

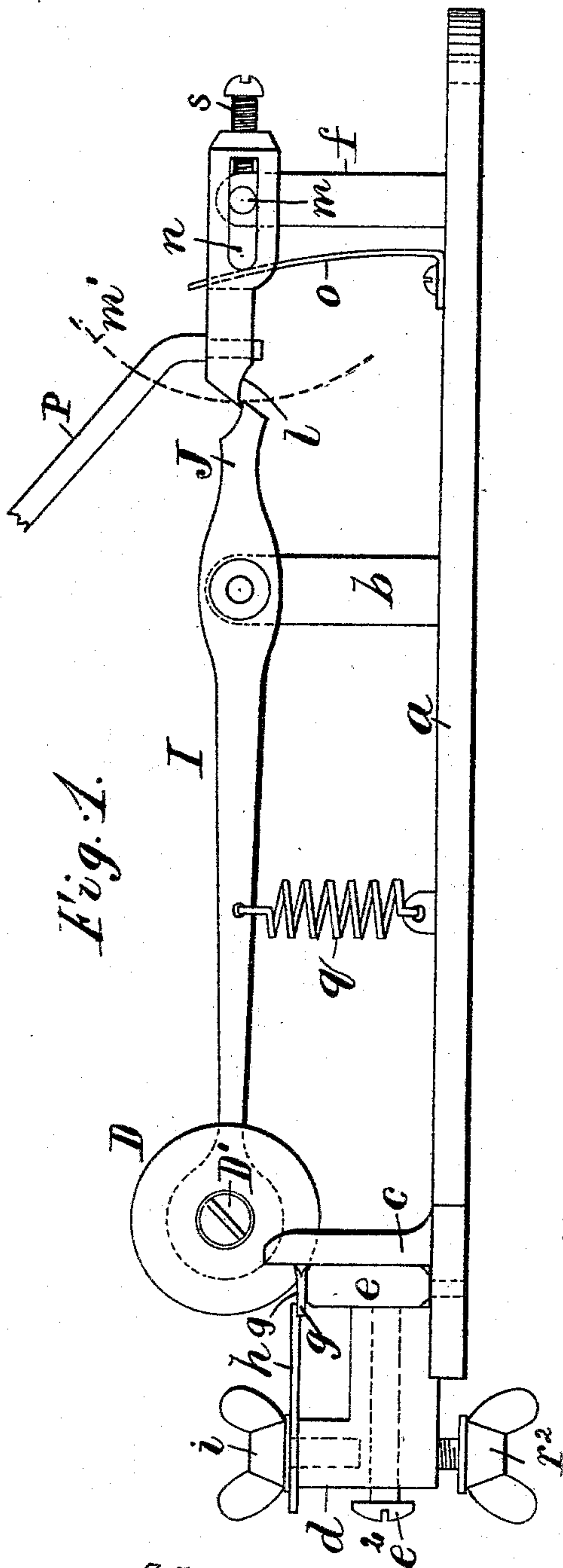
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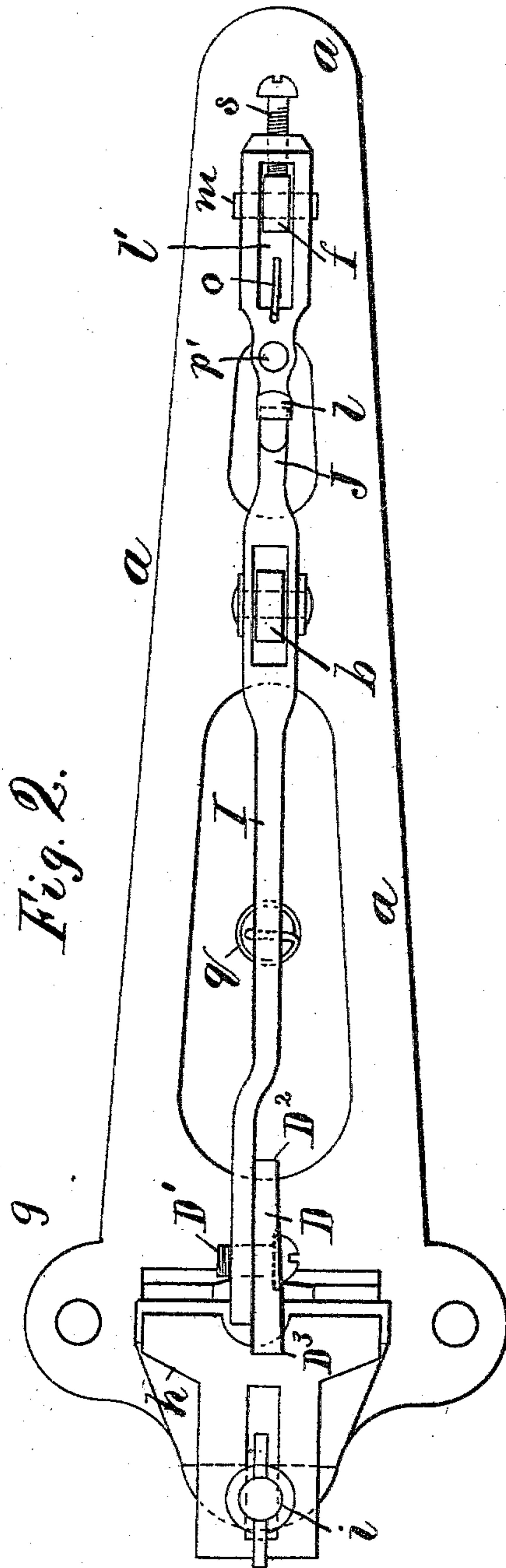
J. HILTON.  
SAW SET.

