

(No Model.)

J. E. EMERSON.

SAW SWAGE.

No. 354,114.

Patented Dec. 14, 1886.

Fig. 2.

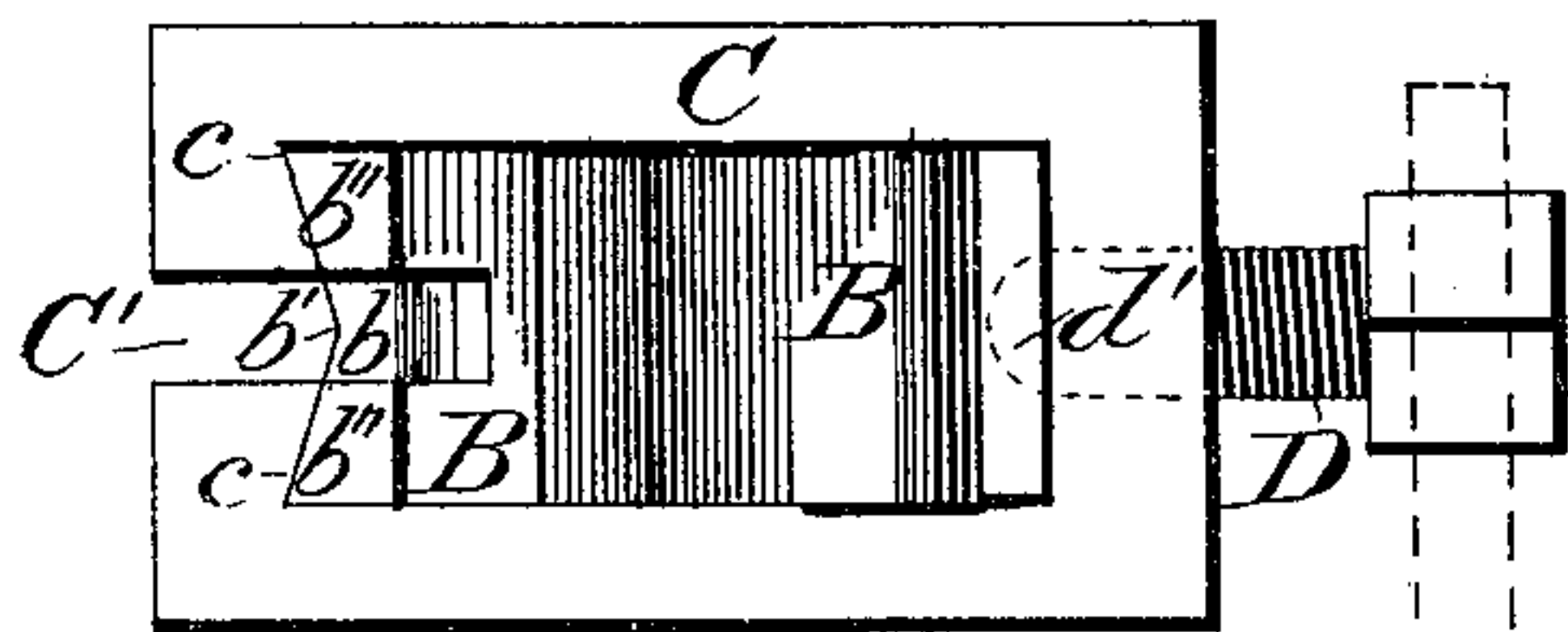


Fig. 3.

