

No. 689,708.

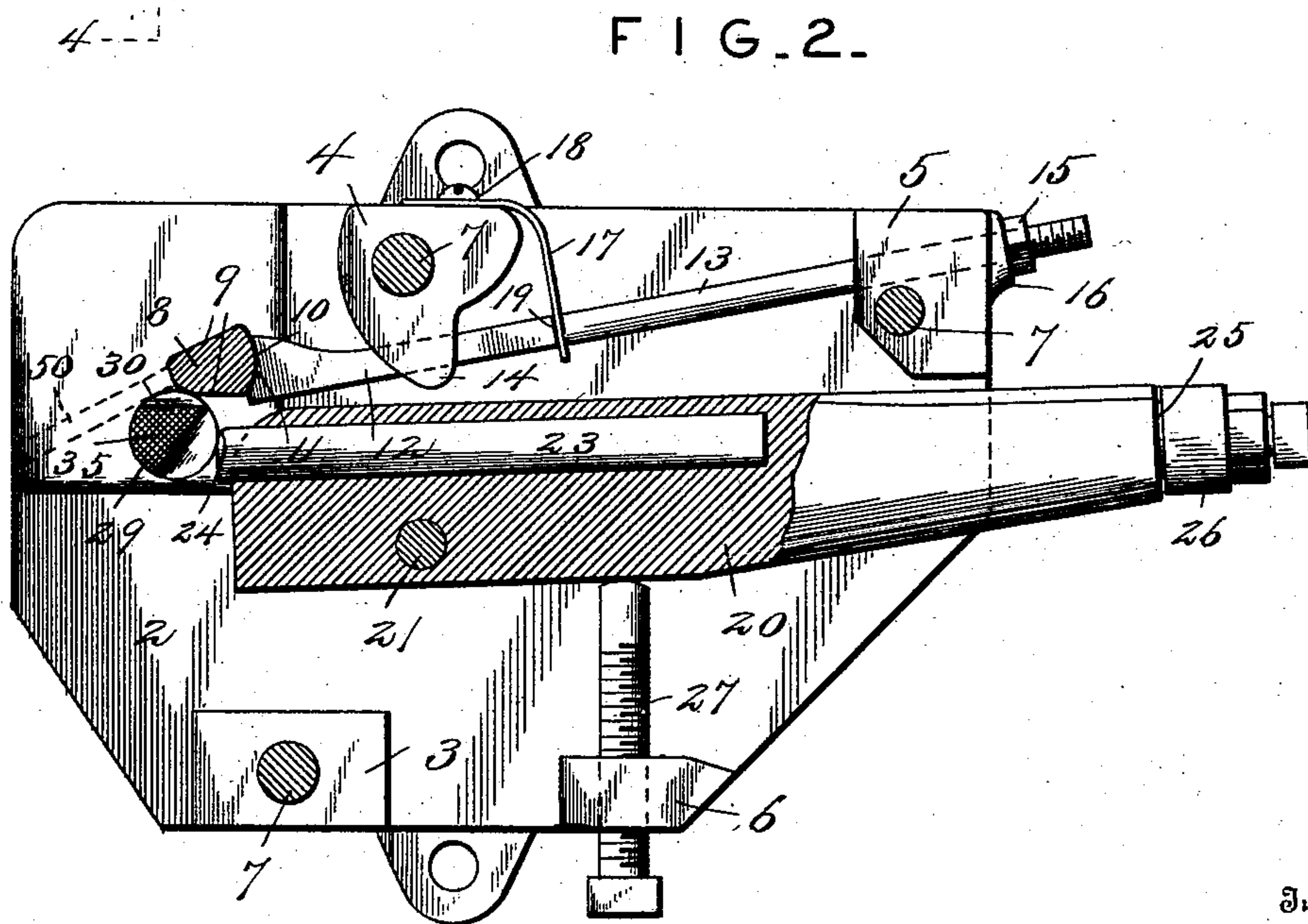
