

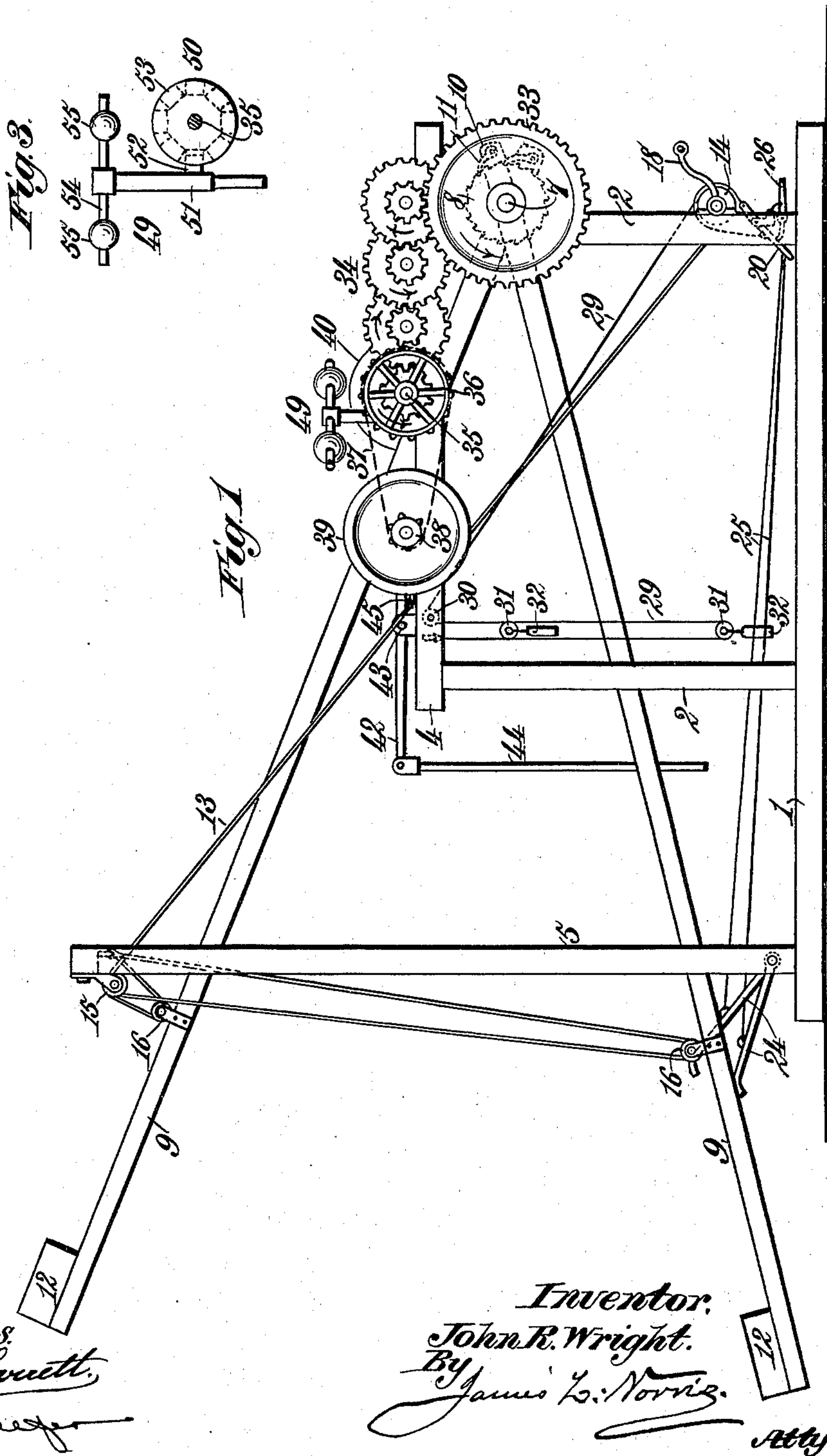
(No Model.)

2 Sheets—Sheet 1.

J. R. WRIGHT.
GRAVITY AND LEVER MOTOR.

No. 590,198.

Patented Sept. 14, 1897.



