

(No Model.)

2 Sheets—Sheet 1.

G. A. FEDER.
WIRE WINDING AND DISTRIBUTING MACHINE.
No. 543,470. Patented July 30, 1895.

Fig. 1.

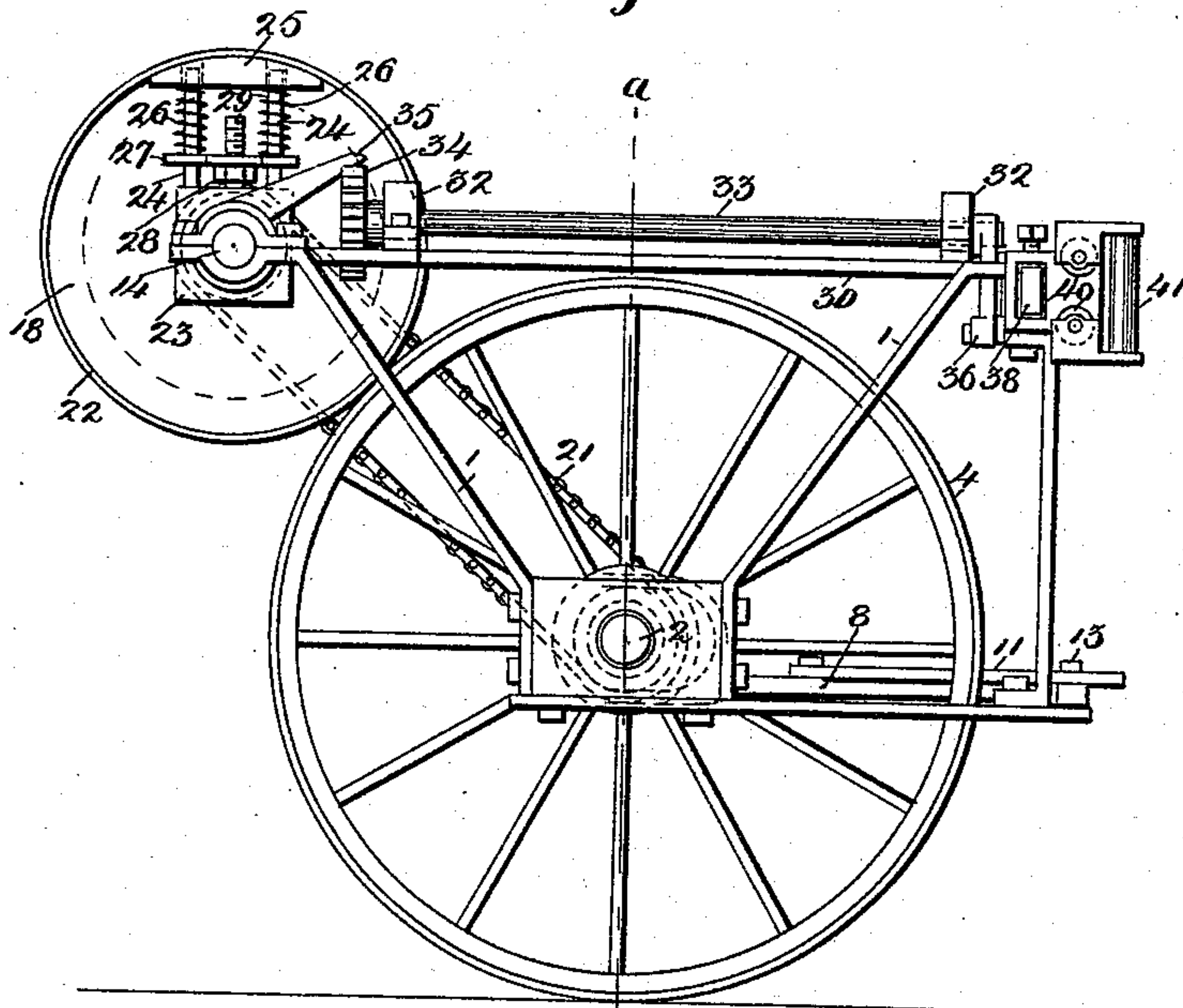
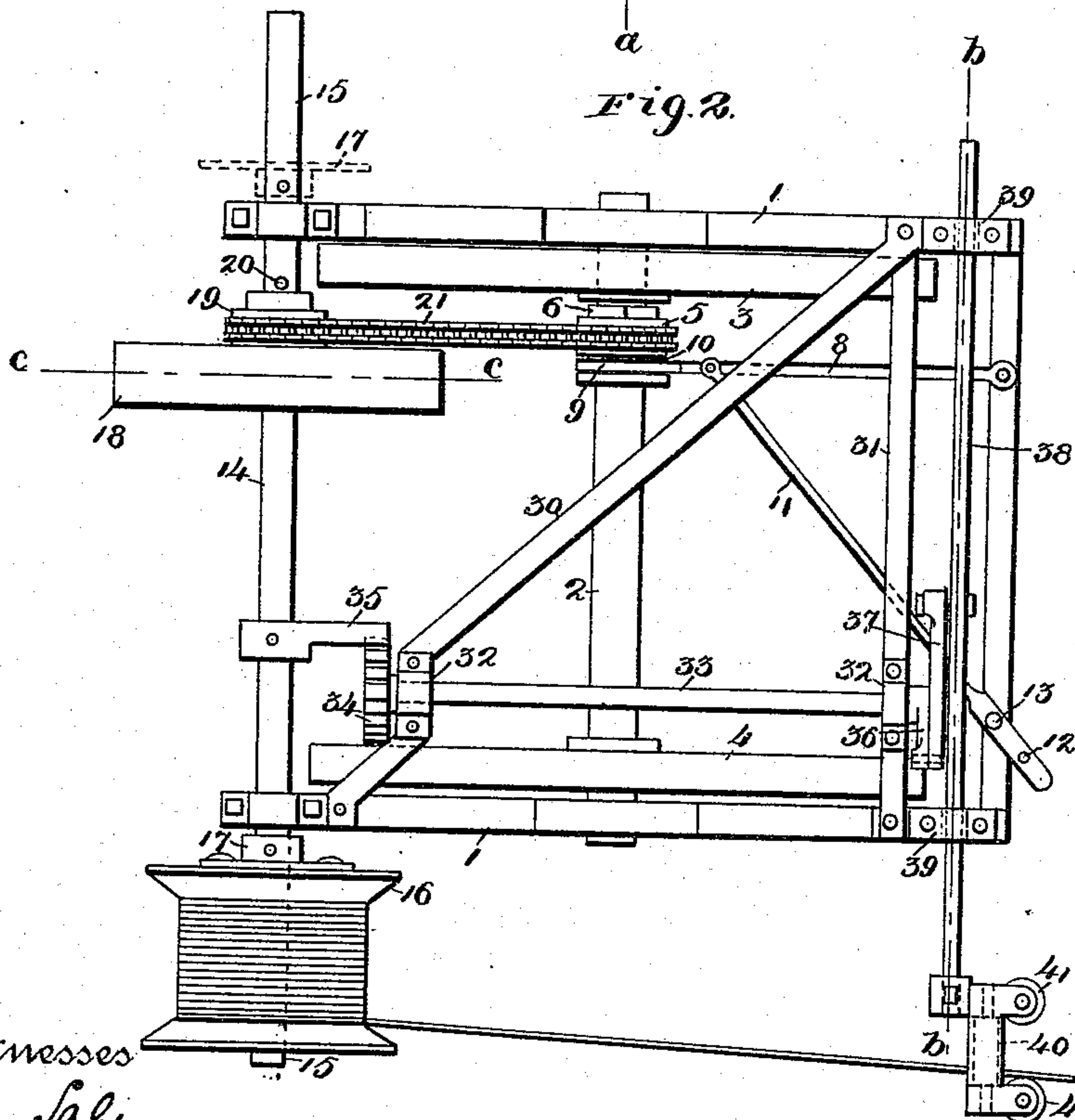


