No. 844,658. PATENTED FEB. 19, 1907.

M. BROWN.

WEIGHT MOTOR.

APPLICATION FILED AUG. 3, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

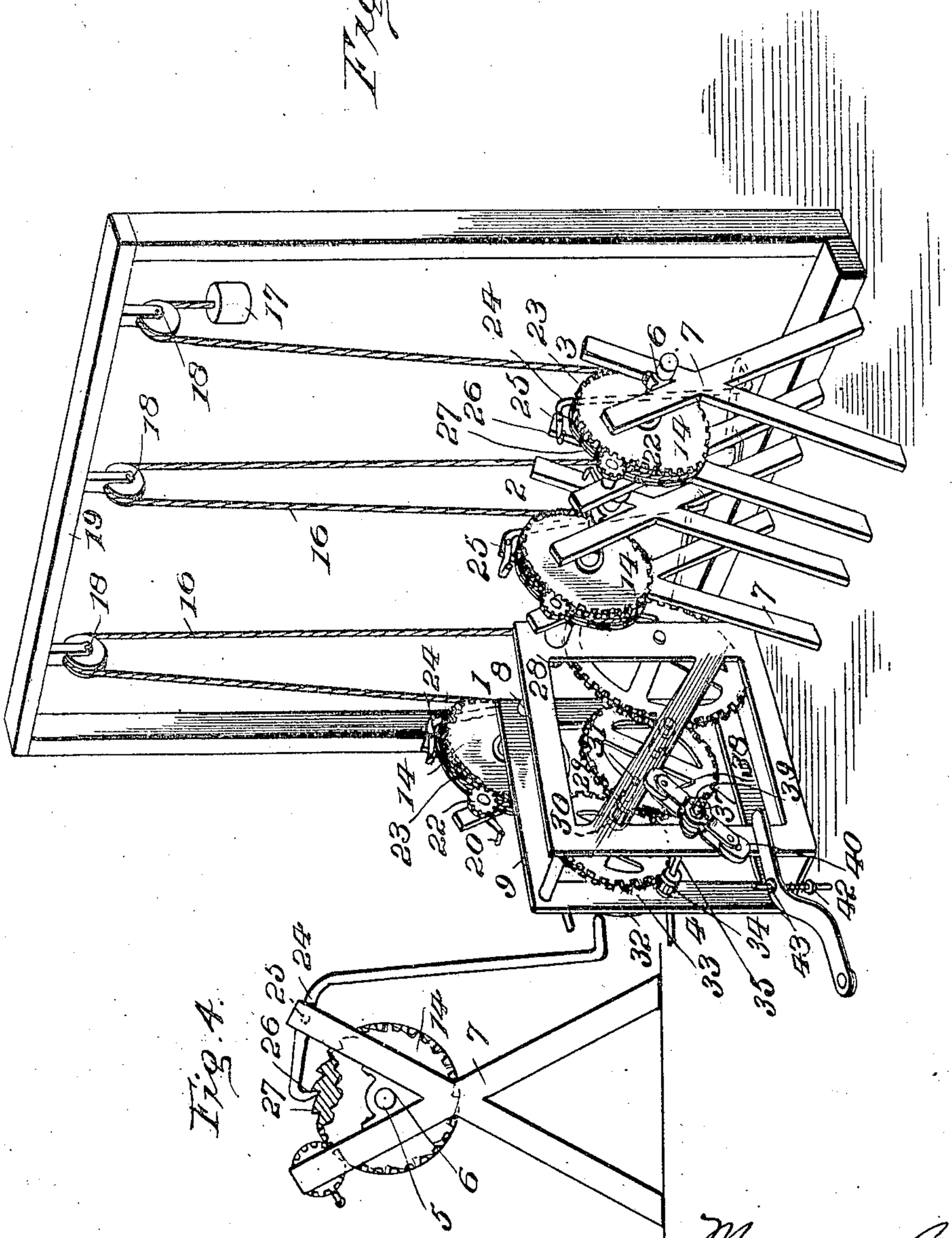

