

No. 767,130.

PATENTED AUG. 9, 1904.

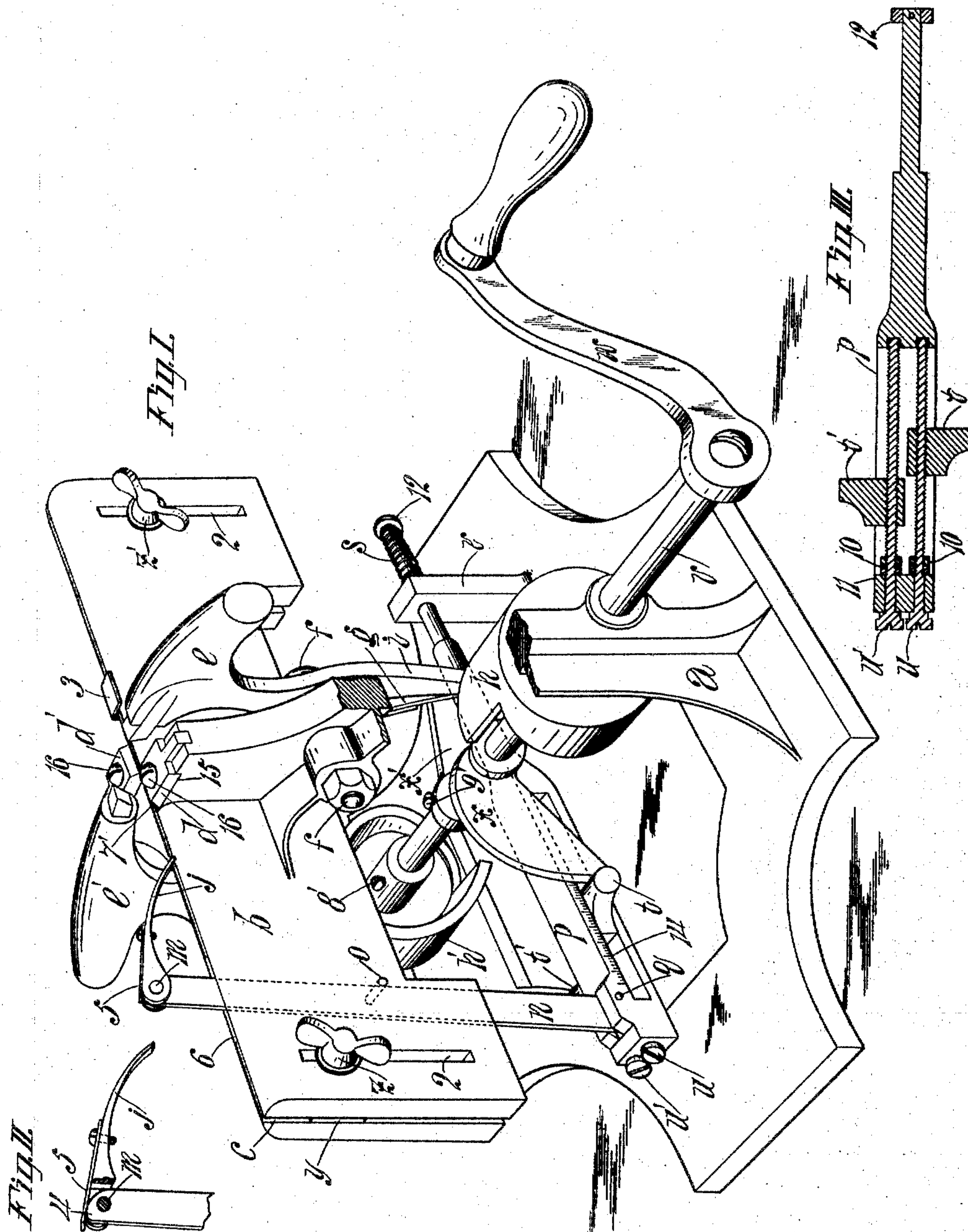
R. ADDISON.

SAW SET.

APPLICATION FILED NOV. 23, 1900.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
George Ingman.  
J. Townsend.

By *Robert Addison*  
*Townsend Bros.*  
his Attys.

