

No. 662,179.

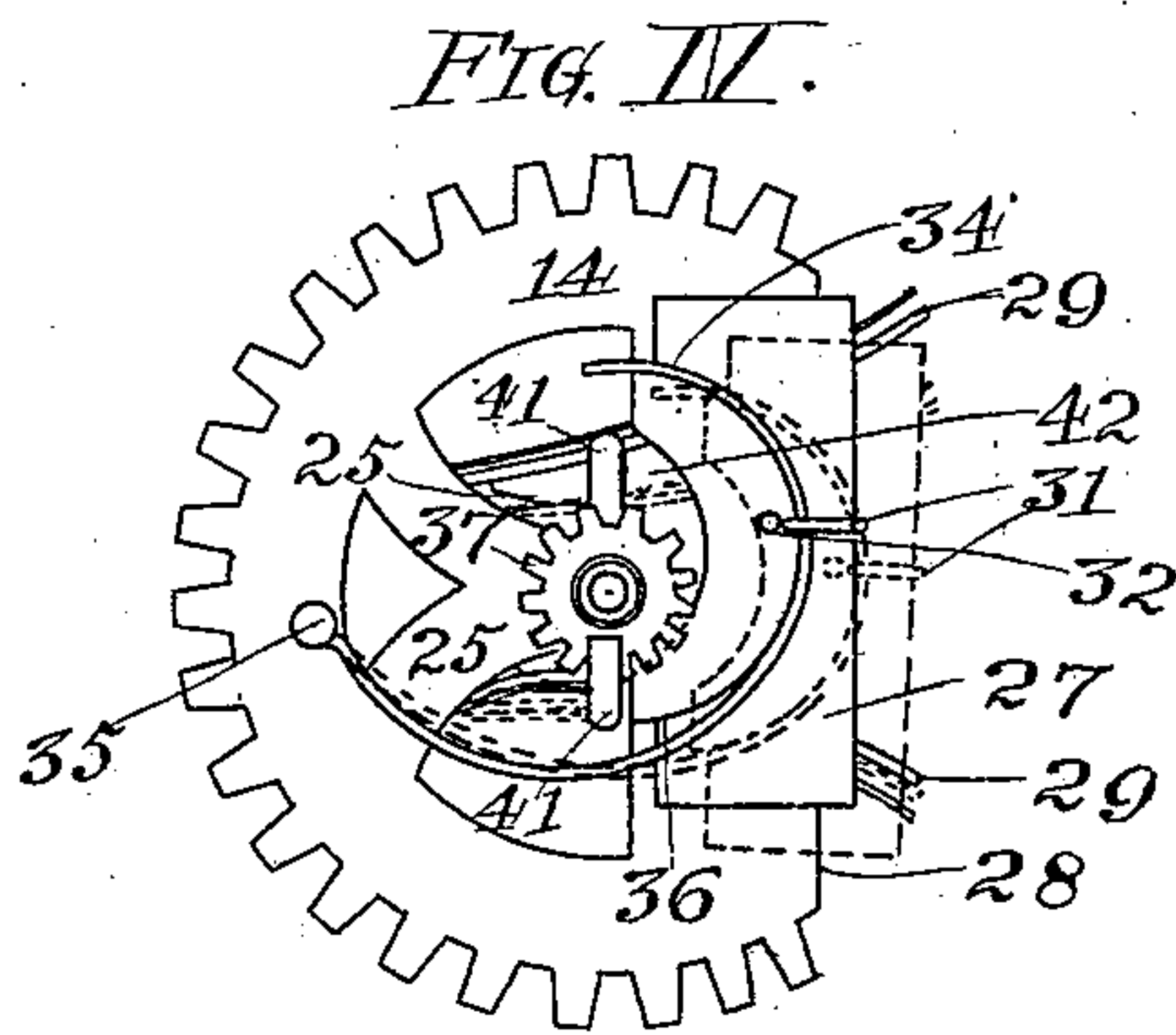
