

No. 663,558.

Patented Dec. 11, 1900.

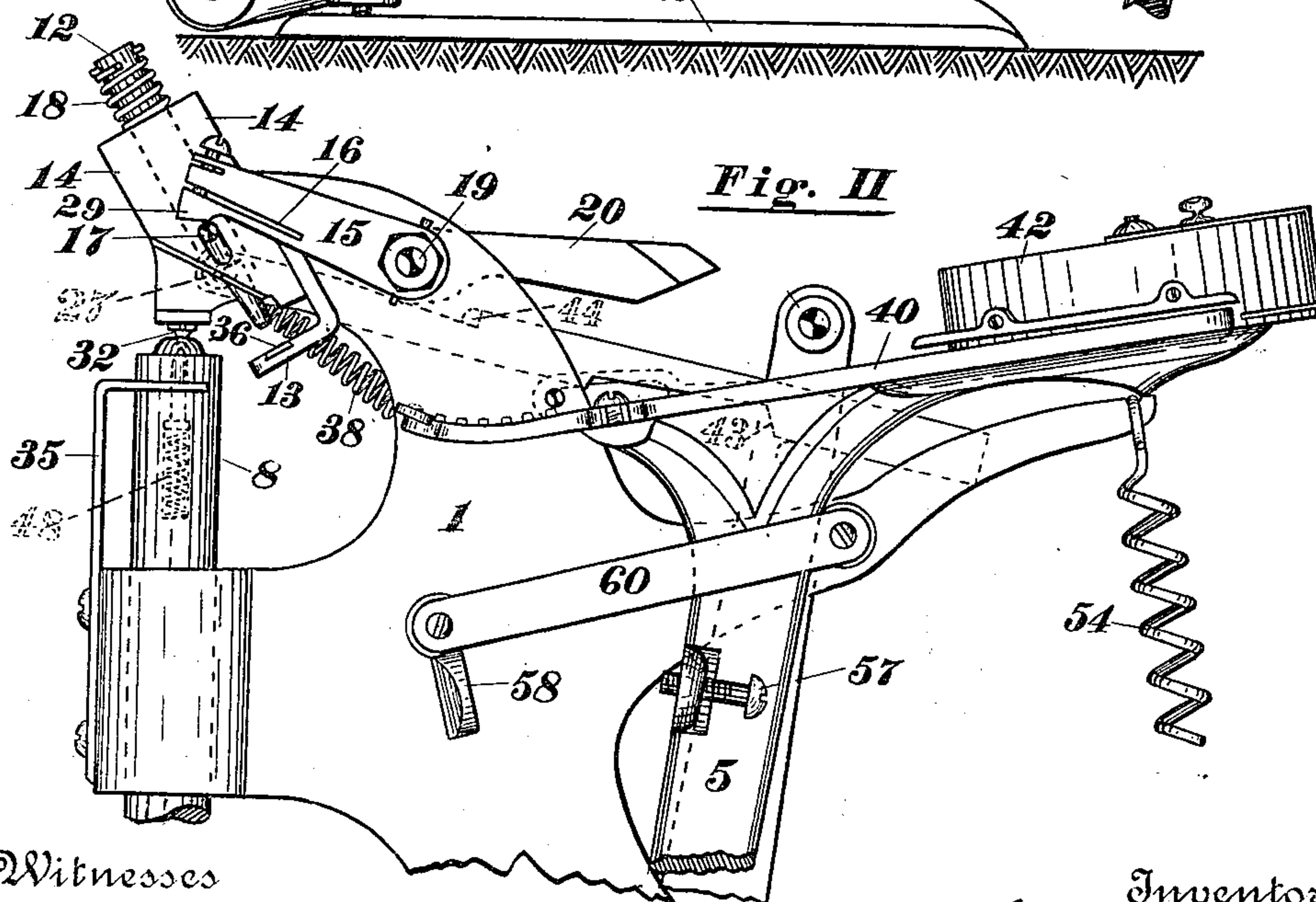
