

(No Model.)

2 Sheets—Sheet 1.

G. W. BUGBEE & F. DANNER.

MORTISING MACHINE.

No. 384,559.

Patented June 12, 1888.

Fig. 1.

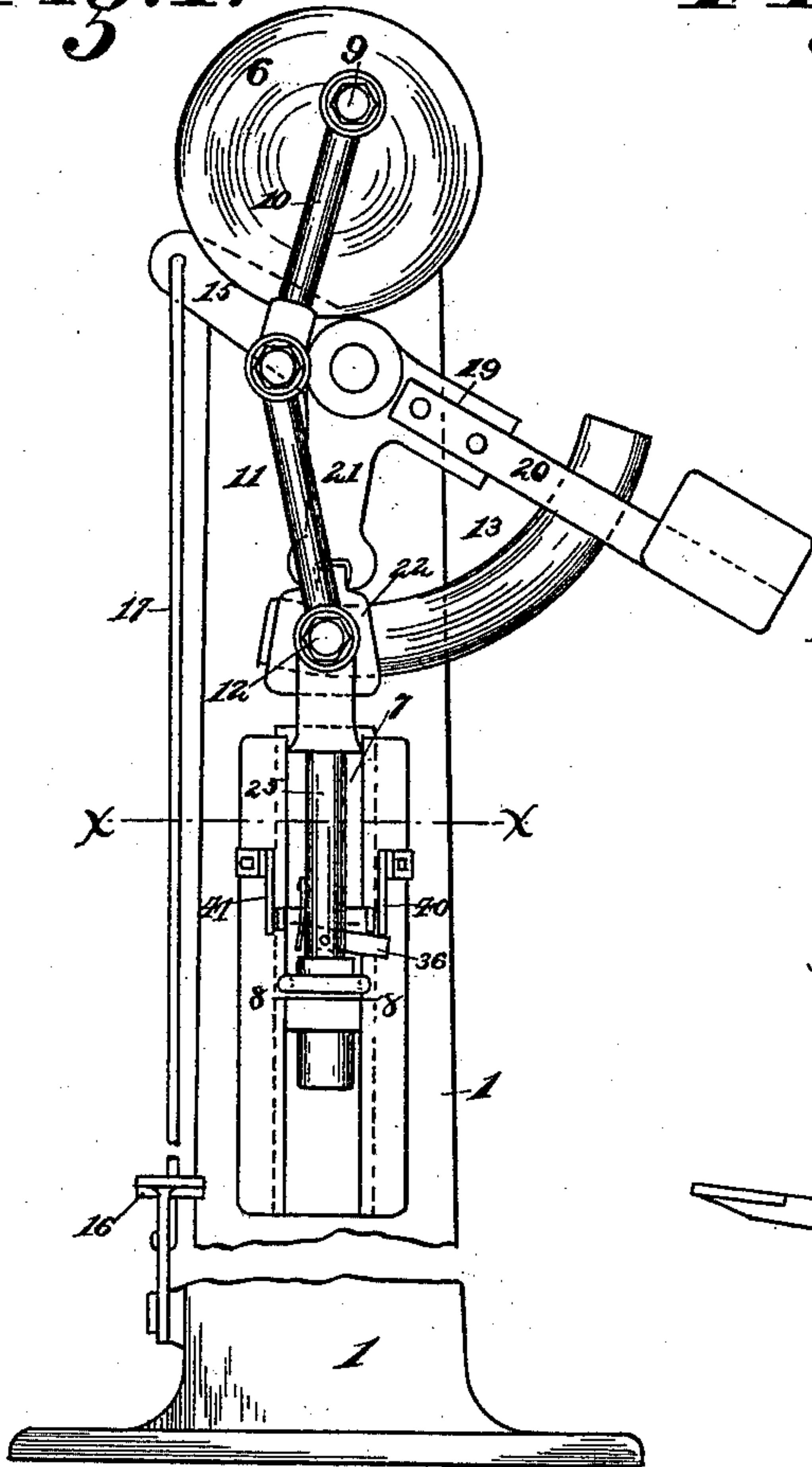


Fig. 2.

