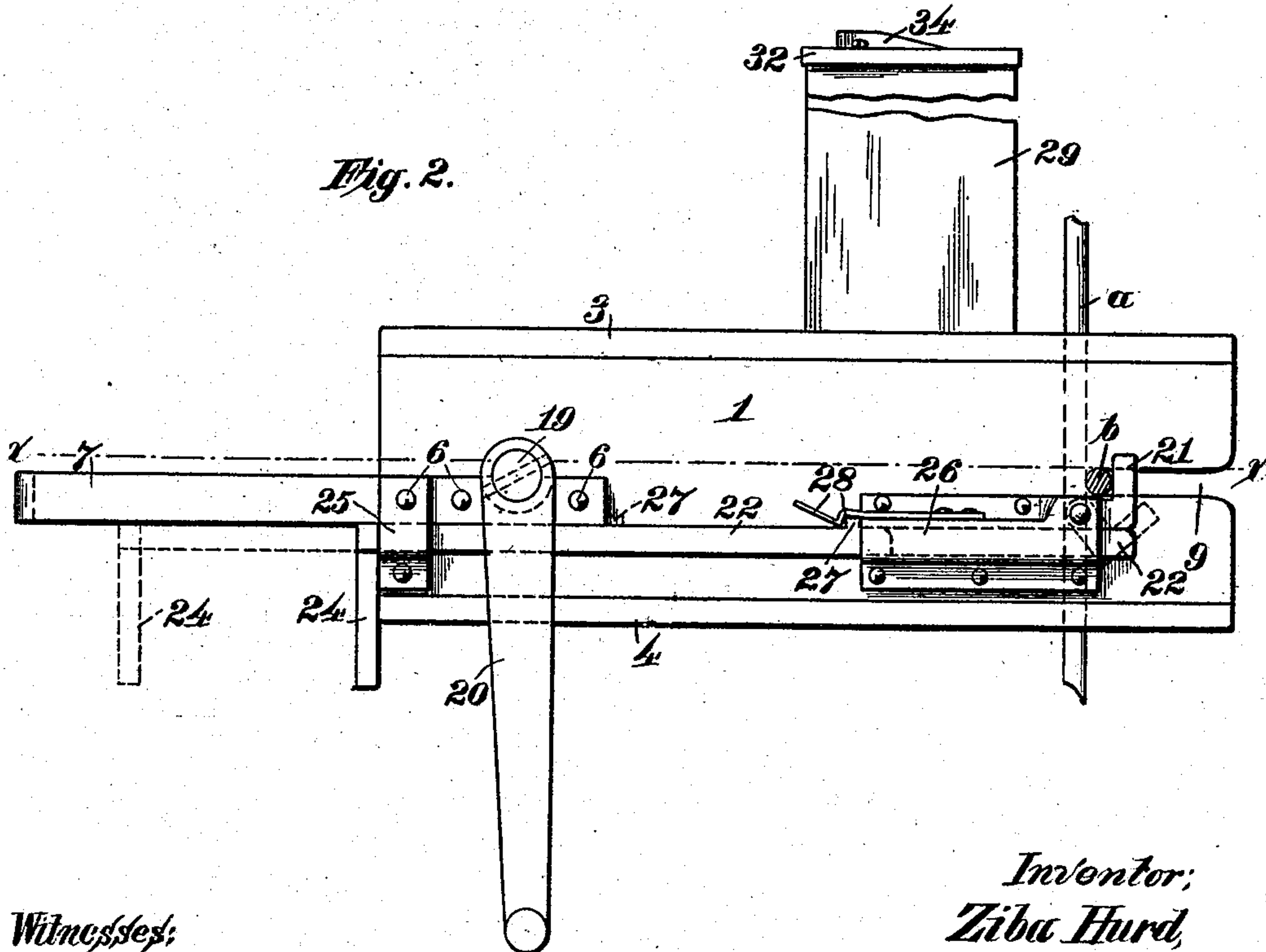
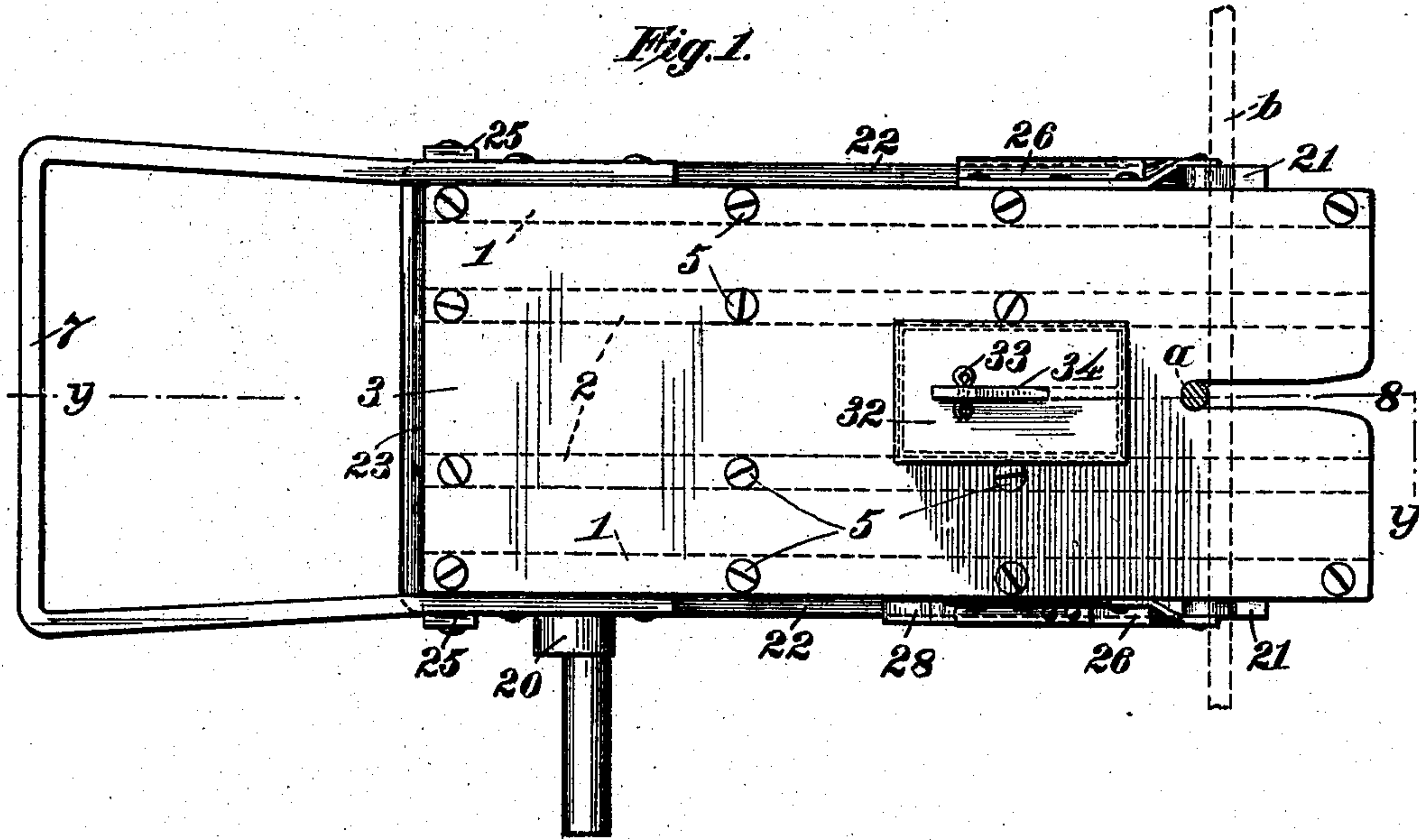