Fig. 4.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

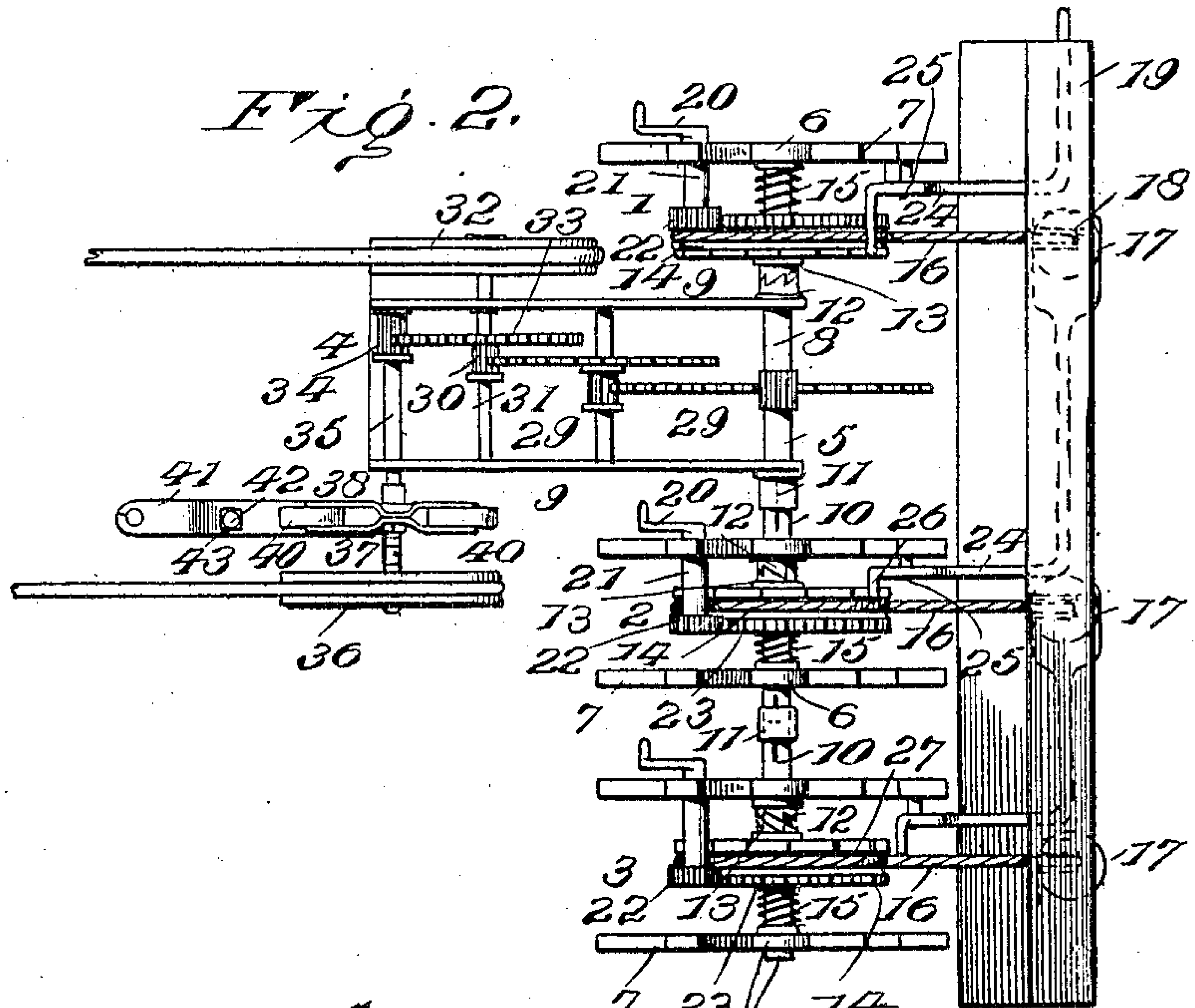