Fig. 2.



Witnesses
Lee Sali
George Bender

By His Attorneys,

Inventor
G. A. Feder.

Keller & Storer

(No Model.)

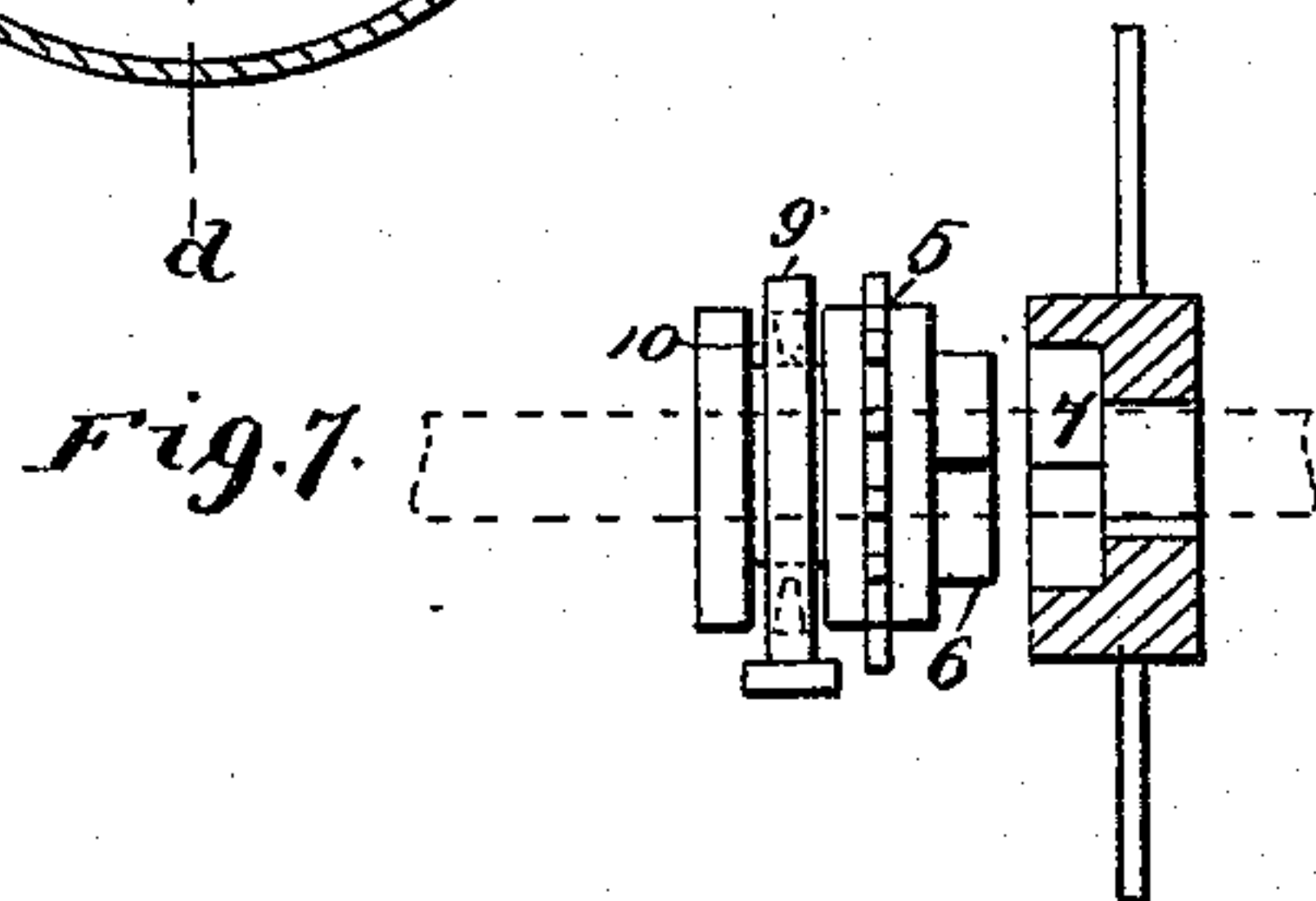