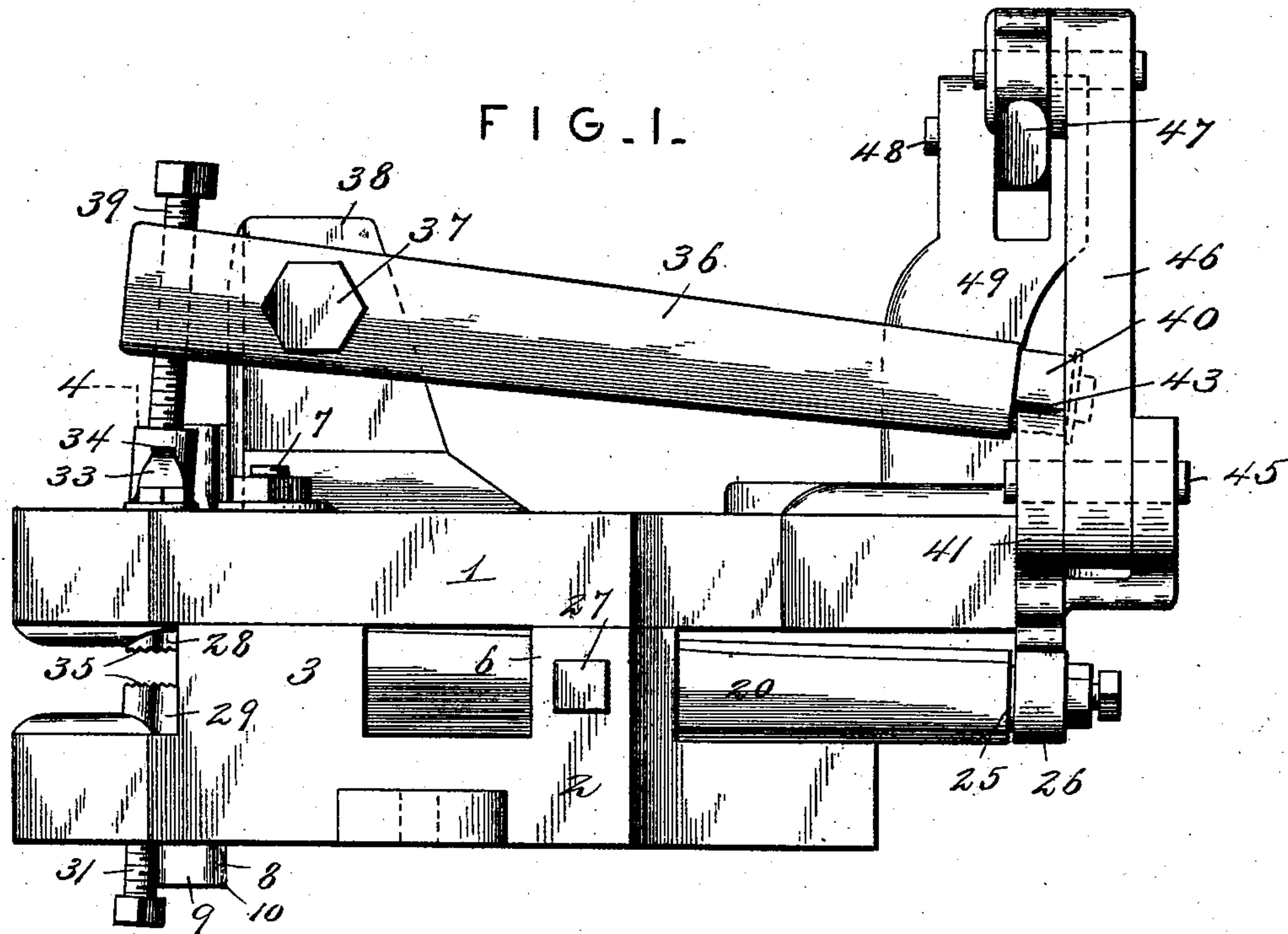
Patented Dec. 24, 1901.

