

No. 665,946.

Patented Jan. 15, 1901.

H. WEBER.
WIRE STAPLING MACHINE.

(Application filed Mar. 28, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

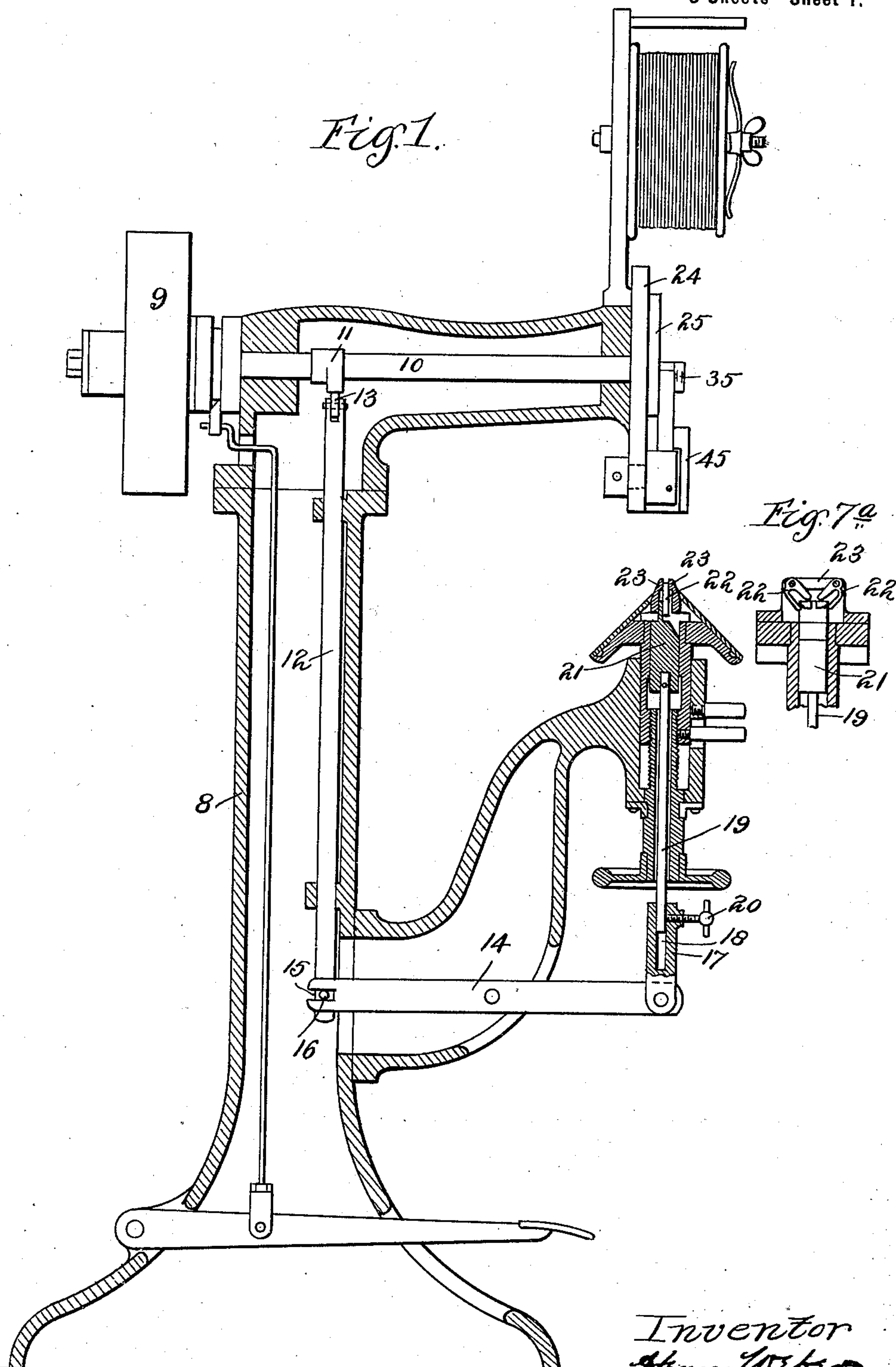
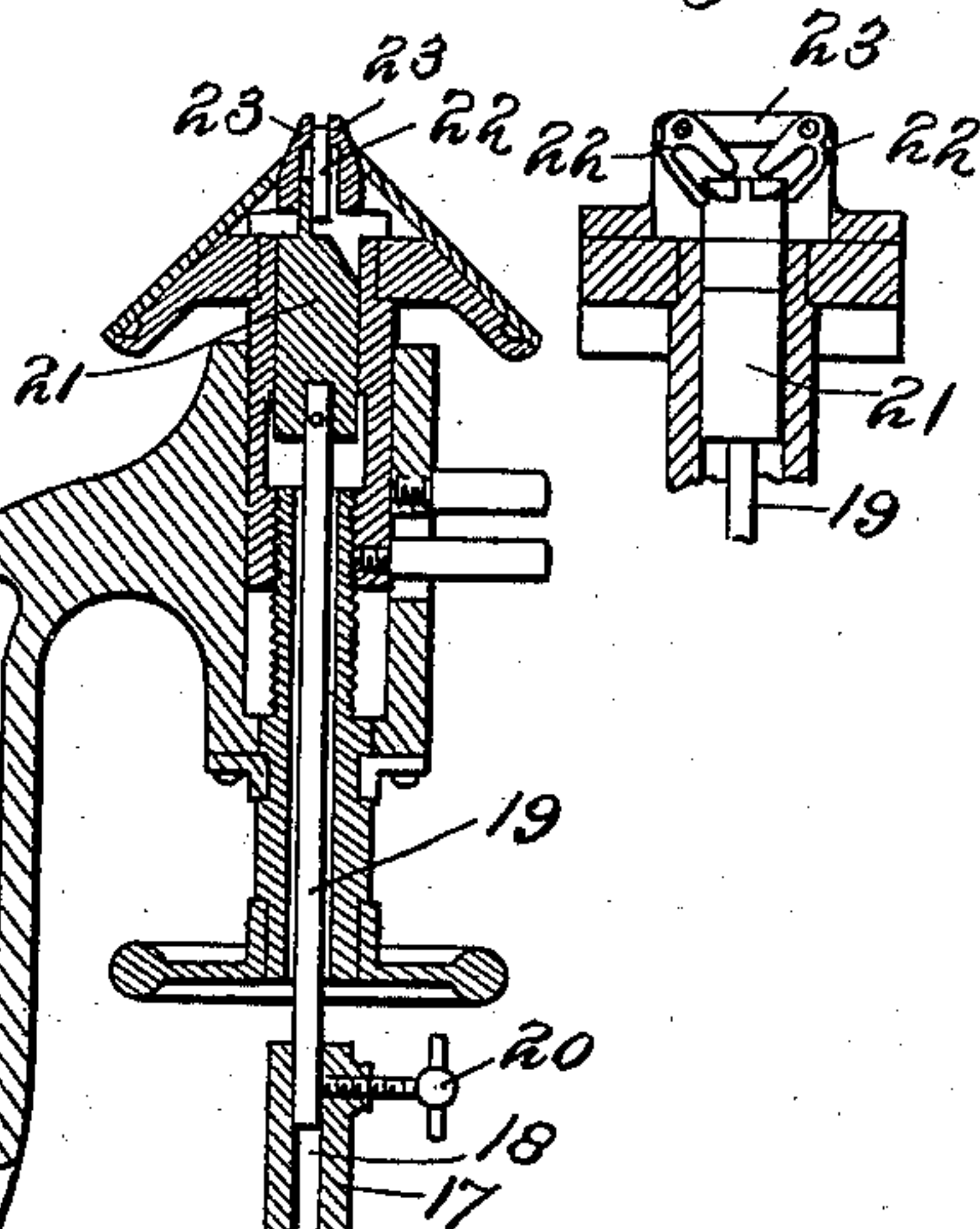


