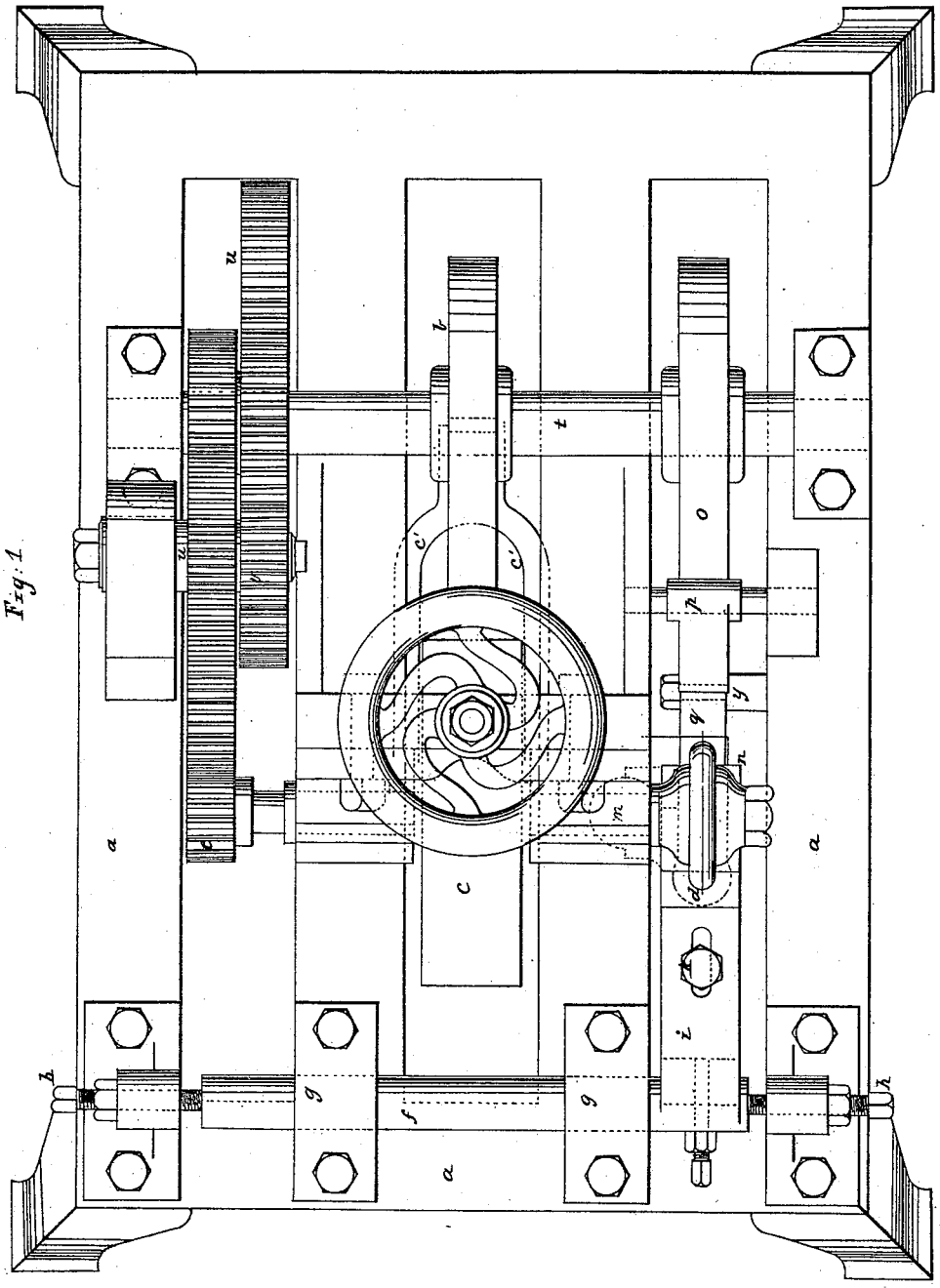
5 Sheets—Sheet 1.

T. J. SLOAN.

Making Wood Screws.

No. 7,748. Patented Oct. 29, 1850.

