

No. 610,618.

Patented Sept. 13, 1898.

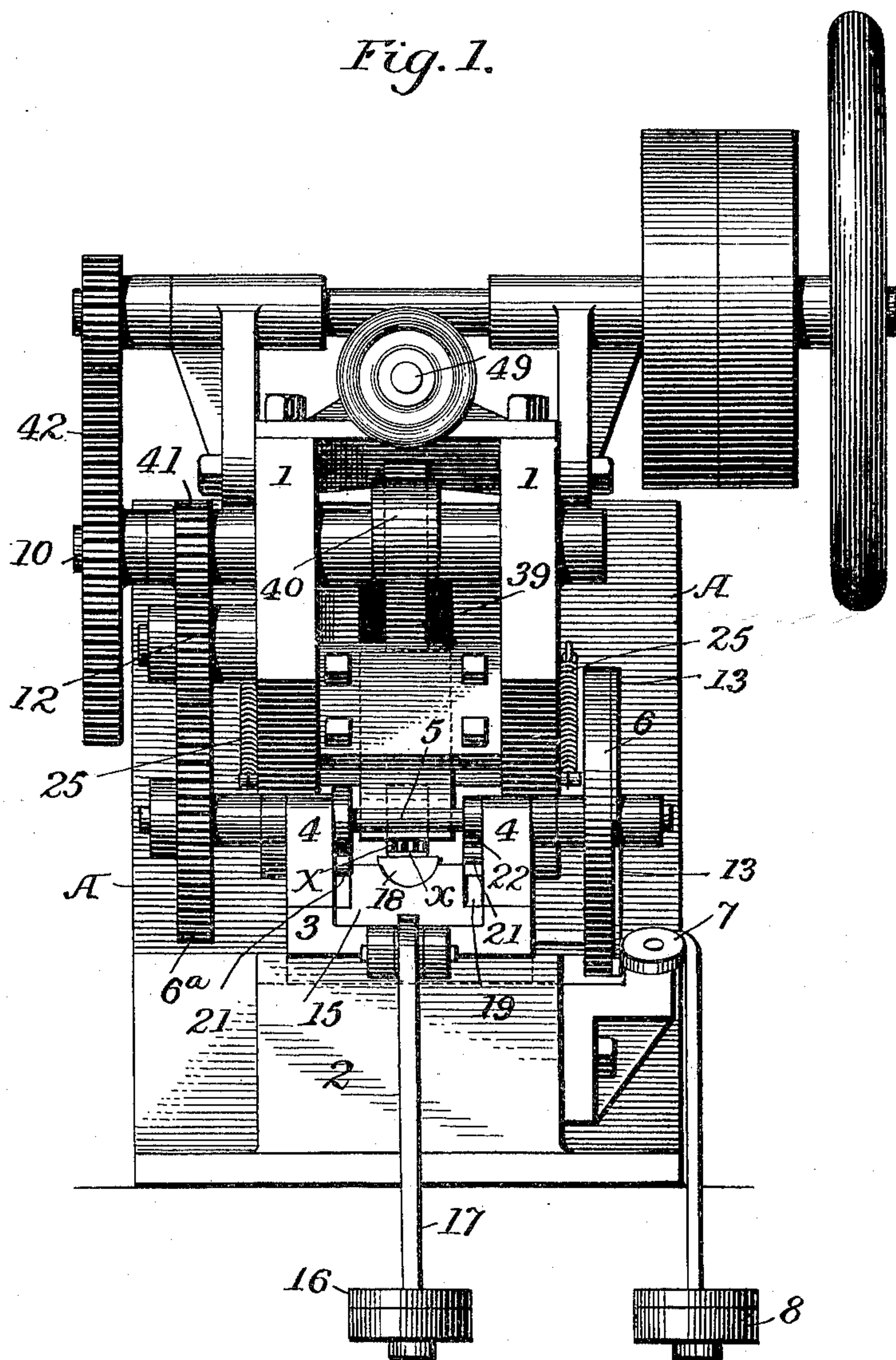
J. TURNER.  
RASP PUNCHING MACHINE.

(Application filed Dec. 9, 1897.)

(No Model.)

