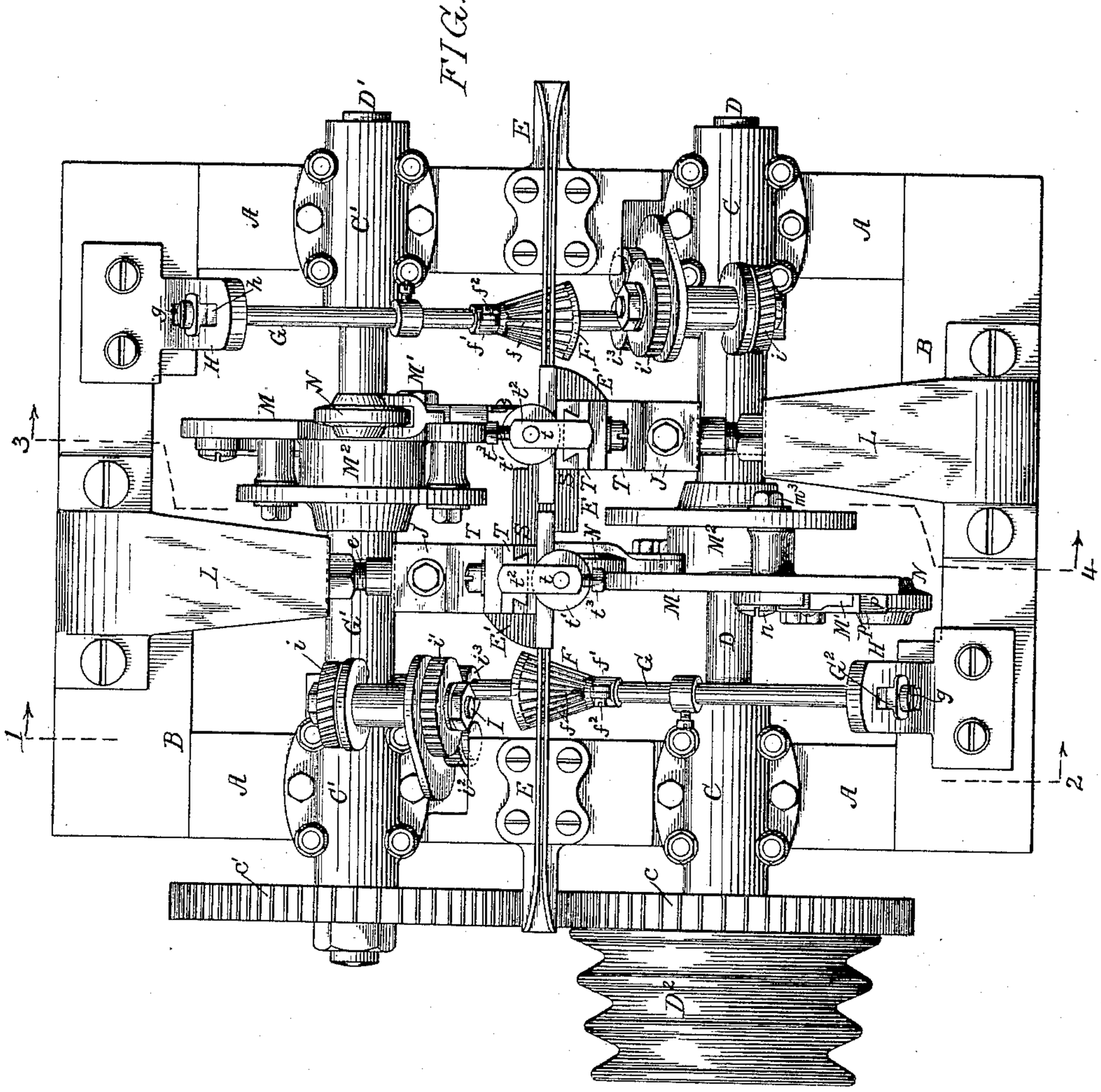
(No Model.) 3 Sheets—Sheet 1.

T. S. DISSTON.

SAW SETTING MACHINE.

No. 453,040. Patented May 26, 1891.

FIG. 1.



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Fred D. Goodwin.

Inventor:
Thomas S. Disston
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(No Model.) 3 Sheets—Sheet 2.

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FIG. 6.

