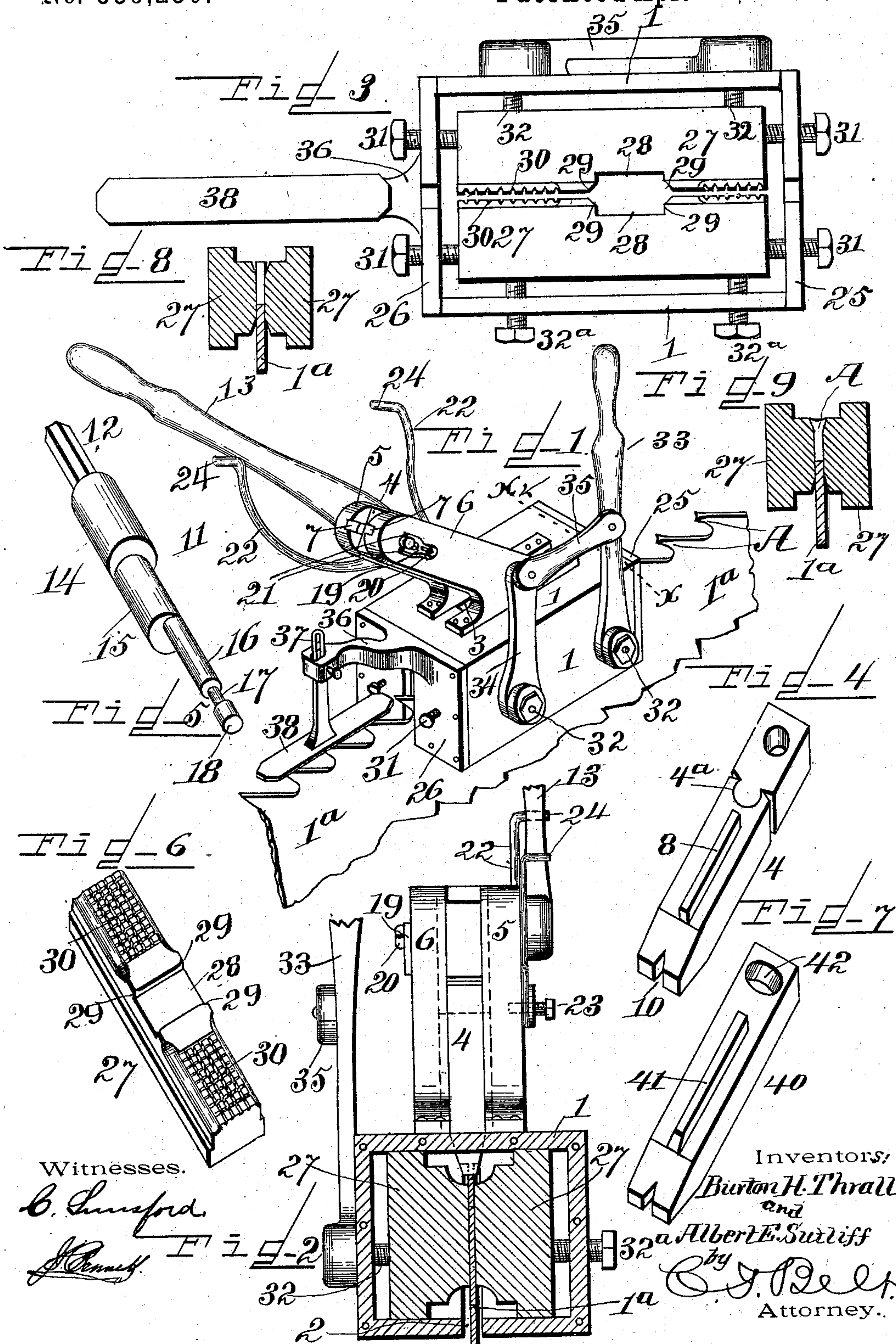


(No Model.)

B. H. THRALL & A. E. SUTLIFF.  
SAW SWAGE.

No. 559,230.

Patented Apr. 28, 1896.





# UNITED STATES PATENT OFFICE.

BURTON H. THRALL AND ALBERT E. SUTLIFF, OF TOMAHAWK, WISCONSIN.

## SAW-SWAGE.

SPECIFICATION forming part of Letters Patent No. 559,230, dated April 28, 1896.

Application filed August 8, 1895. Serial No. 558,689. (No model.)

*To all whom it may concern:*

Be it known that we, BURTON H. THRALL and ALBERT E. SUTLIFF, citizens of the United States, residing at Tomahawk, in the county of Lincoln and State of Wisconsin, have invented certain new and useful Improvements in a Saw-Swage, of which the following is a specification.

This invention relates to a saw-swaging machine, and particularly to a saw-swage, and its novelty will be fully understood from the following description and claims when taken in connection with the annexed drawings; and the object of the invention is to provide a saw-swaging and swage-shaping machine of simple and inexpensive construction, yet of such arrangement of parts as to accomplish the same and better results than two separate machines as ordinarily used for this purpose.

A further object of this invention is to provide a simplified means for operating the machine to accomplish the purposes hereinafter set forth in an approved manner.

Other objects and advantages peculiar to this machine will be revealed in the specification and claims to follow.

With these objects in view the invention resides in the construction and arrangement of parts, and essentially in the gage-spring and handle controlling the swage-die.

In the accompanying drawings, forming part of this application, Figure 1 is a perspective view of the machine in position upon a saw. Fig. 2 is a cross-section on the line  $xx$ , Fig. 1. Fig. 3 is a bottom plan view of the machine with the bottom of the main frame removed. Fig. 4 is a perspective view of the swage-die. Fig. 5 is a perspective view of the eccentric shaft. Fig. 6 is a perspective view of one of the clamping-blocks. Fig. 7 shows a modified form of swage-die. Fig. 8 is a section through the clamping-blocks and saw with a tooth of the latter in position to be swaged. Fig. 9 is a similar view with the tooth swaged.