3 Sheets—Sheet 1.

*Fig. 1.*



Witnesses

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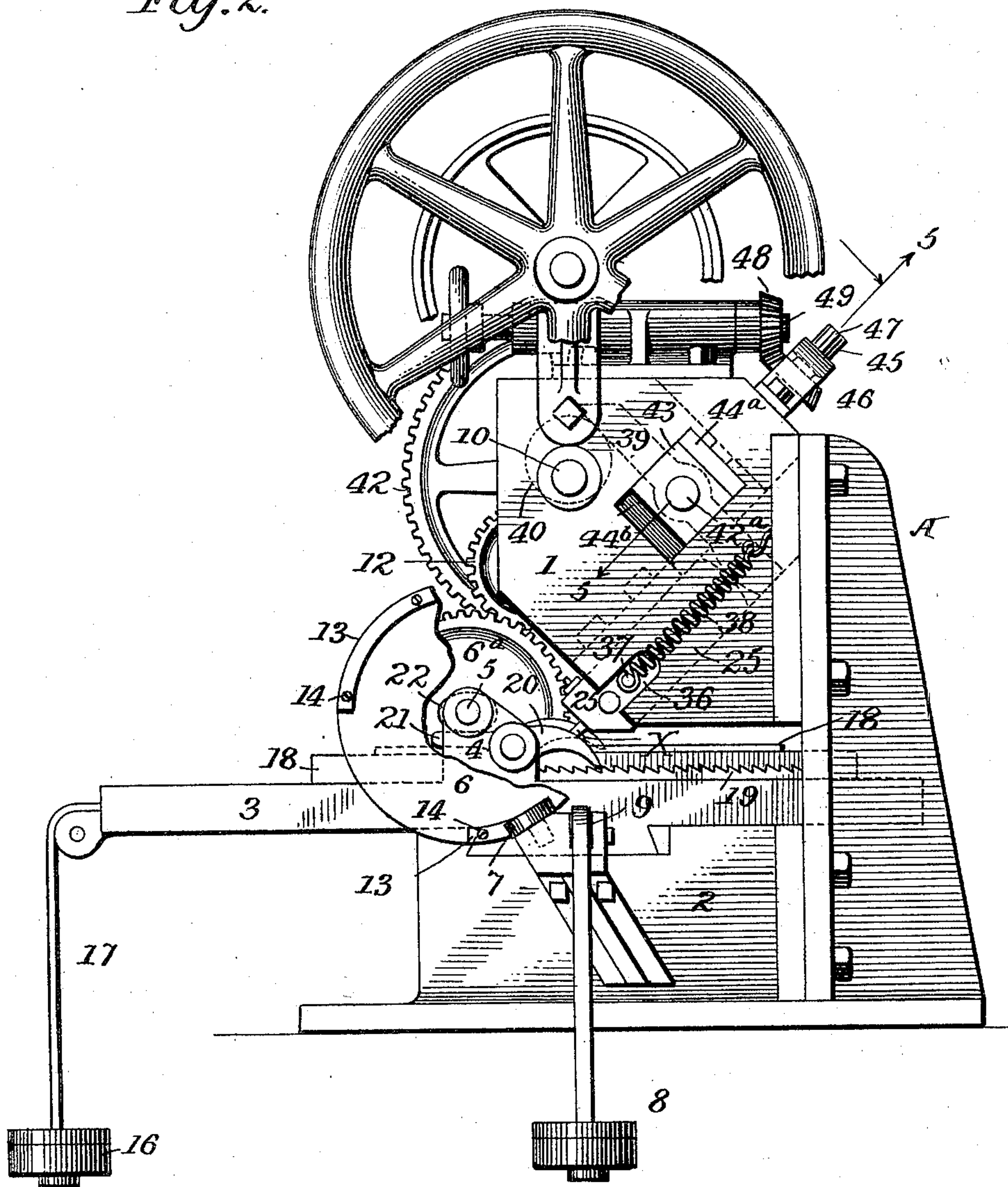
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Fig. 2.



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Fig. 3.

