

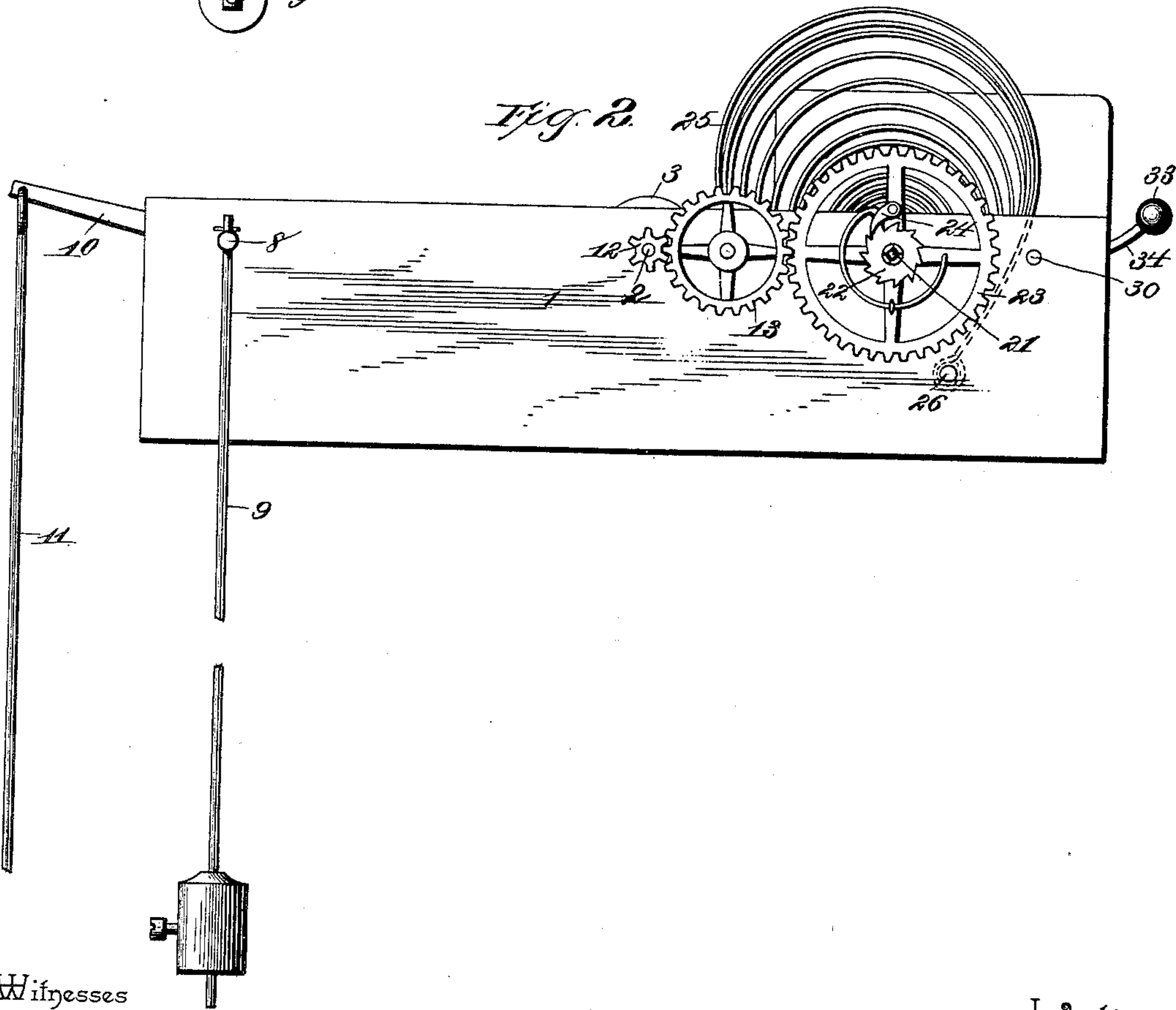