No. 767,130.

PATENTED AUG. 9, 1904.

R. ADDISON.  
SAW SET.

APPLICATION FILED NOV. 23, 1900.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. IV

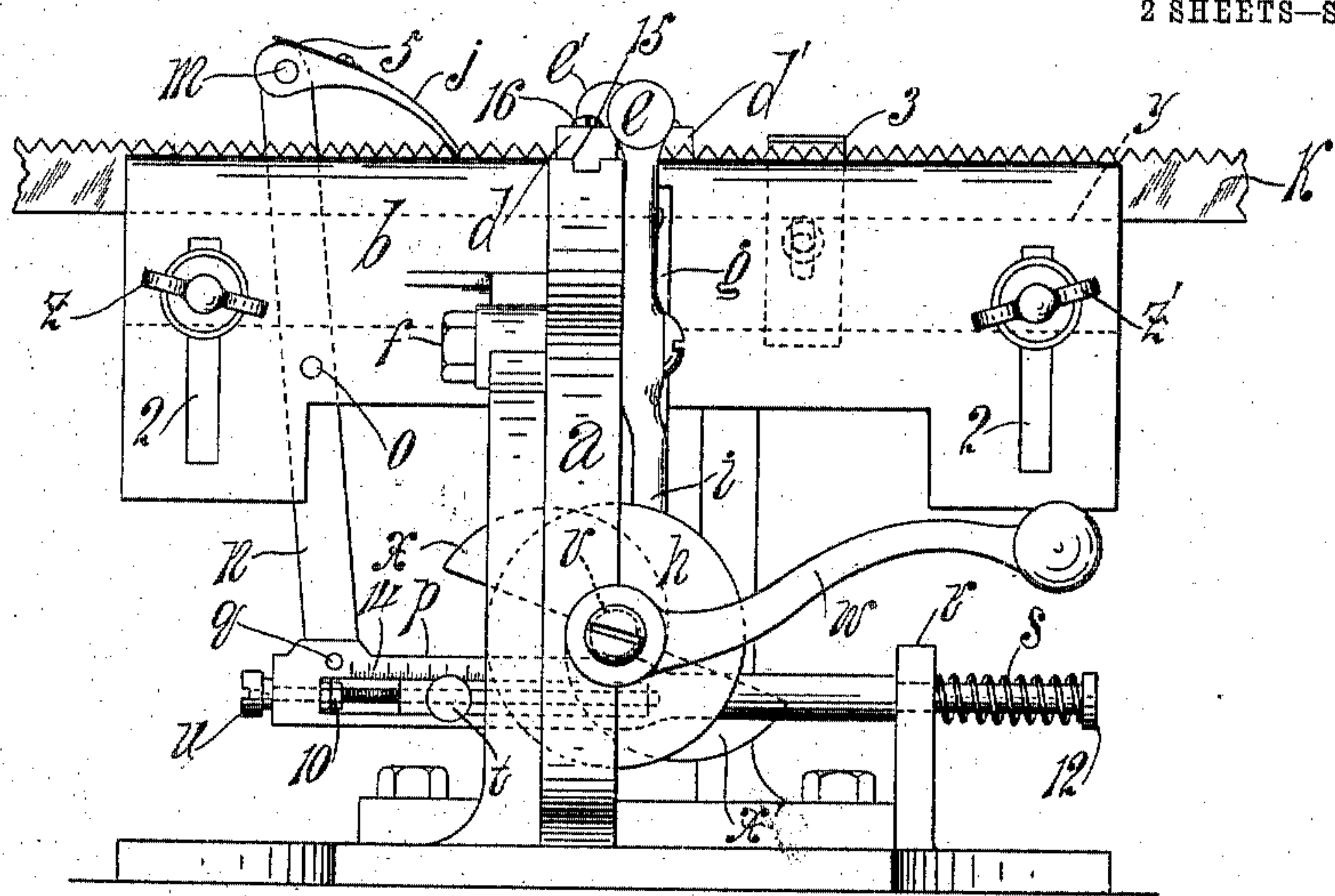