Fig. 7a



Witnesses.
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Fig. 3.

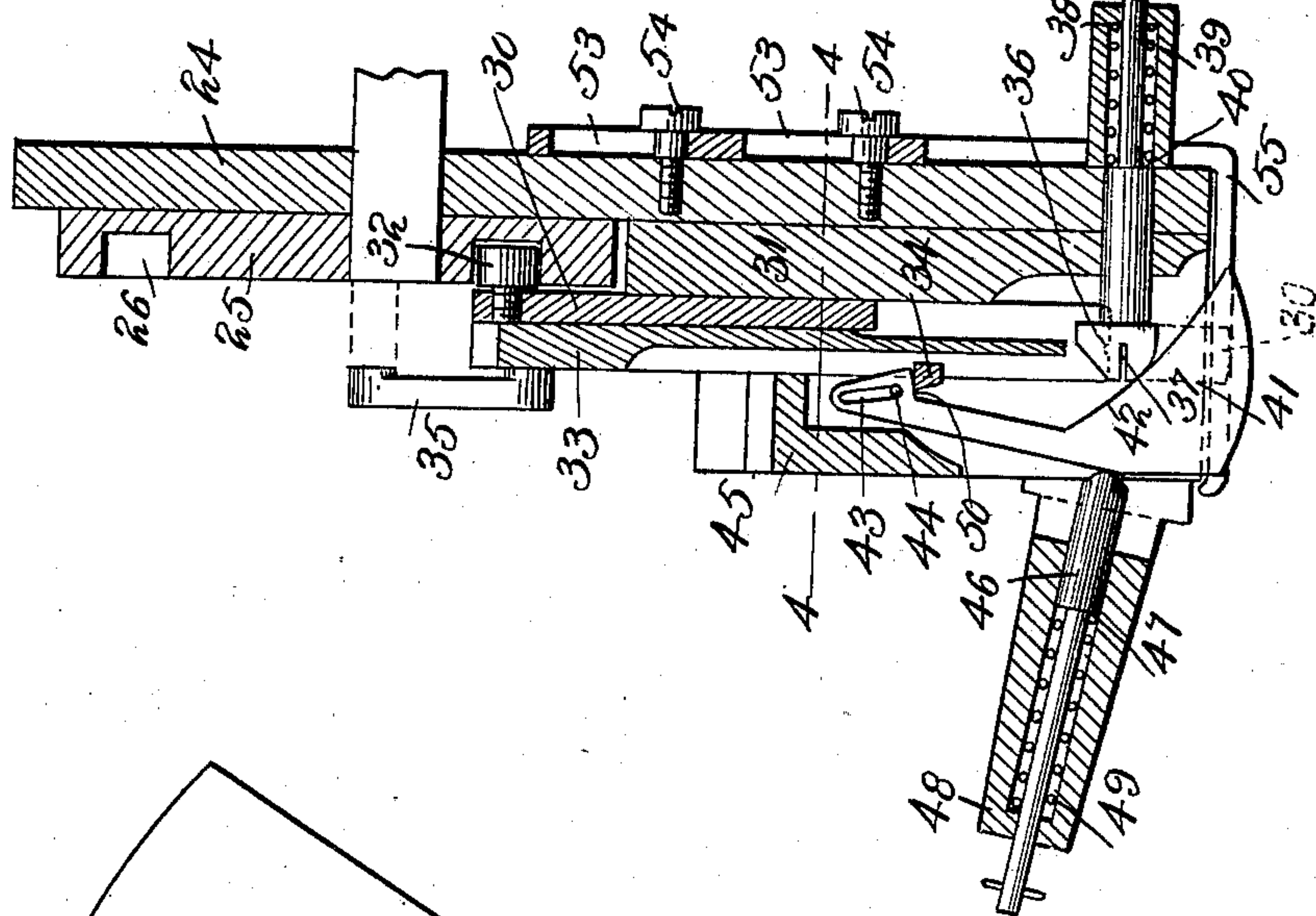
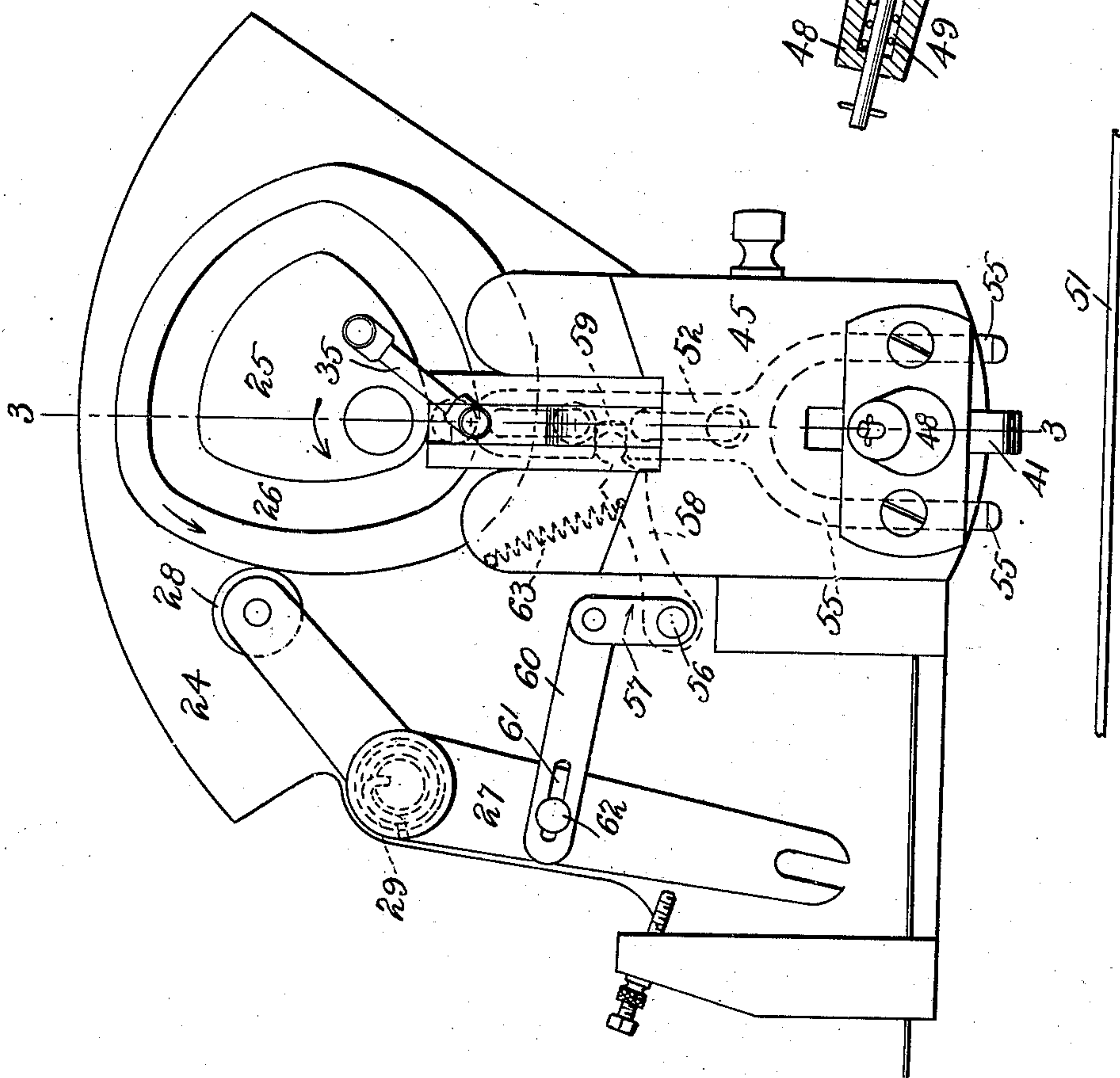


Fig. 2.



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3 Sheets—Sheet 3.

Fig. 4.