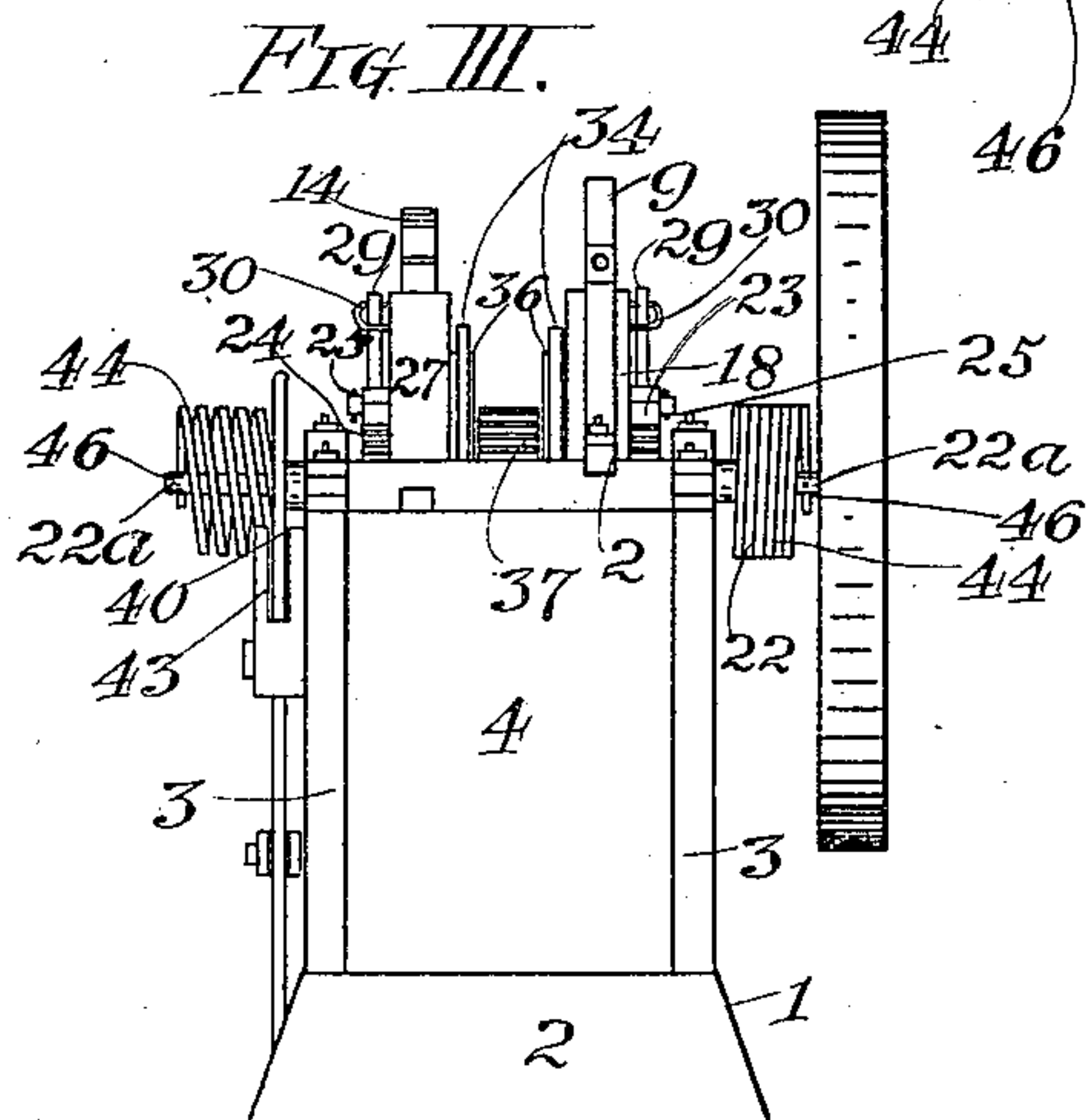
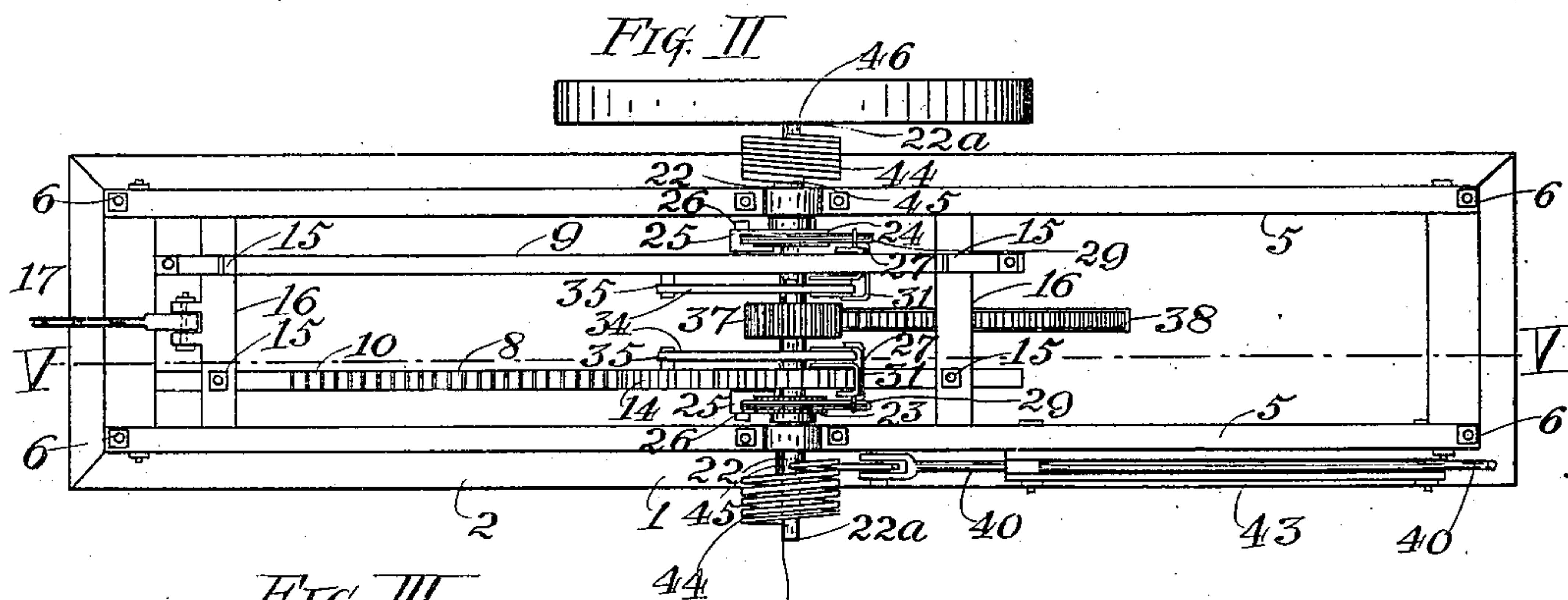