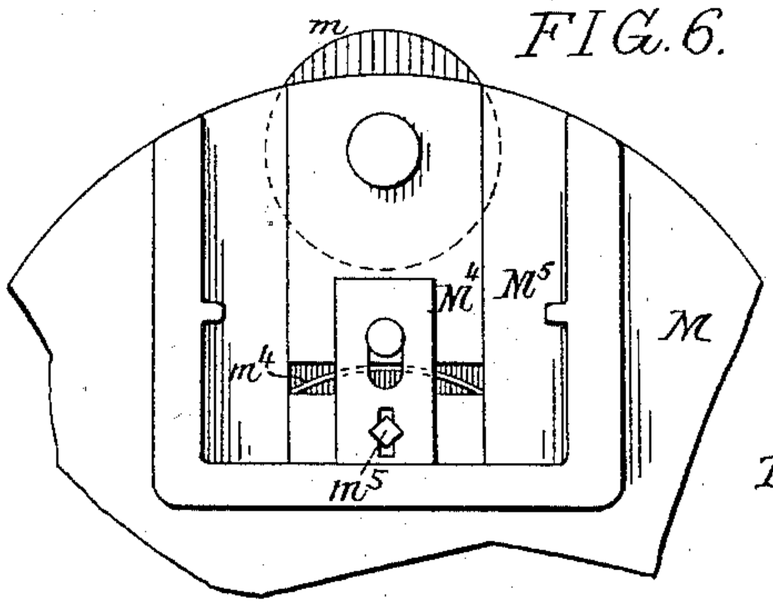

FIG. 2.

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(No. Model.) 3 Sheets—Sheet 3.

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FIG. 5.

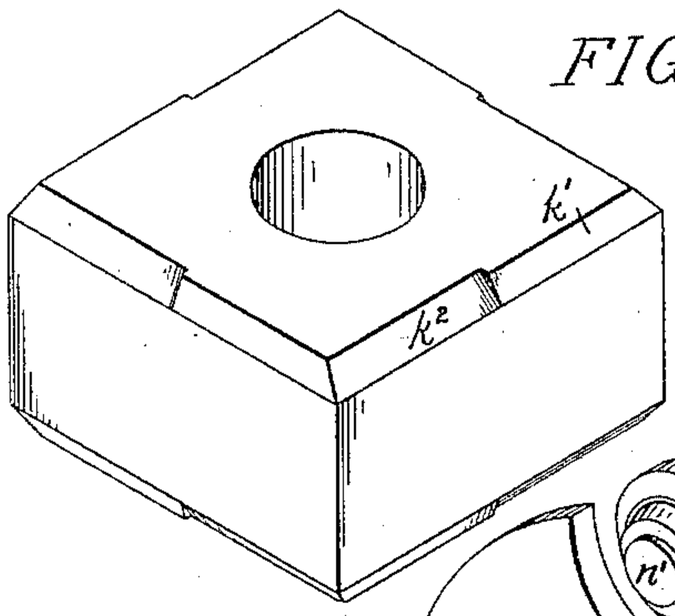
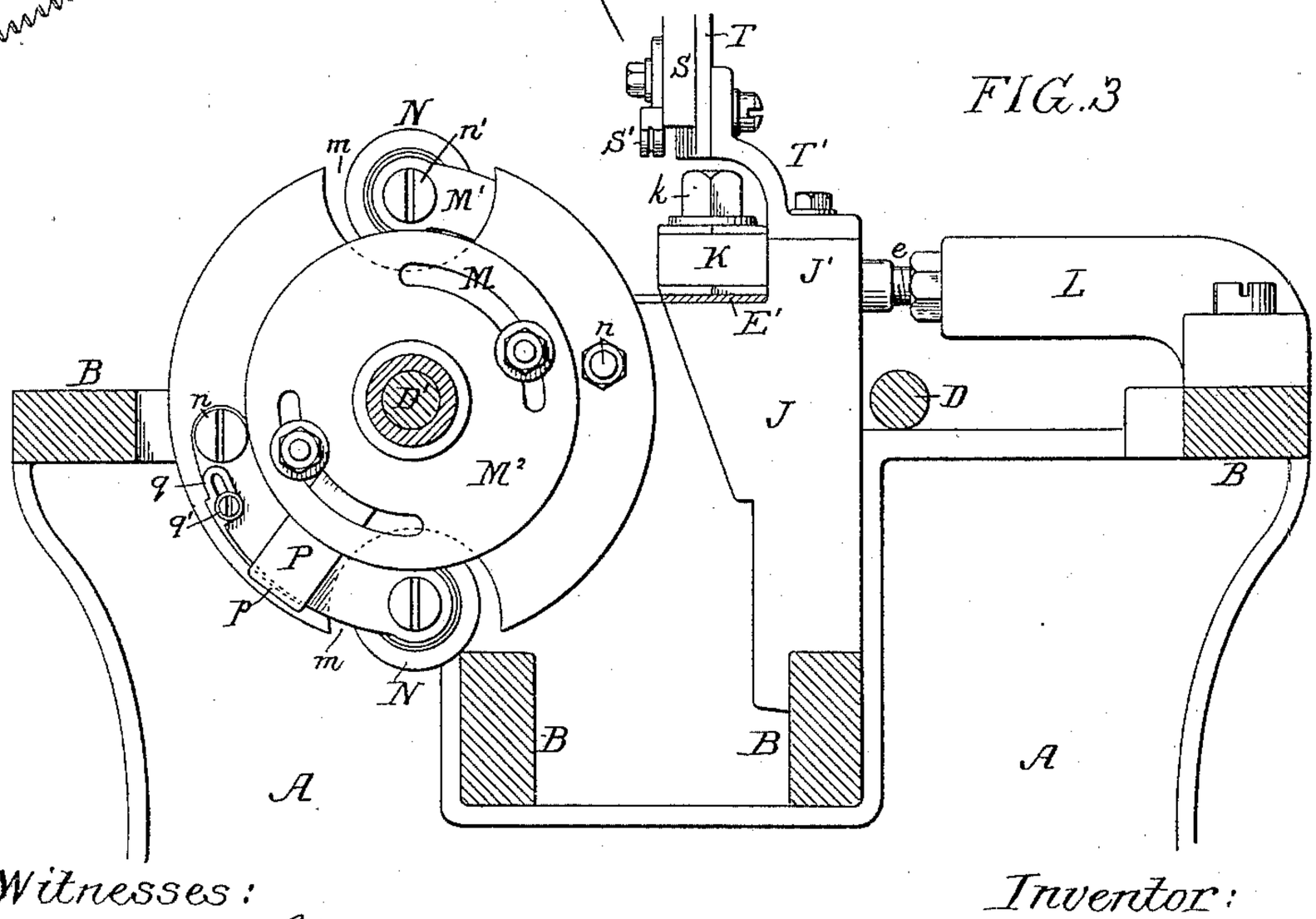