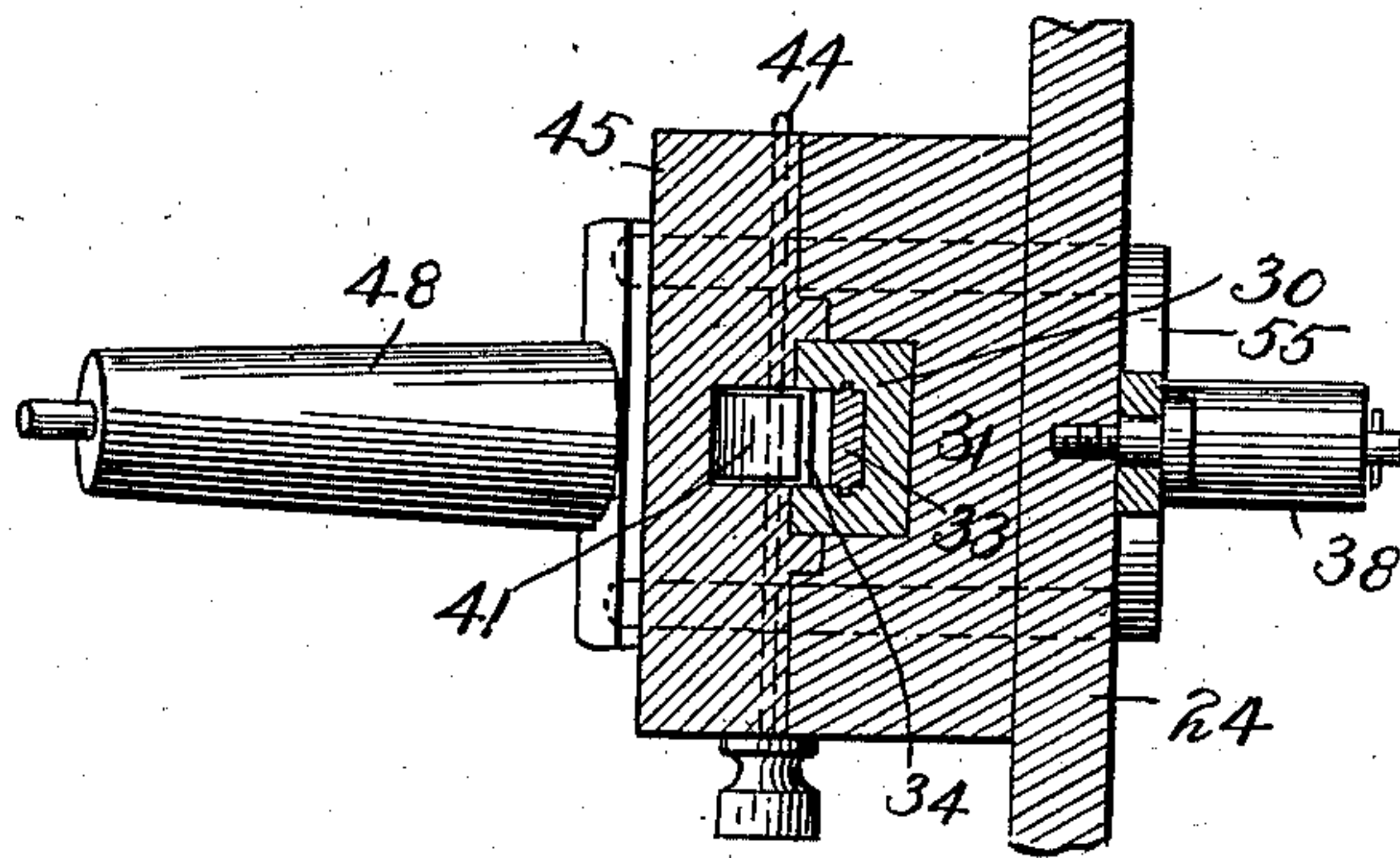