J. E. DAVIS.  
SAW SWAGE.

(Application filed July 24, 1901.)

(No Model.)

2 Sheets—Sheet I.



Witnesses

H. L. Amer.  
L. E. Tibbette.

Inventor  
James E. Davis.  
By *Rexford M. Smith.*  
Attorney

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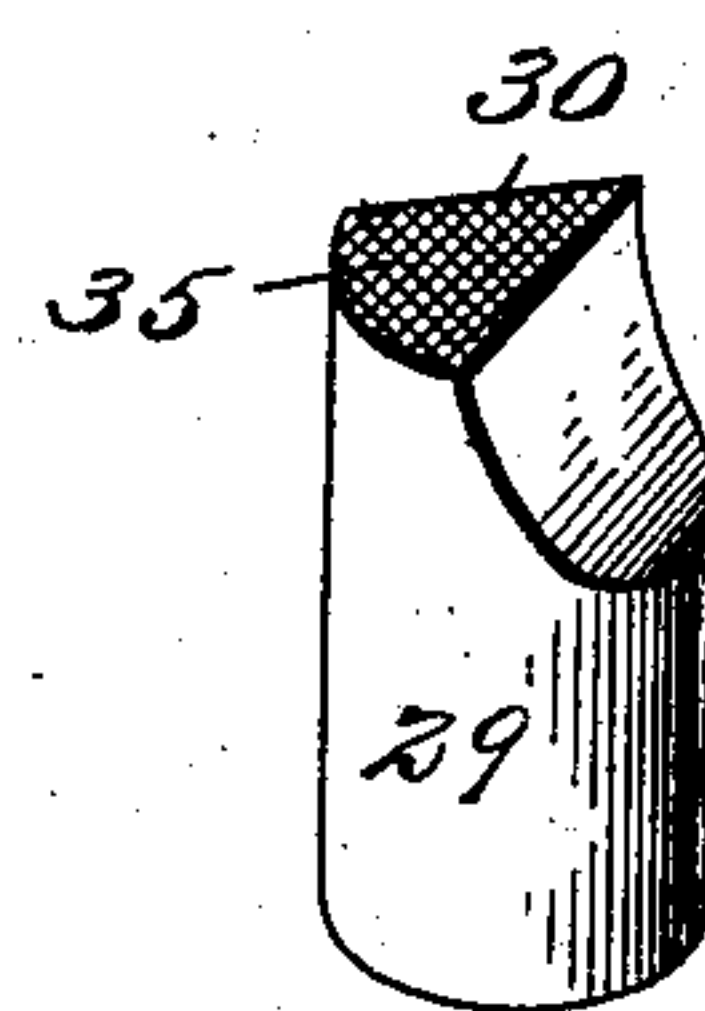
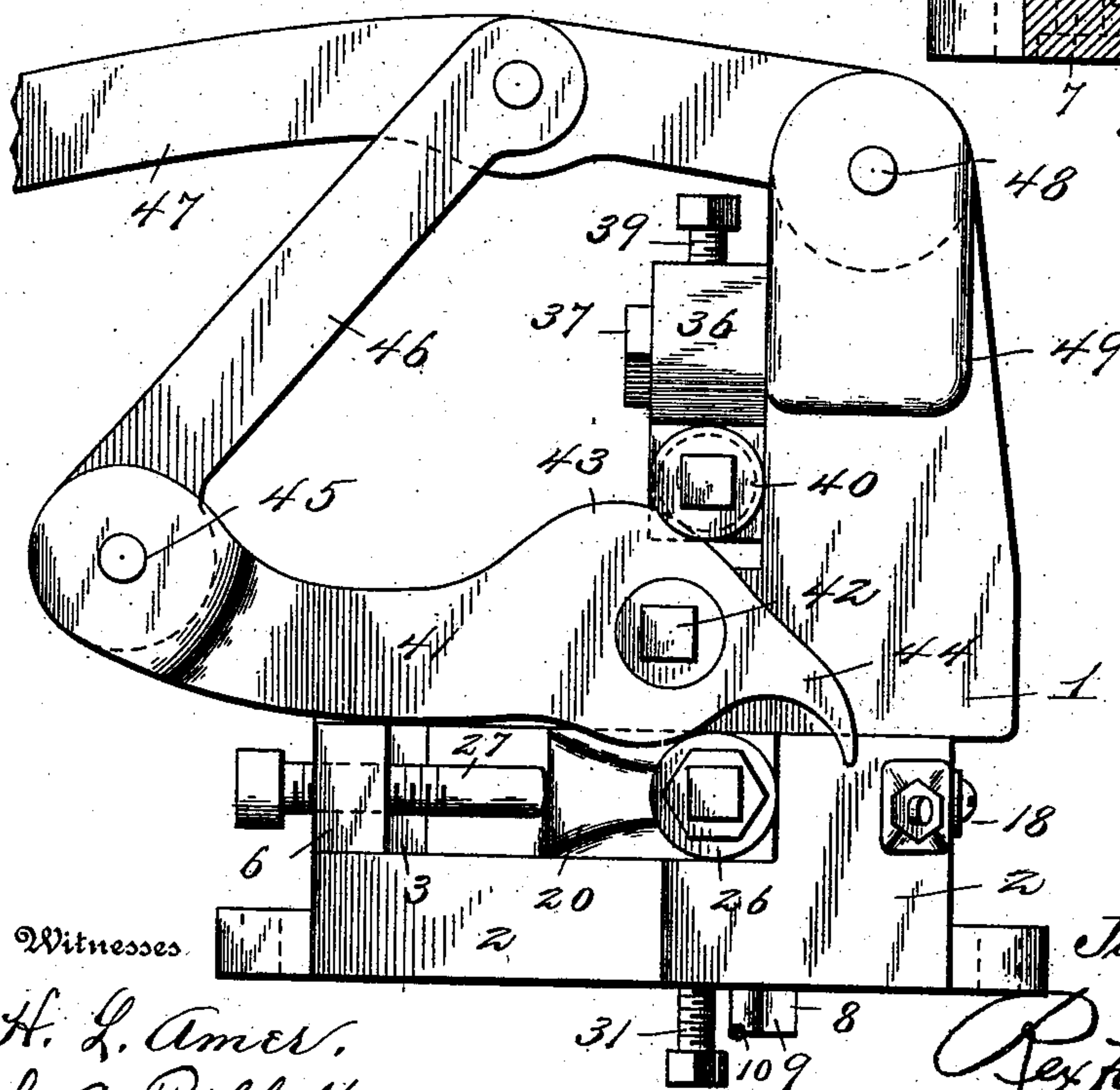