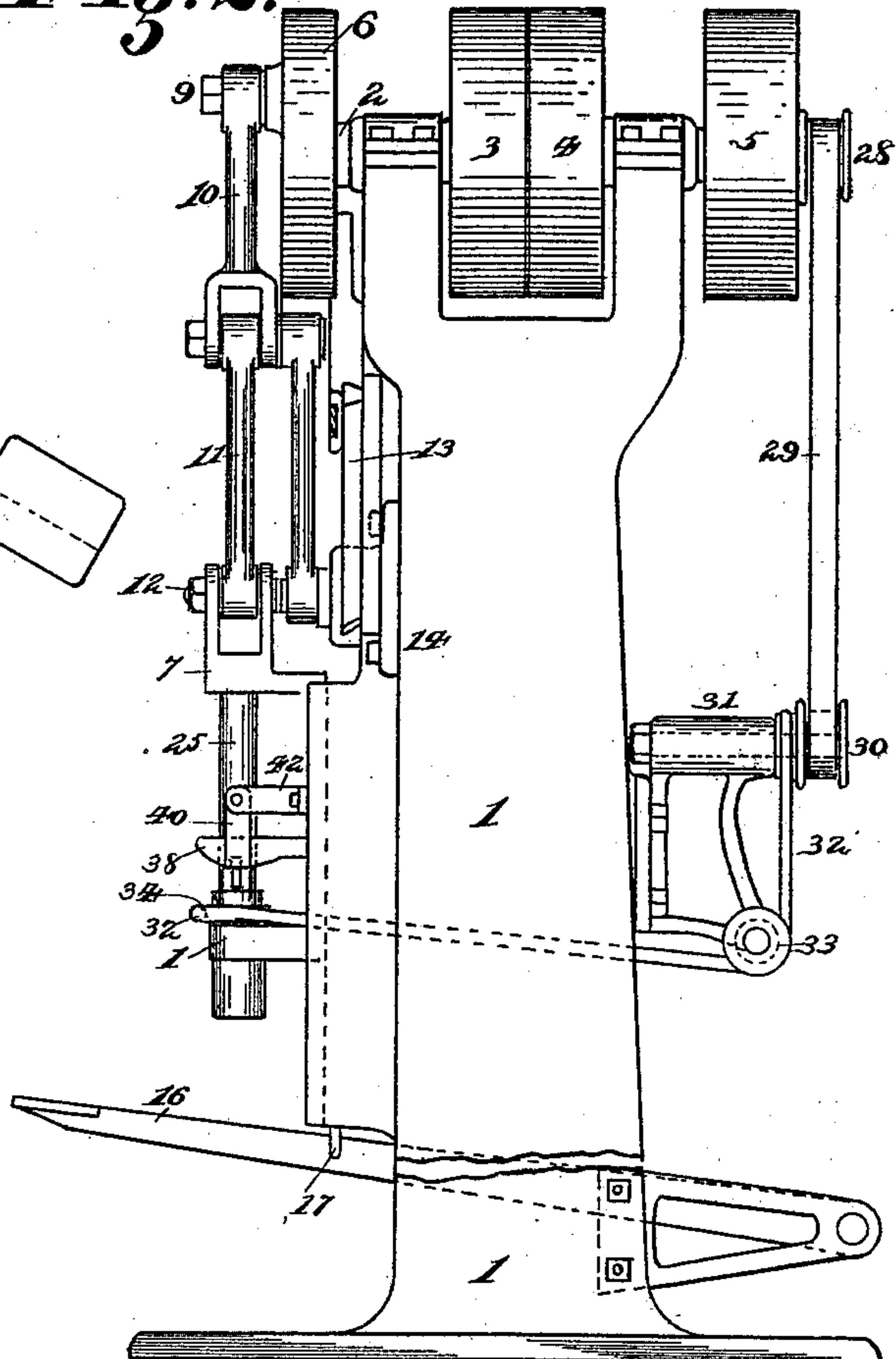


Fig. 6.