Witnesses.
Robert Emmett.
J. B. Keegan

Inventor.
John R. Wright.
By *James L. Norris.*
Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

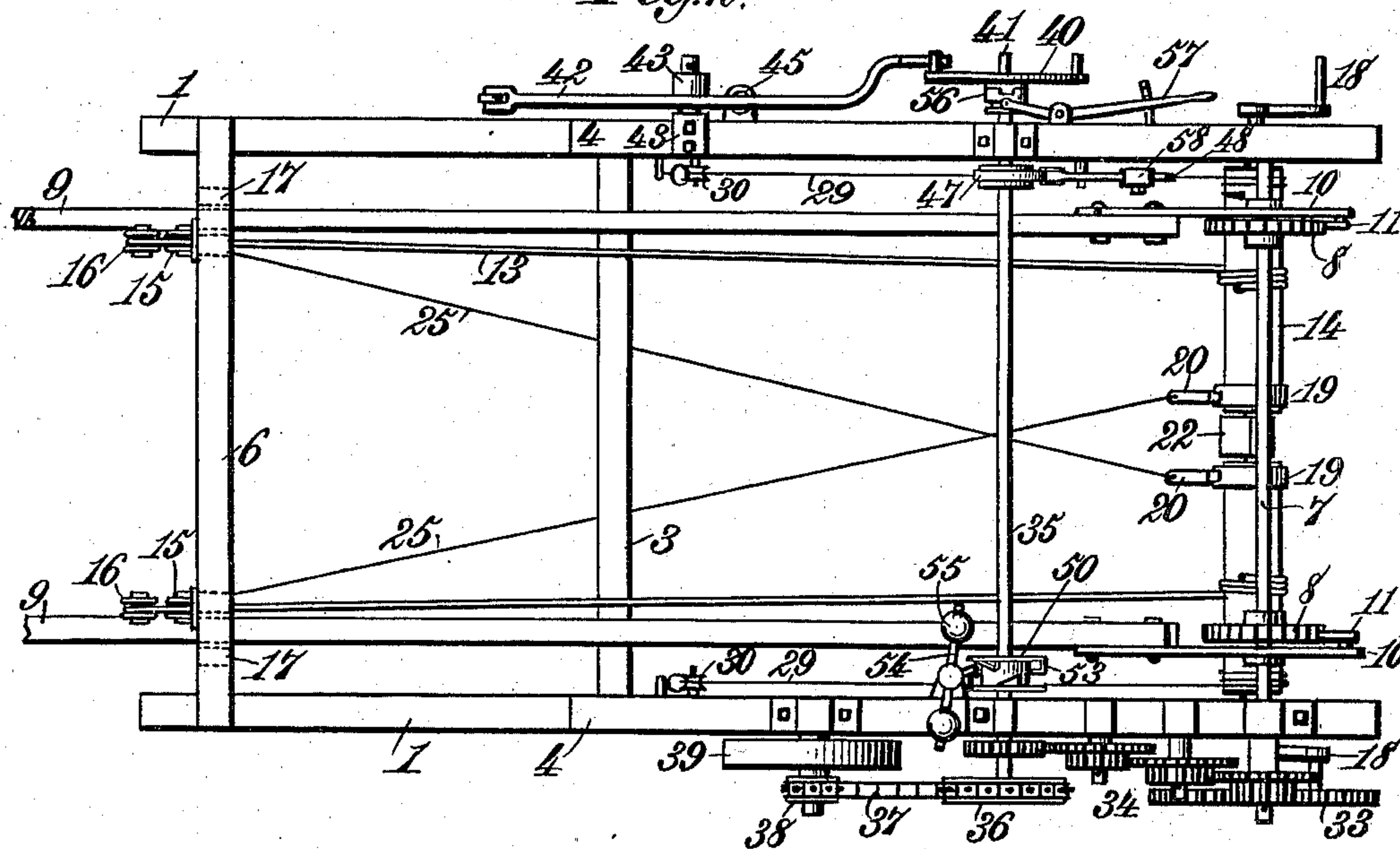


Fig. 5.

