

(No Model.)

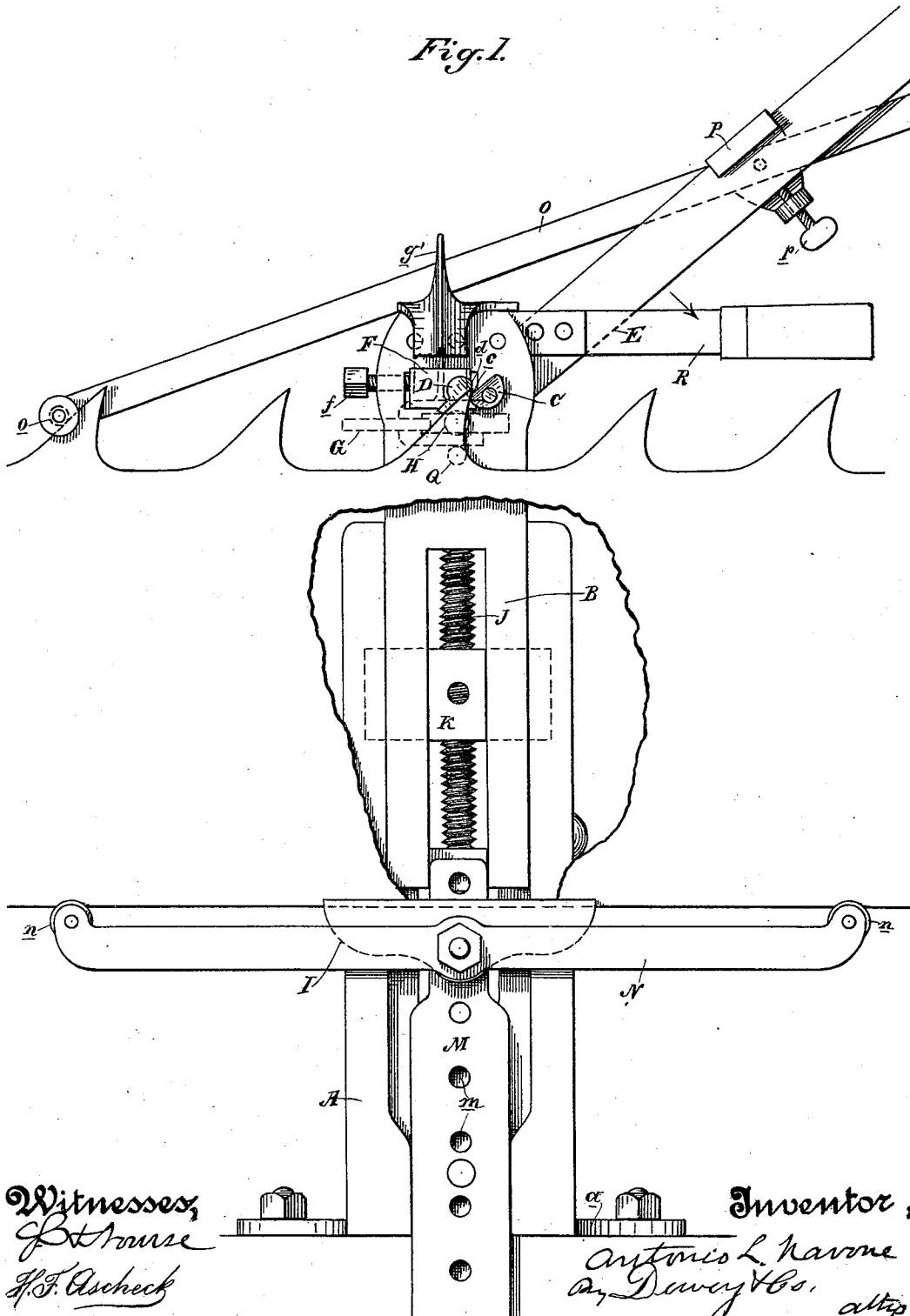
2 Sheets—Sheet 1.

A. L. NAVONE.
SAW SWAGING DEVICE.

No. 478,886.

Patented July 12, 1892.

Fig. 1.