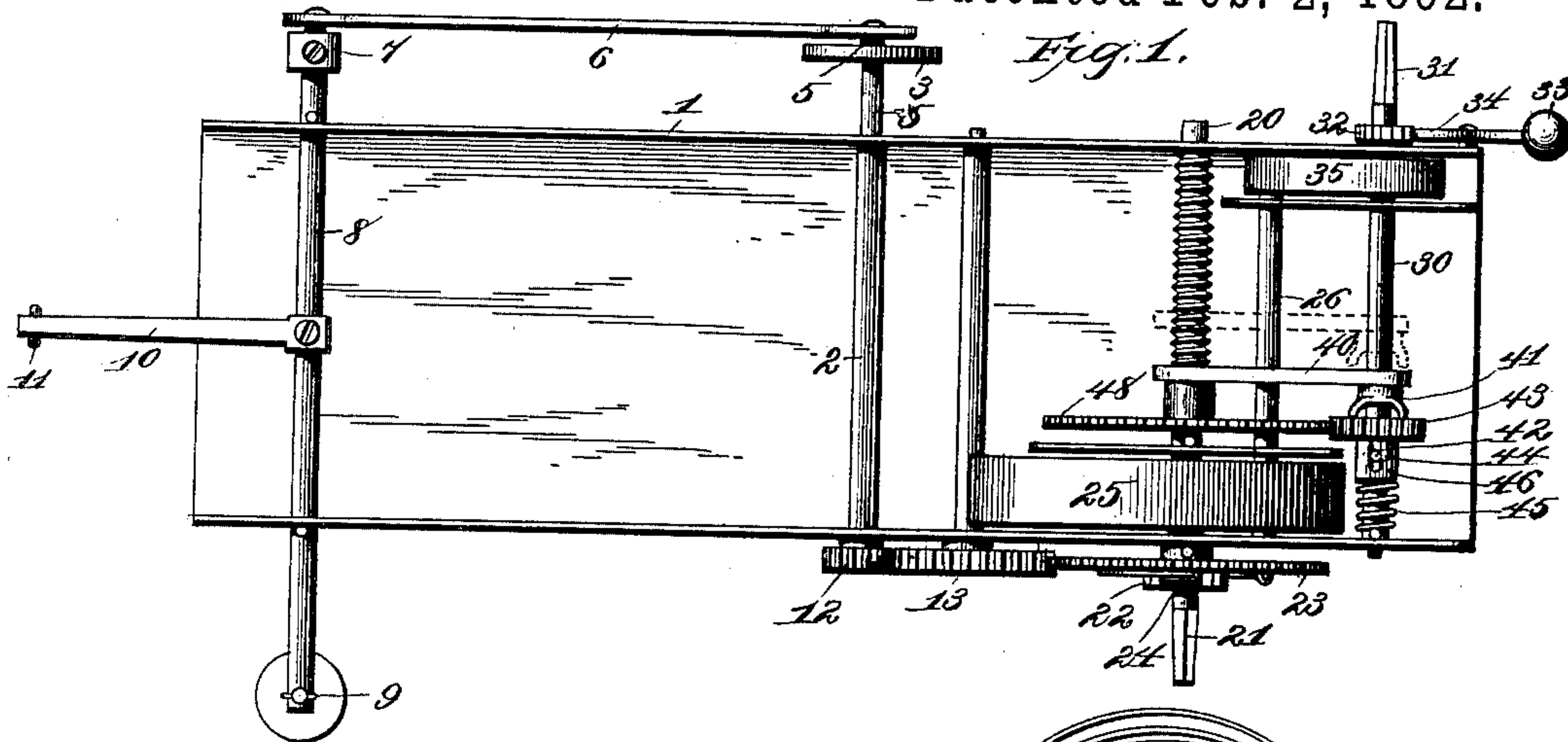
(No Model.)