Fig. 1



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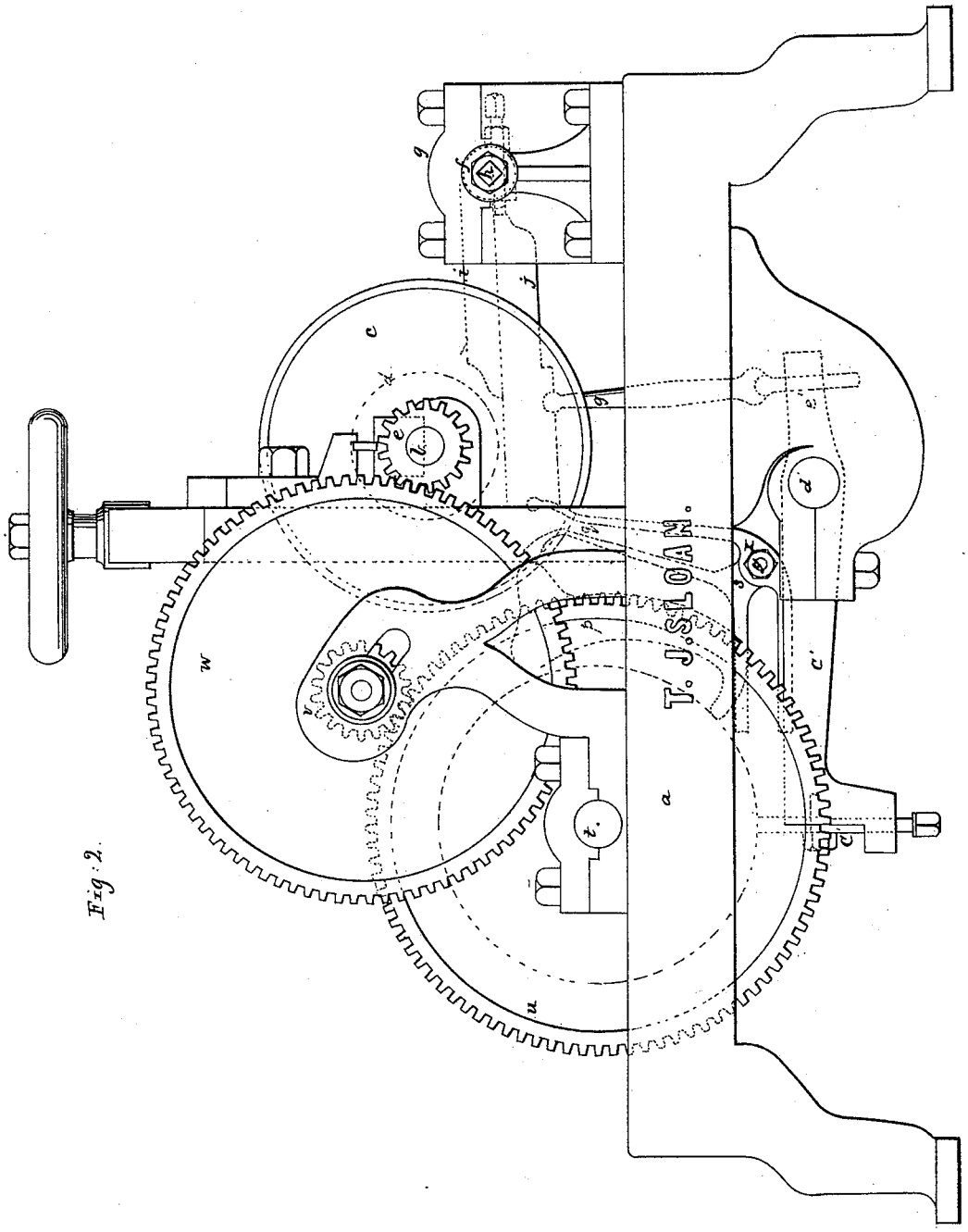

Fig. 2.