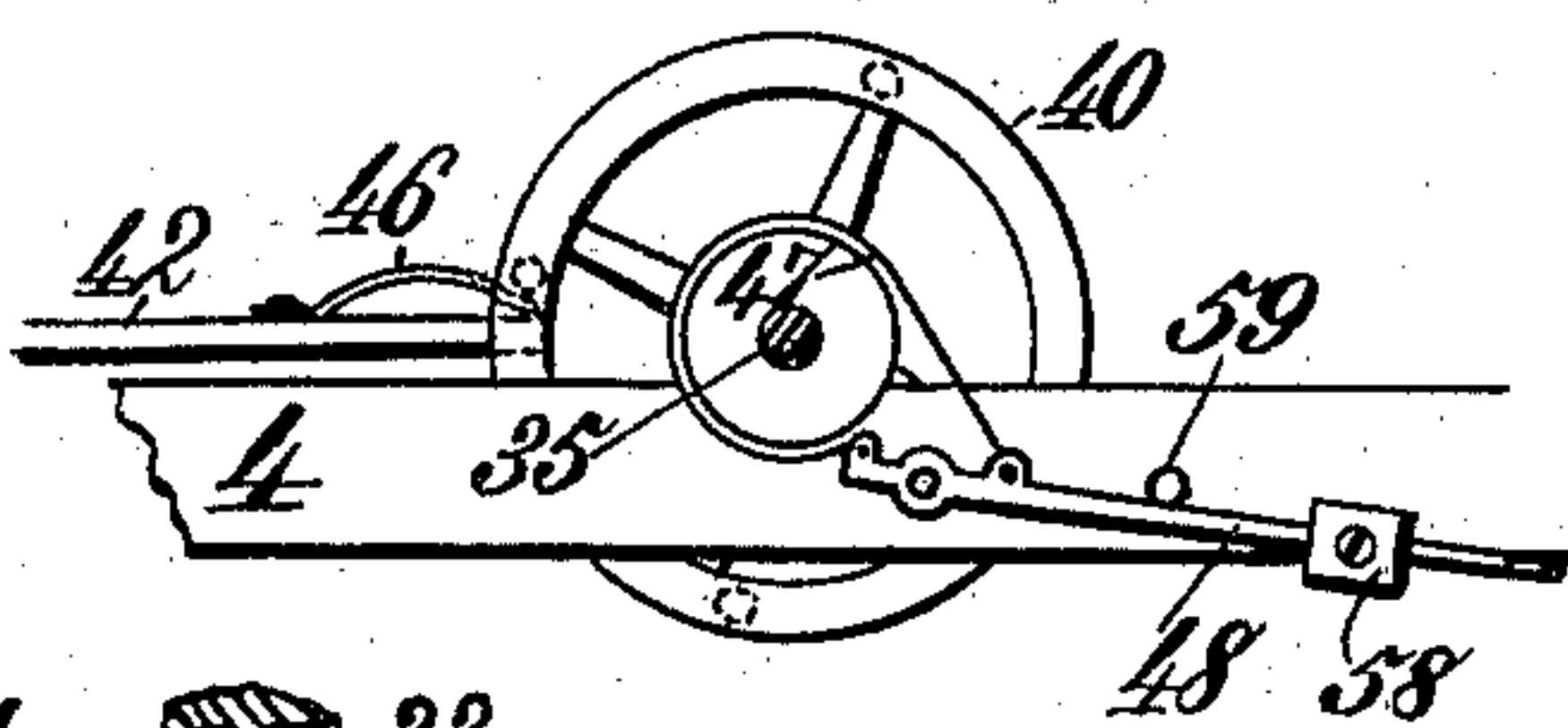


Fig. 4.