No. 411,893.

Patented Oct. 1, 1889.



Attest:  
L. Lee,  
F. C. Fischer.



Inventor.  
James Hilton, per  
Crane & Miller, Atty.

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Fig. 3.

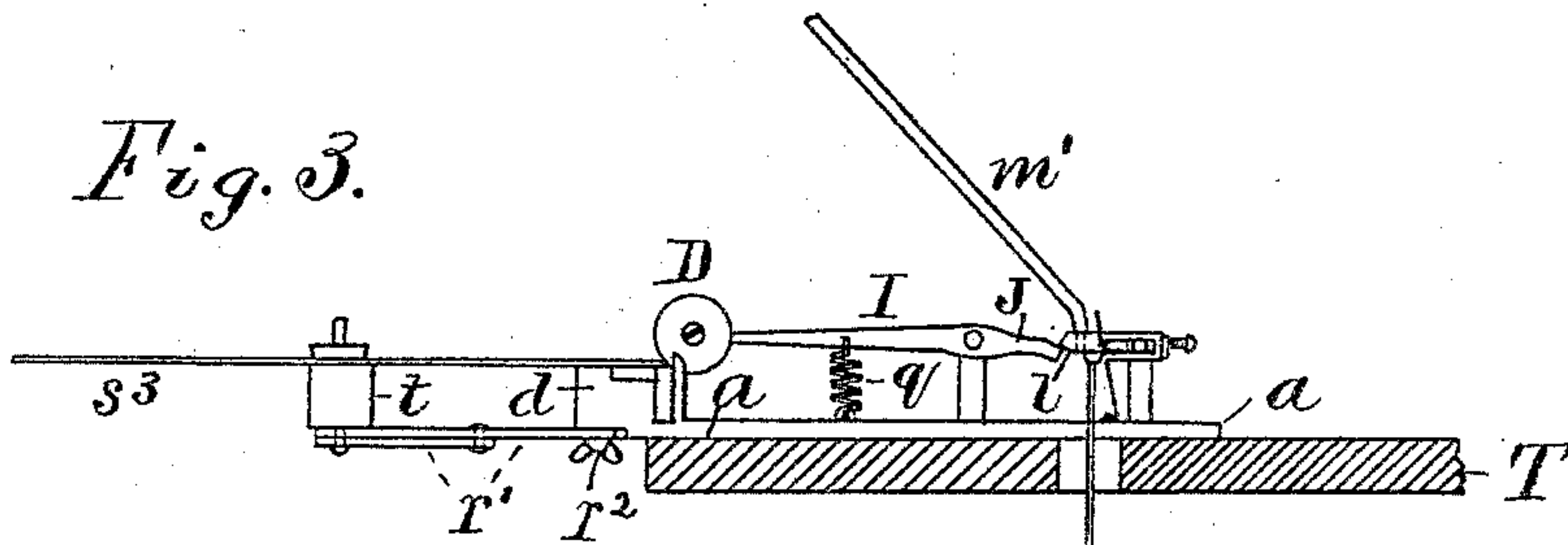


Fig. 6.