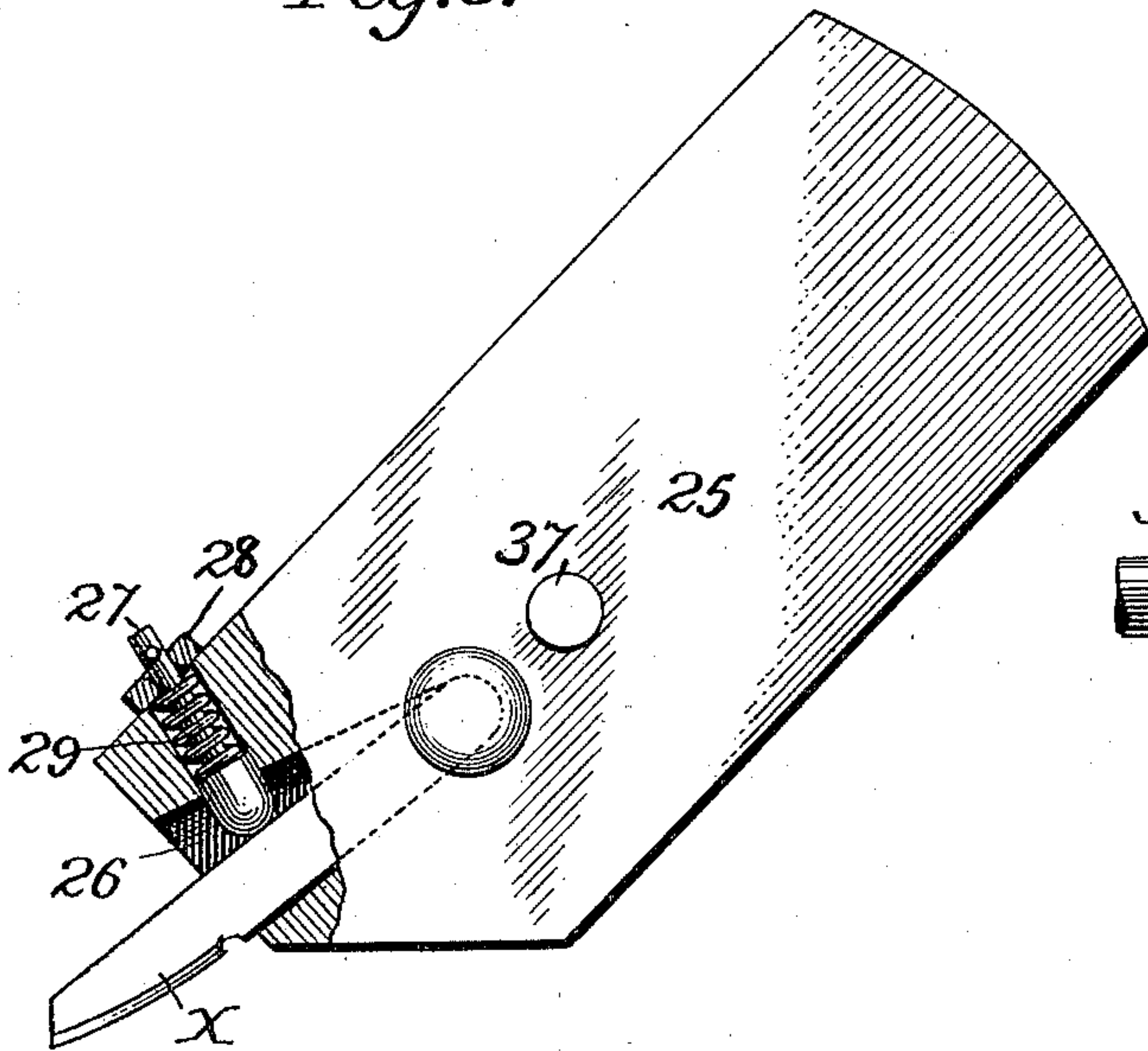


Fig. 4.