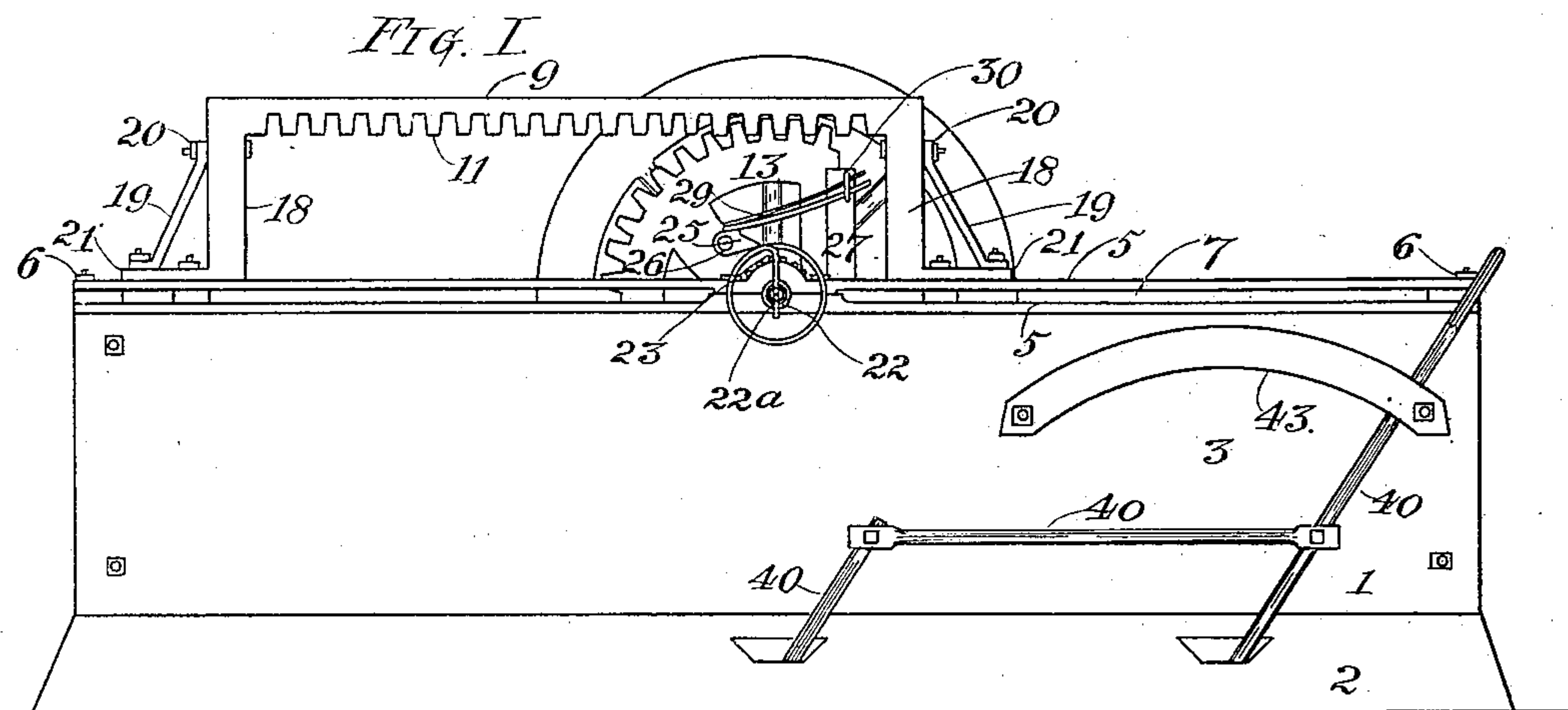
Patented Nov. 20, 1900.