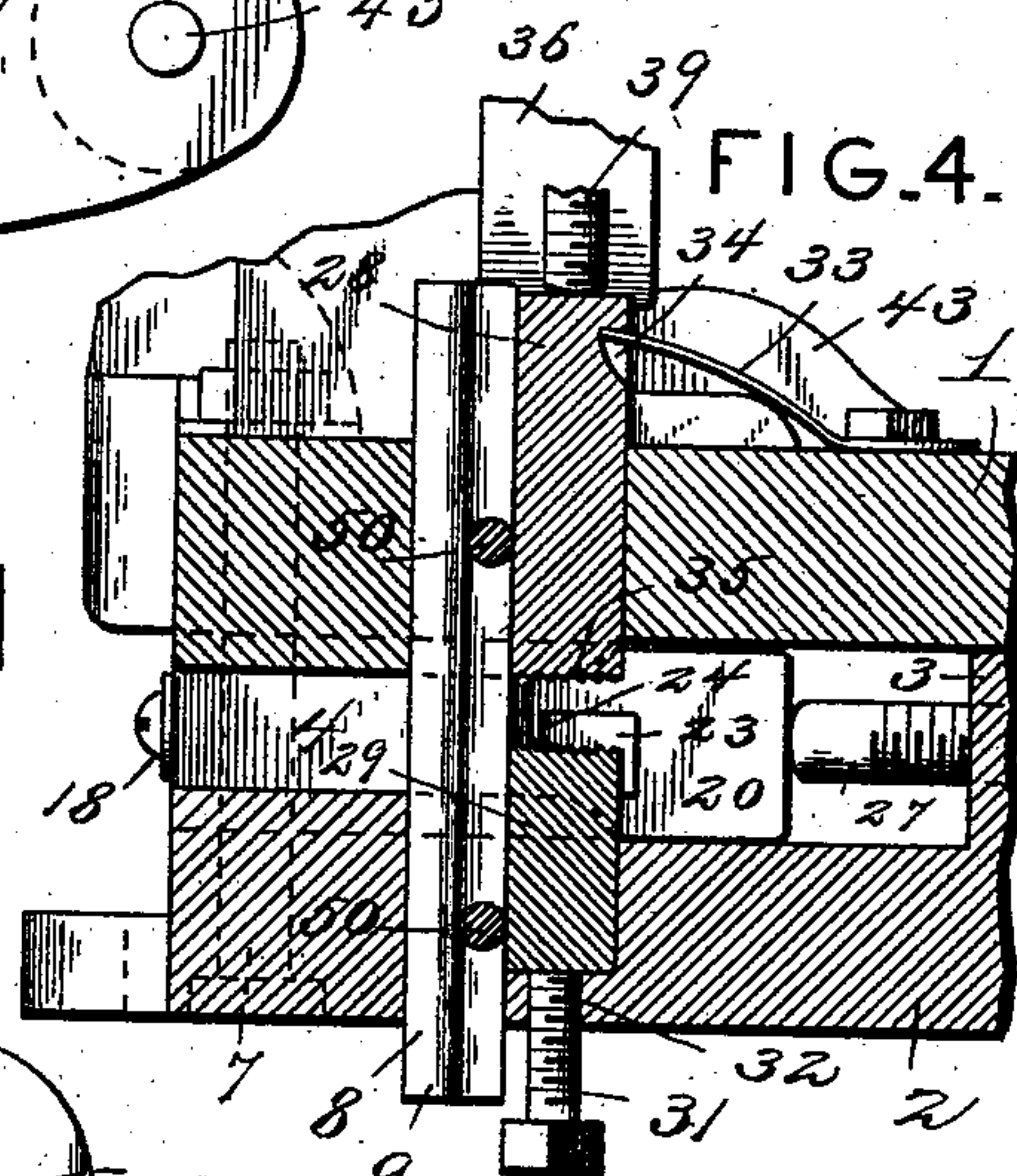
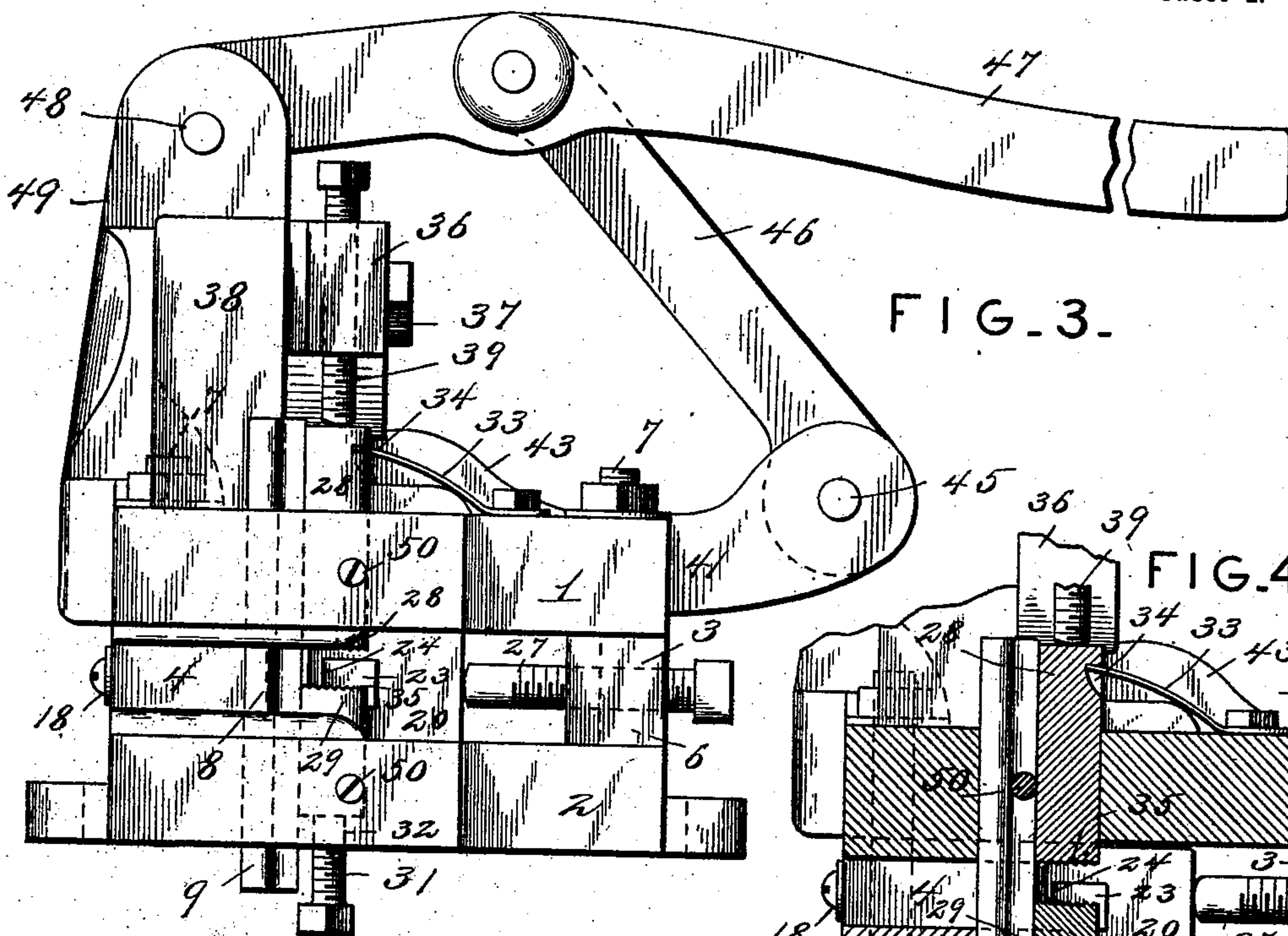
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H. L. Amer.  
L. E. Tibbetts