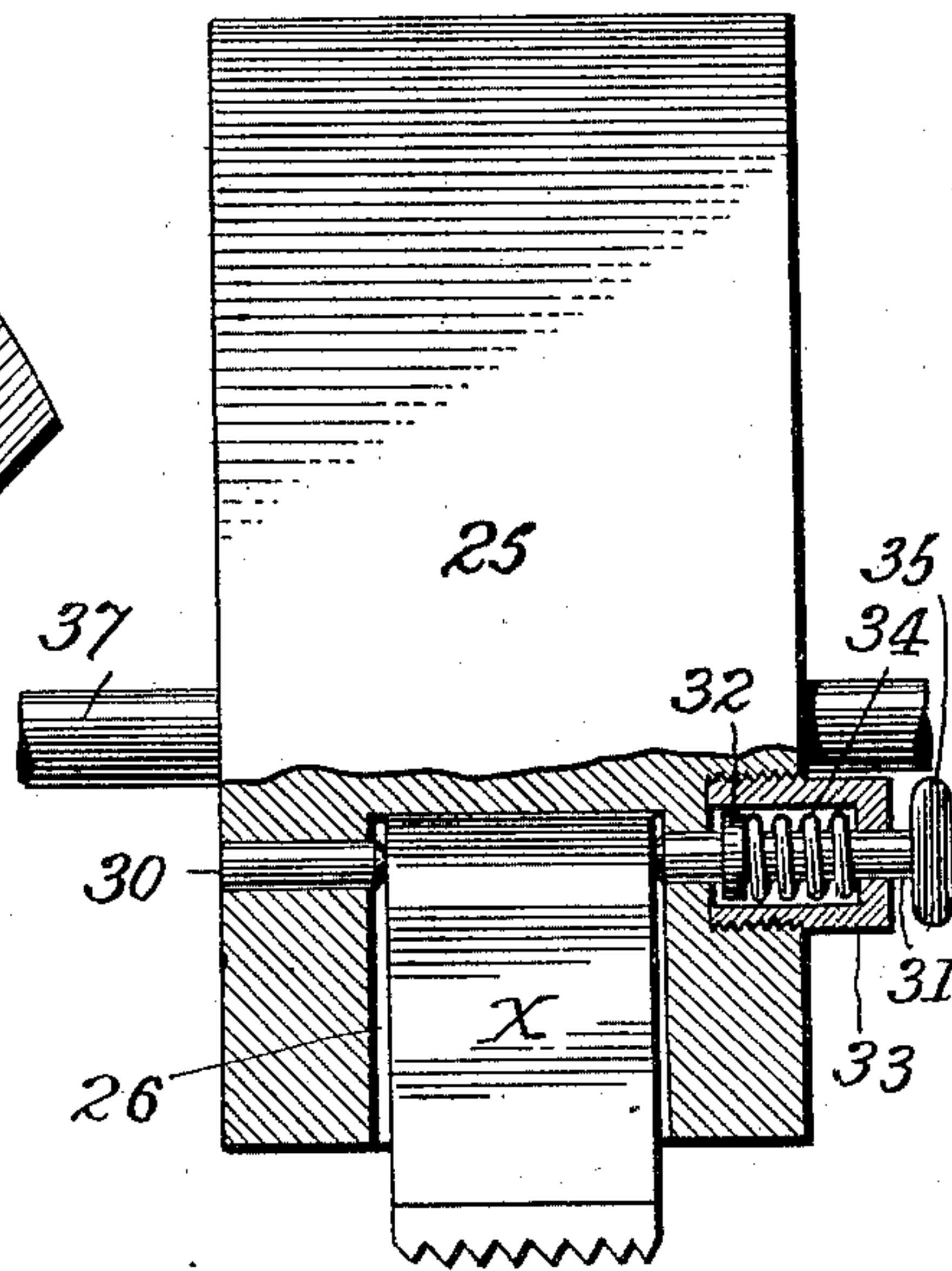


Fig. 5.