F. S. WEATHERLY.
POWER TRANSMITTER.

(Application filed Feb. 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
Robt Train
Olin & McVain

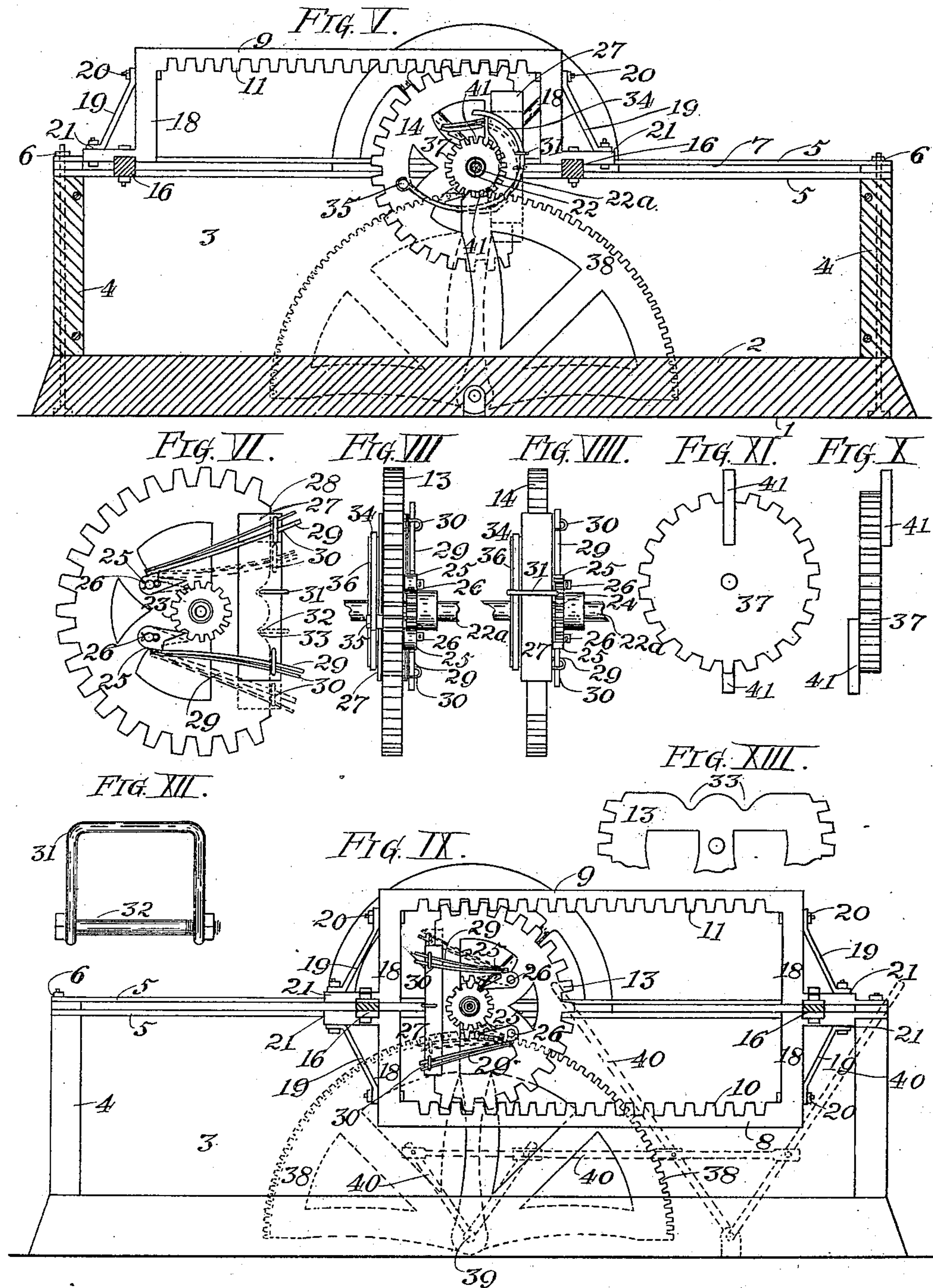
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UNITED STATES PATENT OFFICE.