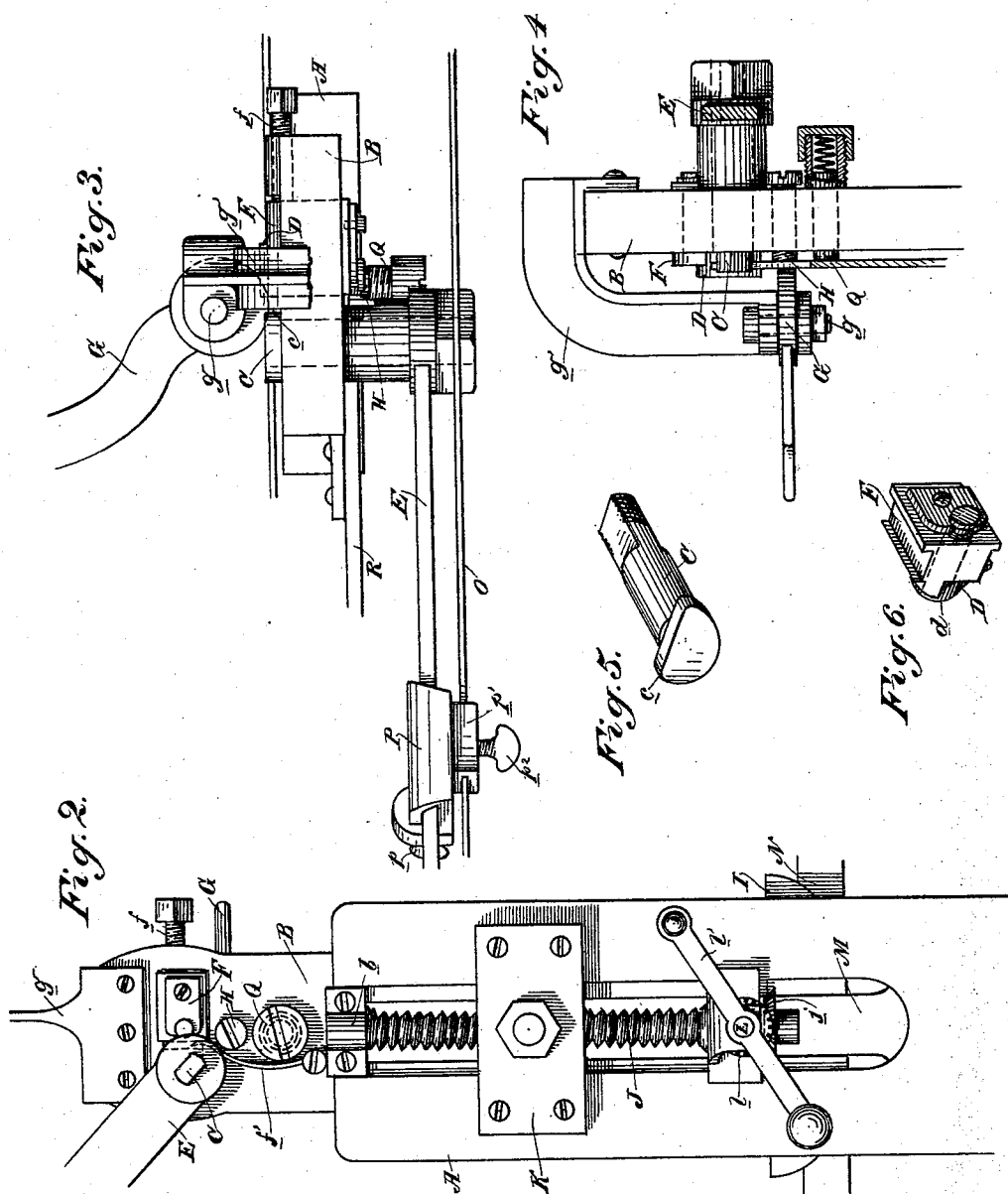
(No Model.)

2 Sheets—Sheet 2.

A. L. NAVONE.
SAW SWAGING DEVICE.

No. 478,886.

Patented July 12, 1892.



Witnesses,
J. H. House
J. F. Aschick

Inventor,
Antonio L. Navone
By Dewey & Co
attys

UNITED STATES PATENT OFFICE.