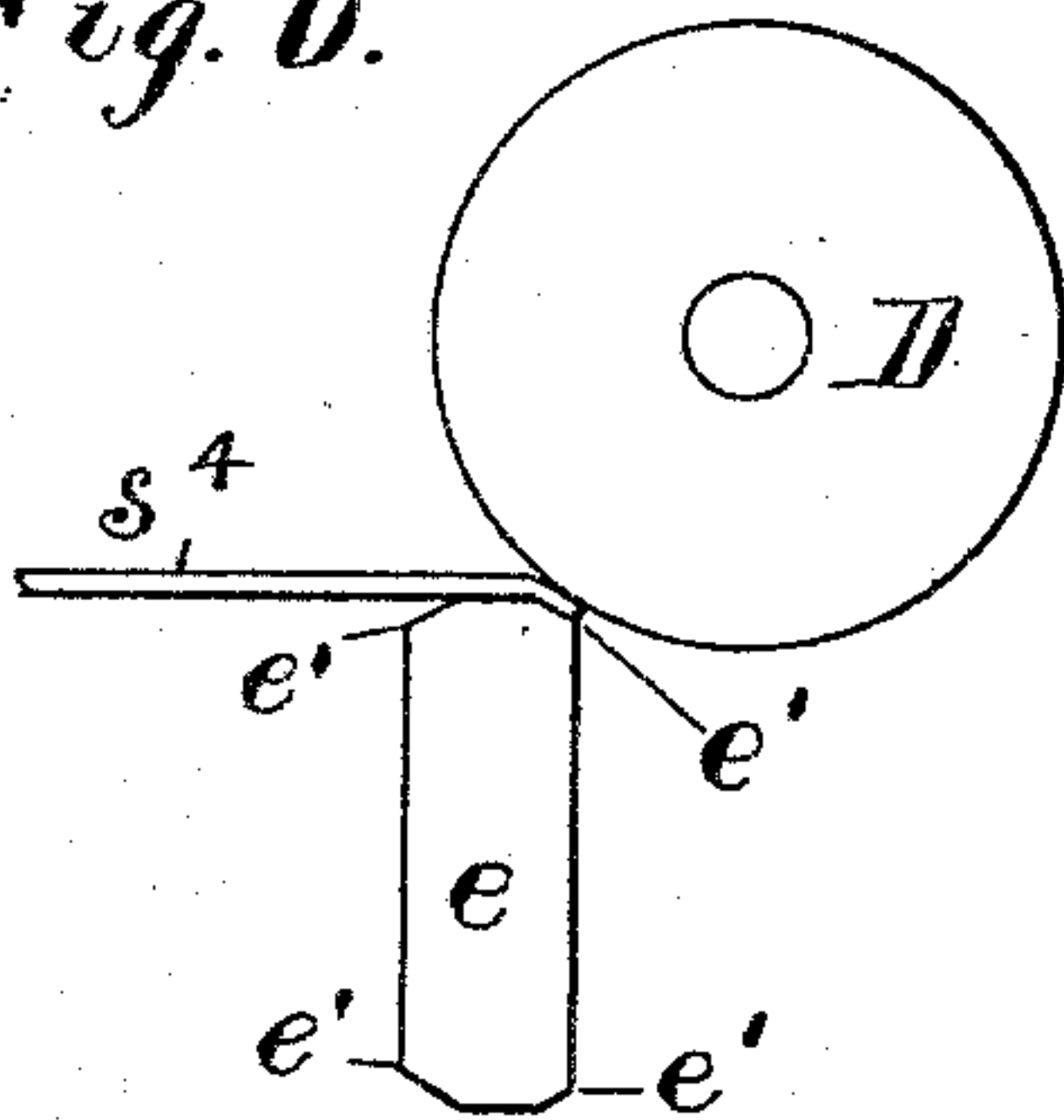