Z. HURD.
WIRE FENCE STAY FASTENING MACHINE.
APPLICATION FILED JULY 29, 1907.

900,099.

Patented Oct. 6, 1908.

3 SHEETS—SHEET 1.



Witnesses:
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T. E. Sheehy

Inventor:
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by
Joshua R. Potts
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3 SHEETS—SHEET 2.

Fig. 3.

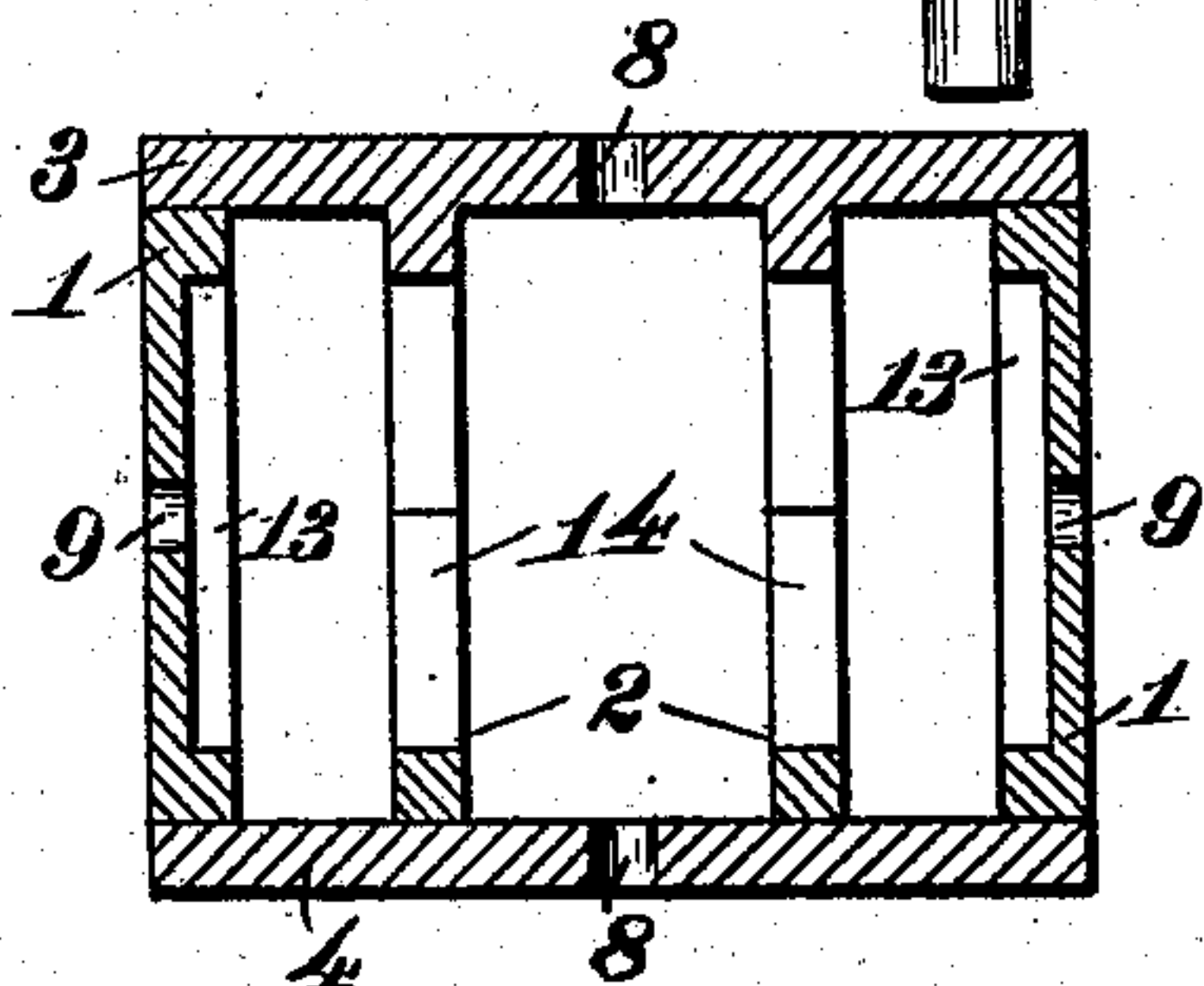
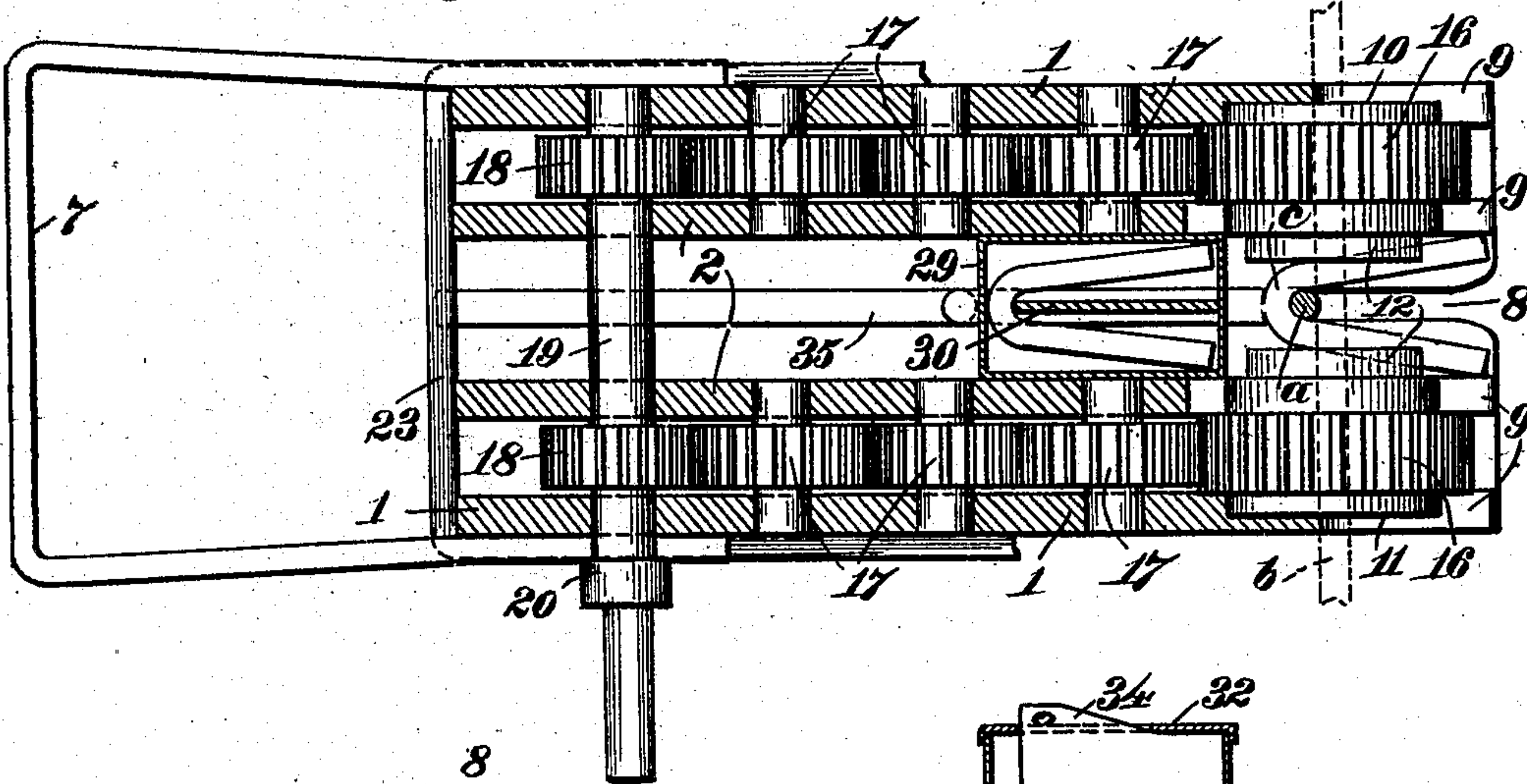