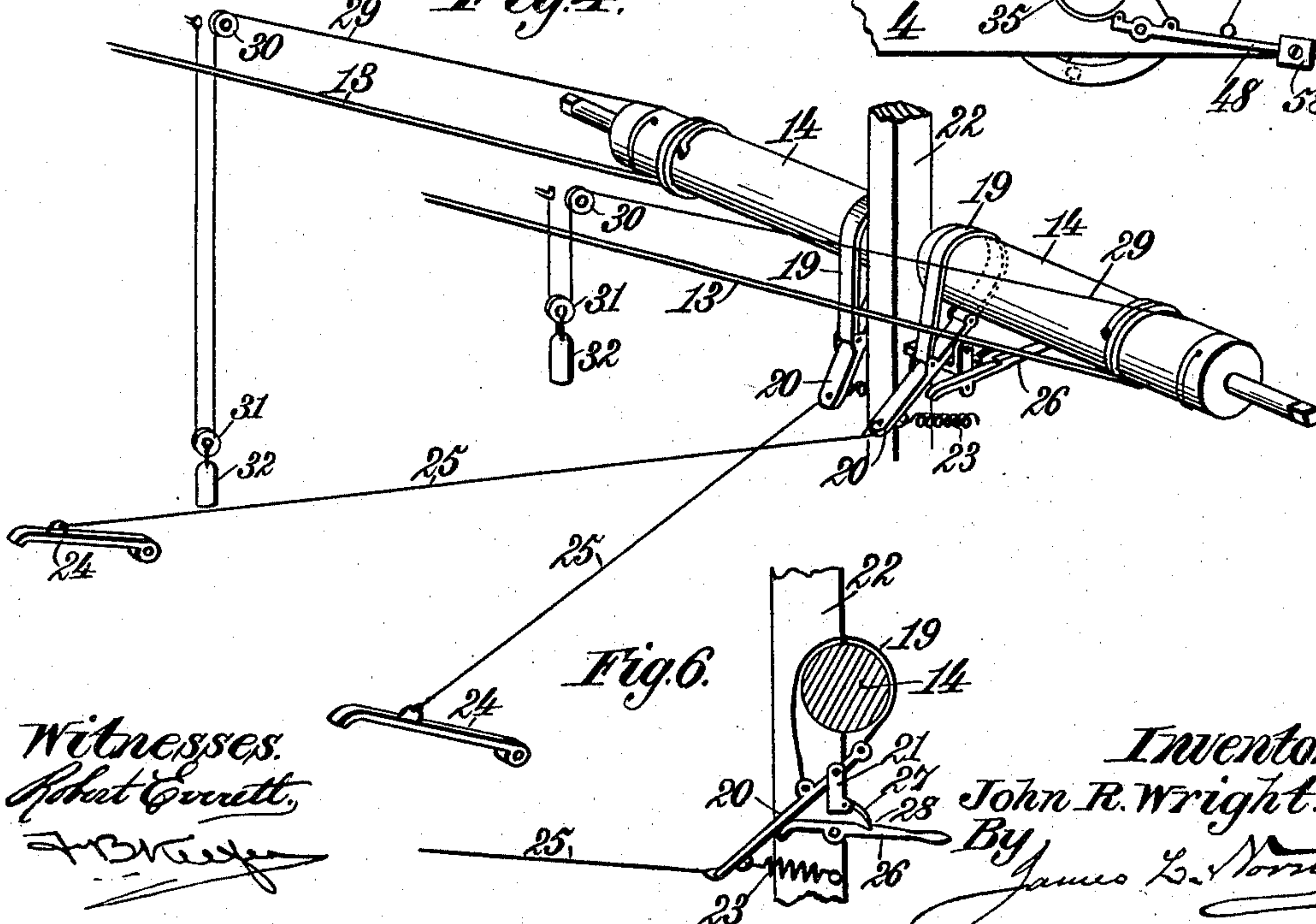
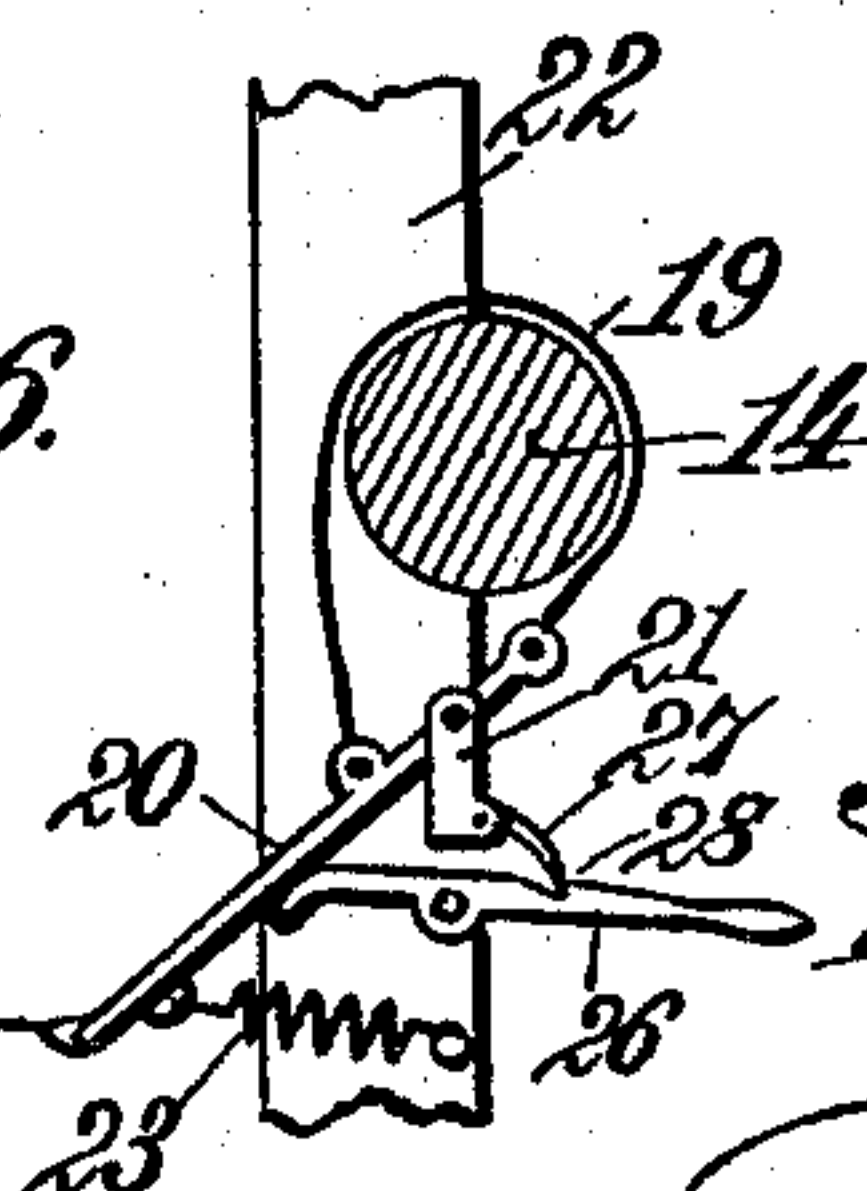