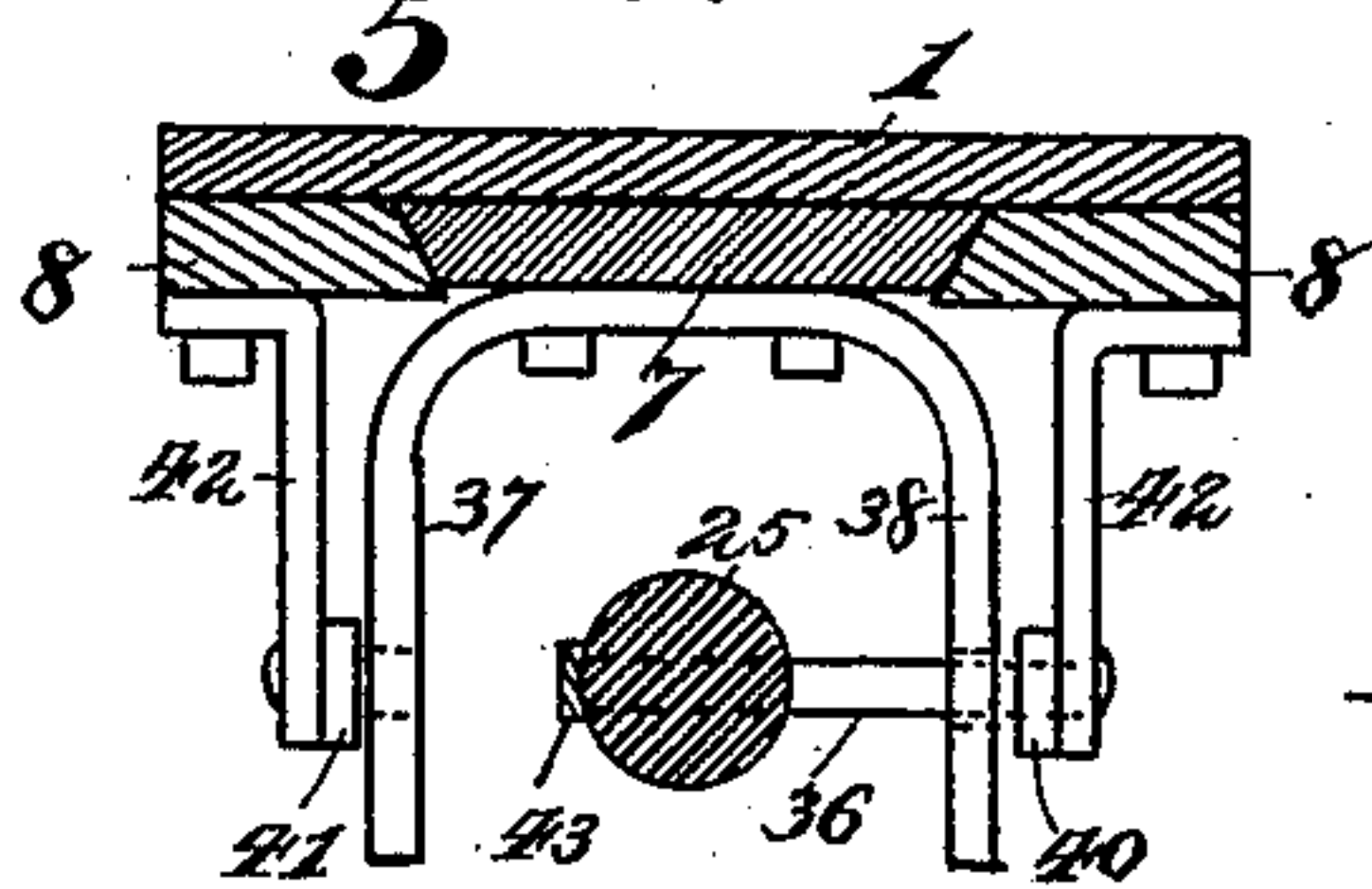


Fig. 7.