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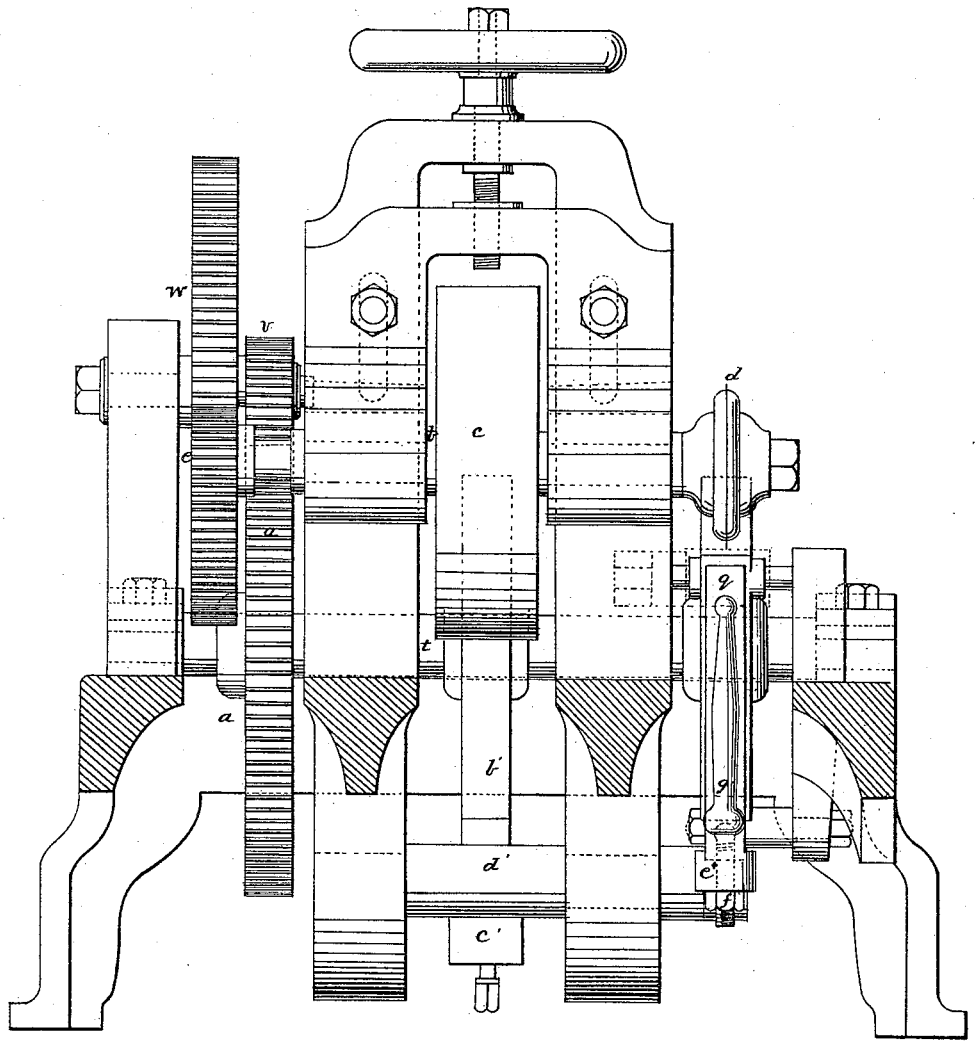
Fig. 3