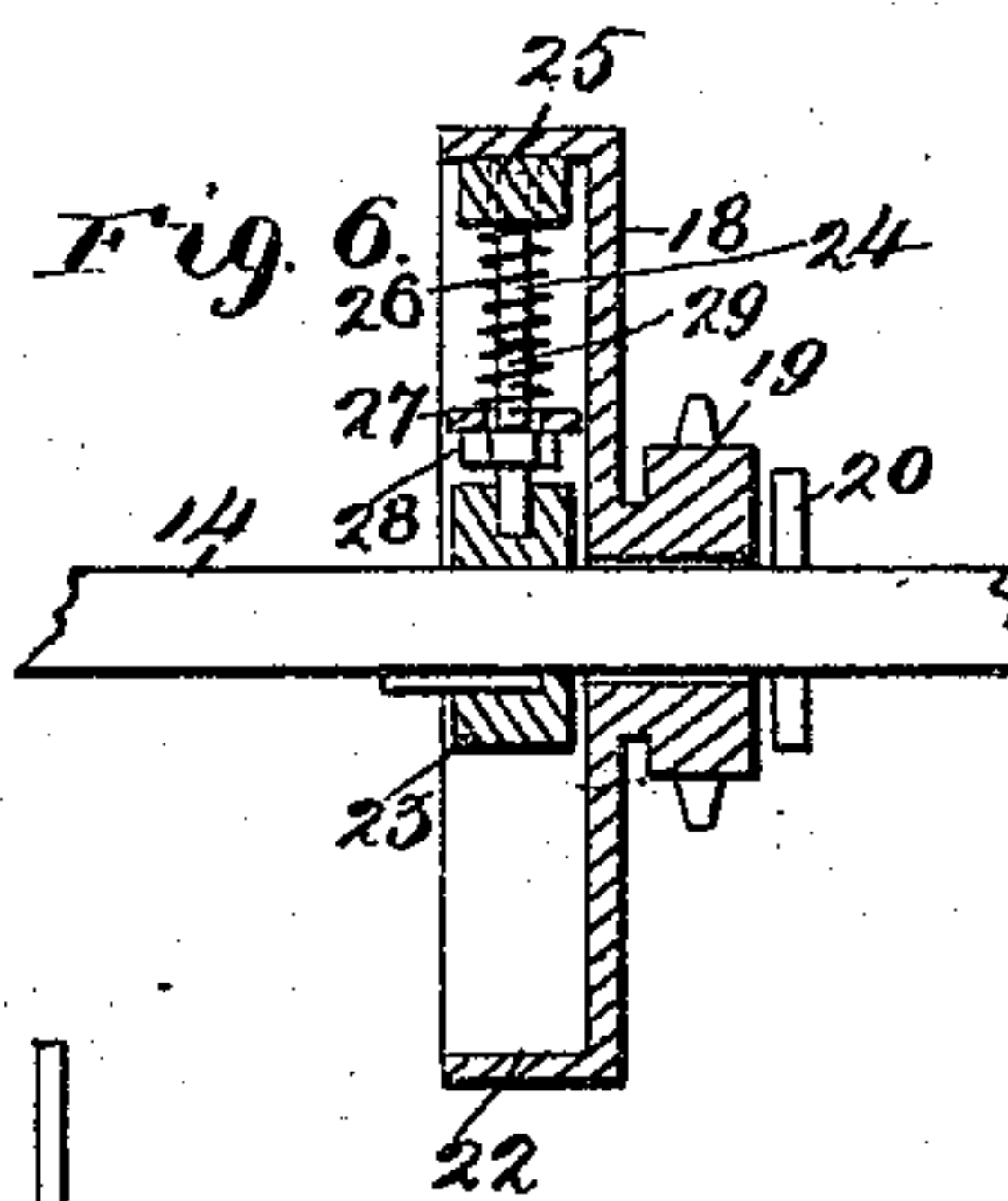
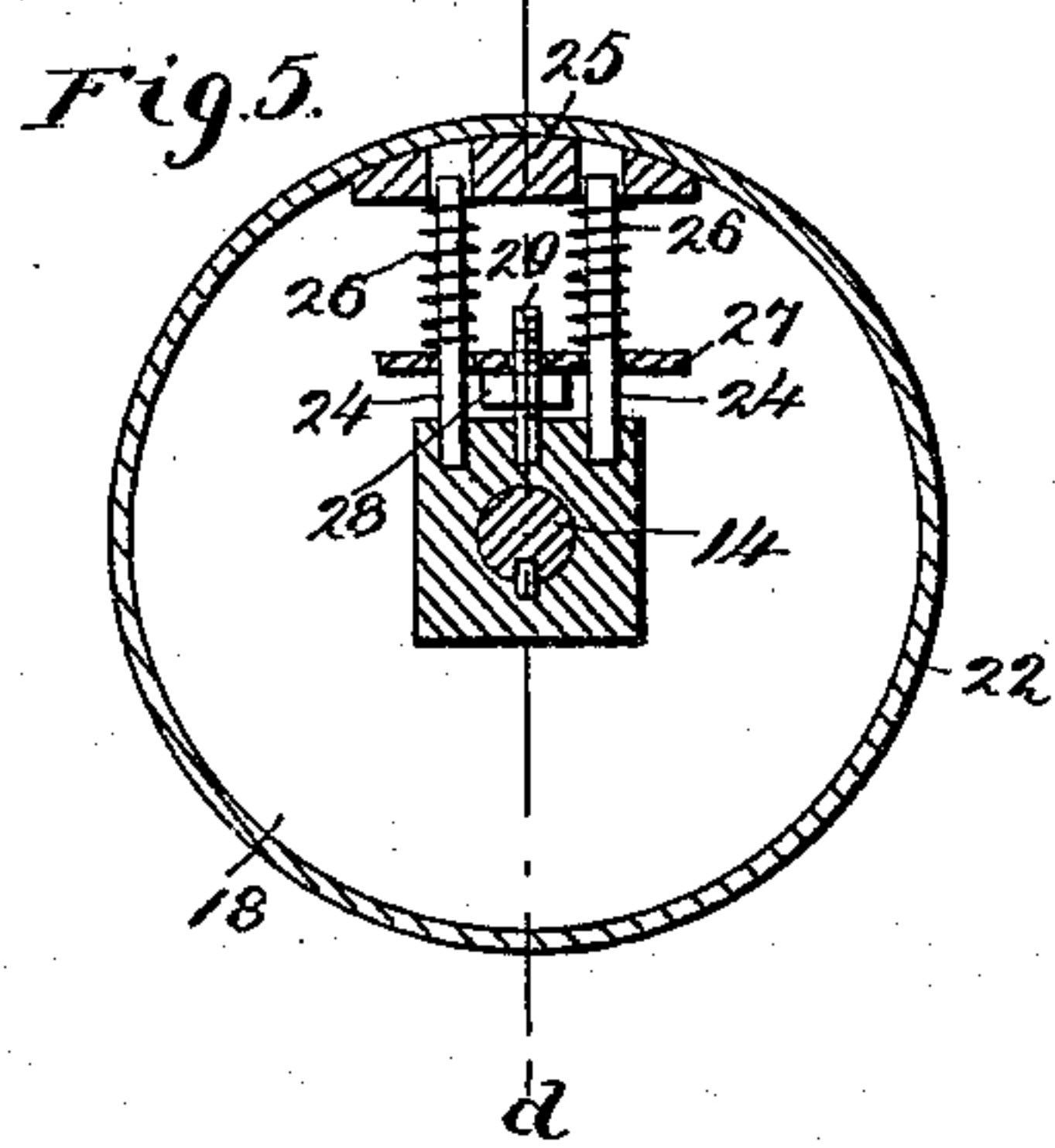