Fig. 5

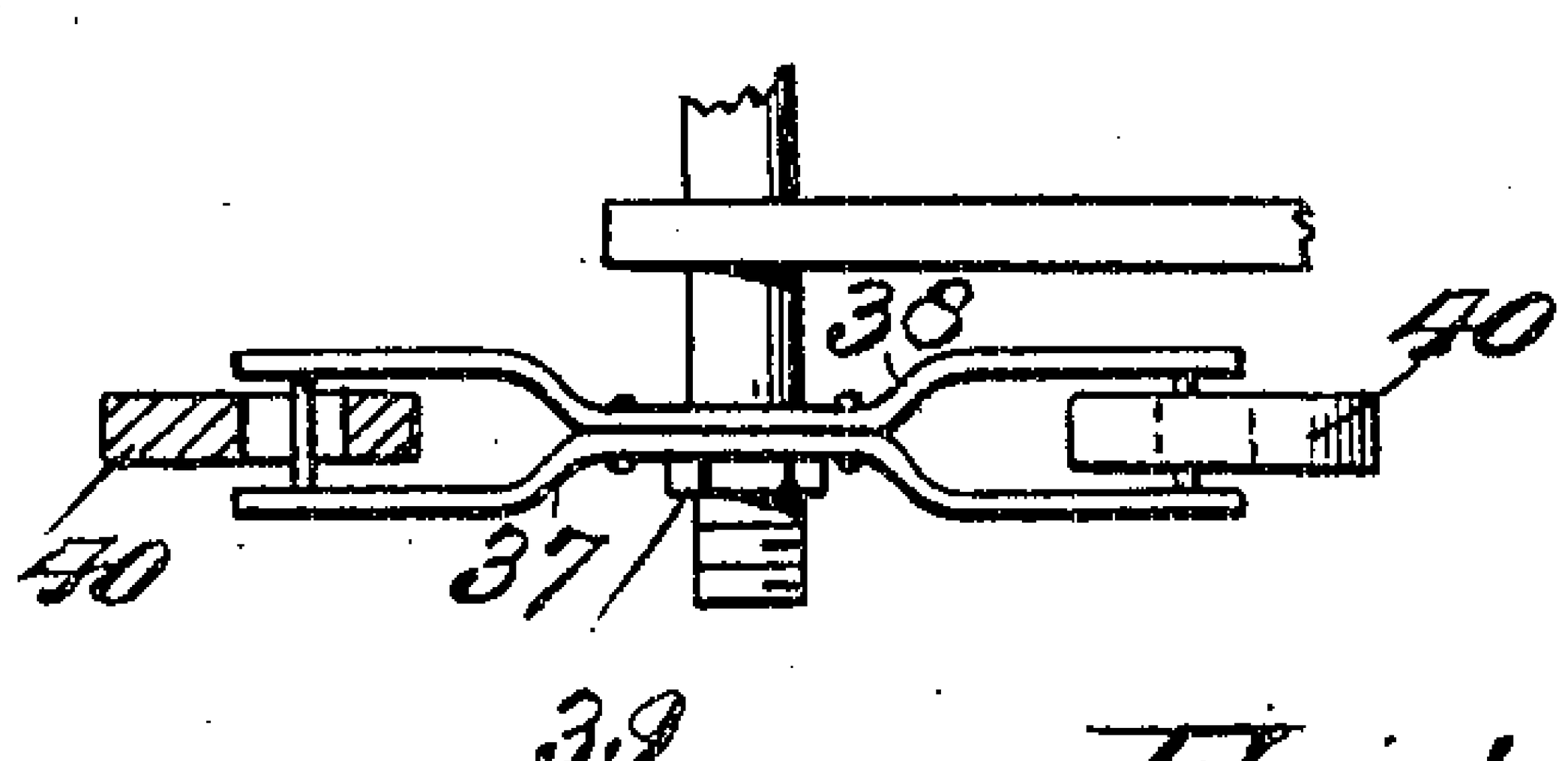
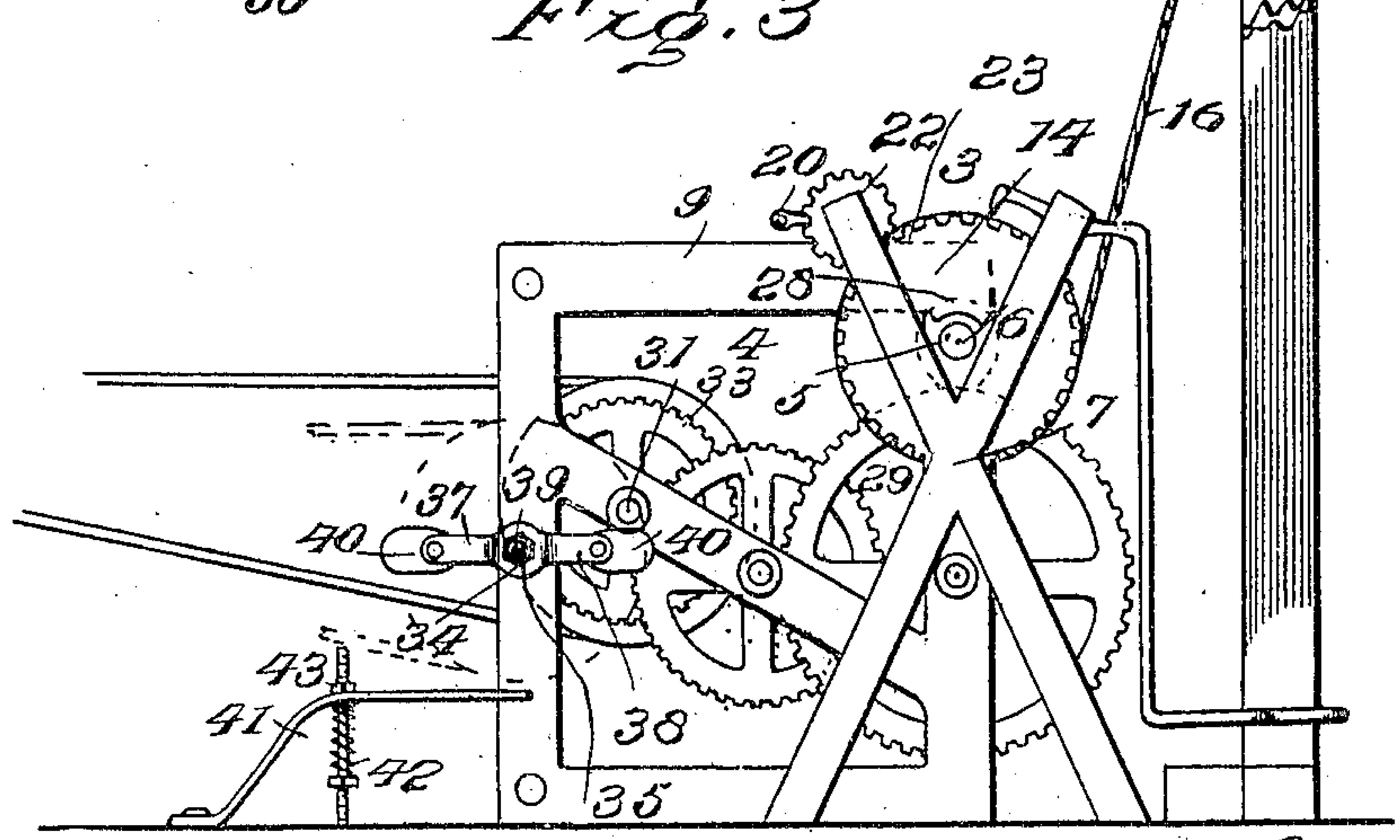