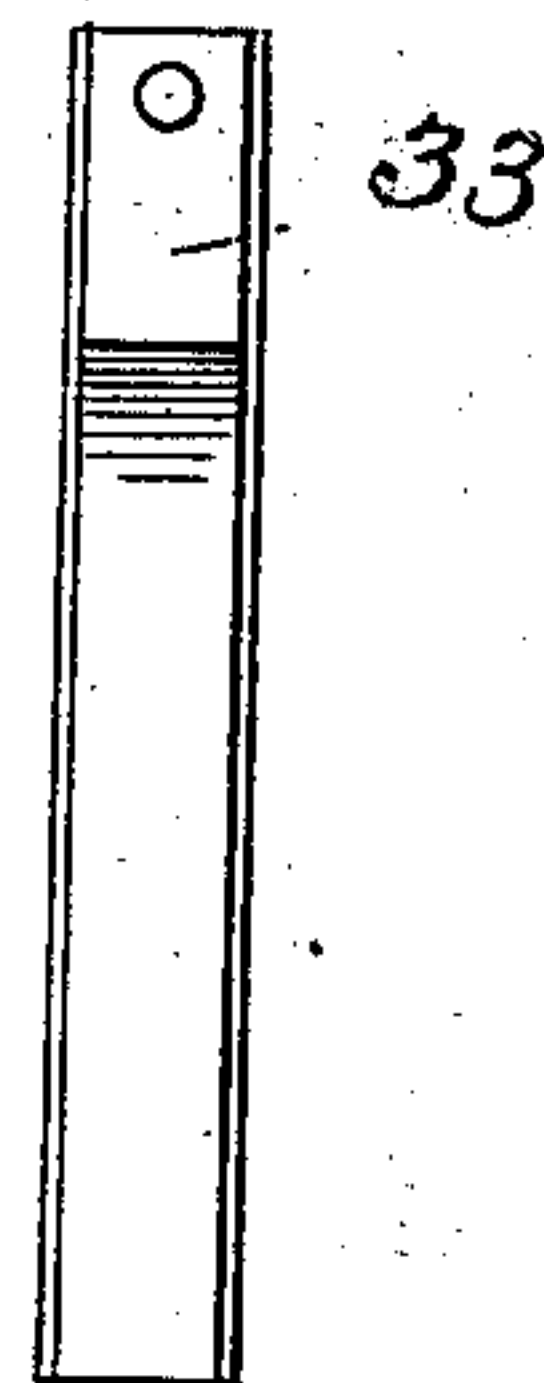
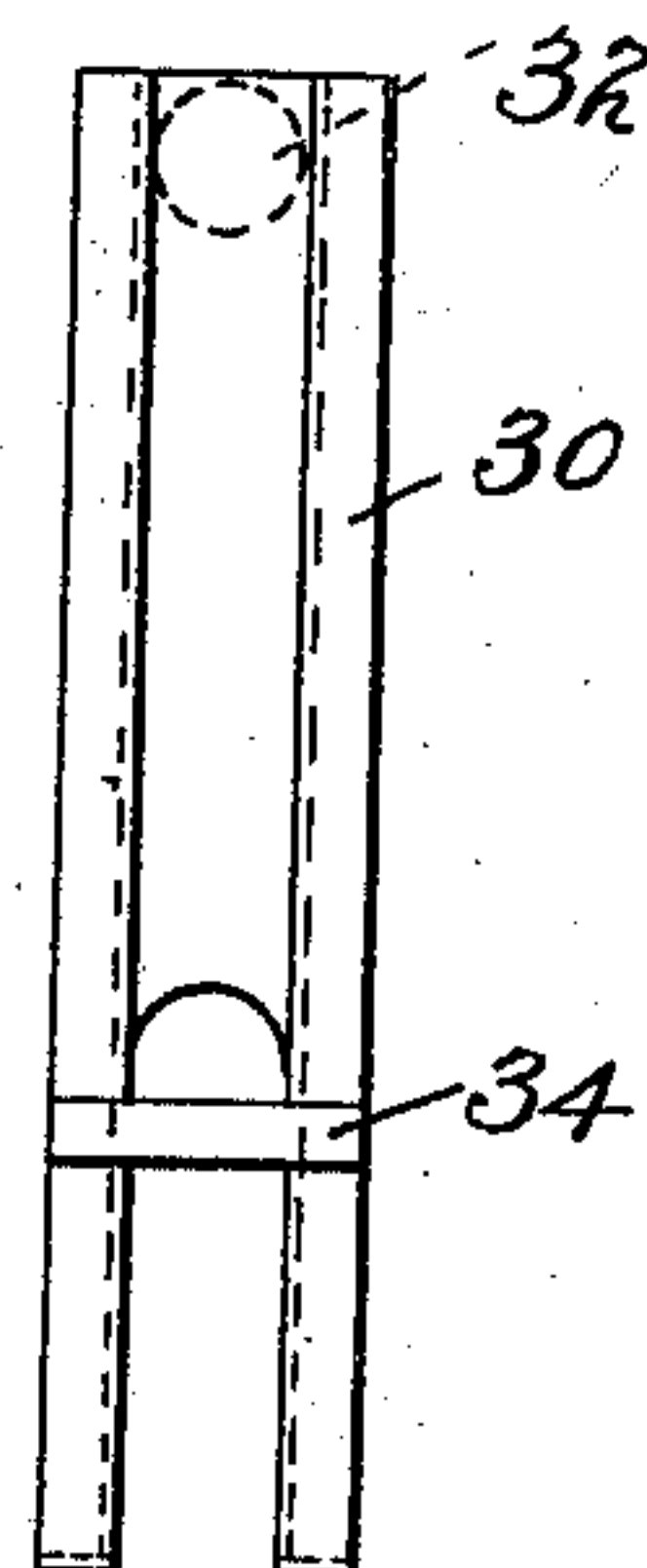