The same reference letters and numerals denote the same parts throughout the several figures of the drawings.

The main frame 1 is preferably cast in rectangular shape of skeleton form, having a longitudinal slot 2 in the base of sufficient

size to accommodate an ordinary saw 1<sup>a</sup> and a central opening 3 in the top, through which the swage-die 4 is operated. The die is knuckle-jointed at 4<sup>a</sup>, so that its free end will adjust itself to a saw-tooth perfectly. The frame 1 has upon its top arms 5 and 6, being at approximately the same angle from the said frame-top as the angle or pitch of saw-teeth, and each arm has a groove 7 upon the inner side, in which grooves the tongues 8 of the swage-die are operated. The importance of the angle of the arms relative to the saw-teeth will cause the die to engage the saw-teeth squarely upon the point of and in a direct line with the slant or pitch of the latter, so that the V-shaped cut 10 of the die will have an equal bearing upon both the bottom and top of a tooth and shape it into the form shown by A in Figs. 1 and 9.

The eccentric shaft 11 has an angular end 12, upon which the die-operating handle 13 is secured; a bearing portion 14, engaging the arm 5; an eccentric 15, upon which the die is hung; a reduced bearing 16, engaging the arm 6, and a neck 17, projecting outside of the arm 6 and provided with a head 18. This neck 17 is engaged by a lock 19, slidably secured to the arm 6 by the set-screw 20, so that the forks 21 of the lock engage the neck 17 to lock or secure the shaft 11 to the arms, and by sliding the lock 19 down sufficient to have the forks 21 disengage the said neck the said shaft is free to be removed from the arms. This is essential, as it is so often necessary to remove the shaft and change the swage-die in accordance with the saw to be treated and for purposes of cleaning and for packing the machine for transportation.

The gage-spring 22 for controlling the handle, and thereby regulating the stroke of the die 4, has one end adjustably secured to the side of the frame 1 by means of the set-screw 23, and the other end has an angle projection 24, which engages said handle. It will be readily seen that by simply raising or lowering the said spring the handle is controlled, and therefore the extent of rotation of the shaft 11 diminished or increased, thereby diminishing or increasing the stroke of the die.

The frame 1 is provided with a slotted end plate 25 and a like slotted plate 26, between



which plates and the sides of the frame saw-clamping blocks 27 are housed. These blocks have a central cross cut-out 28, through which the die 4 is operated, and the corners 29 are  
5 grooved out or cut away, so as not to obstruct the die, and the saw contact-face of the blocks have teeth 30 to more firmly grasp the saw.

The blocks 27 are held in the frame 1 by  
10 means of set-screws or bolts 31, passed through the end plates 25 and 26. One of the blocks is operated to clamp the saw by means of the screws 32, and the other block is adjusted to the saw by the set-screw 32<sup>a</sup>.

15 One of the screws 32 has a hand-operating lever 33 and the other screw a lever 34, connected to the hand-lever 33 by the bar 35, so that by moving said hand-lever both the screws are operated alike and simultaneously  
20 and bring the said block upon the saw squarely.

The end plate 26 has an arm 36, in the head of which is adjustably secured a link 37, carrying a plate 38, which rests upon the end of  
25 the saw-teeth and to level and fix the machine in place for operation.

The die 40 (shown in Fig. 7) is made in one piece, having a tongue 41 and a cross-slot 42, in which the shaft 11 is operated, and by  
30 means of said slot the die is given a lateral as well as a vertical movement upon the rotation of the said shaft.

In the operation of the machine the blocks 27 clamp and hold the saw and tooth to be  
35 swaged firmly, so that latter will not buckle, and with only the point of the tooth standing clear of the blocks between the cut-away corners 29, (see Fig. 8,) the said blocks thus acting as a clamping-anvil. Then the swage-  
40 die is forced down with its V-notch over the tooth-point and spreads or swages the latter into the form shown by A in Figs. 1 and 9.

Having thus described our invention, what

we claim, and desire to secure by Letters Patent, is—

1. The combination in a saw-swaging machine, of the toothed blocks having a central cross cut-out, the set-screws 32<sup>a</sup>, the screws one having a hand-lever attached and the other having a lever-and-bar connection to the said  
50 hand-lever, whereby the blocks are moved squarely upon a saw, and the end plates provided with set-screws to keep the blocks in the frame of the machine, substantially as set forth.

2. In a saw-swaging machine, the combination with the skeleton frame having a longitudinal slot and a top central opening, of the end plates having a slot to register with said frame-slot one of said plates having an arm,  
60 the link carrying a plate to set upon the saw-teeth and adjustably secured in the said arm, the grooved arms 5 and 6 the die having tongues, the eccentric shaft, and means adjustably secured to the arm 6 for holding the  
65 said shaft in place, substantially as set forth.

3. In a saw-swaging machine the combination of the skeleton slotted frame, the slidable toothed blocks in the frame and the slotted end plates, with the arms 5 and 6 fixed to the  
70 frame upon approximately the same angle as the saw-teeth and having a groove extending through their length, the knuckle-jointed die having tongues, the shaft having a hand-lever and upon which the die is hung, and the gage-  
75 springs secured to one of the said arms and engaging the hand-lever to control the latter, substantially as set forth.

In witness whereof we hereunto set our hands in the presence of two witnesses.

BURTON H. THRALL.  
ALBERT E. SUTLIFF.

Witnesses:

W. CLAUDE LUNSFORD,  
W. T. SIMMONS.