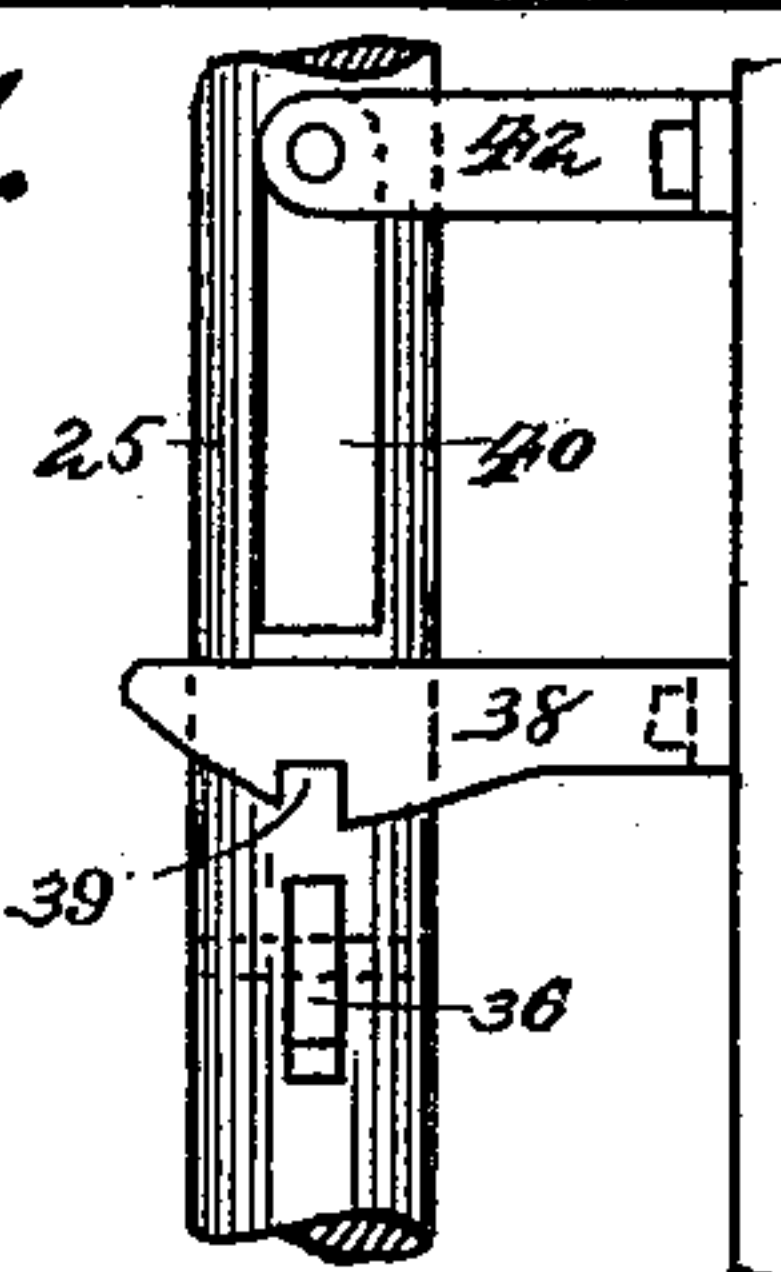


Fig. 10.