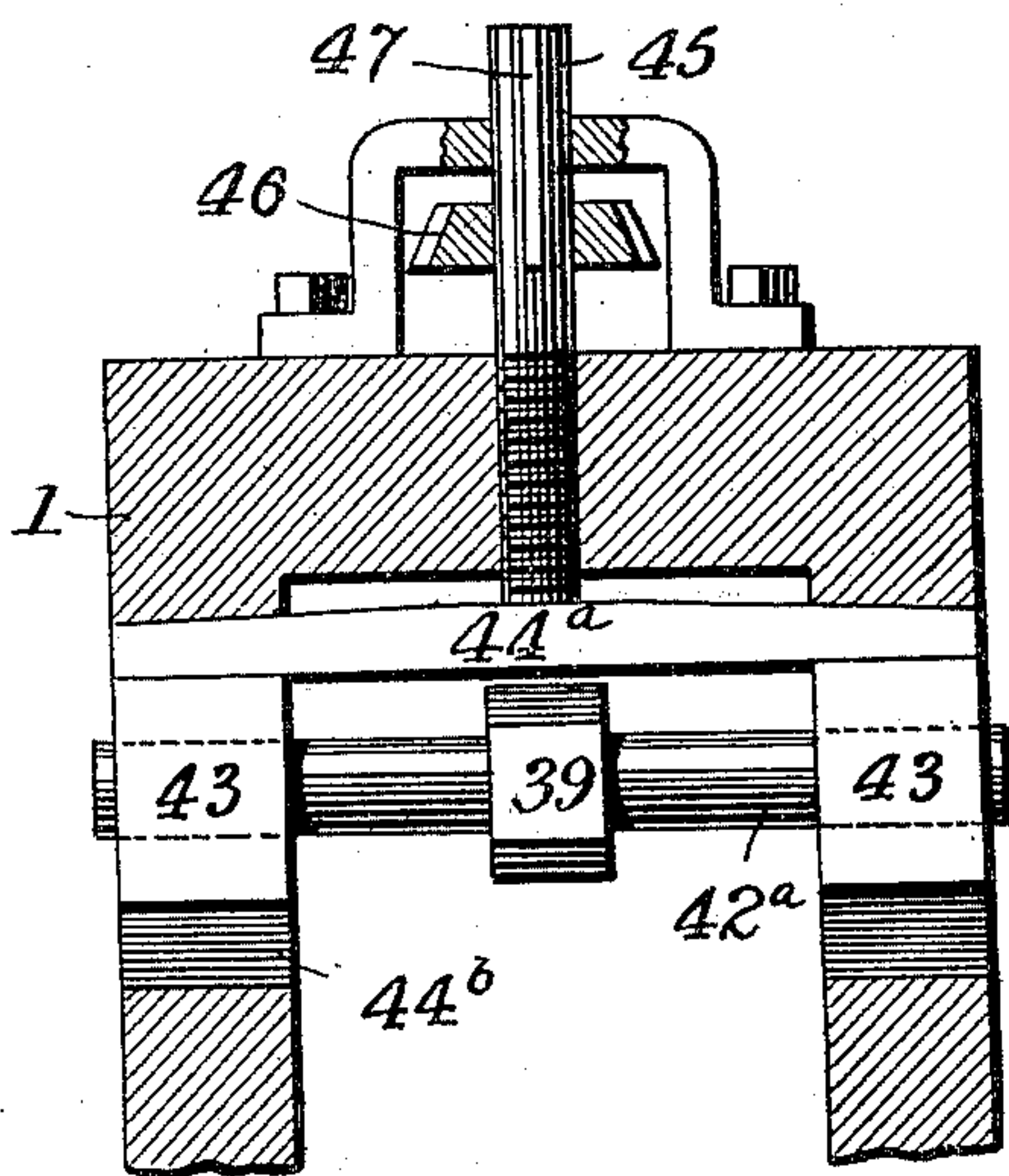
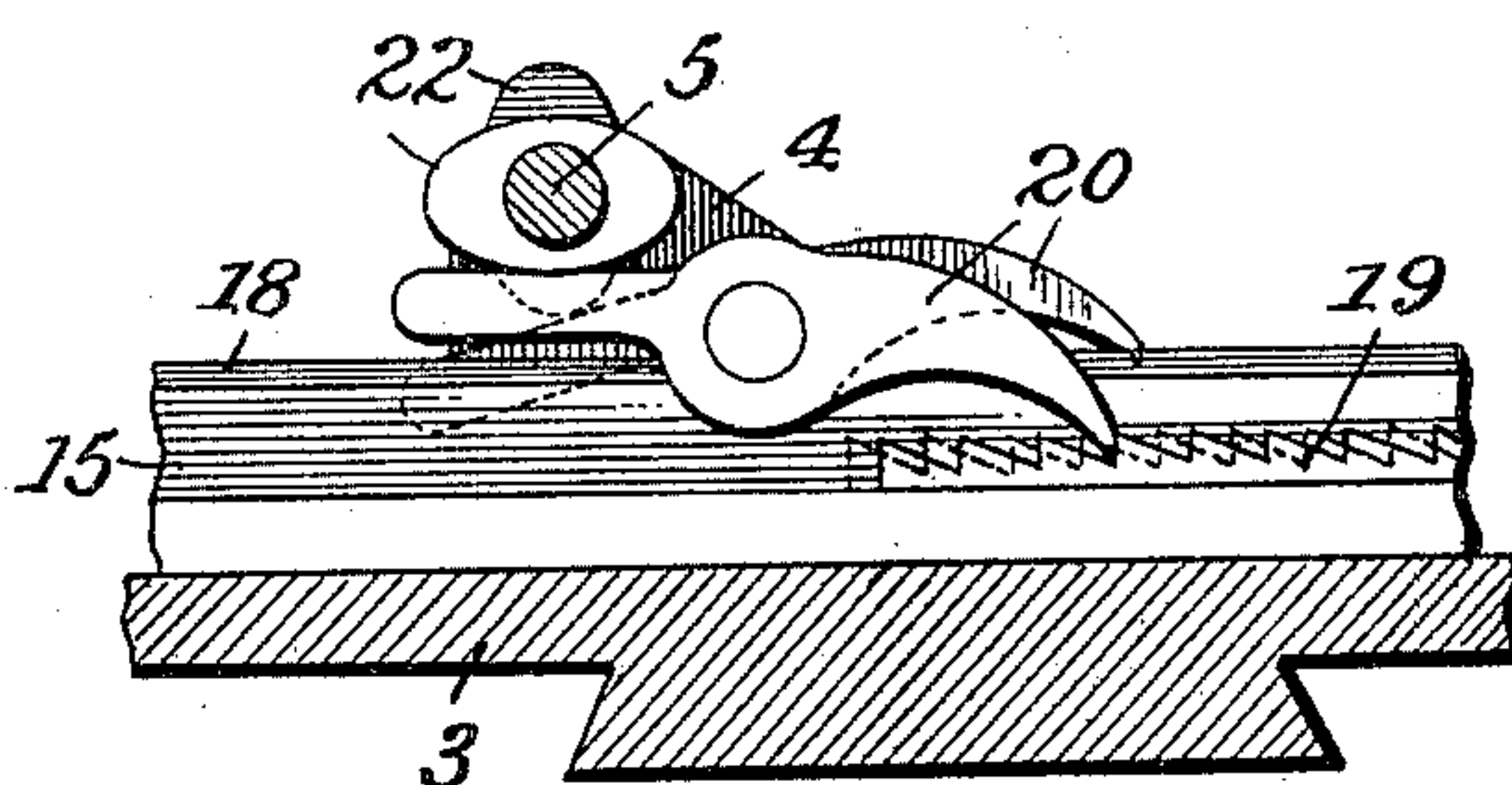