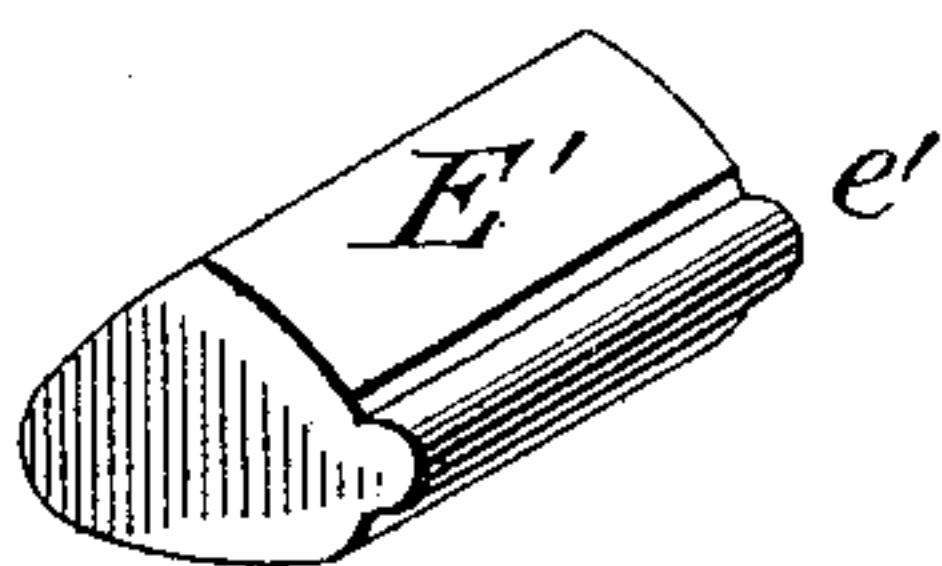


Fig. 4.