FIG. 4.

FIG. 3



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS S. DISSTON, OF PHILADELPHIA, PENNSYLVANIA.

SAW-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 453,040, dated May 26, 1891.

Application filed January 19, 1891. Serial No. 378,296. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. DISSTON, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Saw-Setting Machines, of which the following is a specification.

My invention relates to machines employed for setting the teeth of saws, and its main object is to construct a machine capable of simultaneously setting alternate teeth in opposite directions, as more fully set forth hereinafter.

In the accompanying drawings, Figure 1 is a plan view of my improved saw-setting machine. Fig. 2 is a transverse sectional elevation on the line 1 2, Fig. 1. Fig. 3 is a transverse sectional elevation on the line 3 4, Fig. 1. Fig. 4 is a perspective diagram showing the operation of the machine. Fig. 5 is a perspective view of one of the anvils, and Fig. 6 is a view of a modification.

A are the end frames of the machine, secured together by cross-bars B, and mounted in bearings C on the frame is the main longitudinal shaft D, having at one end a cone-pulley D^2, through the medium of which power is applied to the machine. On this shaft D is a gear-wheel c, meshing with a gear-wheel c' on the second longitudinal shaft D', adapted to bearings C' on the frame A. These two shafts D D' carry disks, on which are mounted the tooth-setting hammers, which act to set the teeth alternately in opposite directions.

Secured to the frames A A are guideways E, flared at their outer ends and being of sufficient width to permit the passage of the fixed saw-blade. The guides are continued through the machine, being cut away at a point where the hammers act upon the saw, and are provided with extensions E', which pass under the anvils K and are held by the bolt k, which secures the anvil in position.