2 Sheets—Sheet 1.

C. C. CORDRY.
SPRING MOTOR.

No. 468,083.

Patented Feb. 2, 1892.



Witnesses

E. J. Mordeman,
N. J. Collamer.

Inventor

By *his* Attorneys,

Chas. C. Cordry
C. A. Snow & Co.

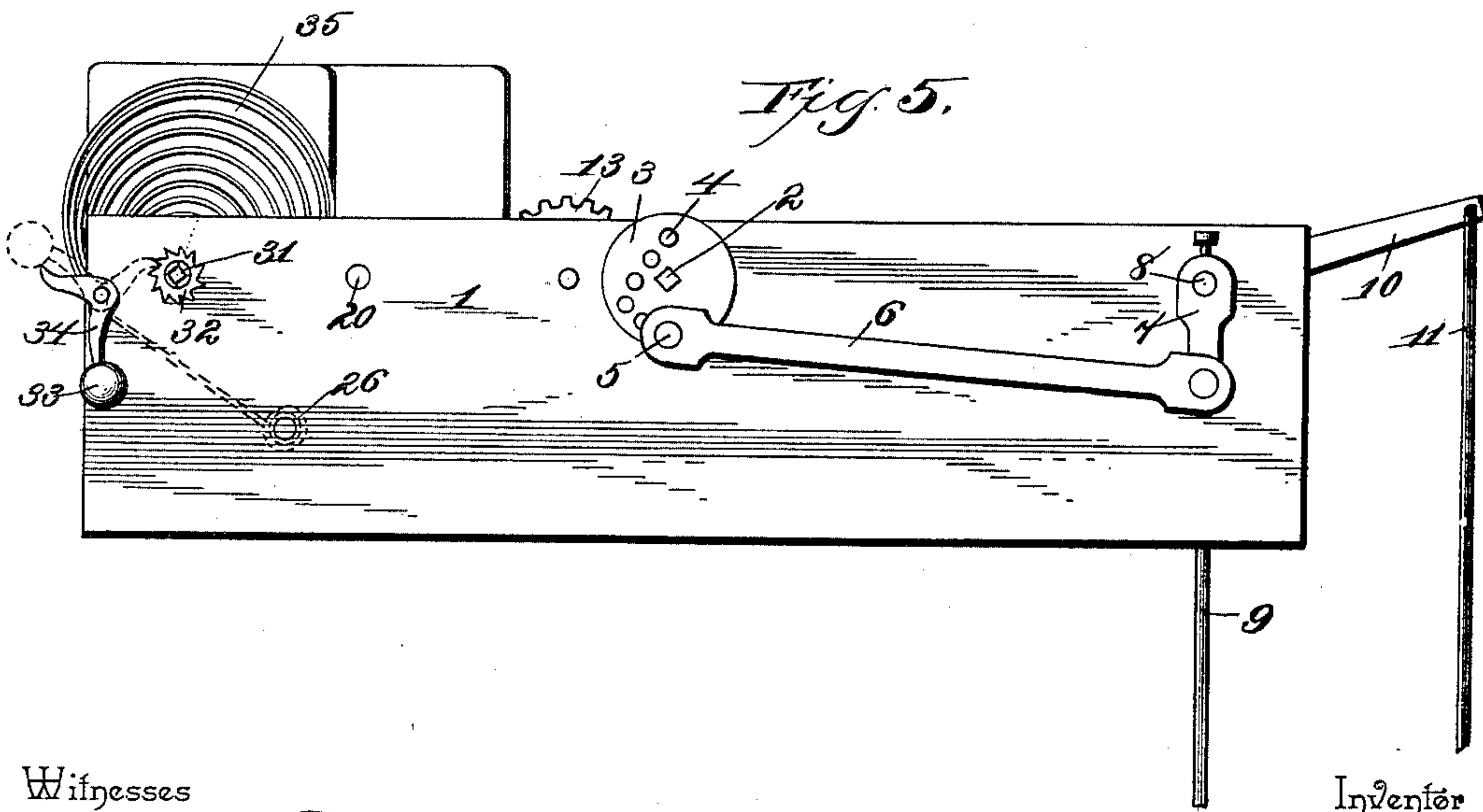
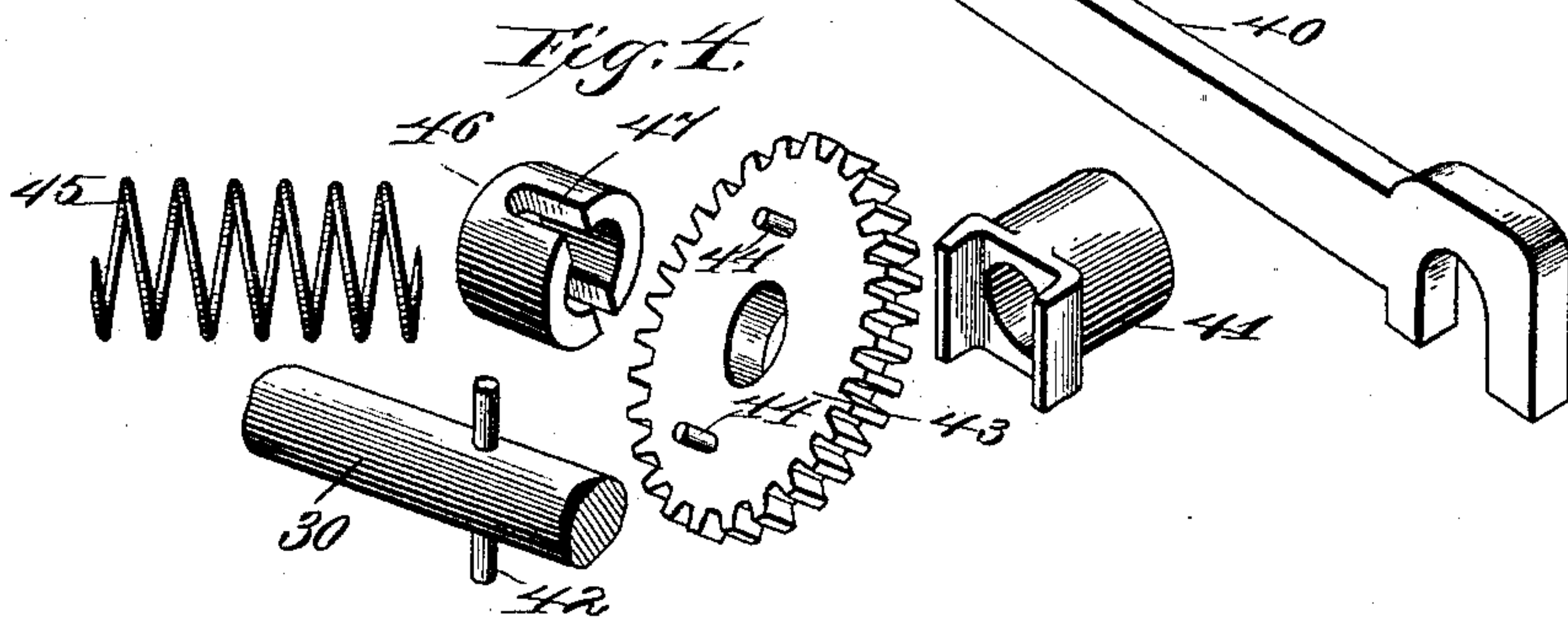
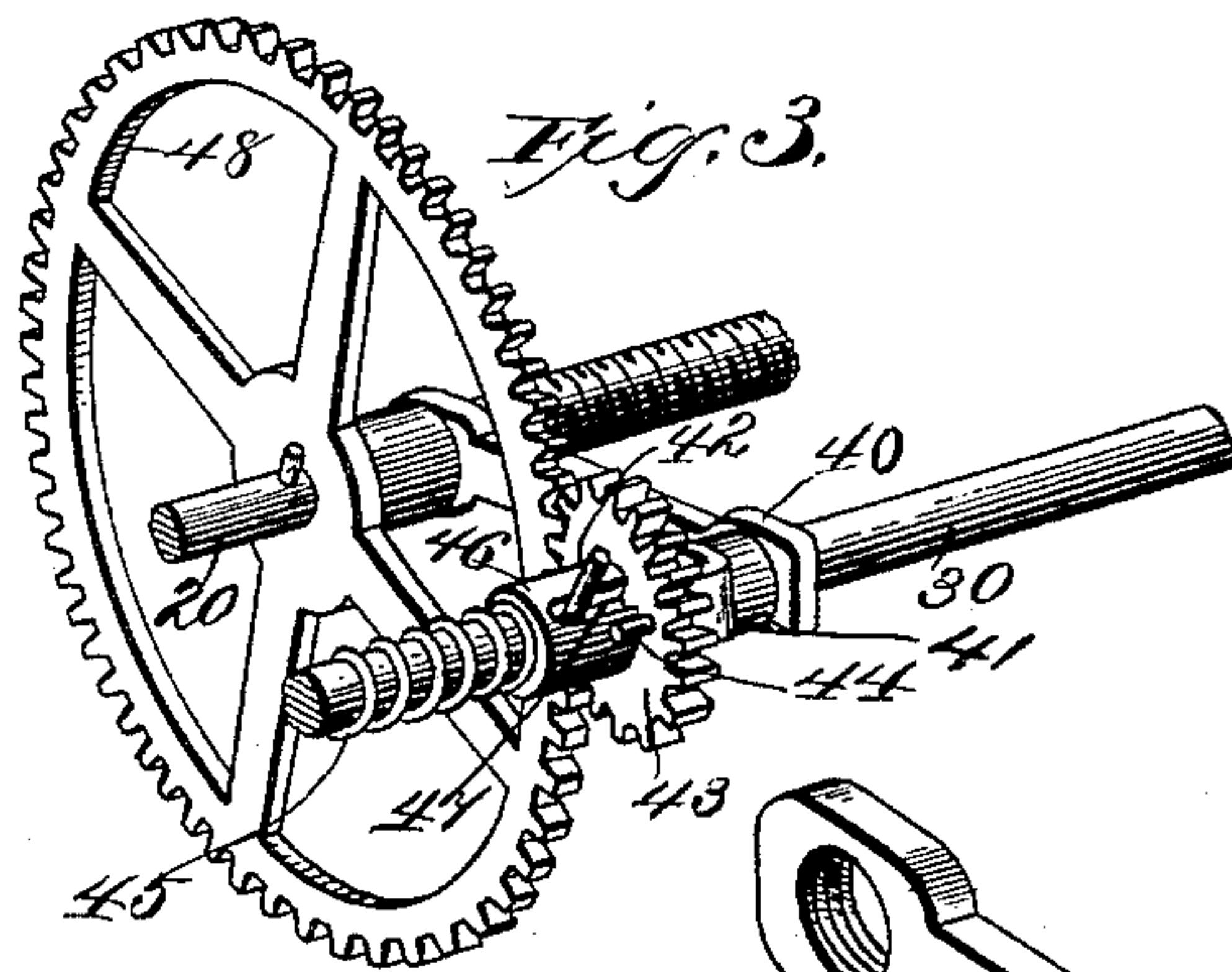
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2 Sheets—Sheet 2.