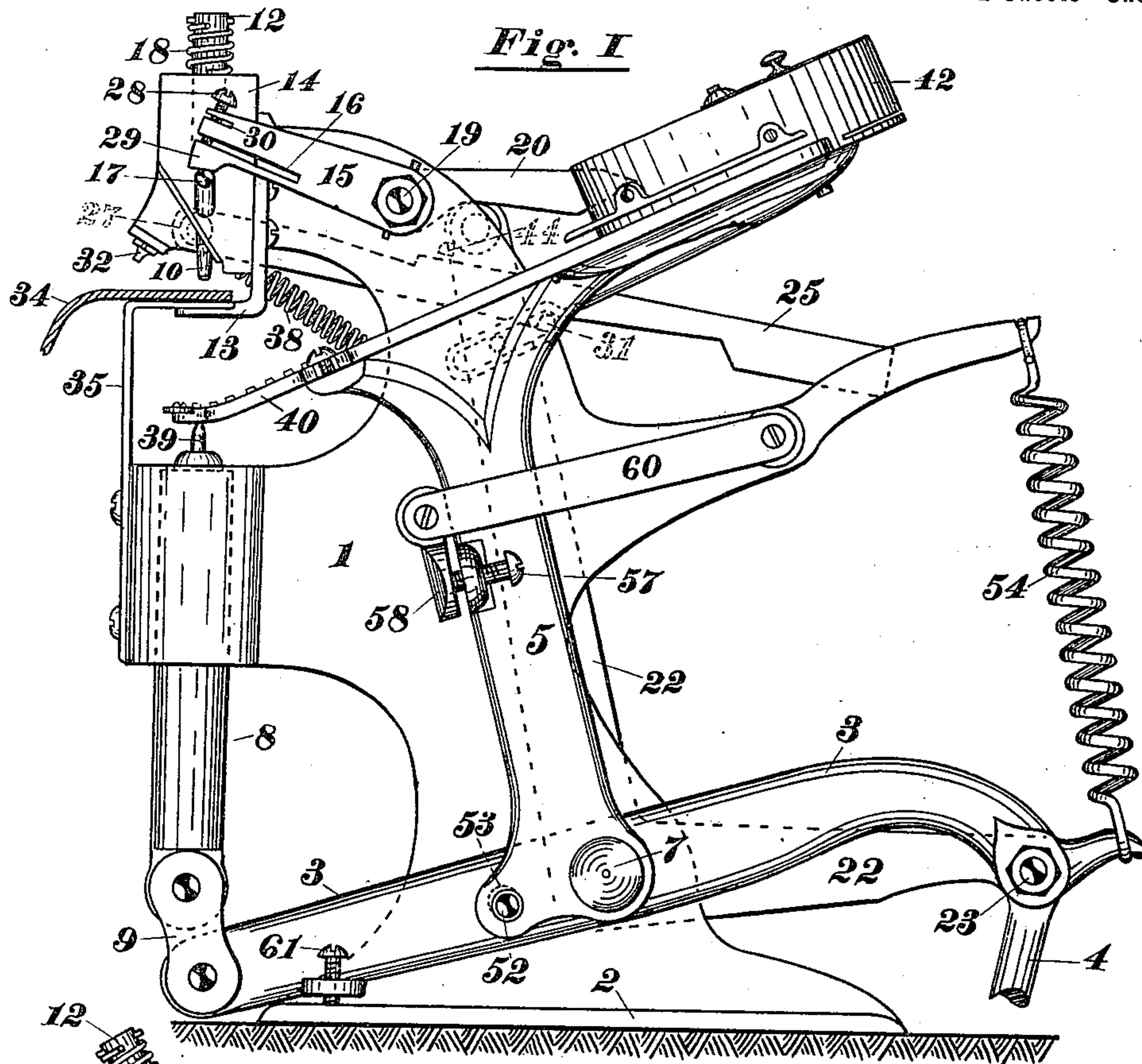
S. W. BURTCHAELL.

