

No. 670,304.

Patented Mar. 19, 1901.

P. BABE.
WEIGHT MOTOR.

(Application filed Apr. 24, 1900.)

(No Model.)

2 Sheets—Sheet 1.

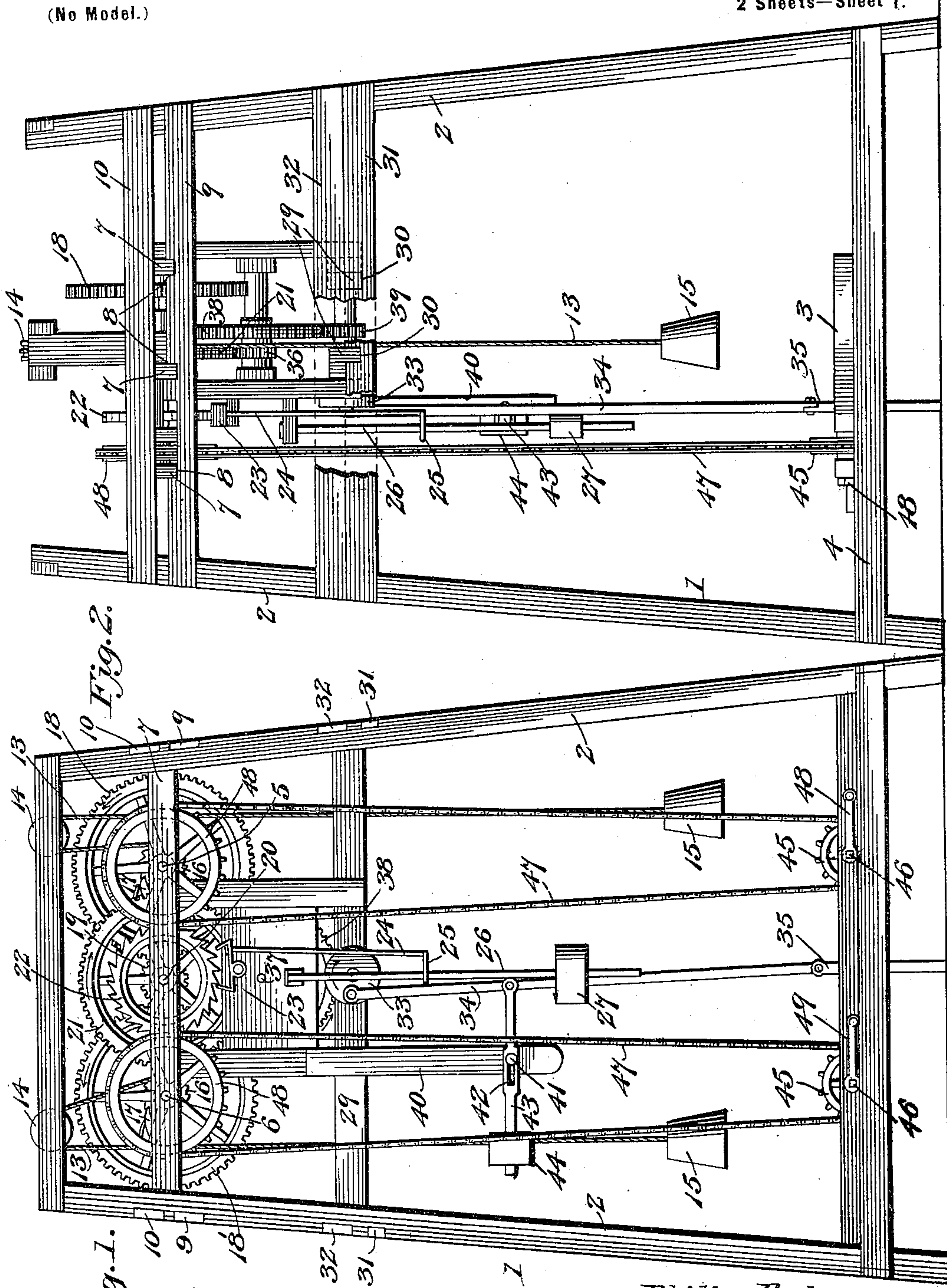


Fig. 1.
Witnesses
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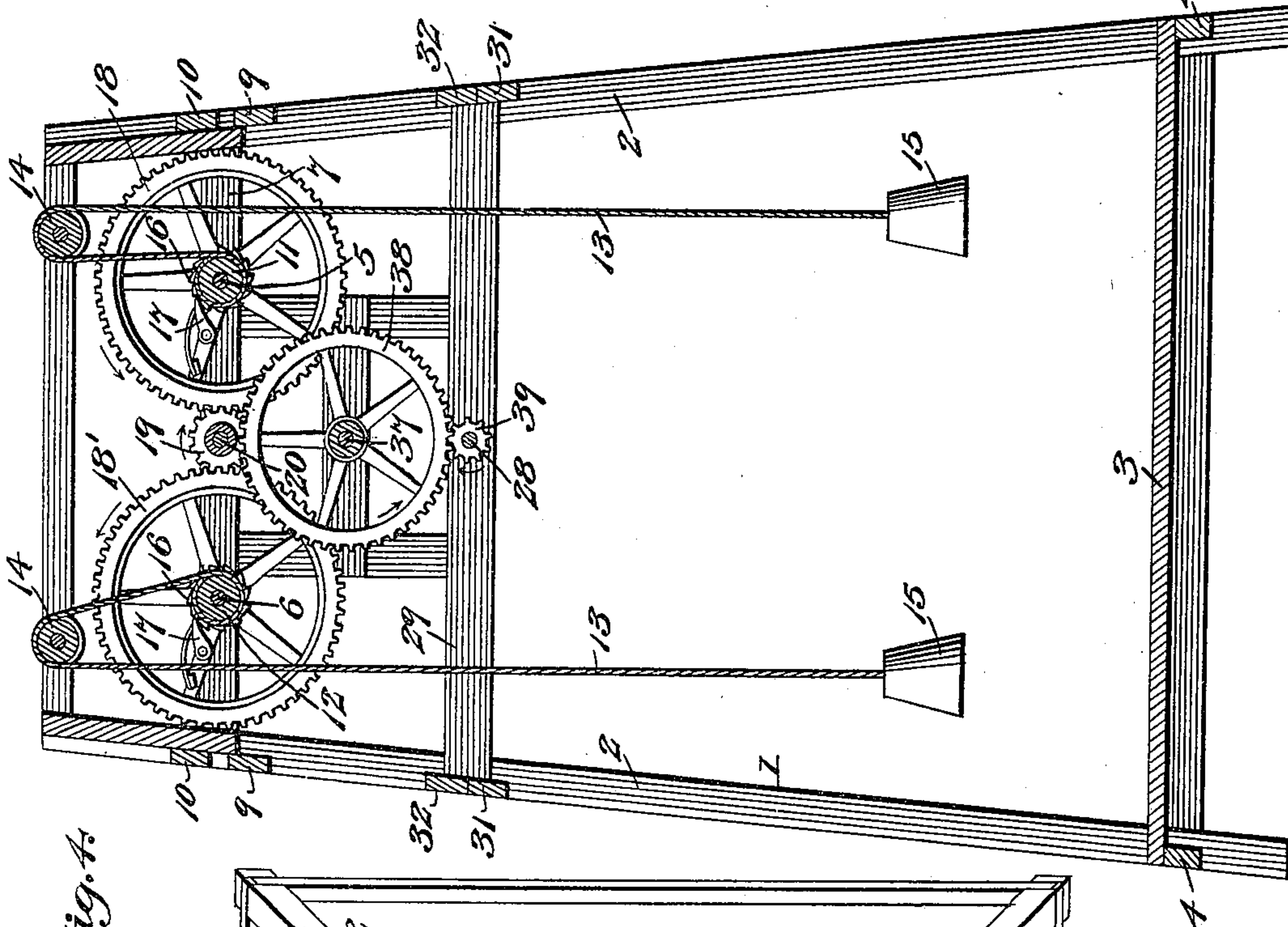


Fig. 4.