C. C. CORDRY.
SPRING MOTOR.

No. 468,083.

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Witnesses

E. L. Hurdman,

N. J. Collamer,

By his Attorneys,

Chas. C. Cordry

Cal. Snow & Co.

Inventor

UNITED STATES PATENT OFFICE.

CHARLES C. CORDRY, OF PRINCETON, ILLINOIS, ASSIGNOR OF ONE-HALF TO
PORTER C. McDONALD, OF SAME PLACE.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 468,083, dated February 2, 1892.

Application filed October 14, 1891. Serial No. 408,686. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. CORDRY, a citizen of the United States, residing at Princeton, in the county of Bureau and State of Illinois, have invented a new and useful Spring-Motor, of which the following is a specification.

This invention relates to motors, and more especially to that class thereof which is driven by springs, and the object of the same is to effect certain improvements in devices of this character.

To this end the invention consists in a motor having two independent spring-actuated driving-shafts and means for tripping a retaining-pawl on the second shaft when the spring on the first shaft has nearly unwound, thereby causing the second spring to rewind the first. This I accomplish by mechanism substantially as hereinafter more fully described and claimed and as illustrated on the two sheets of drawings, wherein—

Figure 1 is a plan view of this improved motor. Fig. 2 is a front elevation thereof. Fig. 3 is an enlarged perspective view of the two driving-shafts, showing the clutch as just coming into engagement. Fig. 4 is a still further enlarged detail of the parts of said clutch slightly separated. Fig. 5 is a rear elevation of the machine, showing the retaining-pawl as just being tripped.

Referring to the said drawings, 1 is a suitable frame or casing, which supports the mechanism hereinafter described, and in whose sides the several shafts are journaled, as shown in the drawings and as will be clear.

2 is the power-shaft, having a crank-wheel 3 on its rear end, preferably provided with a number of holes 4, in one of which is removably seated the crank-pin 5, and 6 is a pitman connecting this pin with a crank 7 on an oscillating shaft 8 at the left end of the frame. On the front end of this shaft is preferably located a pendulum 9, and from the shaft also projects an arm 10, which may be connected to the mechanism to be operated as a pump-rod 11. On the front end of the power-shaft 2 is a gear 12, intermeshing with an idle-gear 13, which latter is driven by the driving mechanism proper in the manner described below

and by whose rotation the oscillating shaft 8 is caused to move.