Fig. 5.

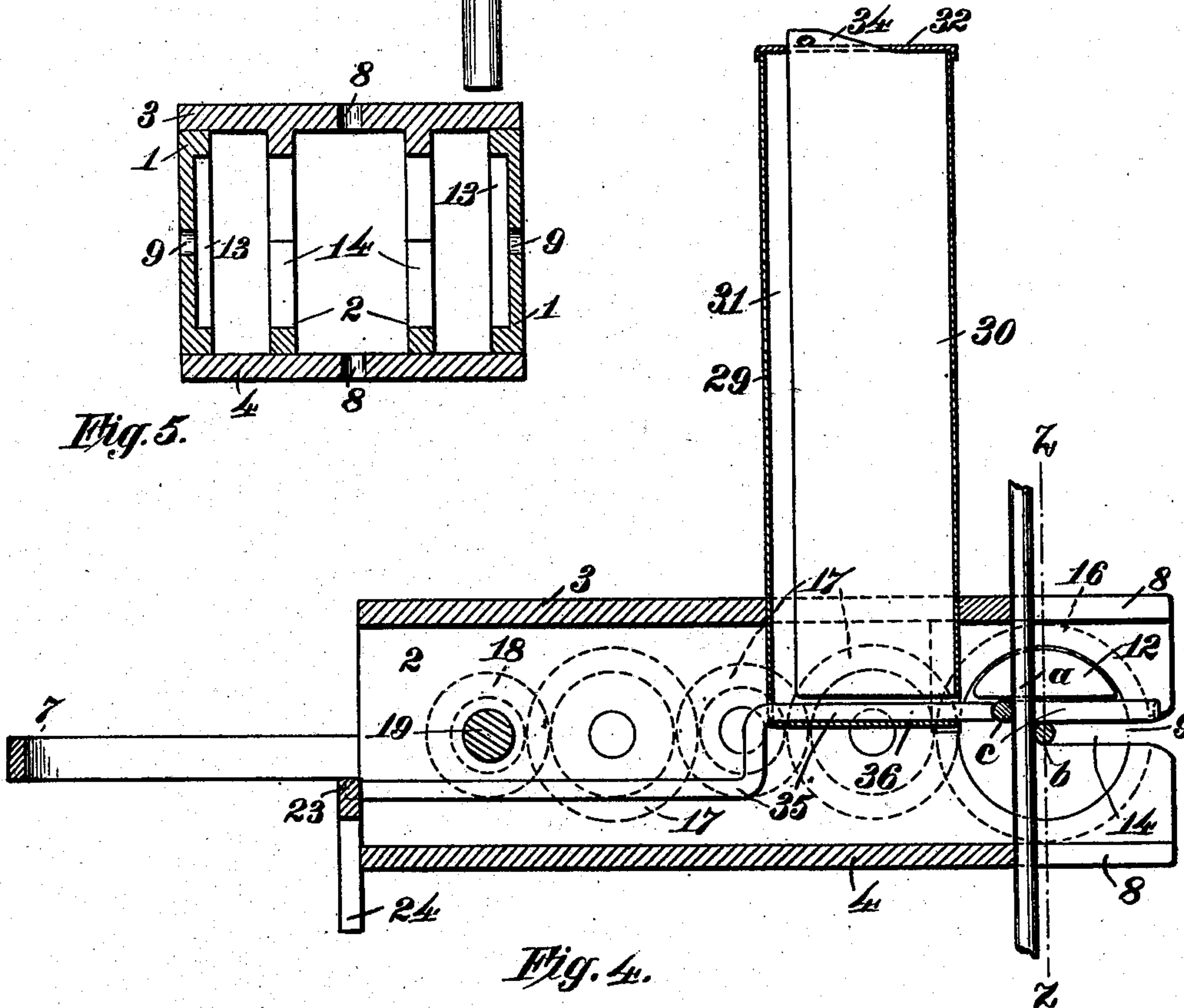


Fig. 4.

Witnesses:

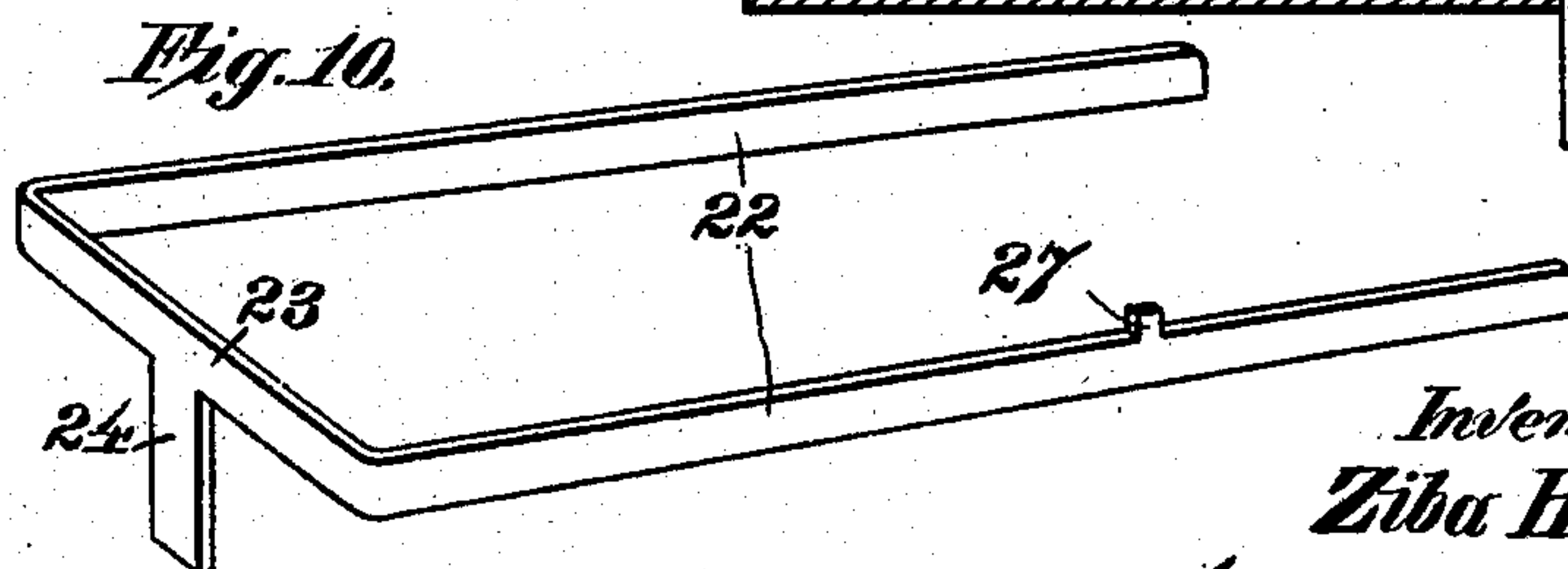
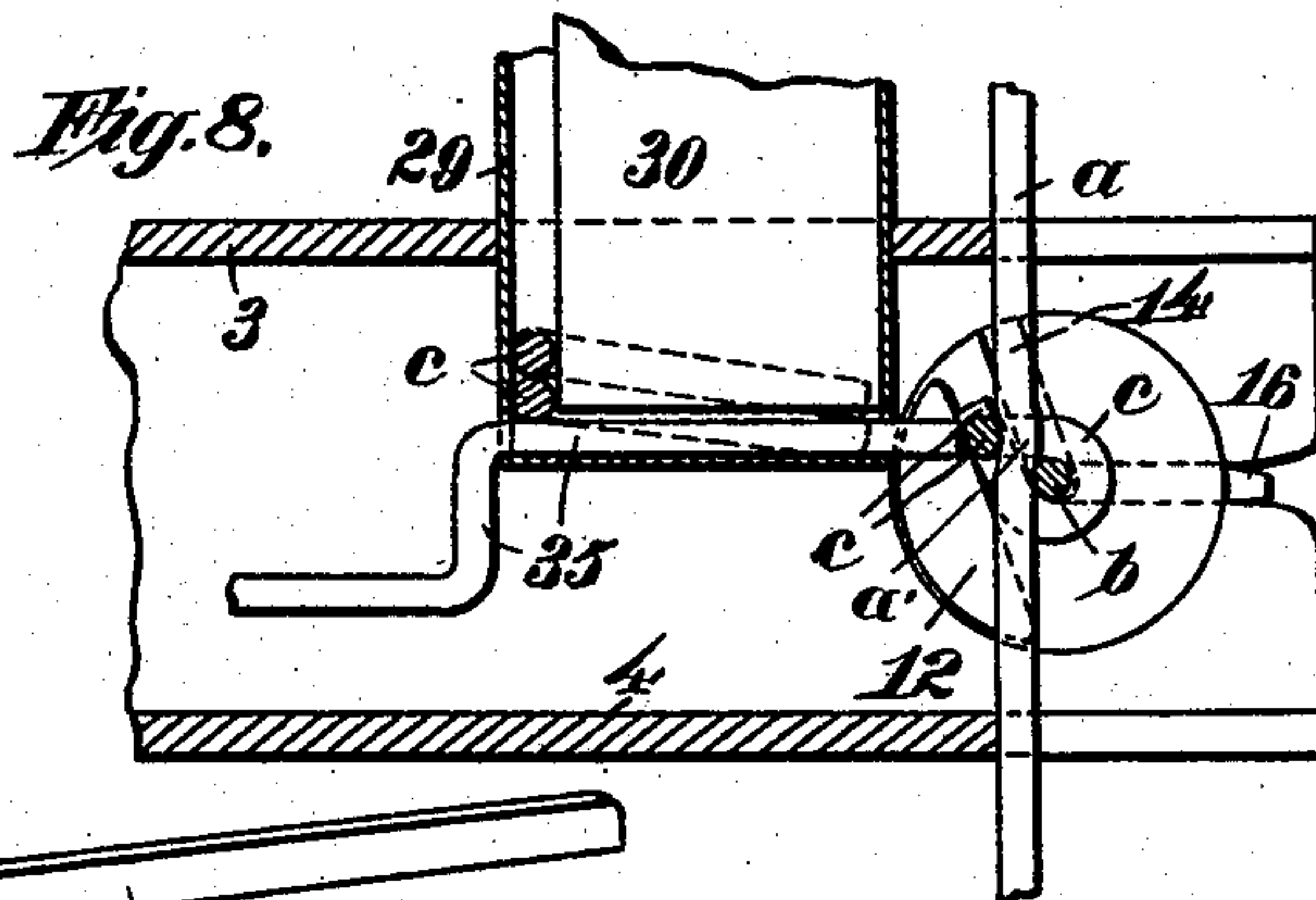