ANTONIO L. NAVONE, OF CALISTOGA, CALIFORNIA.

SAW-SWAGING DEVICE.

SPECIFICATION forming part of Letters Patent No. 478,886, dated July 12, 1892.

Application filed November 11, 1891. Serial No. 411,627. (No model.)

To all whom it may concern:

Be it known that I, ANTONIO L. NAVONE, a citizen of the United States, residing at Calistoga, Napa county, State of California, have invented an Improvement in Saw Swages and Sharpeners; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of swaging-machines in which by lever mechanism the tooth is operated upon between a swage-cam and an opposing anvil.

My invention consists in the novel construction of the cam and anvil-bar, the means for clamping the tooth and holding the saw, the means for feeding the saw and other details of construction and arrangement, all of which I shall hereinafter fully describe, and specifically set forth in the claims.

The object of my invention is to provide a simple, powerful, and readily-adjustable saw-swaging machine, in the operation of which the teeth will be sharpened as well as swaged.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a front view of my machine, the clamping-lever G being in dotted lines and the saw being broken away to show the adjusting-screw. Fig. 2 is a back view of my machine. Fig. 3 is a top view. Fig. 4 is a side view. Fig. 5 is a perspective view of the swage-cam. Fig. 6 is a perspective view of the sliding bearing in which the anvil is carried.

A is the stock of the machine, having a foot *a* for securing it to a convenient bench. To this stock is fitted the frame B, in the head of which are carried the swage-cam C and the anvil D. The cam C is formed with a straight face terminating below in a rounded contact-point *c*. Its body passes through the frame B in a suitable seat and receives the lever E on its other end, whereby said cam can be rocked. The anvil D is formed with a straight face terminating above in a contact edge or corner *d*, and said anvil is pivoted in and carried by a sliding bearing F, seated suitably in frame B. The bearing F is adjusted inwardly by a screw *f* and is forced outwardly by a spring *f'*.

The operation of these parts is as follows: The tooth of the saw is inserted between the

swage-cam and the anvil, and the swaging is done by the rounded contact-point of the cam operating on the face of the tooth and forcing said tooth against the contact edge of the anvil, which bears with its straight face against the back of the tooth. These two contacts require to be in a certain relation to each other in order to properly operate. The anvil is pivotally mounted, so that it can adjust its face to different inclinations of the tooth-backs, and because of this adjustability it is evident that its contact edge will vary its position with relation to the contact-point of the cam. Therefore it is necessary to compensate for this variance, and this is done by mounting the anvil in the sliding bearing F, whereby its contact edge can be brought into the required relation to the cam, no matter what its inclination may be in adjusting itself to the particular tooth. This is done by setting up or relieving the screw *f*, in the former case forcing the anvil farther in and in the latter allowing it to be forced backwardly by the spring *f'*. The saw-tooth being between the cam and anvil and their contacts being properly and relatively adjusted, the lever E is moved to rock the cam upwardly. The rounded contact-point of the cam bearing on the face of the tooth effectually swages it, and the contact is so sharp and clean that the swaged point will be left sharp and will not require any subsequent filing or grinding whatever. It is necessary during this operation of swaging to clamp the tooth tightly in place. To do this, I have the eccentric-headed clamping-lever G. This is pivoted at *g* in a bracket *g'*, secured to the top of frame B. Opposed to the head of this lever is an abutment-stud H, seated in frame B and having a roughened face. The body of the saw-tooth is clamped firmly between the eccentric head of lever G and the abutment-stud H and will not move under the swaging-pressure. A straight saw is seated with its back in a rest-plate I, while a circular saw is fitted with its central eye over a stud or pin.

To provide for different widths of saws being received in the machine, the frame B is made to slide in stock A. This adjustment is effected by means of a screw J, the upper end of which is stepped in a bearing *b* on the back of frame B. The screw passes and operates

through a fixed nut K, secured to stock A, and is operated by means of a pinion *j* on its lower end, engaged by a gear *l* on a shaft L, having a crank-handle *l'*. Thus the whole frame B may be moved up or down, and as it carries the operating parts sufficient space is thus provided between them and the saw-support to receive saws of different widths or diameters. The saw—for example, a circular saw—may be seated on a stud or pin directly in nut K, or it may be seated on a pin or stud in a fixed plate M, having a series of holes *m* to receive it at different points, and thus extend the limits of adjustment. The saw-rest I may be set in any of said holes to receive the backs of straight saws. To steady the latter, I have a long bracket N secured to the same pin or stud and having rollers *n* in the extremities of its arms, which bear under the saw-back.