Fig. V

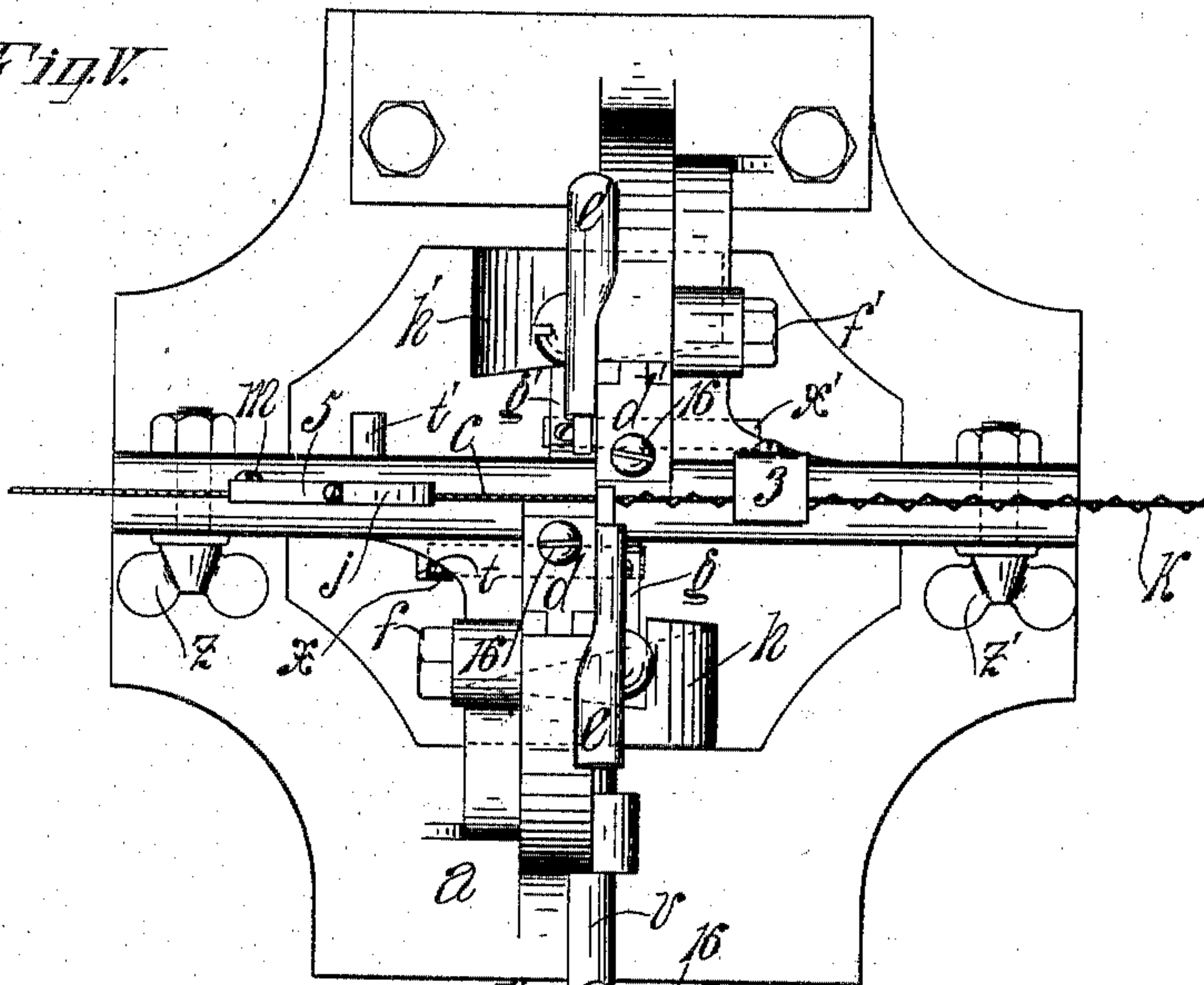
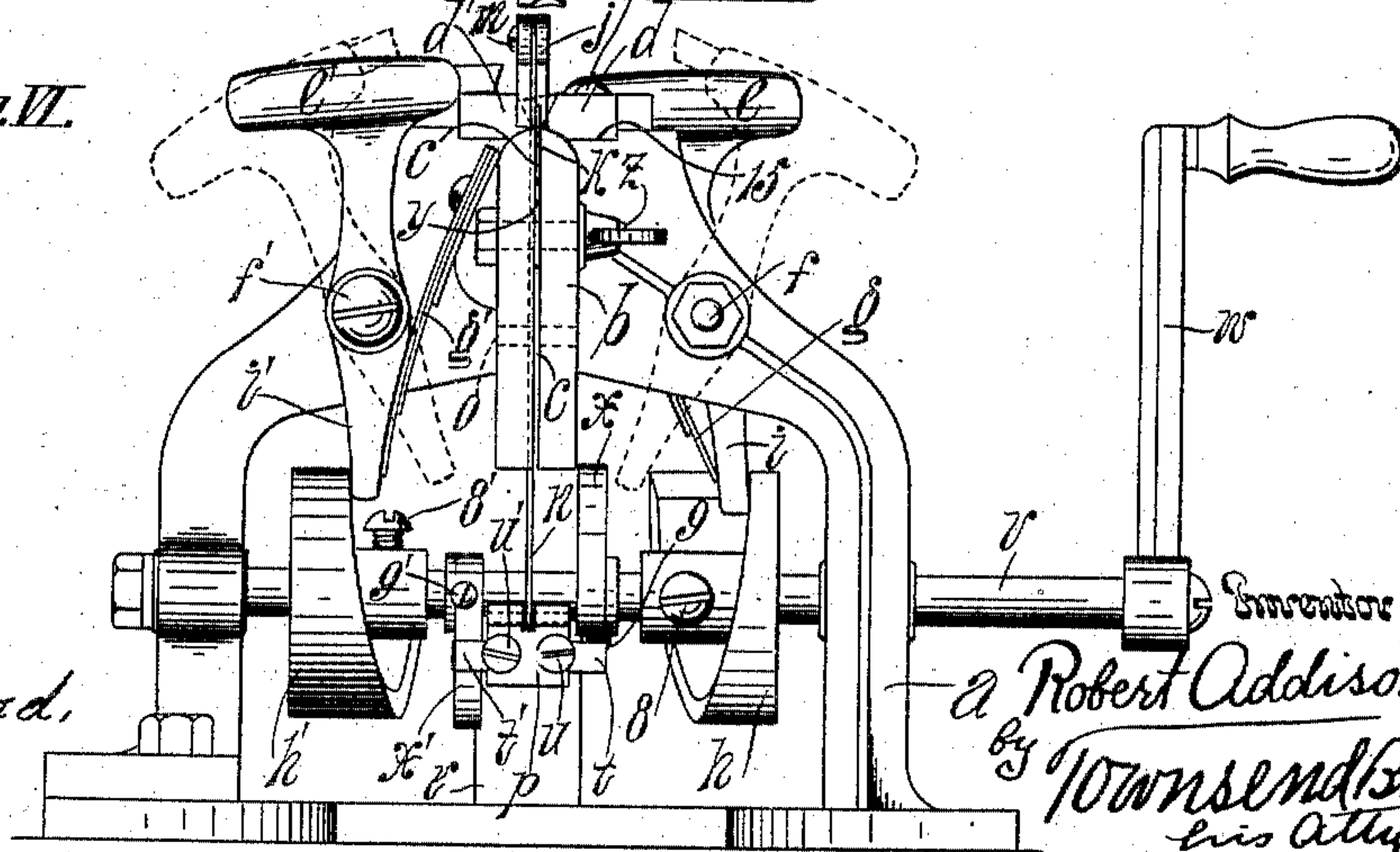