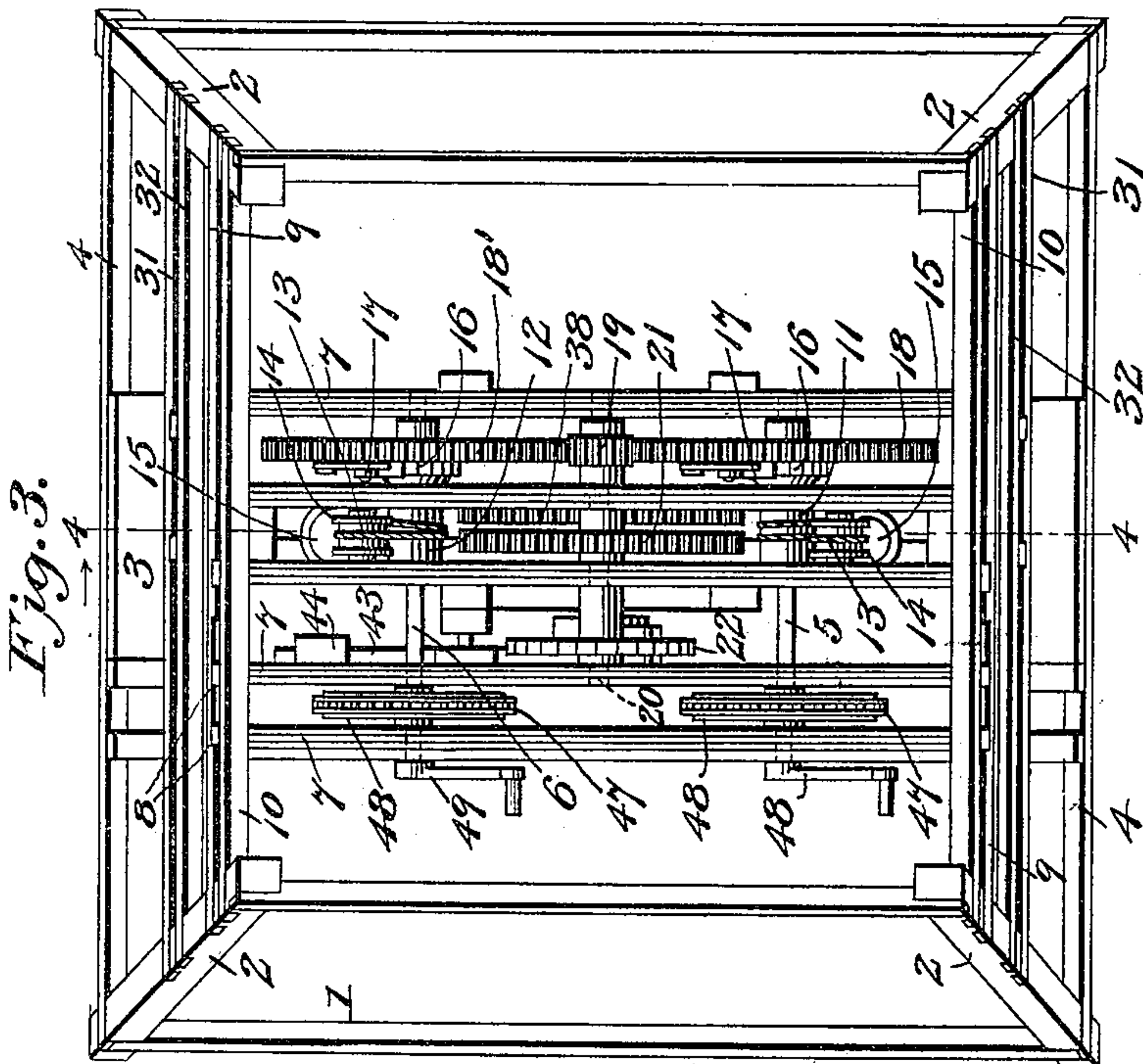


Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

PHILIP BABE, OF BRIGHTON, WISCONSIN.

WEIGHT-MOTOR.

SPECIFICATION forming part of Letters Patent No. 670,304, dated March 19, 1901.

Application filed April 24, 1900. Serial No. 14,167. (No model.)