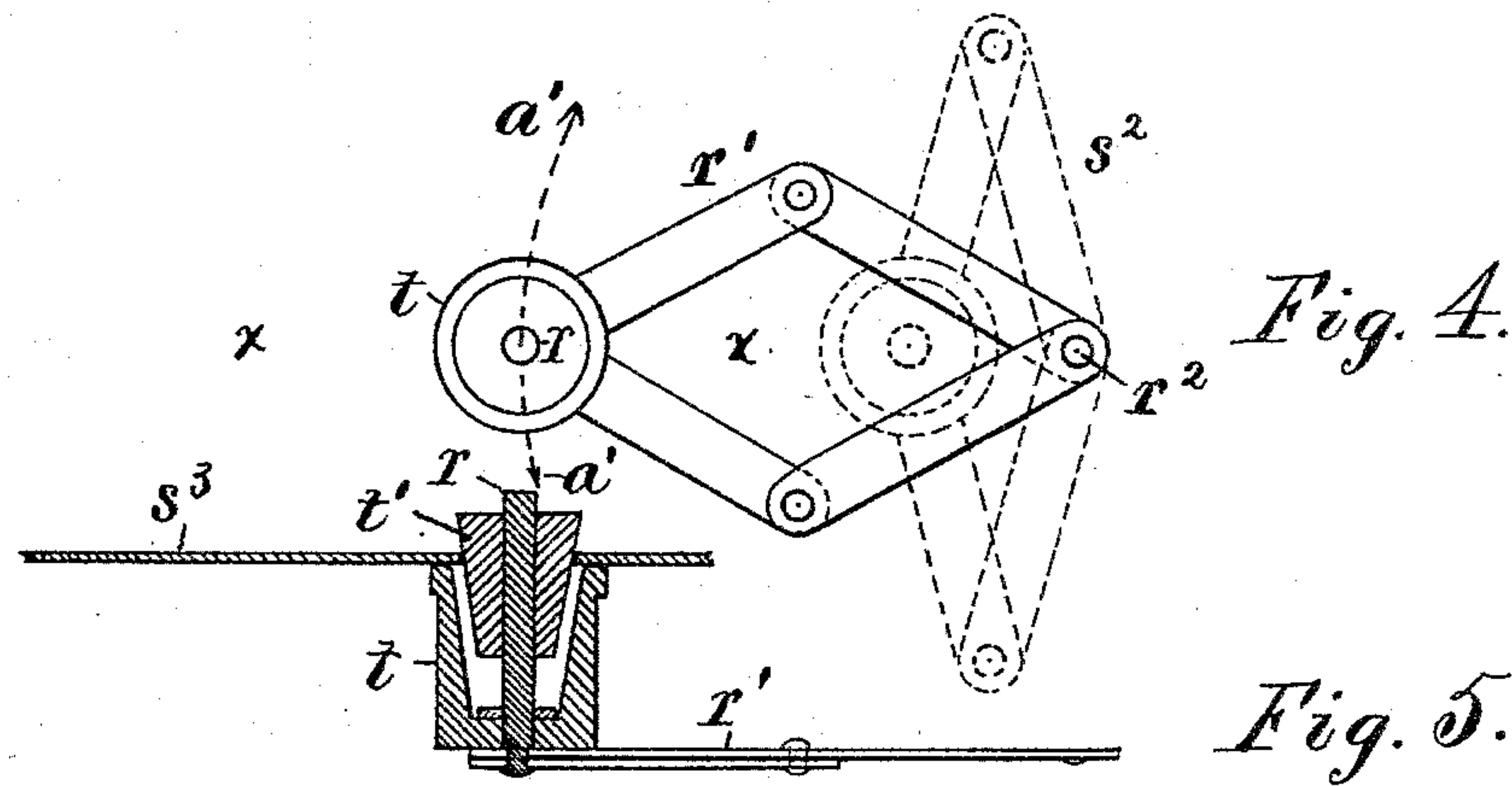