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN R. WRIGHT, OF WHEELING, MISSOURI.

GRAVITY AND LEVER MOTOR.

SPECIFICATION forming part of Letters Patent No. 590,198, dated September 14, 1897.

Application filed March 30, 1897. Serial No. 629,969. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. WRIGHT, a citizen of the United States, residing at Wheeling, in the county of Livingston and State of Missouri, have invented new and useful Improvements in Gravity and Lever Motors, of which the following is a specification.

This invention relates to a gravity and lever motor, and has for its object to provide convenient, simple, efficient, and easily-controlled motive power for the working of pumps and the driving of light machinery, whether reciprocating or rotary.

The invention consists in features of construction and novel combinations of devices in a motor, as hereinafter described and claimed.

In the annexed drawings, Figure 1 is a side elevation of my gravity and lever motor. Fig. 2 is a plan of the same. Figs. 3, 4, 5, and 6 are detail views.

As shown in the drawings, the reference-numeral 1 designates the sills of a frame, which comprise also the uprights 2, connected by cross-bars 3 and having top pieces 4, located at one end of the frame, and standards 5, connected by a top cross-bar 6 at the other end of the frame.

The uprights 2 at one end of the frame are provided with suitable journal-bearings for a transversely-arranged power-shaft 7, having ratchet-wheels 8, secured thereon at suitable points between the opposite sides of the frame. The shaft 7 affords pivotal support for weighted levers 9, each of which is provided at one end with a strap or arm 10, by which the weighted lever is loosely fulcrumed on said shaft. These lever-arms 10 are provided with pawls 11 to engage the ratchet-wheels 8, and thereby rotate the power-shaft 7 as the weighted levers 9 descend. Each lever 9 is provided at its outer end with a weight-box 12 of sufficient capacity to receive any weights that may be required for actuating the power-shaft. The weighted levers 9 are elevated independently by means of ropes, chains, or cables 13, connecting the outer portions of said levers with two independently-actuated winding-drums 14, located in one end of the machine. Each rope 13 is attached at one end to its winding-drum, and its other end is passed over a pulley 15 on the cross-bar 6, then around

a pulley 16 on its respective lever 9, and then upward to the cross-bar 6, where it is secured.

The outer portions of the weighted levers 9 have a vertically-swinging movement in proximity to the standards 5, and guides 17 are provided to prevent lateral swaying of the levers. On the shaft of each winding-drum 14 there is a crank-handle 18 for rotating the drum to wind the rope 13 thereon and thereby raise the connected weighted lever 9 to an elevated position.