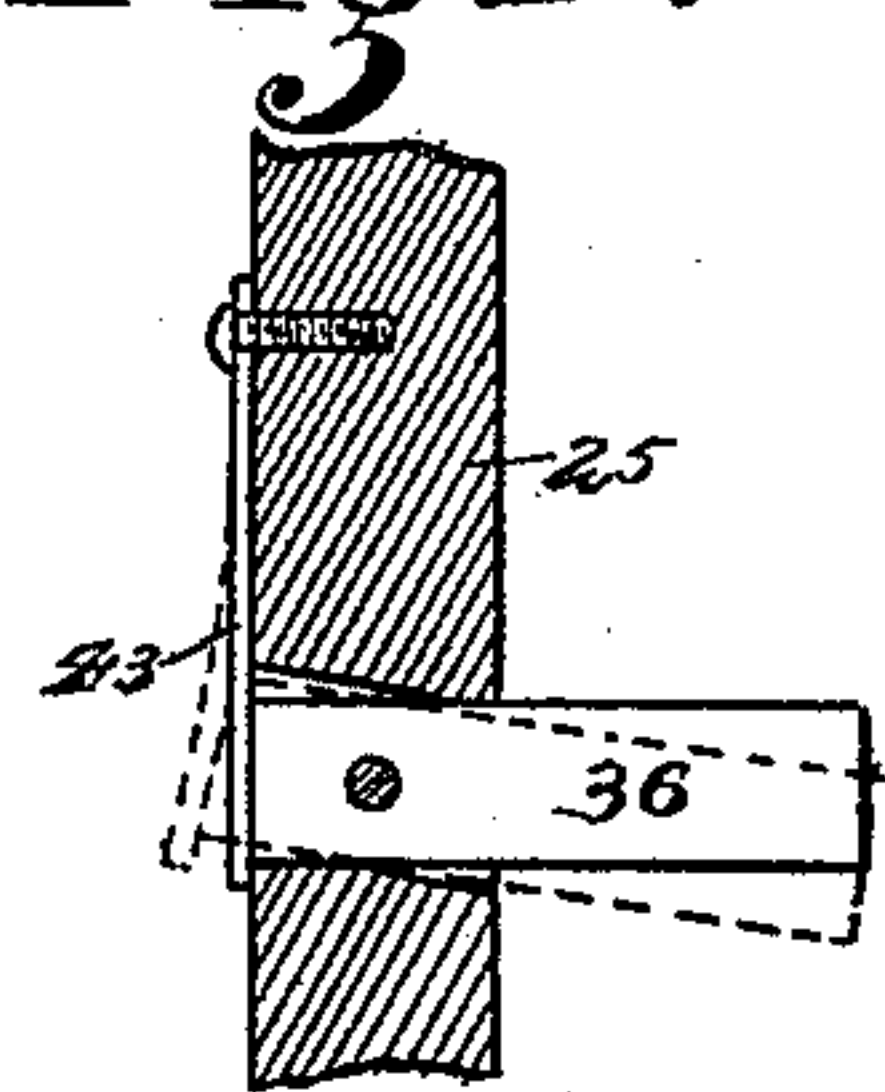
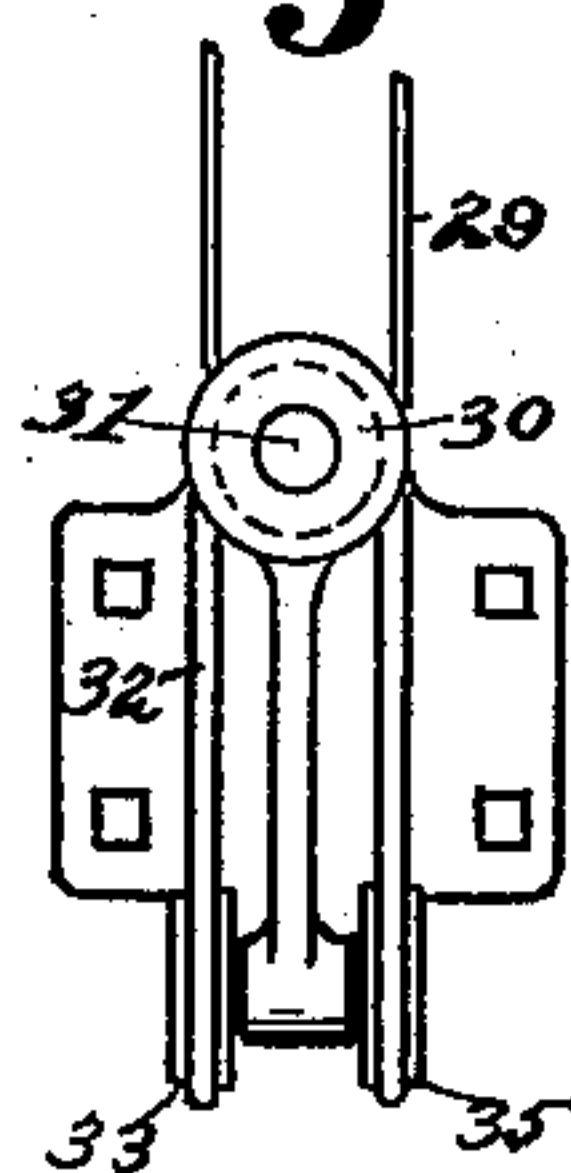


Fig. 11.



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(No Model.)