Fig. VI



Witnesses  
Seymour  
J. Townsend.

Inventor  
a Robert Addison  
by Townsend Bros.  
his Attys.



# UNITED STATES PATENT OFFICE.

ROBERT ADDISON, OF PASADENA, CALIFORNIA.

## SAW-SET.

SPECIFICATION forming part of Letters Patent No. 767,130, dated August 9, 1904.

Application filed November 23, 1900. Serial No. 37,542. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT ADDISON, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Automatic Saw-Set, of which the following is a specification.

The object of my invention is to provide simple and compact means for setting the teeth of band-saws and the like with great rapidity, ease, and precision.

The accompanying drawings illustrate my invention.

Figure I is a perspective view of my newly-invented saw-setting machine. A portion of the frame is broken away for clearness of illustration. Fig. II is a fragmental detail showing the upper end of the pawl-carrying lever with a fragment of the saw-advancing pawl pivoted thereon. Fig. III is a longitudinal section of the reciprocating pawl-lever-actuating rod detached. Fig. IV. is a side elevation of the machine with a fragment of a band-saw in position to be operated upon. Fig. V is a plan view of the machine shown in Fig. IV with saw in place. Fig. VI is an end view of the machine. Dotted lines show the hammers fully retracted.

*a* indicates the frame of the machine provided with a guide *b*, furnished with a runway *c* for a saw-blade.

*d d'* indicate anvils on opposite sides of said runway, respectively.

*e* indicates a hammer pivoted by a pivot *f* on one side of the runway to strike toward the anvil on the opposite side of said runway.

*e'* indicates another hammer pivoted in like manner by pivot *f'* on the other side of said runway to strike toward the anvil *d*, which is on the side of the runway opposite to such hammer *e'*. Resilient means consisting in springs *g g'* are provided for said hammers, respectively, to throw them to strike toward their respective anvils. These springs are fastened to the upper portions of the frame *a* on opposite sides of the guide *b* and extend thence downward to actuate the lower portions *i i'*, respectively, of the hammer handles or levers, so that the springs extend along the hammer-handles between the same and

the guide. Suitable means are provided for intermittently retracting the hammers against the tension of said springs, respectively. Such means (shown in the drawings) consist in two oppositely-arranged cams *h* and *h'*, which operate on the hammer handles or levers *i i'*, respectively, to retract the hammers against the tension of the springs *g g'*, respectively.

*j* indicates a pawl to play above the runway *c* in the path of the teeth of the saw-blade *k*. Means are provided to operate the pawl to advance the saw along the runway to the right in Fig. IV, and resilient means are provided to retract the pawl in the opposite direction. The pawl *j* is pivoted by a pivot *m* to an upright pivoted lever *n*, which is pivoted by a pivot *o* to the guide *b*.

*p* indicates a reciprocating rod pivoted by a pivot *q* to the lower end of the lever *n* to move the lever to operate the pawl *j* in both directions.

*r* indicates a support for the free end of the reciprocating pawl-lever rod *p*.

*s* indicates a spring to draw the rod *p* to operate the lever *n* to retract the pawl *j*.

*t* indicates a lug slidably mounted on and adjustably connected to the rod *p*.

*u* indicates a screw journaled in the reciprocating rod *p* and engaging the lug *t* to move the same along the rod and to hold it at any required position therealong.

*v* indicates the rotary cam-shaft, furnished with a crank *w*, by which it is to be turned. This shaft carries the cams *h h'*, which operate the hammers, respectively, and also carries two cams *x x'*, which can be adjusted so that either or both of the lugs *t t'* will be engaged thereby when the shaft *v* is rotated, thus to operate the rod *p* and the pawl *j* in opposition to the pressure of the spring *s*.

*y* indicates an adjustable bottom for the runway *c*. *z z'* indicate clamp-bolts to slide in vertical slots 2 in the guide to adjust the bottom *y* to the desired height required for different widths of saw. When adjusted appropriately, the bolts are tightened to hold the adjustable bottom from moving down.

3 indicates an adjustable saw-blade holder over the saw-blade runway on that side of the anvils which is opposite the pawl *j* to hold



down the saw-blade and keep it appropriately in line.

The anvils and hammers are respectively beveled at the appropriate slant to give the desired set to the saw-teeth. The hammers will strike the anvils when the machine is operated without anything between the hammers and the anvils.

The pawl-carrying lever *n* is furnished at its upper end with a cam 4, and the pawl *j* is furnished with a spring 5, which presses upon the cam to thereby hold the pawl *j* in engagement with the top of the guide *b*. One wall of the runway *c* is furnished with a gain 6, in which the lever *n* is pivoted to play.