Inventor

James E. Davis.

By

Rexford M. Smith  
Attorney



# UNITED STATES PATENT OFFICE.

JAMES E. DAVIS, OF ORANGE, TEXAS.

## SAW-SWAGE.

SPECIFICATION forming part of Letters Patent No. 689,708, dated December 24, 1901.

Application filed July 24, 1901. Serial No. 69,511. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES E. DAVIS, a citizen of the United States, residing at Orange, in the county of Orange and State of Texas, have invented a certain new and useful Saw-Swage, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to saw-swages, the object in view being to provide a hand-operated saw-swaging machine comprising, in connection with saw-clamping mechanism, swaging mechanism for offsetting the saw-teeth and operative connections whereby the clamping and swaging mechanisms are properly timed and simultaneously operated, so as to first clamp the saw-blade and subsequently swage each tooth as it is presented to the movable die.

It is also an object of this invention to provide means for adjusting the throw of the movable clamp and other means independent thereof for limiting the throw of the lever which carries the swaging-die.

The invention also contemplates the use of a novel form and arrangement of saw-tooth gage by means of which all of the saw-teeth may be uniformly swaged.

With the above and other objects in view, the nature of which will appear more fully as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts hereinafter fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a saw-swaging machine constructed in accordance with the present invention. Fig. 2 is a horizontal section through the same, showing the die-lever partly in section. Fig. 3 is a front elevation of the machine. Fig. 4 is a detail cross-section on the line 4-4 of Fig. 1. Fig. 5 is a rear elevation of the machine, and Fig. 6 is a detail perspective view of the lower clamp.

Similar numerals of reference designate corresponding parts in all the figures.

The saw-swaging machine contemplated in this invention comprises, essentially, an upper frame-piece 1 and a lower frame-piece 2, the said parts consisting of plates arranged at a suitable distance apart and held at the proper distance from each other by means of

spacing-lugs 3, 4, 5, and 6, said lugs being preferably formed integrally with one of the frame-pieces and arranged as shown in Fig. 2, the lugs 3, 4, and 5 being provided with openings for the reception of bolts 7, passing also through the frame-pieces 1 and 2 for holding the latter firmly together.