PUNCHING AND EYELET SETTING MACHINE.

(No Model.)

(Application filed Aug. 21, 1899.)

2 Sheets—Sheet 1.



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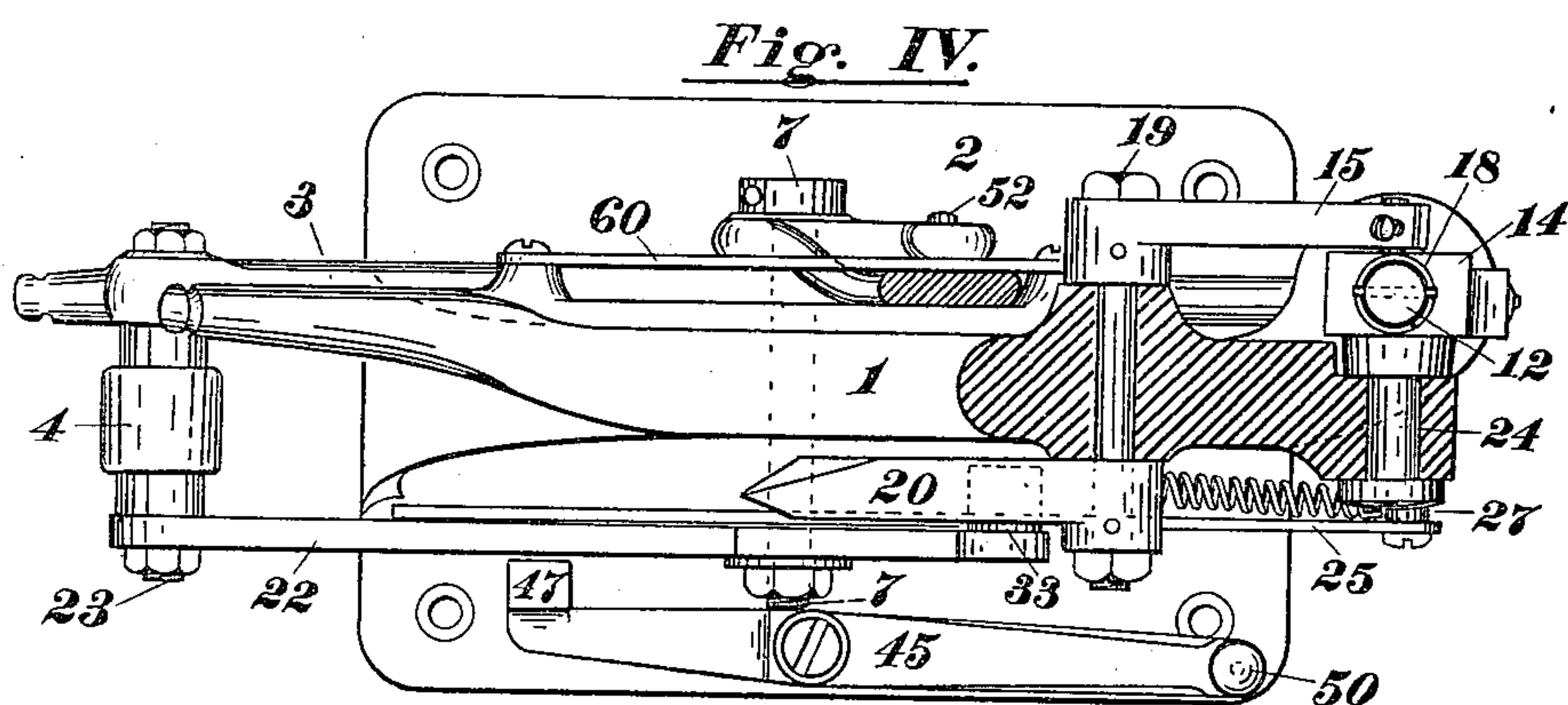
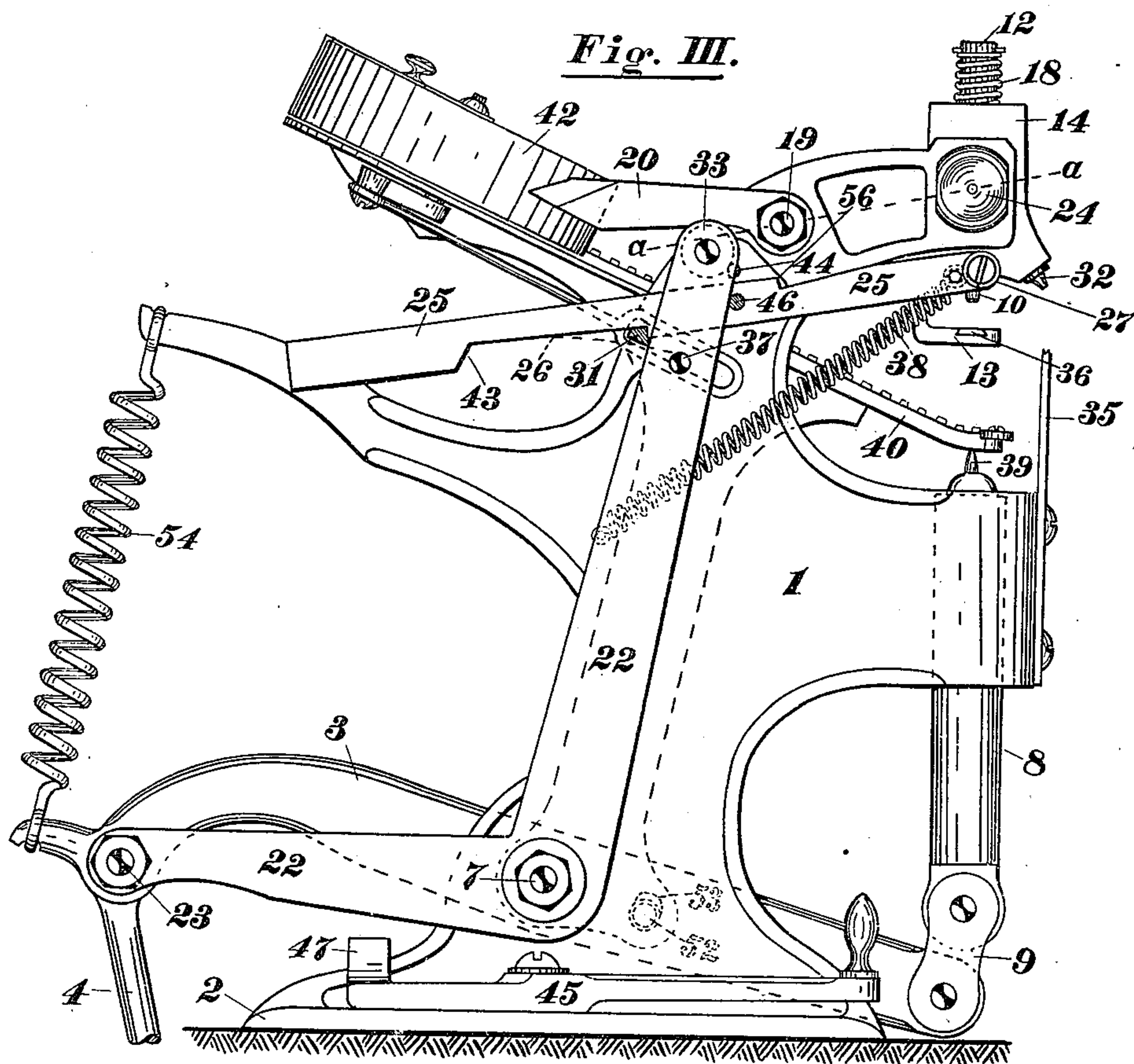
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UNITED STATES PATENT OFFICE.