The amplitude of movement of the pawl *j* is governed by the position of the lugs *t t'* on the reciprocating rod *p*. Said rod is marked at intervals, as indicated at 14, to indicate the appropriate position for the lugs *t t'* for teeth of different sizes. For setting the teeth of a coarse saw the lug *t* will be moved away from the lever *n* into the path of cam *x* and the other lug, *t'*, will be moved toward said lever out of the path of the cam *x'*, so that only one lug will be operated on to move the lever *n*. For finer saws the lug *t* will be set closer to the lever *n*, thus diminishing the length of stroke of the pawl.

In practical operation to insert the saw-blade in the runway *c* the crank *w* will be turned to retract both of the hammers *e e'*, and the saw will then be inserted and the teeth brought into the runway between the anvils *d d'*. The lug *t* will be set appropriately in accordance with the coarseness or fineness of the teeth. Then the crank *w* will be turned, thus causing the cams *h h'* to alternately retract and release the hammers to allow them to be thrown by the springs *g g'*, respectively, to strike toward their anvils, respectively. The saw-blade tooth which is interposed between an anvil and its hammer will be bent against the bevel-face 7 or 7' of the anvil, as the case may be, and will thus be set at the appropriate angle.

The rotation of the shaft *v* will cause the cam *x* to engage the lug *t*, and thus through the intermediate pawl-operating mechanism push the pawl forward to bring two more teeth into position to be set by the hammers. The cams *h h'* are adjustably fastened on the cam-shaft *v* by means of the screws 8 8', and the pawl-throwing cams *x x'* are adjustably fastened to the shaft by the set-screws 9 9', so that the several cams may be appropriately set to perform their work at the appropriate times.

It is essential that the cams be set so that while the saw is being moved the full stroke by the action of the pawl-throwing cam *x* both of the hammers will be sufficiently raised from their anvils, as indicated in Figs. I and VI, to allow the saw-blade to slide along the runway.

When the teeth are of such size that two

teeth can be simultaneously brought into the position to be struck by the two hammers, respectively, then the pawl-throwing cam *x* is alone sufficient for the work of advancing the saw along the runway; but if the size of the teeth is such that only one tooth at a time can be brought to the appropriate position to receive the blow from the hammer which is to set it then the cam *x'* and the lug *t'* will be brought into use, and the several lugs and pawl-throwing cams will be so adjusted that after the long stroke has been made by the pawl, responsive to the action of cam *x*, the one hammer—as, for example, the hammer *e*—will be released by its cam *h* and allowed to strike. Then under such adjustment (not shown) the cam *x'* will engage the lug *t'* to again advance the pawl *j* to bring the appropriate tooth into position to be operated upon by the hammer *e'*, after which the cam *h'* will release the hammer *e'* and allow it to strike. Then a further rotation of the shaft *v* and its cams *h h'* will retract both of the hammers *e e'*, and the cam *x* will act upon lug *t* to operate the pawl to bring another saw-tooth into position to be operated upon by the hammer *e*, after which the operation is continued in the way above described.

The screws *u* may be secured in place by any suitable means. In Fig. III of the drawings I have shown them screwed through the set-nuts 10. Said nuts engage a shoulder of the reciprocating rod *p* and are firmly screwed together to hold them steadfast in position on the screw to sustain the screw against the thrust of the lugs *t t'*, respectively. By turning the appropriate screw *u* or *u'* the lugs may be brought to the appropriate position.

12 indicates a stop on the end of the reciprocating rod *p* to sustain the thrust of the spring *s*, which retracts the reciprocating rod *p*.

By means of the combination of the cams adjustably mounted on the rotary shaft for operating the saw-adjusting and saw-setting mechanisms, respectively, in different times relatively determined by the positions of the cams relative to each other I am able to adjust the machine to operate upon any band-saw having regularly-spaced teeth.