Each winding-drum 14 is provided with a friction brake-band 19, attached to a lever 20, fulcrumed on a bracket 21, supported by a portion 22 of the machine-frame. A spring 23 is arranged to draw on the lever 20 in such manner as to hold the brake in frictional engagement with the winding-drum until the brake is tripped to release the drum and allow the elevated weighted lever 9 to descend. When either weighted lever 9 has descended to near the sill of the machine, it will come in contact with and automatically depress one end of a tripping-lever 24, the other end of which is pivotally attached to the machine-frame. Each tripping-lever 24 is connected by a rod or cord 25 to the lever 20 of the brake-band 19 on the drum 14, that controls the weighted lever 9, located on the opposite side of the machine from either tripping-lever, the rods or cords 25 being crossed, as shown.

To start the motor, either weighted lever 9 will be first hoisted by rotating the proper drum 14 in such direction as to wind thereon the rope 13 connected with said lever. Meanwhile the brake 19 of that drum should be held off by pressing down a lever-arm 26, connected with the brake-lever 20, a pawl 27 being provided to engage a notch 28 in said lever-arm 26 and thereby hold the brake off from the drum until the weighted lever 9 has been hoisted. The brake may be left off to allow the weighted lever to descend and thereby actuate the power-shaft 7 through the pawl-and-ratchet connections. Before this weighted lever completes its downward movement the other weighted lever should be hoisted by means of the crank-handle on its drum, and when the first lever has descended to near the limit of its movement it will come in contact with a tripping-lever 24 and there-

by release the brake on the drum of the second weighted lever, so as to permit it to fall and thus continue the rotation of the power-shaft.

5 To an upper part of the frame, on each side of the machine, there is secured one end of a rope 29, that is carried over a pulley 30, and thence to one of the drums 14, to which it is attached. Between the pulley 30 and the
10 point where the rope 29 is secured to the upper part of the frame there is in each rope a bight that carries a pulley-block 31, from which a weight 32 is suspended. It will be observed that the weighted ropes 29 are so
15 arranged with relation to the drums 14 that as the drums are rotated under the unwinding of the ropes 13, caused by descent of the released weighted levers 9, the ropes 29 will be wound onto the drums and the weights 32,
20 suspended in these ropes 29, will exert a retarding action on the said drums 14 to take up the slack of the ropes 13 or keep them extended and prevent a too rapid fall of the weighted levers. These weighted levers 9 act
25 alternately, one being hoisted by hand while the other completes its descent, so that together they will exert a continuous action for rotating the power-shaft. As the rotation of the drums 14 to wind up the ropes 13 will not
30 require the constant care of an attendant he will have sufficient time for other work in the intervals.

On one end of the power-shaft 7 is a gear-wheel 33, that drives a train of gearing 34, through which rotation is imparted to a counter-shaft 35, journaled in or upon the machine-frame.

If desired, there may be placed on one end of the counter-shaft 35 a sprocket-wheel 36 to connect by a chain 37 with a smaller sprocket-wheel 38 on the shaft of a fly-wheel or band-wheel 39, from which power may be taken by suitable belting for the purpose of driving any light rotary machines, such as
45 corn-shellors, feed-cutters, rotary churns, grindstones, and the like.

The counter-shaft 35 carries a pin-wheel 40, having pins 41 projecting laterally from its rim, at suitable intervals to come in contact
50 with and depress one end of a pump-lever 42, that is fulcrumed at 43 on an upper part of the motor-frame. A connecting rod or pitman 44 is attached to one end of the lever 42 for the purpose of operating a pump or
55 any vertically-reciprocating machinery. Between the pin-wheel 40 and the lever-fulcrum 43 there is a spring 45, arranged to return the pump-lever 42 after it has been depressed by the action of a pin 41 on said
60 wheel. The end of the pump-lever 42 is provided with a bow-spring 46 to receive the impact of the pins 41 without jar or jolt on the lever.

On the shaft 35 there is a friction band-brake 47, provided with a weighted lever 48, and by fastening this lever 48 down by any means the action of the motor may be ar-

rested before the weighted lever 9 has completed its descent, and thus the motor may be made temporarily inoperative, if desired. 70

For the purpose of regulating the speed of the motor there is provided a governor 49, that is actuated from a cam-wheel 50 on the shaft 35. As shown, the governor comprises an upright shaft 51, having thereon a lug 52, 75 engaged at intervals by wedge-shaped cams 53 on the cam-wheel 50, by which a to-and-fro motion is imparted to the governor 49, which is provided at the top with a horizontal shaft 54, having sliding weights 55 thereon. 80

The attaching-arms 10 of the weighted levers 9 may each carry a number of pawls 11, of varying length, so as to engage the ratchet-wheels 8 at several points for a more certain and steady application of power. In the 85 gear-train 34 for multiplying the speed the gear-wheels may be of any suitable number or dimensions to accord with the speed and power for which the motor may be designed.