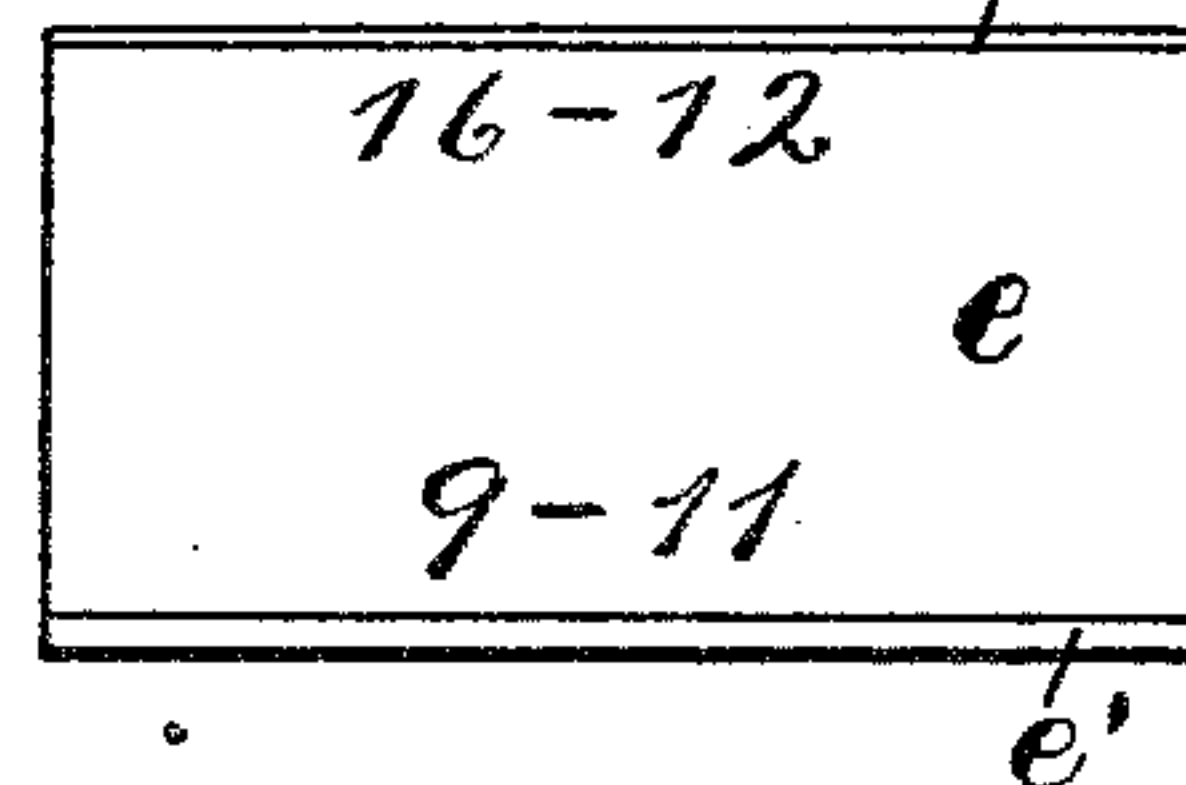