FRANK S. WEATHERLY, OF LOS ANGELES, CALIFORNIA.

POWER-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 662,179, dated November 20, 1900.

Application filed February 27, 1900. Serial No. 6,738. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. WEATHERLY, a citizen of the United States, with residence and post-office address at 228 East Second street, Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Power-Transmitters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a power-transmitter such as shown in my application Serial No. 724,128, in which reciprocating motion is changed to rotary motion, also means for reversing the rotary motion and means for dispensing with any shock or sudden start in changing from the reciprocating motion to the rotary motion; and my invention consists in certain features of novelty hereinafter described and claimed.

Figure I is a side elevation of my improved device. Fig. II is a top view. Fig. III is an end view. Fig. IV is a detail view showing method of reversing. Fig. V is a longitudinal section taken on line V V, Fig. II. Fig. VI is a side elevation of one of the segmental gear-wheels. Fig. VII is an edge view of one of the segmental gear-wheels. Fig. VIII is an edge view of one of the segmental gear-wheels, showing reversing device. Fig. IX is a side elevation of my improved device, showing the side of the bed-plate removed. Fig. X is an edge view of the reversing gear-wheel. Fig. XI is a side elevation of the reversing gear-wheel. Fig. XII is a plan view of the clevis for connecting the reversing yoke with the segmental gear-wheel. Fig. XIII is a detail side elevation of the segmental gear-wheel.

Referring to the drawings, 1 represents a bed-plate of any approved construction, having a base 2, vertical sides 3, and ends 4.

5 represents upper and lower guide-plates extending the full length of the bed-plate, resting upon the upper edges of the sides 3 and secured thereto by means of bolts 6, said bolts preferably extending through the base of the bed-plate and through the sides 3. The guide-plates 5 are placed a short distance apart, leaving a horizontal working space 7.

8 9 represent my double reciprocating

power-rack, having teeth 10 11, which engage the segmental gear-wheels 13 14. The racks 8 9 are placed some distance apart and secured at 15 to cross-heads 16. The cross-heads 16 extend across the bed-plate, with their ends resting in the horizontal space 7 between the upper and lower guide-plates 5.

17 represents a piston-rod connected with one of the cross-heads 16, by which reciprocating motion is imparted to the racks 8 9. The racks 8 9 are placed some distance apart both horizontally and vertically with the teeth of one rack presented upwardly and those of the other rack presented downwardly. The racks are provided with legs 18, which are bolted to cross-heads 16, said racks being strengthened by means of braces 19, connecting the racks at 20 with L-shaped projections 21, said projections being a right-angle continuation of the legs 18 and resting upon and secured to the cross-heads 16. The segmental gear-wheels 13 14 are loosely mounted upon a sleeve 22, the sleeve being in turn loosely mounted upon a power shaft 22^a, each of said segmental gear-wheels engaging the teeth of its respective rack, so that as the racks are reciprocated in the bed-plate the segmental gear-wheels will partially rotate upon the sleeve 22 in opposite directions.