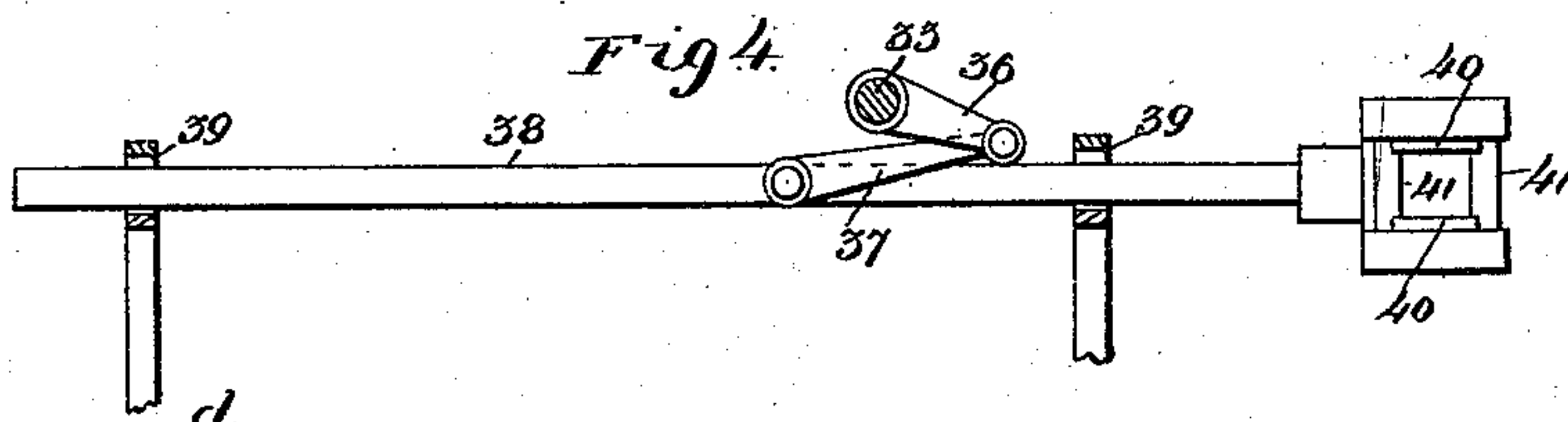
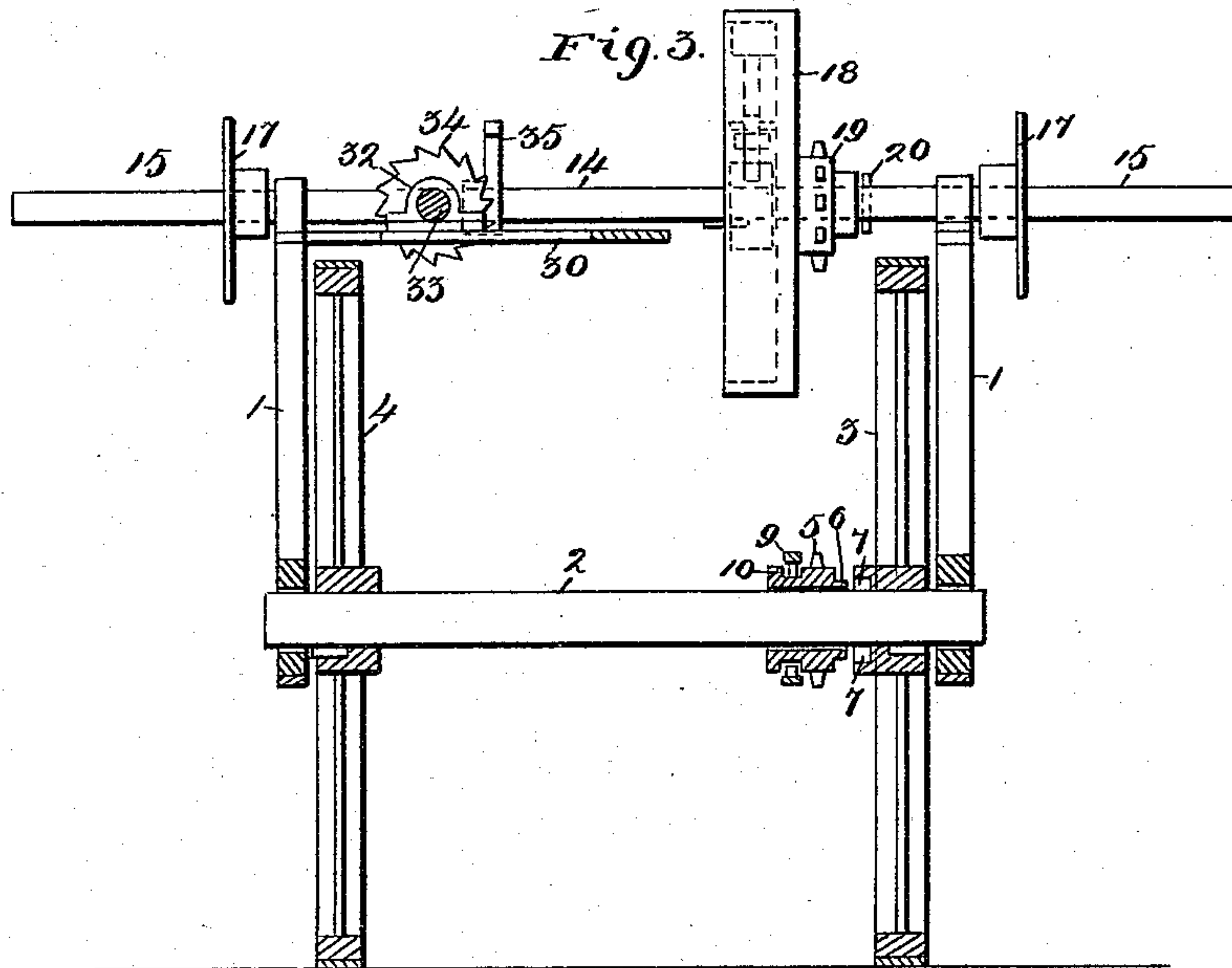
2 Sheets—Sheet 2.