Fig. 7.



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# UNITED STATES PATENT OFFICE.

JAMES HILTON, OF NEWARK, NEW JERSEY.

## SAW-SET.

SPECIFICATION forming part of Letters Patent No. 411,893, dated October 1, 1889.

Application filed November 13, 1888. Serial No. 290,722. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HILTON, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Saw-Sets, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention consists in the construction herein described and claimed.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is a side elevation of the apparatus without the mandrel-carrier or circular saw, and Fig. 2 is a plan of the same. The hand-lever is removed from the trip in Fig. 2 and is broken off in Fig. 1 for want of room upon the sheet. Fig. 3 is a side elevation, upon a smaller scale, of the apparatus provided with the mandrel-holder and connected with a foot-treadle. Fig. 4 is a plan of the mandrel-holder, with dotted lines showing a change of adjustment; and Fig. 5 is an edge view of the same, with the mandrel and its attachments shown in section on line *xx* in Fig. 4. Fig. 6 is an end view, and Fig. 7 a side view, of the anvil detached.

The parts may be mounted upon any suitable frame, but are shown in the drawings attached to a cast-iron bed *a*, provided with a fulcrum-bearing *b*, a gage *c*, a lug *d*, for the attachment of the saw-holding devices, and a bearing *f* for the hammer-trip. An anvil *e* is held removably against the gage *c* by a set-screw *e*<sup>2</sup>, and a guide *h*, rabbeted upon its under side to fit narrow saw-blades, is shown resting upon the top of the anvil and clamped upon the lug *d* by thumb-screw *i*.

The setting-hammer consists in a disk *D* and helve *I*, pivoted upon the fulcrum-bearing *b* and provided with a lever *J*, projected in the rear of the bearing and actuated by a trip *l*. The latter consists in an arm pivoted upon a pin *m*, projected through the trip-bearing *f*, and is provided with a slot *n*, fitted to such pin to render it adjustable to and from the trip-lever *J*.

The arm of the trip *l* is shown constructed with a fork *l'* in Fig. 2, to embrace the upper end of the bearing *f*, and a spring *o* is af-

fixed to the bed *a* and fitted inside the fork *l'* to press the end of the trip normally toward the end of the lever *J*.

A hand-lever *P* is shown fitted in a hole *p'* in the trip-arm and projected toward the anvil *e*. A downward pressure upon the hand-lever operates to rotate the trip-arm around the pin *m* in an arc indicated by the dotted segment *m'*, and the engagement of the trip with the rear end of the lever *J* operates to depress the end of the lever and to raise the hammer-head *D* until the curved movement of the trip disengages it from the lever.

A spring *q* is applied to the hammer-helve *I* to draw the helve downward, and the disk *D* is thus thrown forcibly toward the anvil when the lever *J* is released from the trip. The end of the trip is formed as a pawl, sloped upon the upper side, and the end of the lever *J* is sloped upon its under side, so that the trip, when lifted after pressing the lever downward, may by the contact of the sloping surfaces be pushed backward in opposition to the spring *o* to engage again with the upper side of the lever.

An eye is formed in the rear end of the trip-arm, and a screw, as *s*, inserted through the same into contact with the bearing *f*, and operates in opposition to the spring *o* to adjust the point of the trip to and from the lever *J*. Such adjustment varies the point at which the trip disengages with the arm, and thus enables the operator to adjust the lift of the hammer and the force of the blow delivered by the head *D* upon the saw-tooth lying upon the stake.

The anvil, as shown in Fig. 6, is beveled in different degrees upon its four corners, and may be turned with any of its corners adjacent to the gage *c*. The gage operates, as shown in Fig. 2, to set the points of the teeth even with the flat side of the anvil, so that the root of the tooth bears upon the inner corner of the bevel, as shown in Fig. 6, and the disk *D* thus operates in all cases to bend the tooth down to the utmost degree that the bevel will allow. In Fig. 2 teeth upon the saw-blade *g* are shown in contact with the gage *c*, and a groove is shown upon the under side of the guide *h* to fit over the rear



edge of the blade, and thus hold it close to the gage, while permitting free longitudinal movement.