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JAMES TURNER, OF PATERSON, NEW JERSEY, ASSIGNOR TO THE KEARNEY & FOOT COMPANY, OF NEW YORK, N. Y.

## RASP-PUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 610,618, dated September 13, 1898.

Application filed December 9, 1897. Serial No. 661,315. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES TURNER, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Rasp-Punching Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in rasp-cutting machines, having for its object to improve generally the construction of such machines, to the end that a better and more efficient rasp may be produced thereby.

With this object in view the invention consists in the novel construction, combination, and arrangement of parts hereinafter more particularly described.

In the accompanying drawings, forming a part of this specification, and in which like letters and numerals of reference indicate corresponding parts, Figure 1 is a front elevation of a machine embodying the invention. Fig. 2 is a side elevation of the same, parts being broken away. Fig. 3 is an enlarged detail side elevation of the cutter-holder and cutter. Fig. 4 is a front elevation thereof. Fig. 5 is a detail sectional view on the line 5 5, Fig. 2, illustrating the means for adjusting the cutter-holder-operating lever; and Fig. 6 is a similar view of the feeding devices of the blank-carrying slide.

Briefly stated, the invention comprises the usual cutter or punch holder and its reciprocating means, upon which is carried a gang-punch—that is to say, a punch adapted to form a series of teeth extending across the width of the rasp-blank at each downstroke thereof. This punch coöperates with the rasp-blank carried upon a bed, which bed is mounted in a longitudinally-movable slide. In order that the teeth of one transverse row may not be cut in longitudinal alinement with those of the preceding row, the longitudinally-movable slide is mounted to slide in guides of a carriage, which is in turn mounted to reciprocate in guides of the frame. The reciprocation of this carriage is in a direction transverse to the line of movement of the slide, and suitable means are provided for automatically shifting the carriage in one direc-

tion or the other after each downstroke of the plunger. By this arrangement and operation of the parts the rasp-blank is shifted laterally to a slight extent after each series of teeth has been cut, and when the cutter next descends to form the next series of teeth the said teeth are cut in staggered relation to those of the previously-formed series.