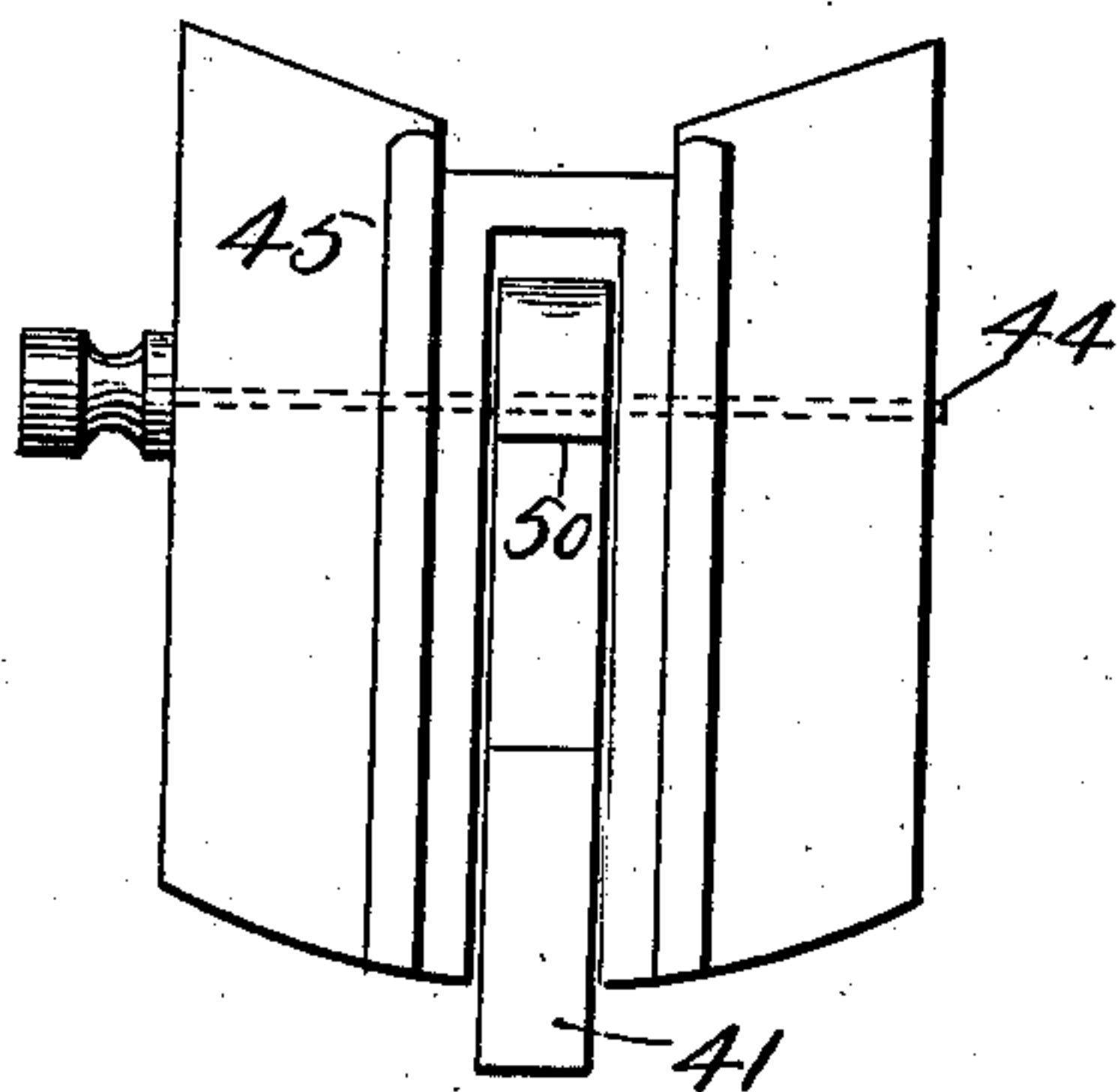