SAMUEL W. BURTCHAELL, OF SAN FRANCISCO, CALIFORNIA.

PUNCHING AND EYELET-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 663,558, dated December 11, 1900.

Application filed August 21, 1899. Serial No. 727,970. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. BURTCHAELL, a citizen of the United States, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Machines for Punching and Setting Eyelets and Like Fastenings; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to machines for punching and setting eyelets and like fastenings in leather or cloth and to certain improvements in such machines.

My improvements consist in a pivoted member containing the punch and its die, also the setting-die, so mounted as to swing to two positions, so that the punching and setting are done in one line and by one motion of the machine without moving the leather or cloth, and also consist in means to move and hold the punch-supporting mechanism and the die connected therewith in the required position during the operations of punching and setting and in other features.

The objects of my invention are to promote the celerity and convenience of the work and reduce it to a single operation.

To these ends I provide mechanism as illustrated in the drawings herewith and forming a part of this specification, in which drawings—

Figure I is a side view of a machine constructed with my improvements, the punching mechanism being in position to act. Fig. II is another side view of the upper portion of the same machine with the punching mechanism swung out of the way and the setting devices in position to act. Fig. III is an elevation reverse to Fig. I, showing the other side of the machine. Fig. IV is a plan view of the machine, partially in section, on the line *aa* in Fig. III.

Similar references indicate corresponding parts.

Referring to the drawings, 1 is the main frame of the machine, provided with a flanged base 2, that can be attached to a bench.

3 is a main actuating-lever operated by a rod 4, extending to a foot-treadle.

5 is a vibrating lever pivoted at 7 and operated by the main lever 3.

8 is a sliding stem having a convex head that sets or closes the eyelets. The stem 8 is operated by the main lever 3 and the links 9.

10 is a common punch, either of the hollow or solid form, held in the sliding stem 12, supported in the pivoted member 14, and is provided with a bed or die 13, attached to and moving with the member 14, and is furnished with a seat 36, of soft metal, longitudinally adjustable, so as to present a new bed or seat for the punch when worn by use. The punch-stem 12 is operated or forced downward by a lever 15, that bears upon a pin 17 in the stem 12, and when released by this lever 15 is raised by the spring 18. The lever 15 is rigidly attached to the stem 19, that passes loosely through the main frame 1, as seen in Fig. IV, and is rigidly fastened in a second lever 20. The levers 15 and 20 and the punch-stem 12 are operated by a roller 33 on the bell-crank 22, pivoted at 7 and attached to the main lever 3 at 23, as seen at Figs. III and IV and to be further explained.

The member 14 is pivoted on stud 24, that passes loosely through the main frame 1, as seen in Fig. IV, and is turned to the two positions shown in Figs. I and II by means of the pivoted bar 25, attached to a stud 27. (Seen in Figs. III and IV and indicated by dotted lines in Figs. I and II.)

The lever 15, that operates the punch-stem 12, is so constructed as to produce a definite range or stroke of the punch 10 by being split at 16 and provided with an adjusting-screw 28, that bends or advances the lower part 29 and consequent range of the stem 12 and the punch 10. This screw 28 is cramped and prevented from working loose by a second slit in the lever 15, the top portion being bent either outward or inward when the hole for the screw is tapped and the screw inserted, thus maintaining a strain on its threads in the manner of a jam-nut.

Referring again to the pivoted member 14, this contains besides the punch 10, to operate in the position shown in Fig. I, a setting-die 32 to operate in the position shown in Fig. II, thus serving two functions, and is moved and held in the two positions by the bar 25 in the following manner: Supposing the position