To set the teeth in the saw-blade, the operator slightly raises the hammer-head (consisting in the disk D) by pressing upon the handle lever P, so as to permit the shifting of the blade with the proper tooth beneath the hammer. The proximity of the hammer-head guides the eye of the operator so accurately that the required tooth may be readily placed beneath the hammer upon the anvil, and the use of any gage to set the saw-blade longitudinally is thus wholly avoided. The handle lever P is then depressed slightly to raise the hammer through the desired arc and release it, the spring then throwing it down upon the tooth and setting the same, as desired.

The pitch of the teeth of different saw-blades varies greatly, and it would be necessary if a tooth-gage were used to adjust such gage in setting each saw; but by utilizing the edge of the hammer to guide the eye of the operator the proper tooth may be adjusted beneath the hammer with sufficient accuracy and the manipulation of a tooth-gage be wholly avoided.

By the use of the treadle both hands of the operator may be set at liberty and used to support a large saw-blade of straight or circular form.

The guide *h* is chiefly useful in setting the teeth of band-saws, which, by reason of their length and elasticity, are liable to spring away from the gage *c*.

The lug *d* is extended outward from the anvil at a level with the top of the same and operates to support wider saw-blades, which would be accommodated by wholly removing the guide *h* and its thumb-screw.

In Fig. 3 the saw-set is shown mounted upon a table T, and a treadle *u* connected with the trip by a rod *u'*.

An adjustable centering device having a mandrel for setting circular saws and holding them to turn readily over the anvil *e* is shown in Figs. 3, 4, and 5, the mandrel *r* being supported vertically by toggle-links *r'*, jointed, respectively, at their ends to the bed *a* and the mandrel. The inner ends of the links are secured to the bed by a thumb-screw *r<sup>2</sup>*, adapted to pinch them firmly, and thus hold them in any desired position.

A cup-shaped socket *t* is attached by its base to the mandrel with its mouth upon a level with the top of the anvil, and a conical plug *t'* is fitted to the mandrel and adapted to fit within the central aperture of the saw and extend within the socket *t*. The toggle-links being both pivoted upon the same screw *r<sup>2</sup>* at their inner ends, permit the free adjustment of the mandrel to or from the anvil, as indicated by the dotted lines *s<sup>2</sup>* in Fig. 4, as well as laterally in the directions indicated by the dotted arrows *a'* in the same figure. By such lateral adjustment of the mandrel the radius of the saw-blade may be adjusted

at any angle with the anvil and hammer, so as to apply the hammer in the most desirable position to the point of the tooth.

The center of the saw-blade *s<sup>3</sup>* is shown in section in Fig. 5 to show the operation of the conical plug *t'* in centering the saw upon the mandrel, the edge of the socket *t* serving merely as the support of the plate, while the plug *t'* and mandrel *r* hold it securely upon its center, so that its periphery may be readily turned with the desired tooth beneath the hammer.

The hammer-head D is made of disk form and rotary upon a pivot D' for the purpose of conveniently varying the breadth of the hammer-face which operates upon the saw-tooth; but the character of the hammer-head forms no part of my present invention.

In Fig. 6 the anvil and disk are shown slightly enlarged, with a saw-plate *s<sup>4</sup>* laid upon the anvil and bent by the hammer. The anvil is shown with bevels *e'* of different lengths upon its several corners, by which the extent to which the tooth is bent by the blow of the hammer may be determined without varying the adjustment of the hammer. The hammer-helve is preferably so constructed that the curved edge of the disk may always come in contact with the outer corner *e'* of the bevel upon the anvil, and the different faces upon the edge of the disk are thus adapted to operate in bending teeth of different lengths without any special adjustment.