Fig. 6.

Fig. 7.

Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY WEBER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE LATHAM
MACHINERY COMPANY, OF SAME PLACE.

WIRE-STAPLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 665,946, dated January 15, 1901.

Application filed March 28, 1898. Serial No. 675,496. (No model.)

To all whom it may concern:

Be it known that I, HENRY WEBER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Wire Stitching and Stapling Machines, of which the following is a specification.

This invention relates to improvements in wire stitching and stapling machines in which wire intermittently fed into machines by suitable devices is cut off into suitable lengths, formed into staples, driven through the paper which it is desired to stitch, and clenched upon the other side of the machine, and particularly to improvements in the wire stitching and stapling machine shown and described in Letters Patent to me, No. 548,681, of October 29, 1895.

One of the objects of this invention is to provide an automatic mechanism by which the paper which is to be stitched may be held down and kept in place during the act of driving the staple through the paper, it being frequently the case with old machines that, particularly when the pile of sheets through which the staple is driven is of considerable thickness, the sheets slip and become displaced, so that the stitching is not evenly and properly done.

Another object of my invention is to provide a new and improved staple-support and manner of suspending and operating the same.

A further object of my invention is to otherwise improve the construction and operation of the wire stitching and stapling machines in certain details hereinafter pointed out.

In the drawings, Figure 1 is a vertical section of the machine. Fig. 2 is an enlarged detail, being a front elevation of the upper part of the machine carrying the cutting, staple forming, and driving mechanism and showing, partly in dotted lines, the device for holding the paper in position and the means for operating the same and also a portion of the table on which the work rests. Fig. 3 is an enlarged detail, being a vertical section made by a plane passing through lines 3 3 of Fig. 2. Fig. 4 is an enlarged detail, being a horizontal cross-section made by a plane pass-

ing through line 4 4 of Fig. 3. Fig. 5 is an enlarged detail, being a view of the rear of a portion of the face-plate and showing the staple-supporter seen from the rear. Fig. 6 is an enlarged detail, being a front view of the staple-former. Fig. 7 is an enlarged detail, being a front view of the driver. Fig. 7^a is a detail showing the clenchers.

In the drawings, 8 indicates the supporting-standard of the machine, upon which the several parts are mounted and carried.

9 indicates a driving-pulley driven in any appropriate manner and keyed or otherwise secured to the shaft 10, which is journaled in the standard 8.