Referring more particularly to the drawings, A designates the frame of the machine, suitably constructed to support the operative parts and comprising a head 1 and a base 2. Mounted to reciprocate transversely across the base of the frame in guides thereof is a carriage 3, provided at its forward end with separated uprights 4, journaled in which is a transverse shaft 5. Upon one end of this shaft, at the side of the frame, is a cam or pattern faced disk 6, the cam-face of which is normally held into engagement with a friction-roller 7 by means of a depending weight 8, connected by means of a chain or cable passing over a friction-roller 9 with one end of the carriage 3. At its opposite end the shaft 5 carries a gear 6<sup>a</sup>, which is driven from the driving-shaft 10 through an intermediate chain of gears 12. Preferably the cam-face of the disk is formed by means of two or more segmental strips 13 of uniform thickness detachably secured at equidistant points upon the disk, at the edge thereof, by means of retaining-screws 14. By this arrangement it will be obvious that if the disk 6 be rotated a distance equal to the length of one of the strips 13 or of the intervening spaces after each reciprocation of the punch the carriage will be shifted a distance in one direction or the other equal to thickness of the strips 13. It will be equally obvious that this distance may be varied at will by detaching strips of one thickness from the disk and substituting others.

Mounted to move in guides of the carriage 3, but in a direction transverse to that in which the carriage is reciprocated, is a slide 15, which is propelled by a suspended weight 16, connected to one end of a cable 17, which cable passes around a guide-pulley upon the carriage 3 and is connected at its opposite end to the front end of the slide 15. Upon



the slide 15 is supported a half-round bed 18, upon the upper flat face of which is adapted to be received the rasp-blank  $x$ .

The slide 15 is adapted to be moved intermittently beneath the rasp-punch, and in order that the movement may be properly timed and limited racks 19 are secured upon opposite sides of the slide, and the teeth of one of these racks is arranged in staggered relation with those of the other rack. Adapted to engage with the teeth of the racks 19 are pawls 20, pivotally mounted upon the uprights 4. These pawls are each provided with tail-pieces 21, which are engaged by cams 22 upon the shaft 5 to lift the pawls out of engagement with the racks, the cams being arranged to lift the pawls alternately, so that when one of the pawls is lifted above its rack the other is resting half-way between two teeth of its rack, and consequently the slide 15 is only permitted to be moved a distance corresponding to one-half that between the teeth of the racks after each downstroke of the punch.

Mounted to reciprocate in guides of the head 1, at an angle to the face of the rasp-blank  $x$ , is the gang punch or cutter holder 25, formed at its lower end with a recess 26 for reception of the punch X. This punch is suitably pivoted at its upper end and is adapted to swing slightly forward within the recess as its points enter the file-blank, thereby raising and forming sharper and more perfect teeth. Normally the punch rests in contact with the rear wall of the recess, which constitutes a bearing therefor, it being maintained in such position by means of a yielding bearing which engages its front face. As shown, this yielding bearing comprises a headed stud 27, which passes through an opening extending from the front face of the tool-holder and intersecting the recess 26. The head of the stud bears against the front face of the punch X, and its stem projects through an opening in a plate 28, detachably secured to the front of the tool-holder, and between this plate and the shoulder of the stud a spring 29 is interposed, which serves to maintain the stud in contact with the punch and the punch in contact with its solid bearing.

As shown, the punch is pivotally supported between two centering-pins 30 31, and one of these pins is fixed stationary relative to the tool-holder, while the other is provided near one end with a collar 32 and projects at its opposite end through the end of a casing 33, screwed into an opening in the side of the tool-holder. Within the casing 33 and interposed between the end thereof and the collar 32 is a coil-spring 34, which surrounds the pin 31 and tends to maintain the conical point thereof within the correspondingly-shaped socket in one side of the punch. By this arrangement it will be obvious that the spring 34 not only serves to maintain the pin 31 in firm contact with the punch X and compensates for any wear occurring between

them, but it also permits the ready removal of a punch from the tool-holder and the substitution of another therefor, it being only necessary to withdraw the pin from engagement with the socket of the punch against the action of the spring 34. In order that this may be more easily effected, the projecting end of the pin is provided with a knob or handle 35, by means of which the pin may be retracted.