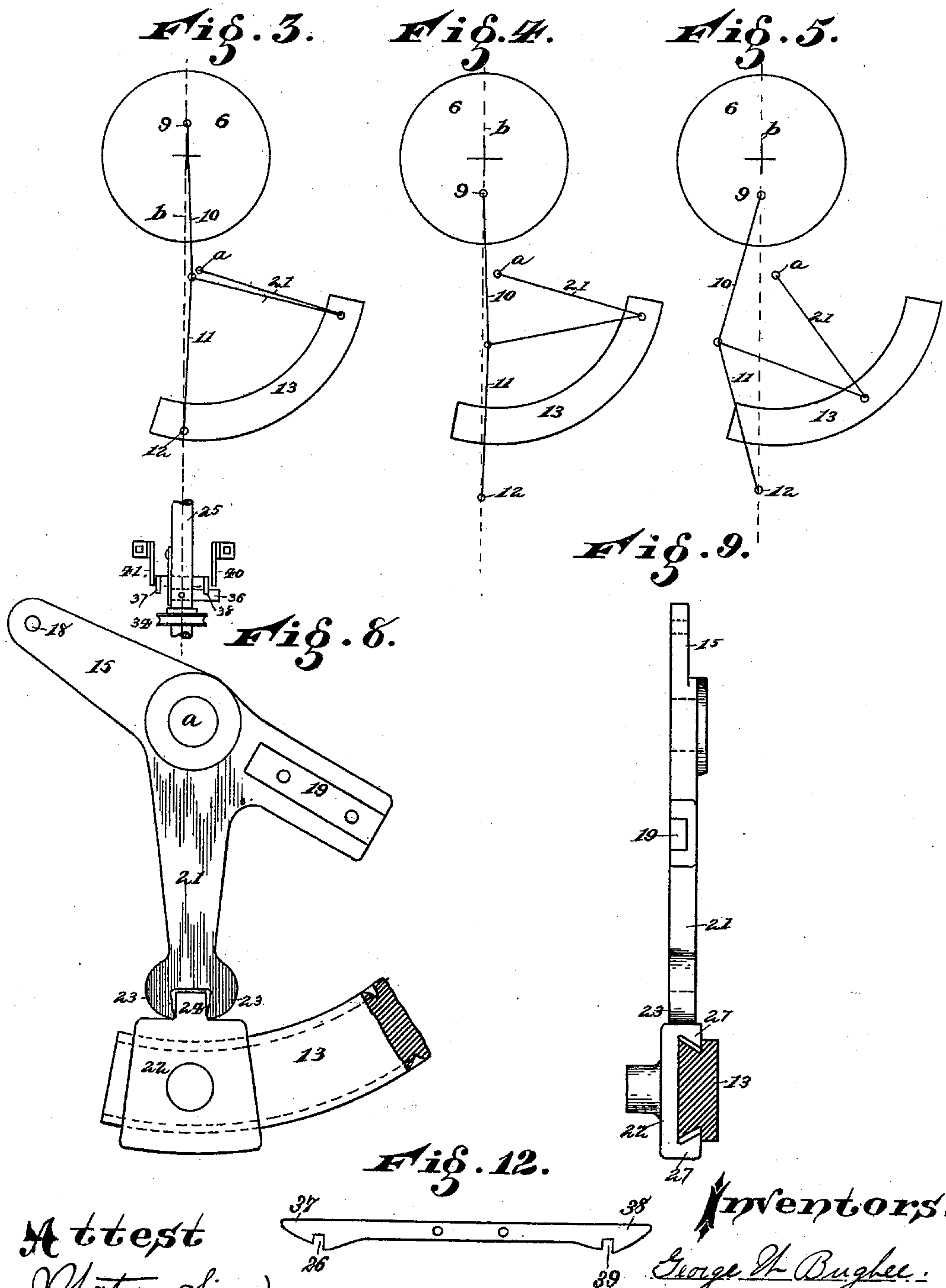
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Their Attorneys, &c.

UNITED STATES PATENT OFFICE.

GEORGE W. BUGBEE, OF DELHI, AND FREDERICK DANNER, OF HOME CITY,
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MORTISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 384,559, dated June 12, 1888.

Application filed January 3, 1888. Serial No. 259,576. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. BUGBEE, of Delhi, and FREDERICK DANNER, of Home City, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Mortising - Machines, of which the following is a specification.

One of the objects of our invention is to construct the mortiser so that the jar occasioned by the stroke of the chisel will not be communicated to the operator through the foot-lever.