11 indicates a cam keyed or otherwise suitably secured to the shaft 10.

12 indicates a rod slidingly mounted in the standard 8, so as to move longitudinally therein.

13 indicates a roller journaled in the upper end of the rod 12.

14 indicates a lever pivoted in the standard 8 and having upon its inner end a slot 15, which engages with a pin 16 upon the lower end of the rod 12.

17 indicates a socket having a hole 18 and pivotally mounted upon the outer end of the lever 14.

19 indicates a rod, the lower end of which is adapted to easily enter the hole 18 of the socket 17.

20 indicates a set-screw which is threaded in the socket 17 and operates when screwed in to firmly hold the rod 19 in the socket 17.

21 indicates a sliding block which is secured to the upper end of the rod 19.

22 indicates clenchers of the well-known type—such as are shown, for instance, in said Letters Patent to me, No. 548,681—and operate between jaws 23, actuated by connection with the sliding block 21 in the well-known manner described by me in said Letters Patent No. 548,681 and whose structure and operation it is therefore unnecessary to describe here more fully than to say that when the set-screw 20 is screwed home, thereby firmly holding the rod 19 in the socket 17, the lever 14 being oscillated by the bearing of the cam 11 upon the pulley 13, the clenchers

22 operate in the well-known manner described in said Letters Patent No. 548,681 to clench the wire. When it is desired to throw said clenchers out of operation, the screw 20 is loosened, permitting the rod 19 to slide freely in the hole 18 of the socket 17, the hole 18 being made of sufficient depth for the purpose. It is obvious that when the screw 20 is relaxed, so that the rod 19 slides freely in said hole 18, all the rest of the machine may be operated without the clenchers being operated, inasmuch as the socket 17 will move freely up and down over the lower end of the rod 19 without moving the same.

24 indicates the back plate of the machine.

25 indicates a cam having a cam-groove 26.

27 indicates a lever pivoted to the back plate 24 and having upon its upper end a roller 28.

29 indicates a coiled spring which is mounted upon the lever 27 in the usual well-known manner and operates to throw the lower end of said lever backward and to the left when the roller 28 is not forced to the left by cam

25. Cam 25 rotates in the direction indicated by the arrow in Fig. 2.

30 indicates a staple-former which is slidingly mounted in a support 31, secured to the back plate 24, and is operated by roller 32, journaled upon the upper end of the staple-former 30 at the back and operating in the cam-groove 26 of the cam 25. The lower end of the staple-former 31 is provided with two legs of the usual form, as is best shown in Fig. 6, and is recessed in its face to slidingly carry a driver 33, which is mounted therein with tongues and grooves, as is best shown in Figs. 4, 6, and 7, in the usual manner. The staple-former 30 is provided with a shoulder 34, extending across its front face and projecting slightly outwardly, as is best shown in Figs. 3 and 6. The driver 33 is operated by a link 35, pivotally connected with the upper end of said driver and with the surface of the cam 25.

36 indicates an anvil having its upper surface beveled, as is best shown in Fig. 3, and is provided in its front face with a slot 37, adapted to receive the wire. The anvil 36 is slidingly mounted in the back plate 24 and support 31.

38 indicates a tube which is rigidly secured to the back of the back plate 24 and surrounds the outer end of the anvil 36.

39 indicates a coil-spring which surrounds the anvil 36 in the tube 38 and bears upon a shoulder in the outer end of said tube and upon a shoulder 40 upon the anvil 36 in such a way as to tend to hold the anvil 36 forward in the position shown in Fig. 3.

The movements and operation of the staple-former, driver 33, and anvil 36 in forming and driving the staple are of the well-known character, as described in my said Letters Patent No. 548,681, and need not be further described here.

41 indicates a staple-supporter which is

curved upon its lower surface, as is best shown in Fig. 3, is provided with a beveled surface 42, and its upper end with a slot 43.

44 indicates a pin which passes through the face-plate 45 and the slot 43 of the supporter 41, so that the said supporter may move freely up and down upon said pin to the extent of the length of the slot 43 and may also swing upon said pin, the face-plate 45 being suitably recessed to support the said wire-supporter and cut away in front to permit the swinging of the said supporter, as is best shown in Figs. 3, 4, and 5.

46 indicates a pin provided with a shoulder 47 and slidingly mounted in a tube 48, which is secured to the face-plate 45.

49 indicates a spring bearing upon a suitable shoulder of the tube 48 and upon the shoulder 47 of the pin 46 and operating to force the staple-supporter 41 to the right in Fig. 3 when not forced to the left by the operation of the driver upon its beveled surface 42, hereinafter described.

The staple-supporter 41 is provided with a shoulder 50, adapted to engage with the shoulder 34 of the staple-former 30.