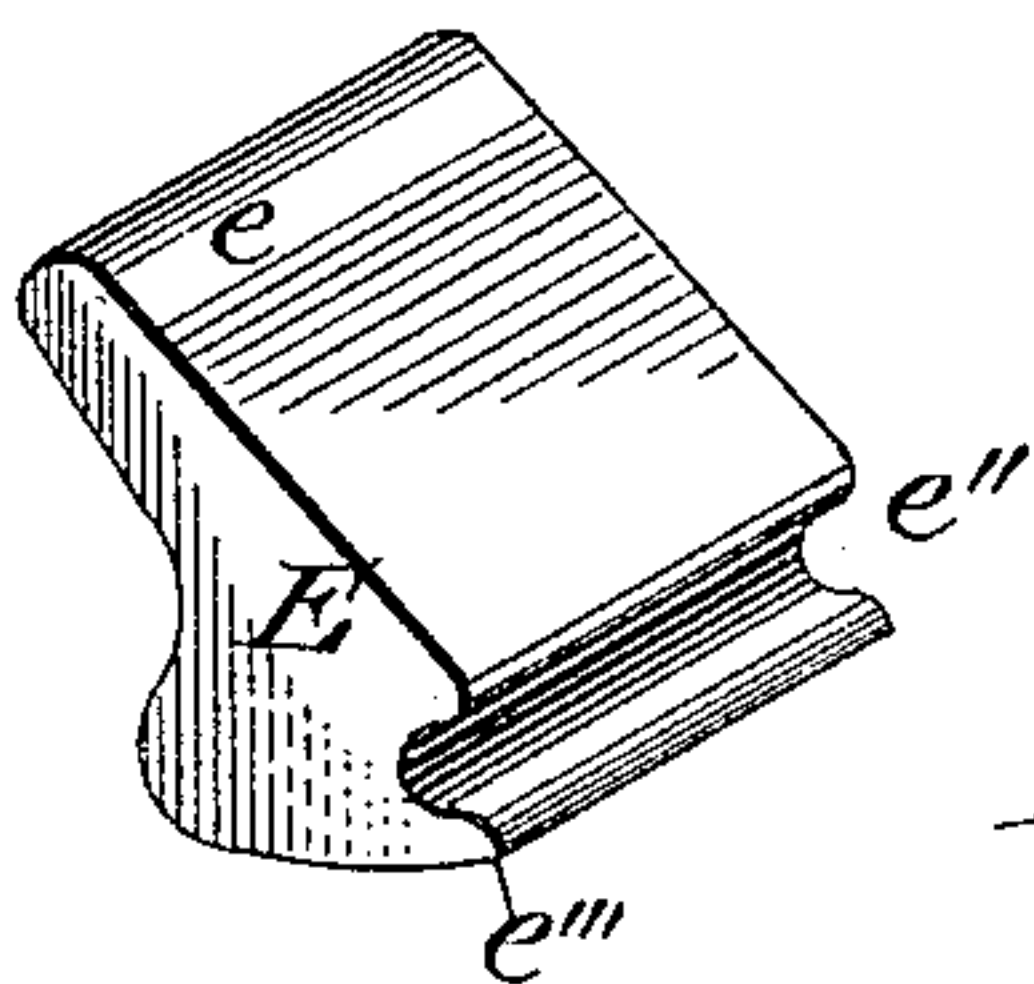
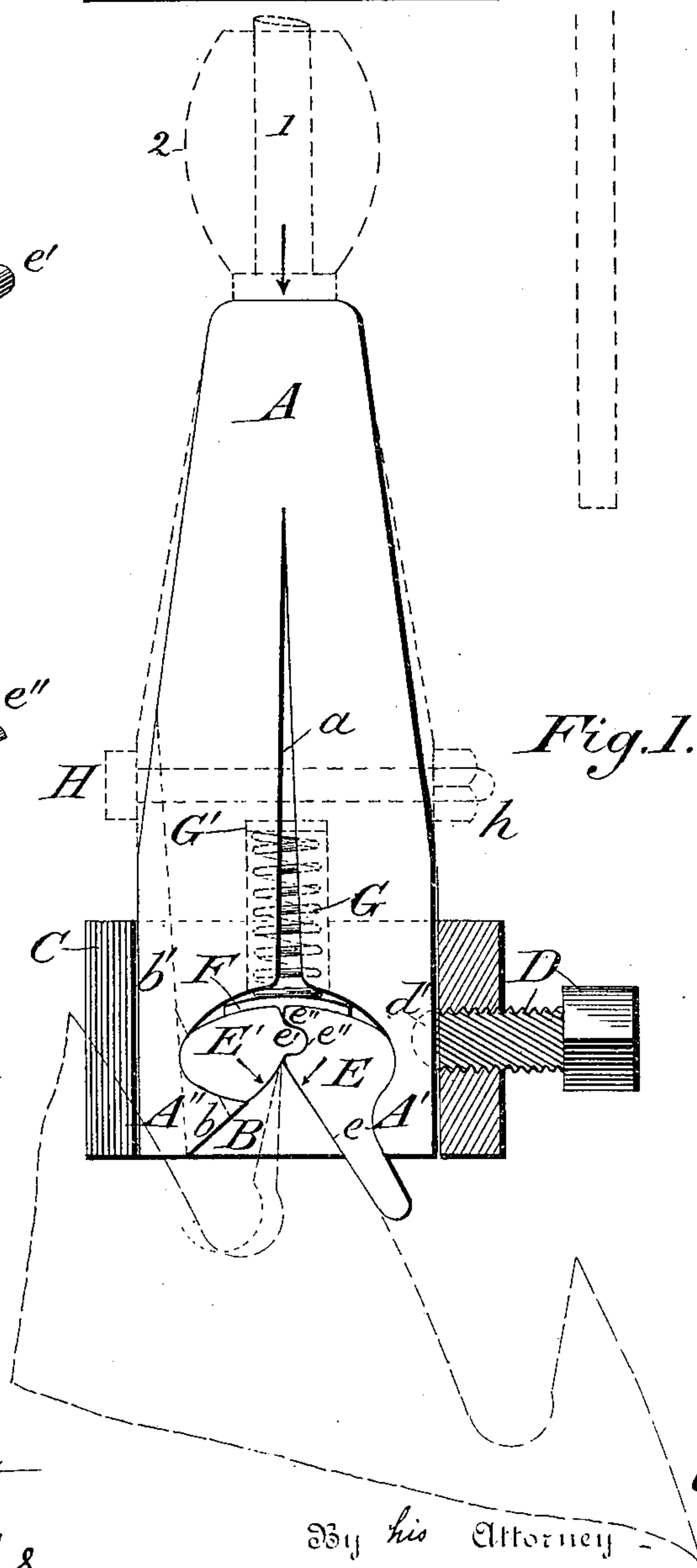
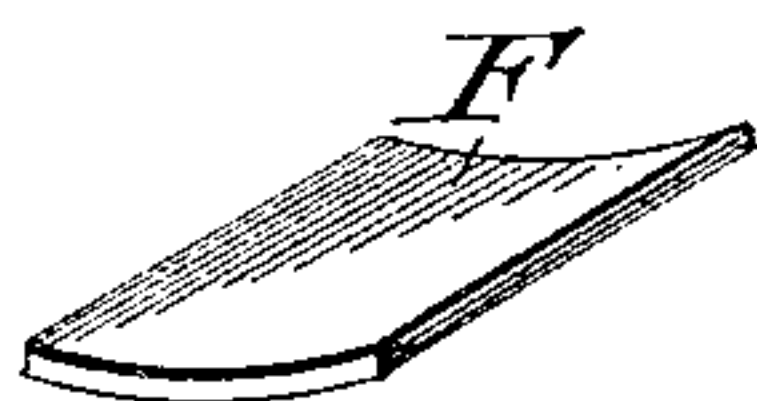