O is a pawl-bar to feed the saw forward to present a fresh tooth to be operated upon. The lower extremity of this bar has a bent end or stud *o*, which engages the saw-tooth. It is secured to the lever E by a clip P, which is seated adjustably on said lever and is set in position by a screw *p*. This clip is pivoted to a sleeve *p'*, fitted adjustably on the pawl-bar and set by a screw *p*². Thus the proper inclination and extension of the bar may be had and its proper stroke regulated by the several adjustments of the clips on its connections. With each operative movement of lever E the pawl-bar stud *o* slips a tooth and with each return movement it engages a tooth and feeds the saw forward. To release the tooth from between the swage-cam and anvil, so that the saw can be moved, there is a spring-controlled pusher or plunger Q seated in frame B just below the abutment-stud. This plunger yields as the saw-tooth is clamped and forced between the cam and anvil; but as soon as the tooth is released it springs forwardly and throws the saw far enough out to free its tooth, and the saw can then be moved.

To the head of frame B a handle R may be removably secured to provide means for easily lifting the machine to operate on saws in place.

The straight face of the swage-cam provides ample room for the entrance of the tooth between it and the anvil.

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

1. In a saw-swage, the combination of the rocking swage-cam, the swinging opposing anvil adapted by its movement to conform to the inclinations of the backs of different teeth, and the sliding bearing carrying said anvil, whereby it can be adjusted properly with relation to the cam independently of its individual adjustment, substantially as herein described.

2. In a saw-swage, the combination of the rocking swage-cam having the straight face terminating below in the rounded contact-point, the swinging opposing anvil having the

straight face terminating above in the contact edge, and the sliding bearing carrying the anvil and adapted to adjust the latter to the cam without regard to its inclination on the saw-tooth back, substantially as herein described.

3. In a saw-swage, the combination of a frame, the rocking swage-cam carried by the frame and having a straight face terminating below in the rounded contact-point, the opposing anvil carried by the frame and having a straight face terminating above in the contact edge, and the eccentric-headed lever pivoted to the frame and adapted to clamp the saw between it and said frame, substantially as herein described.

4. In a saw-swage, the combination of a frame, the rocking swage-cam carried by the frame and having a straight face terminating below in the rounded contact-point, the opposing anvil carried by the frame and having a straight face terminating above in the contact edge, and the eccentric-headed clamping-lever and the opposing abutment-stud both carried by the frame and between which the saw is clamped, substantially as herein described.

5. In a saw-swage, the combination of a frame, the rocking swage-cam carried by the frame and having a straight face terminating below in the rounded contact-point, the opposing anvil carried by the frame and having a straight face terminating above in the contact edge, the eccentric-headed clamping-lever and the opposing abutment-stud both carried by the frame and between which the saw is clamped, and the spring-actuated push-plunger carried by the frame for throwing the saw out from between the cam and anvil when relieved by the clamping-lever, substantially as herein described.

6. In a saw-swage, the combination of the stock A, having the fixed plate M, with series of holes, the saw-support adapted to be secured in any of said holes, the frame B, mounted in the stock, the cam, the anvil, and clamping-lever carried by the frame, and the means for vertically moving said frame, consisting of the fixed nut, the screw seated in the nut and connected with the frame, and the connections for operating the screw, substantially as herein described.

7. In a saw-swage and in combination with the operating-lever thereof, the pawl-bar engaging the saw-teeth and the connection between said bar and lever, consisting of the clip P, sliding on the lever and set by a screw, and the sleeve *p'*, pivoted to the clip and sliding on the pawl-bar with a screw to set it, substantially as herein described.

In witness whereof I have hereunto set my hand.

A. L. NAVONE.

Witnesses:

T. W. MURPHY,
WM. H. REED.