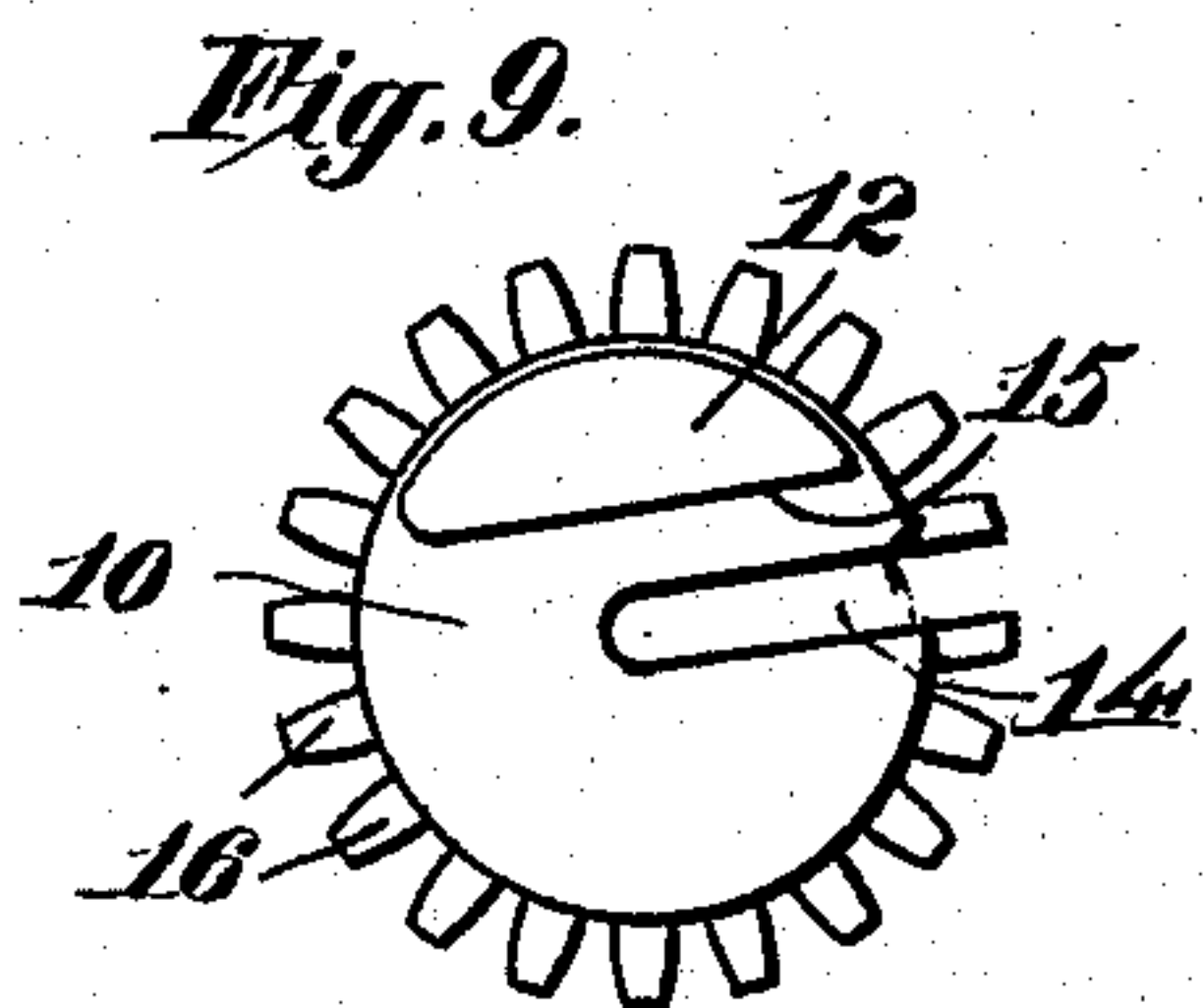
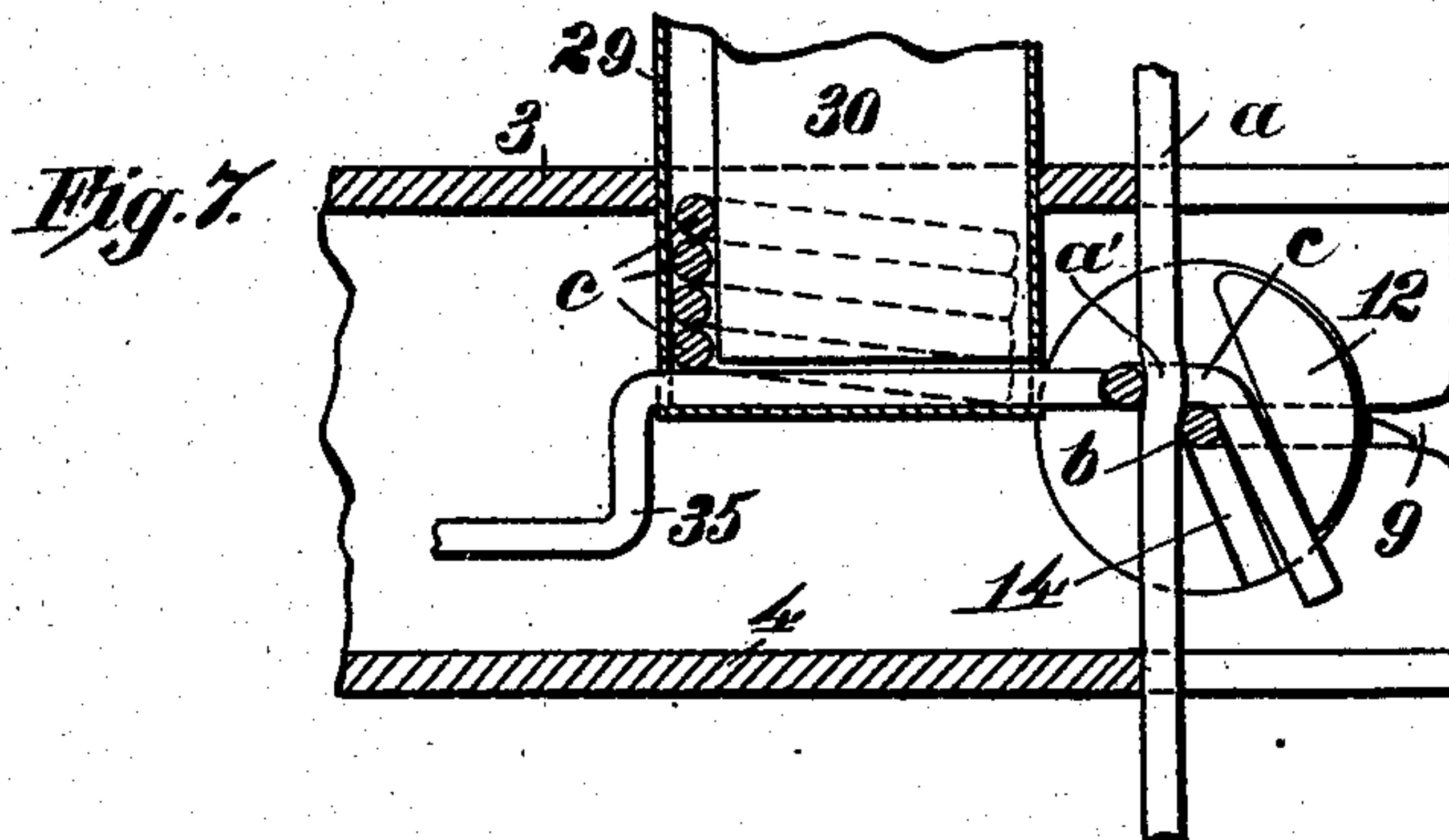