The upper and lower frame-pieces 1 and 2 are provided with openings arranged in alignment with each other and adapted to receive the stationary die or anvil 8, consisting of a bar of metal somewhat wedge-shaped in cross-section, as shown in Fig. 2, wherein it is seen to comprise the opposite flat faces 9, against which the saw-teeth are adapted to bear, said flat faces being disposed at an angle to each other. The die or anvil 8 is further provided with a rounded rear edge 10, forming an abutment for the concaved surface 11 of a saw-tooth gage 12, which is at the forward end of a gage rod or stem 13, the latter extending through a slot formed in the inward extension 14 of the lug 4, hereinabove referred to, said lug thus forming a guide for the stem of the gage. The rear end of the lug or stem 13 passes through a guide-opening in the spacing-lug 5, hereinabove referred to, and has its end portion threaded to receive an adjusting-nut 15, which bears against an inclined seat 16, forming an extension of the lug 5, as shown in Fig. 2. The stem 13 extends at an oblique angle with respect to the length of the machine and is engaged by the free end of a gage-spring 17, the opposite end of which is fastened, as at 18, to the guide-lug 4 or other convenient part of the machine. The free end of the gage-spring is provided with an opening to admit of the passage of the stem 13 and to adapt the spring to press in a forward direction against a shoulder 19, formed on the stem 13, whereby the gage is held either against the stationary die or anvil 8 or at such a distance therefrom as the operator may desire, according to the extent or amount of surface of the tooth to be swaged or spread.

Mounted between the frame-pieces 1 and 2 is the die-carrying lever 20, which is fulcrumed on a pin or bolt 21, connected with the frame-pieces. The lever 20 is provided in its forward end with a longitudinal recess, in which is detachably fitted the movable die 23, consisting of a bar of steel, one end of which is



adapted to project beyond the end of the lever 20, where it is provided with a rounded corner or angle, as shown at 24, adapted to bear against the back of the saw-tooth in forcing the latter against the stationary die or anvil 8 in the act of spreading the back of the tooth. By such construction the movable die 23 may be quickly detached for shaping or dressing the tooth-engaging portion thereof without removing the lever 20. The lever 20 at its rear end is provided with a spindle 25, on which is mounted an antifriction-roller 26, adapted to be operated upon by the cam-lever, hereinafter described. 27 designates an adjustable screw-stop, which passes through a threaded opening in the spacing-lug 6, with its inner end arranged in the path of movement of the lever 20, so as to limit the operative movement of said lever.

Adjacent to the openings for the stationary die or anvil 8 the frame-pieces 1 and 2 are provided with other openings for the reception of upper and lower clamps 28 and 29, respectively. Each of said clamps is preferably formed of a bar of steel round in cross-section and afterward flattened on one side, as at 30, to prevent the same from turning in the openings provided therefor in the frame, such openings in the frame being correspondingly shaped to provide an abutting-surface for the flattened sides of the clamps. The lower clamp is upheld and adjusted by means of a clamp-adjusting screw 31, which passes through a threaded opening 32 in the lower frame-piece 2 and bears against the lower end of the die 29, as shown in Fig. 3. The upper clamp 28 is normally upheld by means of a relief-spring 33, one end of which is secured to the frame and the opposite end of which is fitted in a notch or socket 34 in the clamp. In this way the upper clamp is yieldingly supported, thus enabling it to be moved downward for the purpose of clamping the saw-blade between it and the lower clamp, both clamps being provided with roughened or serrated opposing faces 35 for obtaining a firmer and more positive hold upon the saw-blade.