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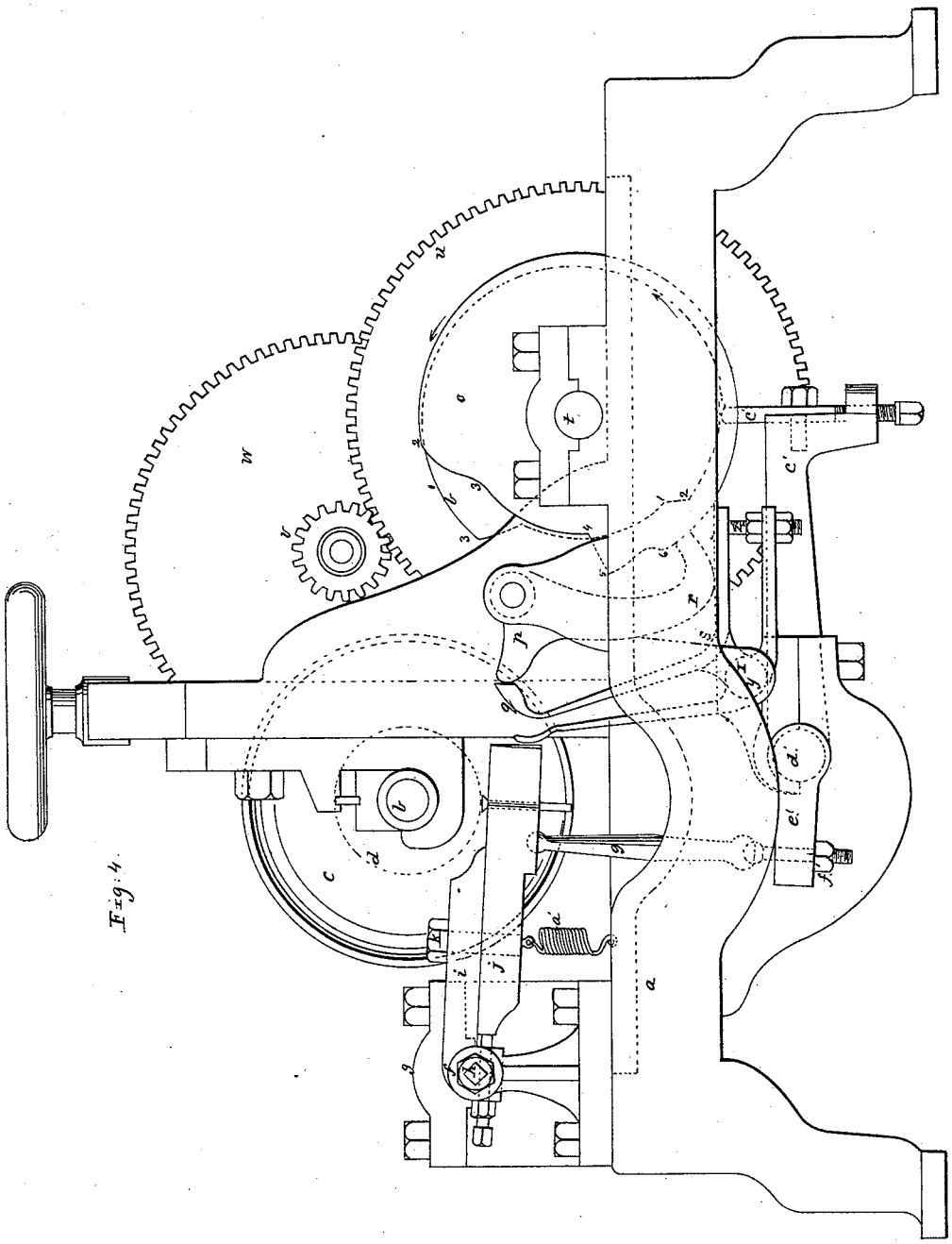

Fig. 4.

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Fig. 6.

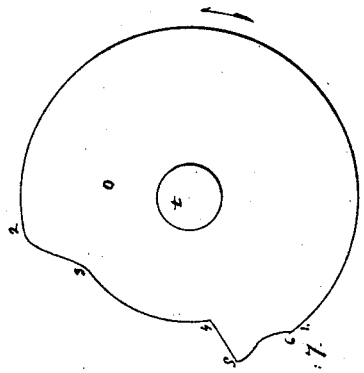


Fig. 7.