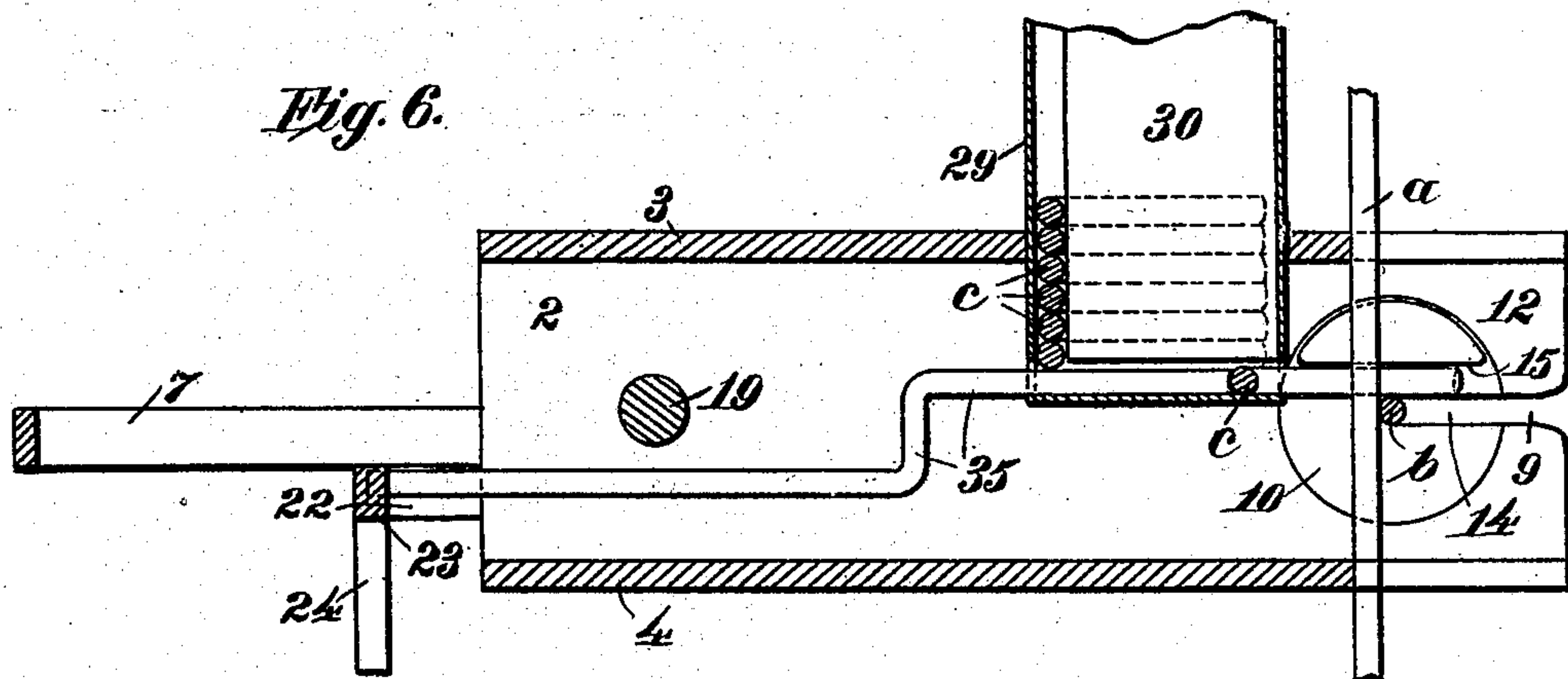
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900,099.