Projecting from opposite sides of the tool-holder and extending through recesses 36 in the sides of the head 1 are studs 37, to each of which is connected a spring 38, which serve to maintain the tool-holder in its normally-elevated position, as well as to take up all lost movement when the cam or lever wears.

Bearing at one end upon the upper end of the tool-holder is a centrally-pivoted lever 39, the opposite end of which rests in contact with a cam 40, upon the shaft of which is mounted a gear-wheel 41, driven by means of gears 42 from the driving-shaft. The rotation of this cam is suitably timed with respect to the blank-feeding mechanism, and in operation it elevates one end of the lever 39, causing its opposite end to be depressed, thereby lowering the tool-holder and carrying the punch X into contact with the rasp-blank.

In order that the position of the tool-holder may be varied to take a long or short cutter or to get the right depth of tooth in rasp-blanks, suitable adjusting devices for the lever are provided. Thus, as shown, the lever is provided with trunnions 42<sup>a</sup>, which project from opposite sides thereof and are received in bearing-blocks 43, adapted to be moved longitudinally in elongated slots formed in opposite sides of the head 1. Arranged within the said slots and interposed between the upper end of blocks 43 is a plate or gib 44<sup>a</sup>. On the opposite sides of block 43 are suitable yielding bearings 44<sup>b</sup>, the said bearings in the present instance consisting of rubber blocks. As a convenient and simple means of adjusting the blocks 43 in their slots a screw 45 is provided and arranged to bear at its lower end upon the gib 44<sup>a</sup>. This screw extends through a threaded opening in the head 1 and is provided at its upper end with a bevel-gear 46, mounted to permit the screw to move longitudinally with respect thereto, but held against independent rotary movement by means of a spline 47. The gear 46 meshes with the gear 48, carried upon one end of a shaft 49, which shaft is mounted in bearings of the head 1 and at its opposite end is provided with a hand-wheel, by means of which it may be rotated.

Without limiting myself to the exact construction and arrangement of the parts shown and described, since it will be obvious that various changes may be made in such construction and arrangement, without departing from the spirit or scope of my invention, and some of the features thereof be used without others,



What I claim is—

1. In a rasp-cutting machine, the combination of a longitudinally-movable slide, means for intermittently moving the same, a transversely-reciprocating carriage upon which said slide is mounted, a rotary pattern-surface mounted upon the carriage with its axis at right angles to the line of movement of the slide, a bearing for said surface upon the frame, means for maintaining said surface in contact with said bearing, and a reciprocating punch and its operating means, substantially as described.

2. In a rasp-cutting machine, the combination of a longitudinally-movable slide means for intermittently moving the same, a transversely-reciprocating carriage upon which said slide is mounted, a pattern-surface having detachable portions, a bearing for said surface, means for maintaining the pattern-surface and bearing in contact and a reciprocating punch and its operating means, substantially as described.

3. In a rasp-cutting machine, the combination with an intermittently-movable slide, and its operating means, of a holder adapted to reciprocate at an angle to the face of the slide, a cutter pivotally supported upon the holder and provided upon one face with a solid bearing and upon its opposite face with a yielding bearing, and a detachable pivot for the cutter adapted to permit the cutter to be removed from the holder, substantially as described.

4. In a rasp or file cutting machine, the combination with a tool-holder provided with

a recess, of a cutter pivoted within said recess and having one of its faces bearing against one wall thereof and a yielding bearing comprising a spring-pressed stud or block engaging the opposite face of the cutter, substantially as described.

5. In a rasp or file cutting machine the combination with a holder provided with a recess, of a cutter or punch within said recess having sockets formed in its opposite sides and pins engaging said sockets, one of the pins being retractable, substantially as described.

6. In a rasp or file cutting machine the combination with a holder provided with a recess of a cutter or punch within said recess having sockets formed in its opposite sides and pins engaging said sockets, one of said pins being spring-pressed and retractable, substantially as described.

7. In a rasp or file cutting machine, the combination with blank-feeding mechanism, of a reciprocating cutter-holder, a pivoted lever for moving the cutter-holder toward the blank-feeding mechanism, means for reciprocating the lever, devices for shifting the pivotal point of the said lever, and springs for moving the cutter-holder from the blank-feeding mechanism, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES TURNER.

Witnesses:

DUNCAN M. ROBERTSON,  
RICHARD KRIMKE.