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES E. EMERSON, OF BEAVER FALLS, PENNSYLVANIA.

SAW-SWAGE.

SPECIFICATION forming part of Letters Patent No. 354,114, dated December 14, 1886.

Application filed August 4, 1886. Serial No. 209,972. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. EMERSON, a citizen of the United States, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Saw-Swages, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in saw-tooth swages, and particularly to that class of swages driven upon the saw-teeth by striking the swage-stock with a hammer or other implement giving a concussive blow; and it consists in the construction and arrangements of parts whereby the points of the teeth are brought to a sharp edge on their cut and spread such cutting-edge in width sufficiently to cut a kerf wide enough for the passage of the saw in the kerf without binding therein, as will be fully hereinafter described.

In the drawings, Figure 1 represents a side view of the finished swage and the clamp or collar in section. Fig. 2 is a plan or end view of the swage; and Figs. 3, 4, and 5 represent details of parts in the construction of the swage.

A represents the body of the swage, which is formed by bending or doubling over a bar of steel or other proper metal closely together for a distance from the doubled end, and having the balance of its length separated to form the two opposite jaws or die-holders, A' and A'', of the swage stock or body A.

B is a recess in the end of the swage, and contains the swaging dies or anvils that give form to the tooth when the swage is struck by a hammer to swage a saw-tooth, and is formed as seen in side view in Fig. 1, and having its mouth wide and angular on the jaw A'', and outwardly curved on the opposite jaw, A', from the most contracted point a distance from the mouth, and then being enlarged in width in both jaws, with the base of the recess also on an enlarged circular line.

b is an inclined slot in the end of jaw A'', and b' is a V-shaped longitudinal groove in the edge of jaw A'', to form inclines or dovetails b'' upon the outside of the said jaw A''.

C is a clamp or collar surrounding or nearly surrounding the swage-stock A at its end con-

taining the swaging-dies, and has the slot C' entirely cut through one side to coincide with the slot b in stock A, and each side of slot C' and upon the inside of the clamp it has inclined or angular faces c c, to fit and slide upon the faces b'' of the grooved edge of the stock.

D is a clamping-screw that is screwed through one side of the collar C, its inner end, rounded or pointed to fit into a cavity, in the edge of the stock, to hold the clamp from sliding on the stock when a blow from a hammer is struck to swage a tooth. The stock A being separated the greater part of its length by the opening a allows of a slight compression on bringing the jaws A' and A'' toward each other when the screw D is hard turned in the collar against jaw A'.