3 SHEETS--SHEET 3.



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UNITED STATES PATENT OFFICE.

ZIBA HURD, OF CHICAGO, ILLINOIS.

WIRE-FENCE-STAY-FASTENING MACHINE.

No. 900,099.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed July 29, 1907. Serial No. 385,948.

To all whom it may concern:

Be it known that I, ZIBA HURD, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Wire-Fence-Stay-Fastening Machines, of which the following is a specification.

My invention relates to wire fence machines and particularly to machines for securing the stays to the strand wire by twisting a short piece of wire about both the stay and the strand at the point where they cross.

The object of my invention is to provide a small machine which can be readily operated by hand to secure the stays to the strand wires in the manner mentioned, and that by anyone, even those not skilled as mechanics.

A further object is to provide a machine as mentioned which shall be light, strong, and durable, to the end that it will not unduly tire the operator, or readily get out of order.

A further object of my invention is to provide a device as mentioned equipped with a magazine for containing a number of the tying wires and provided with means for feeding them one at a time as desired, and in proper position in relation to the stay and strand, and the operating mechanism.

A still further object is to provide a machine having the characteristics mentioned which will lock itself to the fence wires before beginning to operate.

Various other objects will appear hereinafter.

With these objects in view my invention consists generally in a suitable frame, a pair of wheels mounted in axial alinement in said frame, slots in said frame and wheels to receive the strand and stay wires, cams on the adjacent faces of said wheels, means for feeding a staple shaped wire astride of the stay wire and above the strand wire, and means for rotating said wheels to twist the free ends of said staple about the strand wire.

My invention further consists in a machine having the characteristics mentioned in combination with means for locking the machine to the strand as the staple shaped wire is fed forward.

My invention further consists in various details of construction and arrangements of parts all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which,

Figure 1 is a plan view of a machine illustrating one embodiment of my invention, Fig. 2 is a side elevation thereof, illustrating in dotted lines the locking device in open position, Fig. 3 is a central horizontal longitudinal section of the device on substantially the line $x-x$ of Fig. 2, the locking device being omitted, Fig. 4 is a central vertical longitudinal section, on substantially the line $y-y$ of Fig. 1, Fig. 5 is a vertical cross section of the frame on the line $z-z$ of Fig. 4, Fig. 6 is a diagrammatic view similar to Fig. 4, illustrating a staple being fed forward into position, Fig. 7 is a similar view illustrating the first position of the twisting operation, Fig. 8 is a view similar to Fig. 7 illustrating a later stage of the twisting, Fig. 9 is a detail of one of the twisting wheels and Fig. 10 is a perspective view of the lock operating bar.

Referring to the drawings, the frame of the machine is seen to comprise two vertical outer plates 1—1 and two inner plates 2—2. These four plates are arranged parallel and are rigidly fixed in relation to each other by top and bottom plates, 3 and 4 respectively. The frame plates, 1 and 2, and the top and bottom plates, 3 and 4, may be secured together in any suitable manner but I prefer to fasten them by screws, 5. Secured to the frame as by rivets, 6, is a handle, 7. This is preferably formed of a single strip of bar steel shaped into the desired form. In using the device the operator grasps it by the handle 7 and presses it against the wires of the fence, the stay a entering the slots 8 in the plates 3 and 4, and the strand b entering the slots 9 in the plates, 1 and 2. The slots are so arranged that the machine is in proper position for operation when the wires a and b are in and at the ends of the slots 8 and 9.

Journaled in the frame near the outer end thereof is a pair of wheels, 10 and 11. These are in axial alinement with each other and are arranged so as to be concentric with the strand wire b when the device is in operation. Each wheel comprises a disk having a cam block, 12, upon its outer face. The wheels are of greater thickness than the distance between the plates 1 and 2, and the edges of their peripheries form the journals by which they are mounted in the bearings.

in the frame plates. The bearings, 13, in the plates 1 for the outer edge of the wheels extend only part way through the plates, whereas the bearings, 14 for the inner edges, extend through the plates, 2, bringing the inner face of the wheels flush with the inner faces of said plates, and with the cams, 12 extending into the space between the plates, 2. Each wheel is provided with a slot, 14, which normally registers with the slots, 9. The cam 12 is preferably formed integrally with the wheel and has a flat face 15 which is substantially parallel with the slot 14. This face is sufficient distance from the slot to permit a wire staple *c* to be inserted between it and the strand *b*, when in operation.

The wire staple *c* forms the fastening for securing the stay to the strand, and it is the office of the machine to twist the ends of the staple about the strand. To accomplish this it is but necessary to rotate the wheels 10 and 11, whereby the cams 12 engage with the ends of the staple and twist them about the strand as shown in Figs. 7 and 8. Any suitable means may be provided for turning said wheels. In the drawings, I have illustrated a train of gears for this purpose. When such operating means are employed the wheels 10 and 11 are formed with teeth 16, and gears 17 operatively connect said wheels with gear wheels 18 on a crank shaft 19, whereof 20 indicates the crank. The gears are arranged between the plates 1 and 2, as shown clearly in Fig. 3.

Assuming that the device is in operative position with relation to the stay *a* and the strand, *b*, and that the staple, *c* is in position, it is evident that by turning the crank, 20, to the right, the wheels, 10 and 11 will be rotated to the right. As soon as the wheels begin to turn, the cams, 12, engage the outer or free ends of the staple and begin to twist it about the strand *b*. The staples are formed of the same size wire as the stays and strands, hence as they are bent about the strand they draw upon the stay sufficiently to bend the same slightly as shown at *a'* in Fig. 7. Further turning of the wheels as to the position shown in Fig. 8, bends the strand slightly toward the stay and on each side thereof. These slight bends in the stays and strands prevent slippage of one upon the other after the tying is completed. When it is desired to have the staple twisted more than once around the strand it is formed with flaring ends as shown in the drawings, and the cams 12 are arranged at a sufficient distance apart to pass the head of the staple upon its second revolution.