Another object of our invention is to provide an improved chisel-reversing mechanism; and the third object of our invention is to employ an endless band for reversing the chisel, the various features of which are shown in the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of our machine. Fig. 2 is a side elevation of Fig. 1; Figs. 3, 4, and 5, diagrams illustrating the different positions and movements of the mechanism employed to reciprocate the chisel. Fig. 6 is a sectional plan view of the reversing-trips, taken on section-line *x x*, Fig. 1. Fig. 7 is a side elevation of the same. Fig. 8 is an enlarged view of the adjusting-arm and sector-guide. Fig. 9 is a side elevation of Fig. 8. Fig. 10 is a central section of the chisel-spindle. Fig. 11 is a rear elevation of the spindle-driving mechanism. Fig. 12 is an elevation of the yoke as it would appear in a straight line.

1 represents the post of an ordinary mortising-machine. 2 represents the main driving-shaft; 3, the loose pulley, and 4 the driving-pulley; 5, the transmitter for communicating power to the ordinary borer usually attached to the mortising-machine, which is not shown herein. 6 represents the crank-wheel. These parts are all mounted upon the shaft 2 in the usual manner.

7 represents the reciprocating mortising-slide, which moves in guides 8.

9 represents a crank-pin; 10 11, link-arms connecting the crank-pin with the slide 7 through center pin, 12.

13 represents a sector-arm, which is se-

curely bolted to the frame at 14, as shown in Fig. 2.

15 represents a crank-arm for adjusting and controlling the operation of the chisel. It is operated by means of the foot-lever 16 and connecting-rod 17, hinged to the orifice 18 in one end of said arm.

19 represents a gain recessed into the opposite end of said arm to receive the weighted lever 20.

21 represents a crank-arm, which is made of two sections, 22 representing the other section, and they are connected together by a loose joint, preferably by making the lugs 25 on section 21 engage with a lug, 24, on the section 22. By means of the movement of the arm 21 22 through the foot-lever the links 11 12 are obliqued or straightened, so as to control the length of the chisel-stroke. We have illustrated the different positions of this stroke by the diagrams 3 4 5. In Fig. 1 the chisel-stock and crank and driving mechanism are shown in position for reversing, the foot-lever being up, and the weighted arm 20 having carried the adjusting-sections 21 22 to their farthest limit, it is in position for reversing the chisel. In this position the chisel has no movement, and the chisel-mandrel 25 is free to revolve or turn half round, in the manner which will be hereinafter described. The mechanism automatically stops and starts this reversing motion, and locks it in a new position as soon as the half-revolution of the mandrel has been made. When it is desired to cut or give the stroke of the chisel, the foot-lever can be depressed to bring it into working operation. Fig. 3 shows the foot-lever depressed and the controlling-arm moved on the sector 13 to its extreme position, so as to give the full stroke of the chisel.

It will be observed that the center *a*, on which the arm 21 swings, is off of the center line, *b*, running from crank-center 9 to the center 12 of the mandrel or chisel-holder. In this position the reversal of the chisel cannot take place. The same will also be observed in Fig. 4, which represents the same position of the crank-arm 21 on the sector, but with

the crank-pin and links in position when the chisel is at its extreme downward movement. Fig. 5 is a diagram illustrating the sector in the central position, with the chisel, say, taking half a stroke, and with the links 10 11 at their extreme downward position.

Our improvement for the operation of these parts consists in dividing the lever-arm 21 22 into two sections, making a loose joint between the two, having greater lost motion than that contained in the bearings of the section 22 upon the guides 27, which connect the section 22 with the sector 13. These guides are preferably of dovetail form, as shown in Fig. 9, with the sides of the boxing babbitted. There being very little lost motion in these guides, and there being more lost motion in the joint connecting the lugs 23 24, the shocks received by the chisel-mandrel will be taken up upon the sector-arm 13, which is rigidly bolted to the frame, and not communicated through the loose joint at the lugs or from section 22 to section 21 and foot-lever. This is a material improvement, as all the jars are received by the sector and taken up by the frame, instead of being communicated to the foot-lever, and hence to the operator, as the foot-lever must be at all times under the control of the foot of the operator in gaging the length of stroke. This relieves the operator from jars, and another important advantage is obtained because the machine is noiseless.