23 24 represent ratchet-wheels fixed to the sleeve 22 on the outside of the segmental gear-wheels 13 14.

25 represents spring-pawls adapted to engage the teeth of the ratchet-wheels 23 24, said pawls being pivoted to pins 26, extending out from the sides of the segmental gear-wheels 13 14, said pawls being so placed on the said segmental gear-wheels as to engage the teeth on either side of the ratchet-wheels 23 24, according to circumstances.

27 represents yokes which straddle the non-toothed part 28 of the segmental gear-wheels.

29 represents spring-rods extending from the pawls 25 to the yokes 27, the ends of said spring-rods 29 passing through staples 30 on said yokes, the result being that as the yokes 27 are shifted upon the segmental gear-wheel (see dotted line, Fig. VI) the respective pawls 25 will either be thrown into contact or out of contact with the ratchet-wheels 23 24.

31 represents a clevis connected with the yoke 27, said clevis having a bolt 32, which

extends through the yoke 27. The yoke is held in the position to which it is thrown by means of the bolt 32, passing into notches 33 in the segmental gear-wheels 13 14, said yoke 5 being firmly pressed down upon the segmental gear-wheels by means of a curved spring 34, having one end fixed at 35 to the segmental gear-wheels and its opposite end curved over shoulders 36 on the yokes 27, the clevis 10 31 also extending over the free end of the spring 34, thus holding it in position.

37 represents a reversing gear-wheel loosely mounted on the sleeve 22 between the segmental gear-wheels 13 14. The wheel 37 15 meshes with a segmental rack 38, which is pivoted at 39 to the bed-plate.

40 represents a compound lever for operating the rack 38.

41 represents lugs on each side of the reversing gear-wheel 37, the outer ends of said lugs as the reversing gear-wheel 37 is rotated engaging within a semicircular recess 42 on the inner face of the yokes 27, so that a single revolution of the reversing gear-wheel 37 25 by the manipulation of the lever 40 and the segmental rack 38 will cause the lugs 41 to enter the recess 42 in the yoke 27 and by pressure change its position. (See Fig. IV.) As the position of the yoke is changed the pawls 30 25 are changed and the sleeve 22 is compelled to travel in the opposite direction.

43 represents a bar for confining and guiding the lever 40.

44 represents coil-springs coiled upon the power-shaft 22, having their inner ends secured at 45 to the sleeve 22 and their outer ends secured at 46 to the power-shaft 22. The object of the springs 44 is to prevent the otherwise unavoidable jerk or jolt on each stroke of reciprocating movement, converting the latter into a rotary motion smoothly and without shock. The springs contracting and expanding act as a storehouse, giving and delivering power, receiving it intermittently, 45 and delivering it steadily, as in watches, clocks, &c.

I claim as my invention—

1. The combination of a suitable base, upper and lower guide-plates, cross-heads adapted to operate between said plates, upper and lower toothed racks secured to said cross-heads, a power-shaft, a sleeve on the shaft, segmental gear-wheels loosely mounted on the sleeve, ratchet-wheels secured to the sleeve 55 and pawls for connecting the segmental gear-wheels with the ratchet-wheels, substantially as set forth.

2. The combination of a suitable base, guide-plates, cross-heads adapted to reciprocate between the guide-plates, a rack formed in two sections with its teeth facing in opposite directions, legs extending from the racks to the cross-heads, L-shaped parts by which the legs are connected to the cross-heads, 65 braces connecting the L-shaped parts with the legs, a power-shaft, a sleeve on the shaft, segmental gear-wheels mounted on said sleeve

with which the racks engage, ratchet-wheels fixed to the power-shaft, and pawls for connecting the ratchet-wheels with the segmental gear-wheels, substantially as set forth. 70

3. The combination of a suitable base, a power-shaft journaled to the base, a sleeve on the power-shaft, segmental gear-wheels loosely mounted upon the sleeve, racks for engaging said segmental gear-wheels, ratchet-wheels fixed to the sleeve, double pawls pivoted to the segmental gear-wheels and adapted to engage the ratchet-wheels, yokes mounted on the segmental gear-wheels, springs connecting the yokes with the pawls for throwing them into or out of engagement with the ratchet-wheels and means for sliding said yokes upon the segmental gear-wheels, substantially as set forth. 85