To secure the machine to the fence before beginning to operate it, I provide the novel locking device shown in Figs. 1, 2 and 10 of the drawings. This comprises a pair of hooks or dogs, 21, pivotally secured to the

sides of the device and adapted to hold the strand, *b*, in the notches, 9 and suitable means for actuating said dogs. The actuating device comprises a flat steel bar bent, as shown in Fig. 10, forming arms, 22, connected by a cross piece 23 and upon the cross piece, 23 is an actuating handle 24 which projects below the plate, 4. (See Figs. 2, 4, and 6.) The arms, 22, are secured to the plates, 1 by brackets, 25, 26, which also constitute suitable guides for said arms. When the device is being applied to the fence, the arms are retracted as shown in dotted lines in Fig. 2. After the wires, *a* and *b* are in position in their respective notches, 3 and 4, the arms are shoved forward, the forward ends thereof, passing under the dogs, 21, and raising them into the position shown in full lines, in the same figure. This securely locks the machine to the strand wire, and the strand holds the stay in place. A lug, 27 on the right hand arm, 22, and a spring latch, 28 holds the locking device against accidental release.

The staples may be placed in position upon the wires, *a—b*, one at a time by hand, but I prefer to provide the device with a staple magazine and equip the same with means for feeding the staples at the proper time. 29 indicates the body of the magazine. This is formed of light sheet metal and is preferably rectangular in cross section. To properly position the staples therein and to retain them in proper position, I provide the magazine with a plate, 30 extending from the top thereof nearly to the bottom. The plate divides the magazine longitudinally of the machine, leaving but sufficient space, 31, for the head of the staples to pass. The magazine is closed by a lid, 32 secured in place by a pin, 33, which extends through a lug, 34 formed upon the top of the partition, 30. The lug, 34 also provides means for facilitating the loading of the magazine, to do which the machine is tilted forward a little and the staples placed one at a time astride of the projecting end or lug, 34, whence they quickly slide into proper place.

To feed the staples forward as needed, I provide a push bar, 35 which slides freely through the magazine above the bottom, 36 thereof, and which is connected at its rear end to the cross piece 23, of the lock actuating device. Hence, as the lock is actuated to secure the machine to the fence, a staple is pushed forward into position. In Fig. 6, I have shown the staple, passing from the magazine and in Figs. 3 and 4 have shown it in place ready to be secured to the strand. To limit the movement of the push bar, 35, I arrange the end of the handle 7 and the rear end of the bracket, 26, to serve as stops, against which the lug, 27 abuts.

It is evident from the foregoing descrip-

tion that the device can be readily operated by any one and it is of particular advantage to farmers or others who desire to construct their own fences.

5 The device while powerful and of great accuracy in operation is of low cost to manufacture and is comparatively light in weight and is easy to operate.

10 Having described my invention what I claim as new and desire to secure by Letters Patent is;

1. In a device of the class described, a frame comprising a pair of vertical side plates and a pair of intermediate plates arranged parallel therewith, in combination with a pair of wheels mounted in axial alinement in said frame, cams on the adjacent faces of said wheels, and means for rotating said wheels, substantially as described.

2. In a device of the class described, a frame comprising a pair of side plates, a pair of intermediate plates and top and bottom plates suitably secured together, in combination with a pair of wheels, mounted in axial alinement in said frame, cams on the adjacent faces of said wheels, suitable means for actuating said wheels, and slots in said wheels and the ends of said frame, as and for the purpose specified.

3. In a device of the class described, a suitable frame, in combination with a pair of wheels mounted in axial alinement in said frame, slots in said frame and wheels to receive the strand and stay wires of a fence, cams on the adjacent faces of said wheels, means for locking the device to the fence, means for feeding a staple into position to be operated upon by said cams, and means for rotating said wheels, substantially as described.

4. In a device of the class described, a suitable frame, in combination with a pair of wheels mounted in axial alinement in said frame, cams on said wheels, a staple magazine mounted on said frame, means for feeding the staples, one at a time from said magazine to a position to be operated upon by said cams, and means for rotating said wheels, substantially as described.

5. In a device of the class described, a suitable frame in combination with a pair of wheels mounted in axial alinement in said frame, slots in said wheels and said frame for receiving the strand and stay wires of a fence, cams on the adjacent faces of said wheels, means for simultaneously locking said device to the wires of the fence and for feeding a staple into position to be operated

upon by said cams, and means for rotating said wheels, substantially as described.

6. In a device of the class described, a suitable frame, in combination with a pair of wheels mounted in axial alinement in said frame, cams on the adjacent faces of said wheels, a vertically disposed staple magazine mounted in said frame, said frame being slotted to receive the strand wire of a fence and the bottom of said magazine being upon a plane with the top of said slots, means for locking the device to the strand wire, and means for feeding a staple forwardly from said magazine in position to be operated upon by said cam, substantially as described.

7. In a device of the class described, a suitable frame, in combination with a pair of wheels mounted in axial alinement in said frame, said frame and said wheels being slotted to receive the strand wire of a fence and said frame being slotted to receive the stay wire, a staple magazine arranged upon said frame, a pair of dogs mounted on said frame, and means for operating said dogs to lock the device to the strand wire, substantially as described.

8. In a device of the class described, a suitable frame slotted to receive the strand and stay wires of a fence, in combination with a pair of wheels mounted in axial alinement in said frame and slotted to receive the strand wire, cams on the adjacent faces of said wheels, a pair of dogs mounted on said frame, and a pair of arms slidably mounted on the side of said frame and adapted in one position to operate said dogs to lock the device to the fence, substantially as described.

9. In a device of the class described, a suitable frame slotted to receive the strand and stay wires of a fence, in combination with a pair of wheels mounted in axial alinement in said frame and slotted to receive the strand wire, cams on the adjacent faces of said wheels, a staple magazine on said frame, a pair of dogs mounted on said frame, a pair of arms slidably mounted on said frame and adapted in one position to operate said dogs to lock the device to the fence, means operable simultaneously with said arms to feed a staple forwardly in position to be operated upon by said cams, and means for rotating said wheels, substantially as described.

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

ZIBA HURD.

Witnesses:

F. E. SHEEHY,
H. S. AUSTIN.