20 is the first driving-shaft, one or both of whose ends are squared, as at 21, whereby a key may be applied to wind the shaft, or a crank-handle may be permanently secured thereto, if preferred, and the body of this shaft throughout most of its length is threaded, as shown. On the front end of this shaft is secured a ratchet-wheel 22, adjacent a loose gear 23, which intermeshes with the idle-gear 13, and to this gear 23 is pivoted a spring-actuated pawl 24, engaging the ratchet.

25 is a spring secured at one end to the shaft 20 coiled thereon and secured at its other end to some fixed portion of the frame, as a rod 26. Thus when the squared end 21 is turned the inner end of the spring will be wound, and in uncoiling the ratchet 22 on the shaft will turn the gear 23 and drive the power-shaft, as will be clear.

30 is the second driving-shaft, one or both of whose ends are squared, as at 31, whereby a key may be applied to wind the shaft, or a crank-handle may be permanently secured thereto, if preferred. On the rear end of this shaft is secured a ratchet-wheel 32, adjacent which is a pawl 34, having a weighted outer end 33, which will throw the tip of the pawl normally out of engagement with the ratchet.

35 is a spring secured at one end to the shaft 30, coiled thereon and secured at its other end to some fixed portion of the frame, as the said rod 26. Thus, when the squared end 31 of the shaft is turned, the inner end of the spring will be wound thereon, and when sufficient tension has been imparted thereto the pawl 34 is turned manually, so as to engage a tooth of the ratchet 32, after which the force of the spring bearing the tooth against the pawl will prevent the latter from disengaging it unless the spring is a little further wound up.

40 is an arm having a threaded aperture in one end which engages the threads on the shaft 20, and having a smooth hole or notch through its other end which slides on the shaft 30, a box 41 being preferably secured to or standing against this end of the arm.

42 is a pin through the shaft 30 and form-

ing one member of a clutch, the other member consisting of a small gear 43, with pins 44 projecting from its front face and adapted to engage the pin 42, when this gear is moved on the shaft 30 by the box 41 up against said pin.

45 is an expansive helical spring on the shaft 30, adjacent the front wall of the frame, and at the inner end of this spring is a collar 46, sliding on this shaft and having notches 47, standing astride the pin 42.

48 is a gear fast on the shaft 20 at such point that it will be engaged by the small gear 43 when the pins on the latter engage the pin 42.

With this construction the operation of the device is as follows: The first driving-shaft is wound and automatically uncoils in a manner which will be obvious. During its winding the arm 40 travels back on the threads of the shaft to the position shown in Fig. 1. The second shaft 30 is wound until its spring is tightly coiled and is held so by its pawl. As the spring on the first shaft uncoils, the arm travels down the threads until its box 41 pushes the small gear 43 against the collar 46, compresses the helical spring 45, throws the two clutch members into engagement, and at the same time throws the small gear into engagement with the gear 48 on the first shaft, all as best seen in Fig. 3. At this time the first spring has almost completely uncoiled and the very last of its power, assisted by the inertia of the pendulum 9, turns the gear 48, which is then in mesh with the small gear 43, and turns the second shaft so as to wind its spring just a trifle more. This permits the retaining-pawl 34 to automatically disengage its ratchet 32, as seen in Fig. 5, and the uncoiling of the second spring, through the gears 43 and 48, then winds the first spring again, it being understood that the second spring is stronger than the first.

A machine of this character can be employed for driving devices, such as a pump, where it is desirable that the motor shall run for a long time without rewinding, and, having wound the two springs at night, an ordinary pump would be driven continuously until morning by their uncoiling when arranged and connected as above described. Still I do not limit myself to the exact details of construction, as considerable change may be made therein without departing from the spirit of my invention. The shapes, proportions, and sizes of parts, as well as their materials and specific locations, are matters with which the manufacturer will deal rather than the inventor.