4. The combination of a suitable base, a power-shaft journaled to the base, a sleeve on the power-shaft, segmental gear-wheels loosely mounted on the sleeve, ratchet-wheels fixed to the sleeve, pawls pivoted to the gear-wheels, yokes mounted on the gear-wheels, spring-rods connecting the pawls with the yokes, a reversing-wheel mounted on the shaft between the segmental gear-wheels and lugs on the reversing-wheel adapted to engage the yokes and change their position on the segmental gear-wheels, thus throwing the pawls into or out of engagement with the ratchet-wheels, substantially as set forth. 95

5. The combination of a suitable base, a power-shaft journaled to the base, a sleeve on the power-shaft, notched segmental gear-wheels loosely mounted on the sleeve, racks for operating said segmental gear-wheels, ratchet-wheels fixed to the sleeve, yokes on the segmental gear-wheels, a clevis secured to the yokes, pawls pivoted to the segmental gear-wheels, spring-rods connecting the pawls with the yokes, means for moving the yokes and the pawls, and a bolt on the clevis adapted to engage the notches in the segmental gear-wheels, substantially as set forth. 100

6. The combination of a suitable base, a power-shaft mounted thereon, a sleeve on the shaft, segmental gear-wheels loosely mounted on the sleeve, racks adapted to engage the segmental gear-wheels, ratchet-wheels fixed to the sleeve, pawls for engaging said ratchet-wheels, yokes on the segmental gear-wheels, said yokes having shoulders, means for connecting the pawls with the yokes, and springs adapted to engage said shoulders and to hold the yokes in position upon the segmental gear-wheels, substantially as set forth. 115

7. The combination of a suitable base, a power-shaft journaled to the base, a sleeve on the shaft, segmental gear-wheels loosely mounted on the sleeve, racks for engaging the segmental gear-wheels, ratchets fixed to the sleeve, pawls for engaging said ratchets, yokes mounted on the segmental gear-wheels, means for connecting the pawls with said yokes, a reversing gear-wheel loosely mounted on the shaft, lugs on the reversing gear-wheel for 125

engaging the yokes, a segmental rack engaging the reversing gear-wheel and a lever operating said segmental rack, substantially as set forth.

5 8. The combination of a suitable base, a power-shaft journaled to the base, a sleeve loosely mounted on the shaft, segmental gear-wheels loosely mounted on the sleeve, means for turning said segmental gear-wheels, 10 ratchet-wheels mounted on the sleeve and connected therewith, spring-pawls for connecting the toothed wheels with the ratchet-wheels, and springs coiled around the power-shaft having one of their ends connected with 15 the sleeve and their opposite ends connected to the power-shaft, substantially as set forth.

9. The combination of a shaft, a sleeve on the shaft, a segmental gear-wheel adapted to turn on the sleeve, a rack meshing with the 20 segmental gear-wheel, springs coiled on the shaft, one end of each spring being attached to the sleeve and the other end secured to the shaft, substantially as set forth.

10. The combination of a rotary member to 25 be continuously rotated, an oscillating member from which rotary motion is to be derived, a double pawl-and-ratchet connection through which motion is imparted to the rotary member, and means for throwing either

pawl into action to determine the direction 30 of rotation set up in the rotary member, consisting of a segmental gear-wheel mounted to oscillate, lugs located at axially and diametrically opposite points on said segmental gear-wheel, connections through which said lugs 35 disengage the pawls from the ratchet by opposite movements of the segmental gear-wheel, and means for oscillating said segmental gear-wheel at will.

11. The combination of a power-shaft, a 40 sleeve on the shaft, segmental gear-wheels loosely mounted on the sleeve, racks engaging said segmental gear-wheels, ratchet-wheels mounted on the sleeve and connected therewith, pawls for engaging the ratchet- 45 wheels, yokes on the segmental gear-wheels to which the pawls are connected, there being semicircular recesses in said yokes, a reversing-wheel loosely mounted on the power-shaft, lugs on the reversing-wheel for engaging the 50 recesses on the yokes for changing the position of said pawls and means for rotating said reversing-wheel, substantially as set forth.

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Witnesses:

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