In Fig. 7 is shown a side view of the anvil, with the numbers 16 to 12 marked adjacent to the upper beveled corner and the numbers 9 to 11 marked adjacent to the lower corner. Upon the opposite side of the anvil the numbers 6 to 8 would be marked adjacent to one corner and the numbers 3 to 5 marked adjacent to the other corner, and the bevels upon the respective corners would be made of suitable width to suit teeth varying in one instance from 12 to 16 points in the inch, from 9 to 11 points upon another corner, from 6 to 8 upon another, and from 3 to 5 upon another. By thus constructing and marking the corners the operator may be enabled to set the proper corner of the anvil in proximity to the gage *c*, and thus secure the desired results without trial.

My saw-set may be made of any size, and it is immaterial whether the trip *l* be operated by foot or hand power, as shown herein, or by any other suitable means.

In actuating the hammer with the treadle *u* the operator may readily acquire such dexterity that the alternate teeth of the saw may be shifted rapidly into the desired position upon the anvil exactly beneath the hammer, and the setting may thus be performed as quickly as the treadle can be actuated.

It will be noticed that there are no adjustable gages upon my saw-set which require to be changed for setting teeth of different lengths and pitches; but that the removable anvil may be readily removed by slackening



the screw  $e^2$  to turn the proper corner of the anvil to suit the required bend in the tooth, and that the adjustment of the trip to or from the arm J then suffices to fit the machine for  
5 immediate operation.

I am aware of the state of the art shown in United States Patents Nos. 22,260, dated December 7, 1858, 24,408, dated June 12, 1859, 95,331, dated September 28, 1869, 135,752,  
10 dated February 11, 1873, 327,609, dated October 6, 1885, and I hereby disclaim the said patents.

The construction of the tripping devices in my invention differs materially from those  
15 shown in the said patents, and no mandrel for holding circular saws upon the anvil of a saw-set has ever been mounted upon toggle-links like those shown in Figs. 4 and 5 of my drawings, although mandrels analogous to  
20 mine have been mounted upon a foot attached to the saw-set to be adjusted to and from the anvil, as required.

Having thus set forth my invention, what I claim herein is—

25 1. A saw-set comprising the gage  $c$ , anvil  $e$ , pivoted hammer-helve I, with hammer-head pressed toward the anvil by a spring, the lever J, projected from the rear of the hammer-helve, and the trip  $l$ , formed with slot  $n$ , fitted  
30 movably upon the pin  $m$ , and provided with adjusting set-screw  $s$  and spring  $o$ , the whole arranged and operated as and for the purpose set forth.

35 2. A saw-set comprising the bed  $a$ , provided with fulcrum-bearing  $b$ , trip-bearing  $f$ , gage  $c$ , anvil  $e$ , and set-screw  $e^2$ , for clamping the same

removably in its place, the hammer-head D, the helve I, with the lever  $j$  projected from the rear of the bearing  $b$ , the spring  $q$ , and the trip  $l$ , formed with slot  $n$ , fitted movably upon  
40 the pin  $m$ , and provided with the adjusting set-screw  $s$ , spring  $o$ , and hand-lever P, the whole arranged and operated substantially as set forth.

3. A saw-set comprising the bed  $a$ , provided  
45 with fulcrum-bearing  $b$ , trip-bearing  $f$ , gage  $c$ , anvil  $e$ , having different bevels upon its four corners, numbered substantially as herein set forth, and set-screw  $e^2$ , for clamping the same  
50 removably in its place, the hammer-head D, the helve I, with the lever  $j$  projected from the rear of the bearing  $b$ , the spring  $q$ , and the trip  $l$ , formed with slot  $n$ , fitted movably upon  
55 the pin  $m$ , and provided with the adjusting set-screw, spring, and hand-lever, the whole arranged and operated substantially as set forth.

4. In a saw-set, the combination, with an anvil and a hammer-head vibrated to and from the same, of a centering device consisting in  
60 the toggles  $r'$ , jointed together and to the bed of the saw-set, and provided at their outer ends with the mandrel  $r$ , the socket  $t$ , and the conical plug  $t'$ , the whole arranged and operated as and for the purpose set forth.  
65

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES HILTON.

Witnesses:

L. LEE,

THOS. S. CRANE.