to be as in Fig. I, the member 14 being held in a vertical position by the bar 25 being engaged on the stop 31, when the main lever 3 is depressed by the rod 4 a roller 33 on the top of the bell-crank 22 passes beneath and raises the lever 20 and depresses the one 15, causing the punch 10 to descend and pass through the leather or cloth 34, the latter resting on the guide 35, which for the punching process is set level with the punch bed or die 13. This is accomplished by loosening the screws by which the guide is attached to the main frame 1, the guide being slotted where the screws enter. The guide is also slotted at the top to admit of the passage of stem 8, as shown in Fig. II. After the punch 10 has perforated the work 34 the roller 33 moving on passes beyond and releases the lever 20, and at the same time a stud 37 in the bell-crank 22 comes in contact at 26 with the bar 25 and raises that out of contact with the stop 31, so that the member 14 being then free is instantly swung by the spring 38 into the position shown in Fig. II and the die 32 is brought into alinement with the stem 8. The spring 38 being attached to the bar 25 at a short distance from its pivotal point on the stud 27 tends to press this bar 25 downward and hold it in contact with the pins 31 and 37. While the operation of the punching mechanism is going on the stem 8 has risen a short distance, and after the punching operation is completed and the setting-die 32 has been brought into alinement with the stem 8 the latter continues to rise until the retractile pin 39 in its upper end engages or picks up an eyelet or other fastening from the raceway 40, that leads from a receptacle 42. This latter and the raceway 40, which are mounted on the lever 5, then recede, as shown in Fig. II, leaving a clear path for the stem 8. The pin 39 in the top of the stem 8 rests on a coil-spring, as indicated at 48 in Fig. II, and recedes when it comes in contact with the die 32. The stem 8 continues to rise, pushing the eyelet or fastening through the cloth or leather 34 and sets or clenches it against the die 32. The mechanism for supplying the eyelets or fastenings from the receptacle 42 I do not describe, as it is not embraced in my present invention. To hold the member 14 firmly in position during the second or setting operation, and in case the spring 38 should fail to hold this member in the desired position, the pin 37 in the bell-crank 22 comes in contact with a shoulder at 43 on the bar 25 and pushes it upward until the shoulder 56 on the top of the bar 25 comes in contact with the pin 44 in the main frame 1, thus holding the member 14 and the die 32 in a fixed position, as shown in Fig. II. In this manner it will be seen that the punching and setting are performed in succession at one full stroke of the main lever 3; but in case punching alone is to be done I provide a pivoted stop-lever 45, that may be swung inward by a handle 50 within conven-

ient reach of the operator, so that the block 47 at the other end of the lever will pass under lever-arm 22, and thus arrest the descent of both levers 22 and 3 as soon as the small range of movement required for the punching operation has been completed and before the stem 8 has risen sufficiently to perform its office and before the raceway is withdrawn.

The vertical lever 5 is connected to the main one 3 by a pin 52, that projects into a slotted hole in the main lever 3, as indicated by dotted lines at 53, or can be the reverse and fastened in the main lever 3, so that when the lever 3 is first moved the stem 8 rises and the pin 39 engages an eyelet or fastening from the raceway 40 before this latter moves back with the lever 5, the slot indicated by dotted lines at 53 permitting such lost motion or pause for that purpose.

The vertical position of the member 14 is determined by a pin 46 in the bar 25, engaged by the bell-crank 22. This forces the member 14 into a vertical position against the strain of the spring 38, and the stop-pin 31 holds it there during the punching operation. The forward range of the bell-crank 22 and corresponding downward movement of the main lever 3 are determined by a stop on the main lever 3, as will be hereinafter explained.

The main lever 3 and the rod 4, with a treadle dependent therefrom, after being depressed are raised by the coil-spring 54 when released by an operator. Motion of the main lever 3 in this direction, and consequently of the bell-crank 22, is stopped by an adjustable screw 61, that abuts against the base-flange 2 of the main frame 1, as seen in Figs. I and II. This same stop-motion indirectly determines the vertical or punching position of the member 14, also insured by the pin 46 in the bar 25, that is engaged by the bell-crank 22, as seen in Fig. III and already explained. The vertical lever 5 is stopped on its corresponding stroke by an adjustable screw 57, that abuts against a lug 58 on the main frame, as seen in Figs. I and II. A bar 60 is provided to support the lever 5 laterally.

Feeding devices can be employed to advance the material and automatically space the distance between the eyelets or fastenings; but such devices are varied in construction to suit the kind of work to be done and are not shown in connection with my present invention.