The operation of these devices is as follows:

Wire being fed into the machine in appropriate lengths by any appropriate feeding

mechanism—such, for instance, as that described in said Letters Patent to me—and

severed by any suitable cutting mechanism, such as that described in said Letters Patent,

the severed portion of the wire to form the staple rests in the slot 37 of the anvil 36. The

staple-former being driven downward at the proper time in the manner described by said

patent bends the wire upon each side of the anvil downward, forming the legs of the

staple. The driver 33, coming into operation, first meets with the beveled surface of the

anvil 36, forcing the same backward, allowing the staple formed by the staple-former

to rest upon the beveled surface 42 of the supporter 41. In the meanwhile by the descent of the staple-former 30 the shoulder 34

is lowered, so as to free it from contact with the shoulder 50, thus allowing the staple-sup-

porter 41 to drop and rest upon the surface of the pile of paper below it. At this time

the driver 33 descending, its lower end comes in contact with the horizontal portion of the

staple resting upon the beveled surface 42 and bearing upon said beveled surface forces

the staple-supporter to the left against the action of the spring 49 and drives the staple

through the paper. The legs of the staple, it will be seen, are thus afforded lateral support during the operation of the driving, the

supporter 41 being forced back to the left in Fig. 3 until the staple is freed therefrom,

the portion forming the staple-head resting upon the paper. The staple so driven is

clenched by the clenchers 23 in the well-known manner described by me in the said Letters

Patent No. 548,681. As the driver 33 is retracted the staple-supporter 41 is swung in-

ward by the operation of the spring 49, and the staple-former 30, raising the shoulder 34, comes in contact with the shoulder 50 of the staple-supporter 41, lifting the same into the position shown in Fig. 3 in unbroken lines. Fig. 3 shows in dotted lines the position of the staple-former when allowed to drop so as to rest upon the paper.

51 indicates the table upon which the paper rests and which may be of any approved form and construction—such, for instance, as that described by me in said Letters Patent No. 548,681.

52 indicates a presser which is provided with slots 53, through which pass screws 54 in the back plate 24, so that said presser 52 is vertically movable thereon. The lower portion of the presser 52 is provided with bifurcated arms 55, which are bent forward at right angles and extend toward the front of the machine upon each side of the staple-supporter 41, as is best shown in Figs. 2 and 3.

56 indicates a rock-shaft journaled in the plate 24 and provided with two arms 57 and 58. The free end of the arm 58 engages with a suitable recess 59 in the presser 52, as is best shown in Fig. 2.

60 indicates a link which is pivotally connected at one end with the arm 57 and is provided at the other with a slot 61, through which passes a pin 62 in the lower arm of the lever 27, so that said pin 62 may slide within slot 61. As the lower arm of the lever 27 is swung to the right in Fig. 2 by the operation of the cam 25 upon the roller 28 the pin 62, meeting the end of the slot 61, urges the link 60 to the right, thus rotating the rock-shaft 56 and throwing the arm 58 downward, which also throws downward the presser 52, so that the bifurcated arms 55 rest upon the surface of the paper and hold it firmly in place upon the table 51. The movements of the parts are so timed that the bifurcated arms 55 shall rest upon the paper and hold it in place before the driver 33 operates to drive the staple into the paper.

63 indicates a retractile spring, one end of which is fastened to the back plate and the other to the arm 58. As soon as the lever 27 begins its backward motion, being freed from the operation of the cam 25, the retractile spring 63 operates to raise the arm 58 and lift the presser 52 from the surface of the paper, the driver 33 having in the meanwhile operated to drive the staple into the paper.

That which I claim as new, and desire to secure by Letters Patent, is—

1. In a wire-stapling machine, the combination with staple-forming and staple-driving mechanism and means for operating the same, of a cooperating, vertically-movable presser, and an actuating-lever therefor connected with said presser and adapted to reciprocate the same, substantially as described.

2. In a wire-stapling machine, the combi-

nation with staple-forming and staple-driving mechanism, means for operating the same and a support on which said parts are mounted, of a cooperating, vertically-movable presser mounted on said support, an actuating-lever for said presser, and levers mounted on said support and connecting said actuating-lever and said presser, substantially as described.

3. In a wire-stapling machine, the combination with staple-forming and staple-driving mechanism, means for operating the same, and a support on which said parts are mounted, of a vertically-movable presser mounted on said support and provided with a bifurcated pressing-foot, the forks of which lie upon each side of said staple forming and driving mechanism, an actuating-lever for said presser, and levers mounted on said support and adapted to operatively connect said presser with said actuating-lever, substantially as described.

4. In a wire-stapling machine, the combination with an anvil, a staple-former, staple-driver, and means for operating the same, of a stationary pin, a rocking, vertically-movable staple-supporter mounted on said pin, and means for rocking and vertically moving said staple-supporter, substantially as described.

5. In a wire-stapling machine, the combination with an anvil, a staple-former, staple-driver, and means for operating the same, of a stationary pin, a rocking, vertically-movable staple-supporter mounted on said pin, and adapted to engage said staple-former and be lifted vertically thereby, substantially as described.

6. In a wire-stapling machine, the combination with an anvil, a staple-former having a shoulder on its face, a staple-driver, and means for operating said anvil, staple-former and staple-driver, of a stationary pin, a rocking, vertically-movable staple-supporter mounted on said pin, and adapted to be engaged by the shoulder on said staple-former, and having a beveled surface adapted to be engaged by said staple-driver, substantially as described.

7. In a wire-stapling machine, the combination with an anvil, a staple-former having a shoulder on its face, a staple-driver, and means for operating said anvil, staple-former and staple-driver, of a stationary pin, and a rocking vertically-movable staple-supporter provided with a slot in its upper end adapted to be engaged by said stationary pin, said staple-supporter being adapted to be engaged by the shoulder on said staple-former and having a beveled surface adapted to be engaged by said staple-driver, substantially as described.

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Witnesses:

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