G is a transverse shaft having one of its bearings in a collar G' on a shaft D' and the other in a block G^2, adapted to slide on a segment H, secured to one of the cross-bars B of the machine, and mounted on this shaft is a cone F, secured in position on the shaft by a collar f', through which passes a clamp-screw f^2. This cone has a series of radiating teeth f, adapted to engage with the teeth of the saw and cleated to the machine, and is adjustable on its shaft by means of the clamp-screw f^2, so that any portion thereof may be brought into the same vertical plane with the guide E, and the machine is thus adapted for the reception of saws having teeth of varying pitch. The teeth f of the cone enter the spaces between the teeth of the saw, as may be seen by reference to the drawings. The saw is fed into the machine with the teeth downward, so that as soon as the teeth of the cone engage with those of the saw they feed it regularly and evenly to the hammers. The bearing-block G^2 is adjustable on the segment H, and is secured thereto in suitable position by a set-screw g, passing through the slot h in the segment, so that when the position of the cone on the shaft G is altered the block G^2 may be raised or lowered to permit the teeth of the cone to engage with those of the saw.

On the shaft D' is a worm d', engaging with a worm-wheel i, mounted on a shaft I', having its bearings in brackets on the collar D'. At the opposite end of the shaft I' is a gear-wheel i', the rotations of which are imparted to a pinion i^3 on the shaft G through the medium of an idler i^2.

The feeding device and its driving mechanism are duplicated at the opposite side of the machine, with this difference, that I prefer to drive the feeding-cone from the shaft D instead of from the shaft D', although this is not essential in carrying out my invention. In fact, a second feeding may be dispensed with, although I prefer the use of two feeding devices.

On each side of the machine is a standard J, securely attached to one of the cross-bars B and carrying at its upper end an anvil-block K, as shown more clearly in Fig. 3 and the perspective view, Fig. 5. This anvil-block K is square in shape, and passing through the central orifice therein is a bolt k, which is tapped into an orifice in the standard J. An extension J' of the standard passes up at the back of the anvil K, serving as a brace and taking the greater portion of the strain from the bolt k.

On one of the bars B is a bracket L, provided with an adjusting-screw bearing against the rear of the standard J, and by which the

anvil may be moved from or toward the saw when adjustment is desired for thick or thin saw-blades, and at the same time the bracket helps to sustain the blows given to the anvil by the setting-hammers. I make the anvils four-sided, as shown in Fig. 5, having beveled portions k' k^2, inclined to the angle required for the set of the teeth. The object of making the anvil four-sided and reversible is that when one portion of the anvil is worn another can be utilized. Thus, as will be seen on referring to Fig. 5, I am enabled to use eight different portions of the anvil before its working-faces are completely worn away. It will also be noticed that each edge of the anvil has two beveled portions k' k^2 at different angles, the portion k' being in line with the first hammer, while the portion k^2 is in line with the second hammer on the same disk, so that as the first hammer strikes the tooth it bends it to a certain extent and the second hammer completes the operation.

Directly opposite the anvil K is a disk M, loosely mounted on the shaft D. This disk is recessed at $m\,m$ for the hammers N N, which are mounted on arms M′, pivoted at n to the disk M. The disk M is adjustably secured by means of a number of screw-bolts m^3 to a slotted disk M^2, fast on the shaft D, so that the disk M and its hammers can be adjusted to strike the blow at the proper time. The hammers in this instance are in the form of rollers pivoted at m^2 m^2 to the arms M′, so that an even wearing of the whole surface of the hammer is effected. The upward movement of each hammer is limited by a stop P, having a lip p, and in order to adjust the extent of this movement I secure to each arm M′ a wedge q, one end of which passes between the lip p and the edge of the arm M′. This wedge is secured in position by a set-screw q', passing through the slot at one end of the wedge, so that it may be adjusted to increase or diminish the space between the lip p and the edge of the arm M′. The arm M′ is forced out by a suitable spring s, secured to the disk M and tending to keep the hammer in an extended position, so as to strike the teeth, the spring also serving to take up the recoil after the blow is given. This spring, however, is not at all times necessary, as the hammers are kept in the extended position by centrifugal force when the machine is in full operation. The arm M′ and the mechanism communicating directly with it are also duplicated on the shaft D′, the anvil and its standard being likewise duplicated. It will be seen that the hammers of the shaft D will strike a blow in one direction and the hammers of the shaft D′ a blow in the opposite direction, so that as the saw passes through the machine alternate teeth will be "set" simultaneously in opposite directions. The two arms M′ on each disk M are not in line with each other, one arm being placed on either side of the disk and the distance between the arms and the hammers being adjusted by packing or filling pieces placed between the arms and the disk at the pivot-point of the frame.