The anvils are detachably secured on seats 15 therefor by suitable means, such as the screws 16, thus allowing them to be readily removed and replaced at pleasure with anvils of less or greater bevel. The hammers are also detachable, thus allowing the user to vary the angle of anvil and hammer used to vary the amount of set given the teeth. In ordinary practice, however, a sufficient variation of the set of the saw will be produced by simply raising or lowering the saw to bring a greater or less portion of the tooth on a level with the anvil to be acted upon by the hammer. When it is desired to give a wide set to the saw, the blade will be raised to bring a considerable



portion of the tooth on a level with the anvil to be bent by the hammer. If less set is desired, the saw-blade  $\frac{1}{2}$  will be lowered to bring a less portion of the tooth on a level with the anvil, so that a smaller portion of each tooth will be bent to give the set to the saw.

In practice the machine may be applied to set a band-saw without detaching the saw from the band-saw machine.

For convenience in setting the teeth of a band-saw while such saw is in the machine I make the corresponding ends of the guide and base of the frame in one plane, as indicated in Figs. I, IV, and V, so that the saw-setting machine may be stood on end on the table of the band-saw machine and the band-saw be brought into position in the guideway. Then the band-saw guide (not shown) will be brought down on top of the frame of the saw-setting machine, thus to hold the saw-setting machine firmly in position, and the band-saw pulleys being disconnected from the operating machinery, so that the band-saw is free to move, the crank  $w$  will be turned and the saw-setting proceeded with in the same way as if the machine were standing on its base, as shown in Fig. I.

By fastening the built-up leaf-springs  $g g'$  to the frame and extending them downward along the handles of the hammers, respectively, very compact springs of great strength may be applied at slight cost, and the hammers may be of very simple form, and the handles thereof are embraced between their springs and cams, respectively.

Desirably built-up leaf-springs are used, as shown. By reference to Fig. VI it will be seen that when the hammers are moved out by the cams into the position indicated by dotted lines the springs will be under a most effective tension to return the hammers with a quick forceful stroke. By the construction and arrangement shown a superior power of stroke may be secured within a minimum space and at a minimum cost of material, time, and labor.

To move the saw along freely, the pawl may be thrown up straight, thus moving the spring 5 over the cam 4, whereupon the pawl will remain erect and inoperative until returned to operative position. (Shown in Fig. I.)

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a saw-setting machine, the combination with a saw-blade guide, of a pawl; a pivoted lever to which the pawl is pivoted; a rod connected with the lever to throw the same to operate the pawl along the guide; resilient means to throw the rod in one direction; a lug

on the rod; means for adjusting the lug lengthwise of the rod; and a cam-shaft provided with a cam to engage the lug to operate the rod in the other direction.

2. In a saw-setting machine, the combination with a saw-blade guide, of a pawl; a pivoted lever to which the pawl is pivoted; a rod connected with the lever to throw the same to operate the pawl along the guide; resilient means to throw the rod in one direction; a lug on the rod provided with a longitudinal slide-way; a lug mounted to slide in the slideway; a screw journaled to rotate in the rod and extending lengthwise of the rod and engaging the lug to slide the same along the slideway; resilient means for throwing the rod in one direction; and a rotary cam to engage the lug to throw the rod in the other direction.

3. In a saw-setting machine, the combination with a saw-blade guide, of a pawl; a pivoted lever which carries said pawl; a rod connected with the lever to throw the same to operate the pawl along the guide; a lug slidably mounted on the rod and projecting from one side of the rod; means for adjusting said lug along the rod; a lug slidably mounted on the rod and projecting from the other side of the rod; means for adjusting such lug along the rod; resilient means for throwing the rod in one direction; and a cam-shaft furnished with cams respectively engaging said lugs to intermittently throw the rod in the other direction.

4. The combination with a saw-blade guide, of a pawl to play along said guide; a lever carrying said pawl; a rod pivoted to the lever; resilient means for throwing the rod in one direction; two lugs adjustably mounted to slide along the rod; means for adjusting said lugs; anvils on opposite sides of the guide respectively; hammers pivoted on opposite sides of the guideway to strike toward the anvils respectively; resilient means to throw the hammers to strike toward their respective anvils; and a cam-shaft furnished with cams to operate said hammers in opposition to the resilient means which operate the hammers, and said shaft being also furnished with cams to respectively engage the lugs for the operation of said pawl.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, California, this 15th day of November, 1900.

ROBERT ADDISON.

Witnesses:

JAMES R. TOWNSEND,  
JULIA TOWNSEND.