In order to operate the upper clamp 28, I employ a clamp-lever 36, which is fulcrumed at 37 on a bracket 38, extending upward from the upper frame-piece. At its forward end the lever 36 carries a threaded and adjustable impact-screw 39, the lower end of which operates in contact with the upper end of the movable clamp 28. The opposite end of the lever 36 carries an antifriction-roller 40, adapted to be acted upon by a cam-lever 41, fulcrumed intermediate its ends at 42 on the upper frame-piece 1, as shown in Fig. 5. The cam-lever 41 is provided with a cam projection 43, which operates against the roller 40, so as to thrust the roller upward, thereby causing the opposite end of the lever 36 to force the upper clamp downward into engagement with the saw. The lever 41 is further provided beyond its fulcrum 42 with a hooked extension 44, which operates upon the roller

26 to thrust the rear end of the lever 20 in a direction which will cause the movable die to be advanced toward the stationary die or anvil. The extension 44, however, does not operate upon the lever 20 until after the cam projection 43 has swung the clamp-lever and secured the saw-blade. The longer arm of the cam-lever 41 has pivotally connected thereto at 45 a link 46, which is pivotally connected at its opposite end to a hand-lever 47, which is fulcrumed at one end at 48 on a bracket 49, extending upward from the upper frame-piece 1. The stationary die or anvil 8 is securely held in place when adjusted by means of one or more set-screws 50 passing through the frame-pieces 1 and 2 and binding at their extremities against the die or anvil, as illustrated in Fig. 2.

From the foregoing description it will be seen that the saw-swage is adapted to operate upon saws of different sizes for the purpose of spreading the backs of the saw-teeth. It will be understood that by a single movement of the hand-lever the saw-blade is first clamped and held fixed while the swaging-die is immediately thereafter brought into forcible contact with the back of the tooth, which being confined between the movable and stationary dies is spread. By means of the adjustable gage 12 any desired portion of the point of the tooth may be spread, and the teeth are uniformly operated upon by the movable die by reason of the fact that the gage is always restored to its proper operative position by means of the gage-spring hereinabove described. The only parts of the machine which need frequent attention and adjustment are the stationary and movable dies which, it will be seen, are detachably mounted with respect to the frame of the machine and the die-carrying lever. The dies may thereby be quickly removed, repaired, or reshaped and reinserted in proper relation to the machine-frame and die-carrying lever. This obviates taking the machine to pieces. The arrangement of hand-lever for imparting the necessary movements to the clamps and swaging-die gives sufficient leverage to insure the uniform swaging of the teeth without requiring undue exertion on the part of the operator.

I do not desire to be limited to the details of construction and arrangement of parts hereinabove set forth and accordingly reserve the right to change, modify, or vary the construction within the scope of the appended claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a saw-swage, the combination with frame-pieces held at a distance from each other, of a stationary die or anvil detachably mounted in openings in the frame-pieces, a movable die-carrying lever fulcrumed between the frame-pieces, saw-clamps mounted in oppositely-located openings in the frame-



pieces, a clamp-lever, and a cam-lever interposed between the die-carrying lever and clamp-lever and adapted to successively operate first the clamp-lever and then the die-carrying lever.

2. In a saw-swage, the combination with frame-pieces rigidly held at a distance from each other, of a stationary die or anvil detachably mounted in openings in the frame-pieces, a movable die-carrying lever fulcrumed between the frame-pieces and provided with a longitudinal recess, a movable swaging-die removably mounted in said recess and detachable from the lever, saw-clamping mechanism, and a cam-lever adapted to successively operate the clamp mechanism and die-carrying lever.

3. In a saw-swage, the combination with frame-pieces held rigidly at a distance from each other, of a stationary die or anvil detachably mounted in said frame-pieces, a movable die-carrying lever fulcrumed intermediate its ends between the frame-pieces,

means for operating said lever at its rear end and an adjustable stop-screw for regulating the operative movement of the die-carrying lever.

4. In a saw-swage, the combination with a clamp-operating lever and a movable die-carrying lever, of a cam-lever interposed between the aforesaid levers and provided with a cam projection operating directly upon the clamp-lever and with a hooked extension which operates the die-carrying lever, said cam-lever operating first to swing the clamp-lever and then to swing the die-carrying lever in a direction substantially at right angles to the path of movement of the clamp-lever.

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

JAMES E. DAVIS.

Witnesses:

C. E. BURTON,  
O. R. SHOLAN.