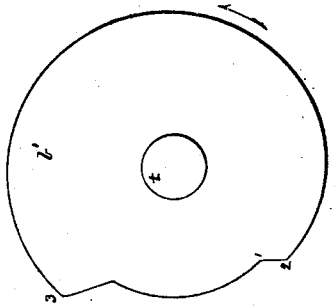
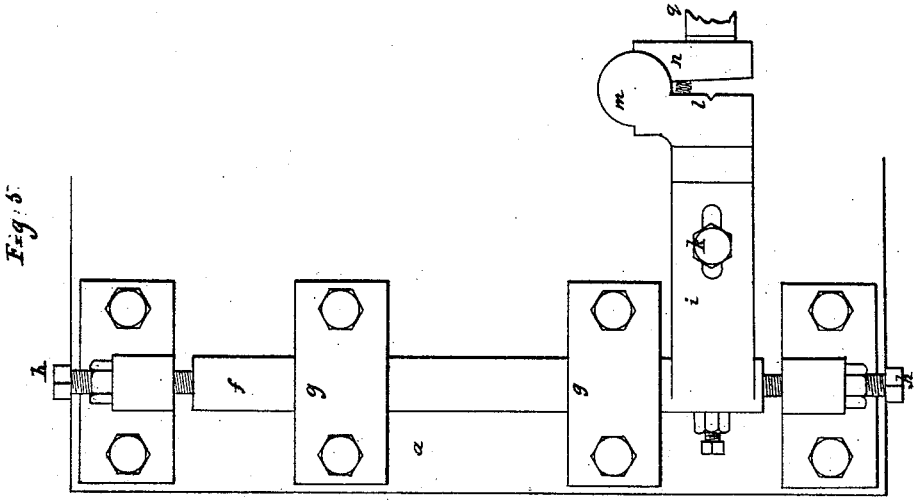


Fig. 5.



UNITED STATES PATENT OFFICE.

THOMAS J. SLOAN, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR NICKING THE HEADS OF WOOD-SCREWS.

Specification forming part of Letters Patent No. 7,748, dated October 29, 1850.

To all whom it may concern:

Be it known that I, THOMAS J. SLOAN, of New York city, county, and State, have made certain new and useful Improvements in the Machine for Nicking the Heads of Wood-Screws, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan; Fig. 2, a side elevation; Fig. 3, a cross vertical section; Fig. 4, another side elevation; Fig. 5, a separate view of the gripping-jaws, and Figs. 6 and 7 face views of the cams.

The same letters indicate like parts in all the figures.

In my improved machine the screw-blanks are gripped in a pair of jaws, which, after gripping the shank of the screw-blank, receive a vibratory motion to carry the head of the blank up to a rotating saw, to be nicked.

The first part of my invention consists in interposing a spring between the gripping-jaws and the cam or lever, which gives the gripping motion that the machine may be self-adapting to the varying sizes of blanks, and this part of my invention also consists in so forming or connecting the spring that its tension may be regulated to suit large and small blanks.

The second part of my invention consists in forming the cam which gives the gripping operation with a recess or depression, so that directly after the blank has been seized by the jaws they shall be partly opened for awhile to permit the blank to fall by gravity into its proper position before it is finally gripped to be presented to the nicking-saw.

In the accompanying drawings, *a* represents a frame adapted to the purpose, toward the middle of which there is mounted a horizontal driving-shaft *b*, with a driving-pulley *c*, around which passes a band from some first mover. One end of this driving-shaft carries a nicking-saw *d*, of the usual kind used in nicking the heads of screw-blanks, and on the other end of the said shaft there is a cog-wheel *e*, from which are derived the various motions for the moving parts of the machinery to be described.

On one end of the frame there is a rock-shaft *f* of a cylindrical form, which runs in two boxes *g g*, so that it can slide therein longitudinally for the purpose of adjustment, which adjustment is effected by means of two end screws *h h*. One end of this rock-shaft is provided with an arm *i*, to which is secured one of the jaws *j* by means of a screw-bolt (or bolts) R, passing through an elongated hole, so that the face of the jaw which receives the screw-blank, and which is formed with a recess *l* for that purpose, can be adjusted in one direction to present the head of the screw-blank to be nicked to the action of the saw. This admits of the adjustment of the jaw in one direction, while the screws before described effect the adjustment at right angles thereto. By means of these adjustments it will be perceived that the machine can be set to present the head of a screw-blank properly to the saw, whatever may be its diameter. The boxes in which the driving-shaft that carries the saw runs should also be made adjustable in a vertical direction to adjust the periphery of the saw as it wears away to the range of motion of the jaws when presenting a blank, and also to the depth of nick intended to be cut.

The jaw *j* has a lateral projection *m*, to which is jointed the other jaw *n*, the face of which is formed like the one *j* for the purpose of receiving and gripping the screw-blanks as presented, a spring being interposed, which tends to keep them open.