What is claimed as new is—

1. The combination, with a first driving-shaft having a portion of its body threaded, a coiled spring for driving this shaft, a gear-wheel loose thereon, a ratchet-wheel fast thereon, a spring-actuated pawl on the gear engaging the ratchet, and connections between said gear and the mechanism to be driven, of

a second driving-shaft, a stronger coiled spring for driving this shaft, a ratchet thereon, a weighted pawl for said ratchet held normally out of engagement therewith, a pin through this shaft, a collar having slots embracing said pin, an arm having a threaded hole in one end engaging said first shaft and a smooth hole in the other sliding on the second shaft, a box carried by the latter end of said arm, a small gear sliding on the second shaft and having pins adapted to engage that through this shaft, a helical spring pressing said collar, so as to hold said gear with the pins out of engagement, and a gear keyed on the first shaft at a point to engage said small gear when the pins are in engagement, as set forth.

2. The combination, with a first driving-shaft having a portion of its body threaded, a coiled spring for driving this shaft, a gear-wheel loose thereon, a ratchet-wheel fast thereon, a spring-actuated pawl on the gear engaging the ratchet, and connections between said gear and the mechanism to be driven, of a second driving-shaft, a stronger coiled spring for driving this shaft, a ratchet thereon, a weighted pawl for said ratchet held normally out of engagement therewith, a clutch member on this shaft, an arm having a threaded hole in one end engaging said first shaft and a smooth hole in the other sliding on the second shaft, a small gear also sliding on the second shaft and having a second clutch member, a collar on this shaft, a spring pressing said collar, so as to hold the clutch members normally out of engagement, and a gear fast on the first shaft at a point to engage said small gear when the clutch members engage, as set forth.

3. The combination, with a first driving-shaft having a portion of its body threaded, a coiled spring for driving this shaft, a gear-wheel loose thereon, a ratchet-wheel fast thereon, a spring-actuated pawl on the gear engaging the ratchet, and connections between said gear and the mechanism to be driven, of a second driving-shaft, a stronger coiled spring for driving this shaft, a ratchet thereon, a weighted pawl for said ratchet held normally out of engagement therewith, a clutch member on this shaft, an arm having a threaded hole in one end engaging said first shaft, a small gear loosely connected to the other end of said arm and also having a clutch member, and a gear fast on the first shaft at a point to engage said small gear when the clutch members engage, as set forth.

4. The combination, with a first driving-shaft having a portion of its body threaded, a spring for driving this shaft, and connections between the shaft and the mechanism to be driven, of a second driving-shaft, a stronger spring for driving this shaft, a ratchet thereon, a pawl for said ratchet held normally out of engagement therewith, a clutch member on this shaft, an arm having a threaded hole in one end engaging said first shaft, a small gear loosely connected to the other end of said

arm and also having a clutch member, and a gear fast on the first shaft at a point to mesh with said small gear when the clutch members engage, as set forth.

5 5. The combination, with a first driving-shaft having a portion of its body threaded, means for driving this shaft, and connections between it and the mechanism to be driven, of a second driving-shaft more powerful,
10 means for driving this shaft, a ratchet thereon, a pawl engaging said ratchet, an arm having a threaded hole in one end engaging said first shaft, and connections, substantially as described, between the other end of the arm
15 and said pawl, as and for the purpose set forth.

6. The combination, with a first driving-shaft having a gear fast thereon, a second driving-shaft having a small gear loose there-
20 on, and an arm moving longitudinally on the second shaft against one side of the small gear, of pins in the opposite face of this gear, a pin through the shaft, a collar on the shaft having slots sliding over said pin, and a heli-
25 cal spring pressing said collar against the small gear and the latter away from said pin, as and for the purpose set forth.

7. The combination, with a first driving-shaft having a gear fast thereon, a second driving-shaft having a small gear loose there- 30 on, and means for sliding this gear in one direction on its shaft, of pins in the opposite face of this gear, a pin through the shaft, a collar on the shaft having slots sliding over said pin, and a spring pressing said collar 35 against the small gear and the latter away from said pin, as and for the purpose set forth.

8. The combination, with a first driving-shaft having a gear fast thereon, a second driving-shaft having a small gear loose there- 40 on, and means operated by the first shaft for sliding the small gear in one direction on its shaft, of a clutch member on the opposite face of this gear, another clutch member on the shaft, and a spring-actuated collar hold- 45 ing said members normally out of engagement, as hereinbefore set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES C. CORDRY.

Witnesses:

EDW. Z. MERCER,
F. W. CLARK.