E is the guide-die, against which the outside edge of the tooth is placed in swaging, and is formed to fit in the curved recess in jaw A', has a straight or nearly straight inner guide-face, e, and extends or may extend a short distance out from the end of the stock.

E' is the opposite die, formed to fit in the recess of jaw A'' and its curvature, and has a half-round projection, e', on its inner face, to enter into a half-round concavity, e'', in die E, which has a projecting lip, e''', to bear against the rib e', which keeps the two dies from sliding upon each other, so that in case they did, such sliding of the dies would change the form of the cutting-edge of the tooth, when swaged, from the shape intended.

The swaging-dies E and E' at their abutting points form an acute angle, which, when the swage is forced by a blow upon the outer end of the stock upon a saw-tooth, will upset the tooth, spread the same in width, and bring the cutting-points to a sharp edge.

F is a curved piece of sheet-steel of spring temper, and inserted underneath the dies E E', with its convex side at its extreme ends resting upon the shoulders of the recess in the jaws A' and A''.

G is a spiral spring inserted in a bore, G', in the jaws A' and A'', the bore in which it is placed being larger in diameter than the spring, to allow the jaws A' and A'' to be forced toward each other when it is necessary to change the space between the swaging-dies E and E'

to correspond with the shape of the saw-teeth being swaged. This spring bears against the convex side of spring F, and which it re-enforces, and resists the bad effects of a blow from a hammer illy struck on the swage-stock. Both these springs may be used at the same time, or either one may be dispensed with and the other used against the swaging-dies, the object being to give to the swaging-dies a yielding movement against the spring and allow the outer ends of the dies to conform to the shape of the saw-tooth being swaged when the swage is struck by the hammer.

The position of the swaging-dies at their outer ends is changed by the temper-screw D in clamp-collar C to be more or less open to fit the size of the saw-teeth; or the swaging is well done, if the teeth of the saw are narrow, by holding the saw in a position to give the proper form of swage to the teeth.

The clamp-collar C in some cases may be dispensed with, and a simple screw-bolt, H, passed through the jaws A' and A'' and regulated by the screw-nut h.

Instead of using a hand-hammer to strike the outer end of the swage to swage a saw-tooth, a guide-rod, 1, may be permanently fixed in the outer end of the swage and a sliding hammer, 2, operated thereon to give the blow upon the swage, as seen in dotted lines in Fig. 1, and as patented heretofore to me. The swaging-dies do not change their contact with each other by a change of angle of the dies, as the teeth will all be brought to an edge at the point of contact, and at the same time spread in width to give a sufficiently wide-cut kerf to prevent friction upon the saw-blade, as the width had by the swaging extends but a short distance from the cutting-edges of the teeth, and hence all the teeth will have the same form at their cutting-edges.

I am aware that opposite eccentric and rolling swaging-dies have been used to form the cutting-edges of saw-teeth; but such arrangement of forming-dies, instead of bringing the teeth to an edge at their cutting-points, tends to draw or elongate the teeth, instead of upsetting them, and at the same time spreading in width and bringing every tooth to a sharp cutting-edge, as is done by my invention, and I do not claim the use of such eccentric forming-dies, nor the result obtained by their use.

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

1. In a swage for swaging saw-teeth, the stock A, having movable jaws A' and A'', and a clamping device to compress the jaws, in combination with the swaging-dies E and E', interlocked by the rib e' and concavity e'', and a spring or springs underneath the jaws, all constructed to operate substantially as described.

2. In a saw-tooth swage, the combination of the slotted clamp-collar C and its temper-screw D with the stock A, having movable jaws A' and A'', the interlocked swaging-jaws E and E', and spring or springs F or G, substantially as described.

3. As a new device in a saw-tooth swage constructed as above described, the interlocked and movable swaging-dies E and E', as shown and set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES E. EMERSON.

Witnesses:

NEWTON CRAWFORD,
FRANK M. GREEN.