The closing and opening of the gripping-jaws to deliver the nicked blanks and receive and grip those to be nicked is effected by a cam *o*, which acts on a rocking lever *p*, and which in turn acts on the hinged jaw with a spring *q* interposed, that the jaws may be self-adapting to any slight variation in the size of the shanks of the blanks. The lower arm of the lever *p* bears against the face of the cam *o*, which from the point 1 to 2, in the direction of the arrow, is concentric to keep the jaws closed. At the point 2 it suddenly recedes toward the axis to permit the jaws to open to deliver a nicked blank and to receive another, the cam being for that purpose concentric from 3 to 4, where it runs out to the point 5 to close the jaws to seize the new blank, and from 5 to 6 it is slightly recessed to permit the jaws partly to open to permit the blank to settle down into its appropriate place between the jaws and to re-

close and grip the blank and there hold it until it is nicked. The part *r* of the lever *p* is round, and that leaf of the spring *q* on which it acts forms a sudden curve at *s*, so as to act suddenly on the spring to contract and liberate it, as shown in Figs. 2 and 4.

The cam *o* (see Figs. 4 and 6) is on a shaft *t*, which makes one entire rotation for each and every complete operation of the machine, and this shaft has on it a cog-wheel *u*, which engages a pinion *v* on the shaft of a wheel *w*, which receives motion from the driving-shaft by the cog-wheel *e*, before described.

The spring *q* (see dotted lines, Fig. 4) is made in two parts put together by means of a joint *x*, similar to a rule-joint, and turning on a fulcrum-pin *y*, that it may retain its position while the gripping-jaws move up and down and at the same time be free to adapt itself to the lateral motions of the jaws. The two plates of this spring are extended beyond their joint attachment and are connected together by a bolt and screw-nut *h*, by means of which the tension of the said spring can be regulated to any size of blanks.

The gripping-jaws are drawn down to their lowest position by means of a spring *a'*, and elevated at the required periods and in the required order by means of a cam *b'* on the same shaft with the cam *o*, before described, which cam *b'* acts on the arm *c'* of a rock-shaft *d'*, which has another arm *e'*, provided with a set-screw *f'*, which can be elevated or depressed to adjust the position (vertically) of the jaws relatively to the periphery of the nicking-wheel. The head of this screw is rounded and fits in a socket in the lower end of a rocking rod *g'*, the upper rounded end of which fits in a socket in the under face of the jaw *j*. By these connections the gripping-jaws are elevated and depressed, and the periods of these movements relatively to the closing and opening of the jaws depends on the form and relative position of the cams on their shaft. The cam *b'*, from 1 to 2, suddenly runs out from the axis to elevate the jaws to bring the head of the blank against the periphery of the saw, and this takes place as the jaws are finally gripping the screw-blank. From the point 2 to 3, in the direction of the arrow, the cam is a scroll gradually receding from the axis for the purpose of gradually carrying the screw-blank up against the saw to cut in the nick, and when this is cut to the requisite depth at the point 3 the cam suddenly runs in toward the axis to let down the jaws as they open to deliver the nicked blank, and then, finally, the cam runs in a concentric direction to keep the jaws down while a new blank is supplied. The operations are then repeated in the same manner.

It will be obvious from the foregoing that the mode of constructing, arranging, and adjusting the parts may be varied without changing the principle of my invention, and therefore I do not wish to be understood as limiting myself to the special mode of constructing, arranging, and adjusting the parts, but to vary these so long as I attain the end desired by means substantially the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Interposing a spring between the gripping-jaw and the lever or cam by which it is operated, in manner substantially as herein described, and for the purpose specified.

2. Making the spring which is interposed between the gripping-jaw and the mechanism which operates it so that its tension can be varied and regulated in the manner and for the purpose specified.

3. Causing the gripping-jaw to open slightly after it has seized the blank to permit the blank to assume its proper position between the jaws before it is finally gripped, in manner substantially as herein specified.

THOS. J. SLOAN.

Witnesses:

ALEX. PORTER BROWNE,

CAUSTEN BROWNE.