To all whom it may concern:

Be it known that I, PHILIP BABE, a citizen of the United States, residing at Brighton, in the county of Kenosha and State of Wisconsin, have invented a new and useful Weight-Motor, of which the following is a specification.

My invention relates to improvements in weight-motors of that class which are particularly designed for the operation of pumping machinery, but which may obviously be adapted to operate other forms of converting mechanism.

One object of the invention is to so construct and arrange the parts of the motor that the gearing may be given a sufficient elevation to provide for considerable movement of the weights and also to provide winding or resetting mechanism located at a considerable distance below the gearing in order to be readily accessible from the ground.

A further object is to provide for the counterweighting of the reciprocatory parts in order that both the up and down strokes may be effected with equal facility and to provide mechanism for regulating the operation of the motor in a manner to insure the smooth and uniform reciprocation of the power-transmitting element—as, for instance, the pump-rod.

To the accomplishment of these several objects and others subordinate thereto, my invention consists in the construction and arrangement hereinafter fully described, illustrated in the accompanying drawings, and embraced within the scope of the appended claims.

In said drawings, Figure 1 is a front elevation of my motor complete. Fig. 2 is a side elevation thereof with a portion of the frame removed. Fig. 3 is a plan view thereof. Fig. 4 is a vertical sectional view on the line 4 4 of Fig. 3 with the lower portion of the frame omitted.

Referring to the numerals of reference employed to designate corresponding parts in the several views, 1 indicates the motor-frame or tower, which preferably comprises four suitably-braced standards 2, provided with a platform 3, supported just above their lower ends upon horizontal beams 4 and provided within the space defined by their upper ends with suitable supporting devices for the operative parts of the motor.

5 and 6 indicate a pair of parallel horizontal drum-supporting or power shafts journaled in suitable bearings in a series of parallel horizontal shaft-supporting beams 7, supported at their opposite ends within notches 8 in a pair of side frame-beams 9, extending between the standards at the opposite sides of the tower adjacent to its top. The ends of the beams 7 are retained in the notches 8 by head-beams 10, located above the beams 9 and designed to prevent the accidental detachment of the shaft-supporting beams. Upon these power-shafts 5 and 6 are keyed or otherwise secured a pair of drums 11 and 12, around which are wound the operating-cables 13, guided by idlers 14, supported above the drums and connected at their lower ends to the operating-weights 15, the gravitation of which effects the rotation of the drums. Each cable-drum is provided at one end with a fixed ratchet-disk 16, designed to be engaged by pawls 17, carried by gear-wheels 18 and 18', loosely mounted upon the power-shafts 5 and 6. The gear-wheels 18 and 18' mesh at their opposed peripheries with an intermediate pinion 19, keyed upon what may be termed a "regulating-shaft" 20, to which latter is also keyed a comparatively large gear-wheel 21 and an escapement-wheel 22 in operative relation to a pivoted escapement 23, from which depends the escapement-arm 24, provided with a terminal loop 25, encircling an oscillatory governor or pendulum 26, the stroke of which is designed to be regulated by the adjustable pendulum-block 27. It will now be seen that as the operating-cables are wound upon the drums in the same direction the descent of the weights will effect the rotation of the drums and will cause the ratchet-disks 16 to engage the pawls 17, thereby imparting motion to the gear-wheels 18 and 18', which in turn rotate the regulating-shaft 20 by means of the pinion 19 keyed thereon. As the shaft 20 is rotated the escapement 23 will be operated to insure uniformity of movement by reason of its connection with the pendulum.

28 indicates a driving-shaft journaled in shaft-supporting beams 29, supported, like the beams 7, in notches 30 of side beams 31, located a suitable distance below the beams 9, and immediately above which are positioned the locking-beams 32, serving to prevent the withdrawal of the beams 29. The "driving-shaft" is so called because at one end of said

shaft is keyed a crank-wheel 33 or its equivalent, to which is connected a pitman 34, pivotally connected at its lower end to the operating-rod of the machinery designed to be propelled by the motor, this machinery being in the present instance a pump and the operating-rod connected to the pitman 34 being a pump-rod 35.