Having thus explained the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an eyelet punching and setting machine, in combination, a main frame, a main lever 3, pivoted on said frame, a member 14 pivoted on the main frame, to oscillate into two positions, a depressible punch 10 mounted in said member 14, a setting-die 32 fixed upon said member 14, a bed 13 attached to said member 14, a bell-crank lever 22 pivoted

with and attached to the main lever, means between the bell-crank lever and the oscillating member 14 for depressing the punch 10, means for bringing the setting-die 32 into a vertical position, and means for holding the member 14 in either position, substantially as specified.

2. The combination of main lever 3, vertically-moving stem 8, provided with retractile pin 39, oscillating member 14, provided with punch 10, fixed setting-die 32, and bed 13, bell-crank lever 22, pivoted with, attached to, and moving with main lever 3, means for depressing the punch by the action of the bell-crank lever, means for oscillating the member 14 by the action of the bell-crank lever, thereby bringing the setting-die into working position, and means for holding the setting-die in working position, during the operation of the main lever and stem 8, substantially as specified.

3. The combination of the oscillating member 14, carrying the depressible punch 10, the fixed setting-die 32, and the bed 13, means for oscillating the member 14 into two positions and successively bringing the punch 10 and the setting-die 32 into working position, means for holding said member 14 in said positions, lever-arm 15 having an adjustment slot and screw, lever-arm 20, and bell-crank lever 22, substantially as specified.

4. The combination of main lever 3, bell-crank lever 22 connected thereto at the end of one arm of said lever 3 and at the pivot or fulcrum thereof and moving therewith, oscillating member 14, carrying movable punch, setting-die and bed, lever-arm 15, lever-arm 20, acted on by said bell-crank lever, bar 25 pivoted to member 14, for holding the same in two positions, stop 31, stud 37, pin 44, and pin 46, substantially as specified.

5. The combination of oscillating member 14, carrying movable punch 10, setting-die 32, and bed 13, bar 25, pivoted to member 14, spring 38 attached to bar 25 near the pivot, bell-crank lever 22, operating-bar 25 to hold member 14 in two positions, and means between crank-lever 22 and member 14 for operating punch 10, substantially as specified.

6. In an eyelet punching and setting machine, the oscillating member 14, carrying reciprocating punch 10, and bed 13 attached to said oscillating member, forming an abutment for said punch but oscillating with the same to make room for the setting operation, a setting-die on said oscillating member, means for operating the punch, means cooperating with the setting-die to set an eyelet, and means for holding the oscillating member alternately in the position for punching and in the position for setting, substantially as specified.

7. The combination of the main lever 3, pivoted at 7, vertically-moving member 8, linked thereto, vertical lever 5, carrying race-way, pivoted at 7, bell-crank lever 22, pivoted at 7, lost-motion device 52, 53, for vertical lever 5, stop-screw 61 for lever 3, stop-screw 57 for lever 5, spring 54 for returning to their normal position levers 3, 5 and 22, oscillating member 14, carrying punch 10, setting-die 32, and bed 13, and pivoted bar 25, substantially as specified.

8. The combination of levers 3, 5 and 22, all fulcrumed at 7, lost-motion device 52, 53 for lever 5, stop-screws 57, 61, lever-arms 15, 20, oscillating member 14, punch 10, setting-die 32, bed 13, pivoted bar 25, spring 38, spring 54, guard 35, vertically-moving member 8, linked to lever 3, and raceway 40 on lever 5, substantially as specified.

9. In an eyelet punching and setting machine, the combination of main lever 3, and bell-crank lever 22, both pivoted at 7 and connected at 23, punch 10, bed 13, lever-arms 15, 20, for operating said punch, stop-lever 45, and block 47, whereby the descent of levers 22 and 3 may be arrested immediately upon completion of the punching operation, substantially as specified.

In testimony whereof I have hereunto affixed my signature in the presence of witnesses.

SAMUEL W. BURTCHAELL.

Witnesses:

ALFRED A. ENQUIST,
ELMER WICKES.