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WIRE WINDING AND DISTRIBUTING MACHINE.

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Witnesses
Lee Sale
George Binder

Inventor
G. A. Feder.
By his Attorneys,
Keller & Starnes

UNITED STATES PATENT OFFICE.

GEORGE A. FEDER, OF BELLEVILLE, ILLINOIS.

WIRE WINDING AND DISTRIBUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,470, dated July 30, 1895.

Application filed December 21, 1894. Serial No. 532,535. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. FEDER, a citizen of the United States, residing at Belleville, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Wire Winding and Distributing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part hereof.

My invention has relation to improvements in wire winding and distributing machines; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my machine. Fig. 2 is a plan view thereof. Fig. 3 is a vertical section on the line *a a* of Fig. 1. Fig. 4 is a detail of the reciprocating bar operating the guide-frame, said view being a section on the line *b b* of Fig. 2. Fig. 5 is a vertical sectional detail of the flanged disk and friction-block, said view being taken on the line *c c* of Fig. 2. Fig. 6 is a cross-section on the line *d d* of Fig. 5; and Fig. 7 is a detail of the sliding sleeve carrying the sprocket-wheel, which is adapted to couple with the hub of one of the driving-wheels.

The present invention is an improvement on the construction described in the specification of my Patent No. 536,782, for a wire-distributing machine, the application for which was filed November 5, 1894, Serial No. 527,936, and has for its object to facilitate the winding on or unwinding of the wire from the spool, this being accomplished by causing the guide-frame to oscillate or reciprocate back and forth in proportion to the unwinding of the wire from the spool, or the winding up of the same on the spool. By this arrangement not only is the manipulation of the wire better effected, but the strain thereon is kept approximately constant.

In detail the present improvement may be described as follows:

Referring to the drawings, 1 represents the general frame of the machine. Mounted within suitable bearings at the base of the frame is the main shaft 2, with the driving-wheels 3 and 4 secured thereto. Loosely mounted on the shaft 2 and adapted to slide along the shaft is a sleeve having cast inte-

gral therewith a sprocket-wheel 5. The polygonal projecting end 6 of said sleeve can be coupled to or uncoupled from the correspondingly-polygonal socket 7 of the hub of the wheel 3 on the principle of a clutch mechanism, so that when coupled with said wheel 3 motion will be imparted to the sprocket-wheel 5, forming a part of said sleeve, when the machine is drawn on the ground by its driving-wheels. The sleeve carrying the sprocket-wheel can be thus coupled or uncoupled by means of the lever 8 pivoted to the frame, the free end of the lever carrying a yoke 9, which spans the sleeve and engages the annular groove or depression 10 thereof. The lever 8 is controlled by the pivoted operating-rod 11, whose free end has two openings 12 adapted to be passed over a projecting pin 13 on the frame, and thus held to keep the lever 8 in position to cause the sprocket-wheel 5 to remain coupled with the hub of the drive-wheel 3, or hold the same uncoupled therefrom.

Mounted in the upper portion of the frame and at one end thereof and parallel to the shaft 2 is a second shaft 14, whose terminal ends 15 serve to carry the spool 16, the spool being limited in its position and held on the shaft by being temporarily bolted to the disks 17, secured to the shaft. Mounted loosely on the shaft 14 is a flanged disk 18, and the sprocket-wheel 19 is secured to or cast integrally with the said disk and prevented from shifting along the shaft 14 in one direction by a limiting-pin 20. The sprocket-wheel 19 is radially in line with the sprocket-wheel 5, the two being connected by a driving sprocket-chain 21. Keyed to the shaft 14 and within the flange 22 of the disk 18 is a rectangular block 23, from one of the outer faces of which outwardly project the parallel arms 24, along which is adapted to move to and from the ends of said arms a friction clutch-block 25, the said block co-operating with the inner surface of the flange 22, its friction against the same being made variable by the coiled springs 26, interposed between the inner face of the block and the adjacent surface of a bearing-plate 27, whose position is adjustable and the tension of the springs 26 varied by an adjusting-nut 28, operating on the exteriorly-screw-threaded stem 29, projecting from the block 23 between the arms 24.