Intermediate of the regulating-shaft 20 and the driving-shaft 28 is located a train of speed-gearing, preferably comprising a pinion 36, meshing with the gear-wheel 21 and mounted on an intermediate shaft 37, upon which is also keyed a comparatively large gear-wheel 38, meshing with a pinion 39, keyed upon the driving-shaft 28. It will now be seen that the rotation of the drums will effect the rotation of the regulating-shaft 20, which through the intermediate train of gearing will propel the driving-shaft to cause the reciprocation of the pump-rod and the operation of the pump; but, in addition to the motor construction described, my invention comprehends means for counterbalancing the pitman 34 and its connections and for facilitating the rewinding of the operating-cables upon the drums from the ground. The first of these mechanisms contemplates the employment of a pendent bracket 40, rigidly connected to a fixed part of the frame and extending in a direction substantially parallel to the pitman 34. Adjacent to the lower end of the pendent bracket 40 extends laterally a pin or fulcrum-stud 41, passing through a longitudinal slot 42 in a counterbalancing-lever 43, pivotally connected at one end to the pitman or pump-rod, as the case may be, and provided at its opposite extremity with an adjustable counter poise or weight 44. As the pump-rod reciprocates, the pitman, the pump-rod, and other operative parts connected thereto are counterbalanced by the weight 44, which serves to relieve the upstroke of the opposition which the weight of these parts would otherwise produce, it being understood that the slot 42 is provided for the purpose of locating the fulcrum of the lever at different distances from the ends thereof and of compensating for the lateral movement of the pitman or pump-rod.

The remaining feature of my device comprehends a pair of sprocket-wheels 45, carried by shafts 46, journaled in the platform 3 and geared to sprocket-chains 47, with somewhat larger sprocket-wheels 48 keyed upon the drum or power shafts 5 and 6 at the ends opposite the gear-wheels 18 and 18'. The outer ends of the shafts 46 are squared for the application of winding-cranks 48 49, by means of which said shafts may be rotated to effect the rotation of the shafts 5 and 6 through the intermediate gearing in order to rewind the operating-cables upon the drums and to elevate the weights when the motor is run down.

From the foregoing it will appear that I have invented a simple, ingenious, and highly-effective weight-motor designed for the oper-

ation of pumping or other machinery which is capable of being rewound without necessity for ascending the tower and in which the counterbalancing of the operating-rod and its connected parts is effected by novel and efficient mechanism; but while the present embodiment of my invention appears at this time to be preferable I do not limit myself to the details defined, but reserve the right to effect such changes, modifications, and variations as may come properly within the scope of the protection prayed.

What I claim is—

1. In a motor, the combination with a frame and weight-drums mounted therein, of cables wound upon the drums, weights supported by said cables, a crank-wheel geared to the drums and designed to be driven by the motor, a reciprocatory element, as for instance, a pump-rod, a pitman connected to said element and to the crank-wheel, an endwise-shiftable counterbalancing-lever provided with a weight upon one end and connected at its opposite extremity to the pitman, and means located at the bottom of the frame for rewinding the cables upon the drums.
2. In a motor, the combination with an operating element, and a counterbalancing-lever, of means whereby the fulcrum of the lever will be shifted during the movement of the operating element in opposite directions.
3. In a motor, the combination with a laterally and longitudinally movable element, and means for actuating the same, of a longitudinally-movable counterbalancing-lever connected to the operating element and designed to have its fulcrum shifted by the lateral movement of said operating element.
4. In a motor, the combination with an operating element, as for instance, a pump-rod, of a crank operatively connected to said element, means for operating the crank, a fixed bracket, a pin extending from said bracket, a counterbalancing-lever provided with a longitudinal slot for the reception of said pin and pivotally connected at one end to the operating element, and an adjustable counterpoise upon the opposite end of the lever.
5. In a motor, the combination with an operating element, as for instance, a pump-rod and power mechanism for driving said rod, of a counterbalancing-lever slidably mounted upon a projection constituting a fulcrum, and means for shifting the pump-rod laterally in opposite directions during its opposite reciprocations for the purpose of locating the fulcrum of the lever at different distances from the ends thereof during the operation of the mechanism.

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

PHILIP BABE.

Witnesses:

EDA MEINHARDT,
A. MEINHARDT.