It will be obvious that the motor may be 90 applied to a variety of purposes in the driving of light machinery. It may be started and stopped at will, and is especially useful on a farm, requiring but little in the way of attention and repairs to keep it in working 95 order.

Should it be desired to hold either weighted lever 9 in an elevated position to operate alternately with the other weighted lever 9, the brake-lever arm 26 will be released from 100 engagement with its pawl 27 to allow the spring 23 to tighten the brake-band 19 onto the drum 14 until the brake is tripped at the tripping-lever 24 by the fall of the other weighted lever 9; but if a simultaneous op- 105 eration of both weighted levers 9 is desired in order to apply more power to the shaft 7, then both brakes 19 would be made loose on their drums and the weighted levers 9 would be repeatedly elevated together by operation 110 of their winding-drums as often as they completed their downward movement. Although I have shown only two weighted levers 9 for driving the shaft 7, it will be obvious that any number of such levers can be employed, 115 with means for controlling their operation either simultaneously or in succession.

The pin-carrying wheel 40 may be fixed to the shaft 35, if desired; but I prefer to mount it loosely and provide a suitable clutch 56, 120 controlled by a clutch-lever 57, for throwing said wheel into and out of gear, according to requirements for the operation of a pump or other machine.

With reference to the brake 47 for the shaft 125 35, it will be understood that the weight 58 on the brake-lever 48 is intended to be adjustable back and forth to help govern the speed of the machine when the lever is not fastened down, as by a pin 59, that is used only to make 130 the motor temporarily inoperative. It will be understood that the number and dimensions of parts in the sprocket-gearing for driving the fly-wheel or band-wheel 39 from the

counter-shaft 35 may be varied according to the speed to be imparted to said wheel.

What I claim as my invention is—

1. In a gravity and lever motor, the combination of a frame supporting a power-shaft provided with ratchet-wheels weighted levers fulcrumed loosely on said shaft and carrying pawls to engage said ratchet-wheels for rotating the said shaft, independently-actuated winding-drums provided with ropes that connect with said levers to hoist the same, friction-brakes for the said drums, tripping mechanism arranged in the path of the said weighted levers whereby the descent of either weighted lever will trip and release the brake on the drum that connects with the other weighted lever, a counter-shaft geared with the said power-shaft on which the said weighted levers are fulcrumed, and means for taking power from said counter-shaft, substantially as described.

2. In a gravity and lever motor, the combination of a frame supporting a power-shaft and a counter-shaft, multiplying gears connecting said shafts, ratchet-wheels secured to the power-shaft, weighted levers fulcrumed loosely on the power-shaft and provided with pawls engaged with said ratchet-wheels to drive the power-shaft, hoisting-drums adapted to be operated independently and provided with ropes that are connected with said weighted levers to elevate the same, friction-brakes for said drums, tripping mechanism connected with said brakes and actuated al-

ternately by each weighted lever to trip and release the brake on the drum of the other weighted lever, weighted ropes connected with said drums and arranged to be wound thereon by the unwinding of the ropes that connect with the weighted levers, a band wheel or pulley driven from the counter-shaft, a pin-wheel carried on the counter-shaft, and a lever actuated from said pin-wheel and adapted to connect with a pump or other reciprocating machine, substantially as described.

3. In a gravity and lever motor, the combination of the frame, the power-shaft provided with ratchet-wheels, the weighted levers fulcrumed on said shaft and carrying pawls to engage said ratchet-wheels, hoisting-drums having ropes to elevate said weighted levers, brakes for said drums, tripping mechanism arranged in the path of the weighted levers and actuated therefrom to release said brakes, the counter-shaft geared with the power-shaft and driven therefrom, a brake on said counter-shaft, a band wheel or pulley driven from the counter-shaft, a pin-wheel carried on the counter-shaft, a pump-lever actuated from said pin-wheel, and a governor, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN R. WRIGHT.

Witnesses:

HARRY BIRD,
H. P. SEMBY.