30 represents a diagonal brace piece or mem-

ber for the upper part of the frame, and 31 a transverse member thereof. These two members furnish suitable bearings 32 for a shaft 33, running at right angles to the shafts 2 and 14. To that end of the shaft 33 which is adjacent to the shaft 14 is secured a ratchet-wheel 34, which is adapted to be rotated the extent of one tooth with every revolution of the shaft 14, this being accomplished by the free end of the arm 35, fixed to and projecting from the shaft 14 and revolving with it, which arm, as is clearly obvious, co-operates with the inner faces of the respective teeth on the ratchet, and as it swings around with the revolution of the shaft 14 it will advance the ratchet-wheel one tooth in its rotation. As the ratchet 34 is thus intermittently rotated it will, of course, revolve the shaft 33, to which it is secured. The opposite end of the shaft 33 carries a crank-arm 36, to the free end of which is pivotally secured one end of the connecting-rod 37, the opposite end being secured to a long reciprocating bar 38, having its bearings 39 in the top of the frame, the said bar being parallel to the shafts 2 and 14. The bar 38 carries at either end the detachable guide-frame, which is of the same form as in my pending application referred to—that is to say, it consists of two horizontally-mounted rollers 40 and the vertical guide-rollers 41. As the shaft 33 revolves it will, as is apparent from the connections described, reciprocate the bar 38 within its bearings, a complete revolution of said shaft reciprocating said bar in two directions—that is, to cause it to make two strokes. In this reciprocating movement it is apparent that the guide-frame will follow the wraps of the wire on the spool as they are wound or unwound, thus keeping the frame substantially opposite or in line with the particular wrap that is being wound or unwound and reducing to a minimum the friction of the parts during the distribution of the wire.

The number of teeth on the ratchet 34 can be accurately proportioned to the thickness or kind of wire, so that, as the wraps from the spool are unwound, the reciprocation of the bar 38, and consequently of the guide-frame carried by it, can be timed accurately.

The operation will be readily understood. When it is desired to wind a suitable quantity of wire, the sprocket 5 is brought into engagement with the driving-wheel 3. Motion will then be imparted to the sprocket, thence communicated to the sprocket 19, secured to the flanged disk 18, and the latter will then impart motion to the shaft 14 through the medium of the friction clutch-block 25, block 23, and intermediate mechanism, the number of revolutions imparted to the shaft 14 depending, of course, on the tension of the springs 26 and the slipping that may exist between the friction clutch-block and the flange 22 of the disk 18. Of course the tighter the adjustment between the disk 18 and the shaft

14 the greater will be the number of revolutions imparted to the latter when motion is imparted to the disk. As the shaft 14 revolves it will intermittently impart rotary motion to the shaft 33, and this in turn will reciprocate the guide-frame to follow the wraps disposed along the spool 16, rotating on the end of the shaft 14.

It is obvious that the machine will work from either side.

Having described my invention, what I claim is—

1. In a wire winding and distributing machine, a suitable spool supporting shaft, means for imparting motion thereto, a second shaft disposed transversely or at right angles to the spool supporting shaft, a suitable bar mounted in the frame and parallel to the spool supporting shaft, a crank arm at the end of the transverse shaft adjacent to the bar, a connecting rod between the crank arm and bar, a guide frame carried by the bar, a ratchet wheel at the end of the transverse shaft adjacent to the spool supporting shaft, and an arm on the latter for intermittently rotating the ratchet and transverse shaft and imparting a reciprocating motion to the bar and guide frame carried by the same, substantially as set forth.

2. In a wire winding and distributing machine, a suitable drive shaft, wheels mounted on the same, a sleeve carried on the shaft, a sprocket wheel forming part of said sleeve, a polygonal end for said sleeve, a polygonal socket in the hub of one of the wheels, a pivoted lever having a yoke at its free end embracing the sleeve, an arm pivoted to the lever, openings at the free end of said arm, a pin on the frame co-operating with the openings, the whole adapted to engage the sprocket wheel with, or disengage the same from the driving wheel and retain the parts in either position, substantially as set forth.

3. In a wire winding and distributing machine, a suitable spool-supporting shaft, a flanged disk loosely mounted on the shaft, a rectangular block keyed to the shaft within the flange of the disk, parallel arms projecting from one of the faces of the block, a perforated friction block adapted to slide along said arms, a plate embracing said arms and adapted to be shifted along said arms, a coiled spring interposed between the adjacent surfaces of the plate and the friction block and encircling each arm, an exteriorly screw-threaded stem projecting from the block between the arms, and an adjusting nut on said stem interposed between the plate and the block secured to the shaft, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE A. FEDER.

Witnesses:

LEE SALE,

GEORGE BENDER.