Situated directly above each of the angles K is a weighted presser-bar S, having a grooved guide-plate S′, through which the back edge of the saw passes. This presser-bar S is guided in suitable ways in an upright T, secured by a bracket T′ to the standard J. The presser has also an extension t, on which a weight t' is placed. The extension t passes through a bearing t^2, provided with a set-screw t^3, so that if it be desired to secure the presser-bar S in an elevated position the set-screw is turned to bear against the extension t. This adjustable presser-bar is not absolutely essential when setting the teeth of a straight-back saw—that is, a saw in which the back edge is in a parallel line with the teeth—as a simple fixed guide would answer the purpose, but when a curved or tapered back saw is to be set a movable presser-bar is essential to keep the teeth of the saw in engagement with the feed-cone F.

The operation of the machine is as follows: A saw x is passed from the guideway E and pushed through the machine in the direction of the arrow, Fig. 4, until the first tooth comes into engagement with the first feeding-cone F Then as the hammers revolve they will strike the teeth of the saw, inclining them to a greater or less extent according to the angle of the incline of the anvils. It will be noticed that the hammers of each disk are not in line with each other. The first hammer—that is, the hammer nearest the feed—strikes a tooth in such a manner as to press it against that portion of the anvil having the lesser incline. Then as the saw is fed forward the partially-bent tooth is brought in line with that portion of the anvil having a greater inclination and is struck by the second hammer, and is set to the proper incline. The feeding mechanism is so timed with respect to the operation of the hammers that the first set of hammers will strike the first, third, fifth, &c., teeth and bend them in one direction, while the second set of hammers will strike the second, fourth, sixth, &c., teeth and bend them in the opposite direction. The blade as it passes through the machine comes into engagement with a second feed-cone F and is carried by this feed-cone away from the hammers, after which it is removed by hand and another saw-blade inserted in its seat.

In Fig. 6 I have shown a modified construction, in which the hammer is mounted in a block M^4, held in radial guides M^5, the extent of outward movement of the hammer being governed by a set-screw m^3 and the hammer being held out by a spring m^4.

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

1. The combination, in a machine for setting the teeth of saws, of an anvil, a disk rotated in the same plane with said anvil and carrying a hammer adapted to strike the teeth

of the saw placed upon the anvil, with feeding devices for said saw, substantially as specified.

2. The combination, in a machine for setting saws, of the anvils situated on the opposite sides of the saw-blade, said anvil having two working-faces of different inclination, a disk rotated in the same plane with the anvils, said disk carrying hammers on its opposite sides adapted to act successively upon the saw-teeth, substantially as specified.

3. The combination, in a saw-setting machine, of the anvil, a disk rotated in the same plane with the anvil, an arm pivoted to said disk, and a roller carried by said arm and adapted to act as a hammer, substantially as specified.

4. The combination, in a saw-setting machine, of the anvil, the disk rotated in the same plane therewith, hammers carried by the disk, said disk being loose on its shaft, a disk M^2, fixed to the shaft, and devices for adjusting said disks with respect to each other, substantially as specified.

5. The combination, in a saw-setting machine, of an anvil having two faces of different inclination and two hammers in line with such inclined portions and adapted to bend a saw-tooth by placing it in line with the different inclined portions of said anvil successively, substantially as specified.

6. The combination, in a saw-setting machine, of the anvil, a disk rotated in the same plane therewith, arms pivoted to said disk, hammers carried by said arms, stop P, and an adjusting-wedge for regulating the extent of movement of said arms, substantially as specified.

7. An anvil for saw-setting machines, comprising a rectangular block having on each of its edges two or more striking-surfaces of different inclinations, substantially as specified.

8. The combination, in a saw-setting machine, of the longitudinal shaft, a collar thereon forming a bearing for one end of the feeding-shaft, a segment H, a slide therein forming a bearing for the opposite end of said feed-shaft, a toothed cone on said feeding-shaft, with mechanism for driving the same, substantially as specified.

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

THOMAS S. DISSTON.

Witnesses:
JNO. E. PARKER,
HARRY SMITH.