The reversing mechanism is constructed as follows:

28 represents the driving-pulley on the main shaft; 29, an endless belt passing over pulley 30, which is journaled upon a stud, 31.

32 represents an endless rope passing around the pulley 30, thence around the sheaves 33 35, thence around the pulley 34, which is keyed to the chisel-mandrel. The chisel-stock is normally held from turning by means of the lock, the belt slipping on the pulleys when the chisel-mandrel is locked.

The lock mechanism is constructed as follows:

36 represents a finger pivoted to the chisel-mandrel, which is slotted to receive it.

37 38 represent forks of a yoke, which is rigidly bolted to the chisel stock or slide.

39 represents a notch cut in the fork 38, and a similar notch, 26, is cut in the fork 37. The notches are longer on the back side, to insure the catching of the lock-pin 36. The finger 36 is normally engaged in one or the other of these notches, holding the mandrel 25 from turning. This lock is tripped automatically whenever pressure is removed from the foot-lever 16, and the weight 20 brings the mandrel up to its position in the following manner:

40 41 represent pendent arms pivoted to hangers 42, that are rigidly connected to the frame of the machine. As the mandrel 25 rises, the finger 36 engages against the end of these pendent arms, which pressure depresses

this finger 36, compressing the spring 43 and moving the finger out of the notch 39. As soon as this finger is moved out of the notch the mandrel 25 will commence to revolve, the finger 36 will swing the pendent arm 40 backward, and it will move round, engaging with the opposite fork, 37, of the yoke, which is inclined in rear of the notch. By the depression of this incline, as soon as it comes opposite the notch in said arm 37, the spring will force it up, and it will re-engage, until it is tripped in a like manner as described for the opposite side. The chisel will be reversed again whenever the foot-lever is depressed, and then the pressure removed, so as to allow the tripping-finger 36 to pass upward and engage with the tripping mechanism.

We claim—

1. In a mortising-machine, the combination, with the crank 6, links 10 and 11, and the chisel-mandrel, of the rigid sector 13, the pivoted arm 21, the arm 22, sliding on the sector and loosely engaging the pivoted arm, the crank-arm 15, connected with the said pivoted arm, and a foot-lever and connecting-rod to operate the crank-arm for adjusting the sliding arm on the sector, substantially as and for the purpose described.

2. In a mortising-machine, the combination, with the crank 6, chisel-mandrel, and connecting-links, of a rigid sector, 13, a pivoted arm, 21, an arm, 22, sliding on the sector and loosely engaging the pivoted arm, and means, substantially as described, for operating the pivoted arm to adjust the sliding arm on the sector.

3. The combination, with the chisel-mandrel 25 and drive-shaft of a mortising-machine, of the crank 6, connecting-links 10 and 11, rigid sector 13, a pivoted arm, 21, an arm, 22, sliding on the sector and loosely engaging the pivoted arm, means, substantially as described, for operating the pivoted arm to adjust the sliding arm on the sector, and chisel-reversing devices composed of a pulley on the drive-shaft, a pulley rigid on the chisel-mandrel, endless bands operating the parts, a finger, 36, pivoted on a part of the chisel-mandrel, the pendent arms 40 and 41, to trip said finger, and the notched forked yoke 37 38, substantially as described.

4. The combination, with the chisel-mandrel of a mortising-machine, of a lock-finger, 36, pivoted on a part of the chisel-mandrel, the rigid yoke 37 38, notched at each end, pendent arms 40 and 41, for tripping the lock-finger to release the mandrel, and endless bands for turning the chisel-mandrel when said finger releases the same, substantially as described.

5. The combination, with the chisel-mandrel 25 of a mortising-machine, of the finger 36, pivoted to a part of the mandrel, the rigid yoke having its free ends notched to engage the finger, and finger-tripping arms 40 and 41, substantially as described.

6. In combination with the rotating mandrel 25 of a mortising-machine, the yoke 37 38, provided with the notches 26 and 39, and the finger 36, laterally engaging with one of
5 said notches for locking and holding the mandrel from revolving, substantially as specified.

In testimony whereof we have hereunto set our hands.

GEORGE W. BUGBEE.
FREDERICK DANNER.

Witnesses:

J. WATSON SIMS,
M. E. MILLIKAN.