Fig. 3



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UNITED STATES PATENT OFFICE.

MANNON BROWN, OF ELK CITY, OKLAHOMA TERRITORY.

WEIGHT-MOTOR.

No. 844,658. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed August 3, 1906. Serial No. 329,118.

To all whom it may concern:

Be it known that I, MANNON BROWN, a citizen of the United States, residing at Elk City, in the county of Roger Mills and Territory of Oklahoma, have invented certain new and useful Improvements in Weight-Motors, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in weight-motors, and more particularly one consisting of a plurality of motor sections or units each of which is operated by the descent of a weight and imparts its power to a common driving mechanism which may be used for running machines of any description.

The object of the invention is to provide a motor of this description, which will be simple and comparatively inexpensive in construction, durable in use, and efficient in operation.

Further objects and advantages of my invention, as well as the structural features by means of which they are attained, will be made clear by an examination of the specification, taken in connection with the accompanying drawings, in which the same reference-numerals designate corresponding portions throughout, and in which—

Figure 1 is a perspective view of my improved weight-motor. Fig. 2 is a top plan view of the same. Fig. 3 is an end elevation, parts being broken away. Fig. 4 is a detail view showing the operation of one of the trip devices, and Fig. 5 is a detail view of the governor.

The embodiment of my invention shown in the drawings consists of three similar motor sections or units 1 2 3; but a greater or less number may be employed. They are arranged in a row and so connected together and to a driving mechanism 4 that they will successively operate the latter. Each of these motor-sections comprises a shaft 5, journaled to rotate in bearings 6, secured between the upper ends of X-shaped uprights or supports 7, which are arranged in pairs, as shown. The shaft 5 of the first section 1 is extended, as at 8, and also journaled in bearings in the frame 9 of the mechanism 4, said frame comprising two side plates connected together and spaced apart by cross-rods, as seen in Fig. 1. The shafts 5 are in longitudinal alinement, and their adjacent ends are squared, as at 10, to fit in similar-shaped sockets in coupling-sleeves 11, which thus unite said shafts 5 and cause them to turn together. Fixed upon each of the shafts 5 is one member 12 of a clutch, the other member 13 of which is carried by a winding-drum 14. Each of the drums 14 is mounted to rotate freely upon its shaft and also to have a slight longitudinal sliding movement, so that the clutch member 13 may be moved into and out of engagement with its member 12. The clutch members are held normally engaged with each other by coil-springs 15, arranged on the shafts 5 and confined between the upright supports 7 and the drums 14, which latter they force longitudinally on the shafts, as clearly shown in Fig. 2. Attached to and wound upon each of the drums 14 is a cable or other flexible element 16, having a weight 17 attached to its free end. These cables are passed over pulleys 18, mounted in the top of an upright frame 19 or other suitable support. It will thus be seen that the descent of the weights 17 unwind the cables from the drums, and thereby rotate the shafts 5.

The cables may be conveniently wound upon the drums by rotating crank-handles 20, provided upon the outer ends of short shafts 21, which are journaled in the upper forward portions of the X-shaped uprights 7 and have fixed upon their inner ends pinions 22, which mesh with gears 23, provided upon the drums 14 at one side. The drums may be held against rotation, so as to hold the cables wound thereon, and the weights elevated by trip devices 24 in the form of levers pivoted at 25 upon the rear portions of the uprights 7 and having at one end dogs or pawls 26, which engage the teeth of ratchets 27, provided upon the drums 14 on their sides opposite the gears 23. The opposite or rear ends of the trip-levers 24 extend downwardly and then longitudinally to provide portions 27, each of which is disposed in the path of the descending weight 17 of the motor-section immediately preceding it—that is to say, the end 27 of the trip 24 on the section 3 is adapted to be engaged and actuated by the weight 17 of the section 2, and the trip of the latter section is adapted to be engaged and actuated by the weight of the section 1. The trip of the section 1 is of course actuated or released manually when it is desired to start the machine.

On the portion 8 of the shaft of the first section 1 is fixed a pinion 28, which is con-

nected by a train of gears 29 to a pinion 30, fixed on a high-speed power-shaft 31. The shaft 31 and the shafts of the train of gears 29 are suitably journaled in the frame 9 of the mechanism 4. On the outer end of the shaft 31 is provided a band wheel or pulley 32 to receive a driving belt or cable which leads to the machine to be driven by the motor. On the shaft 31 is also fixed a gear 33, which meshes with a pinion 34 on a low-speed power-shaft 35, journaled in the frame of the mechanism 4. When a speed lower than that obtained from the pulley 32 is desired, a similar band wheel or pulley 36 is provided upon the outer end of the shaft 35, as shown in Fig. 2. In order to control the descent of the weights 17, and hence the speed of the motor, I provide a governor 37 on the outer end of the shaft 35. As seen in Figs. 2 and 5, this governor comprises two plates 38, riveted together near their center and apertured to receive the shaft on which they are secured by a nut 39. The outer ends of these plates are bent outwardly to form forked arms, in which are slidably mounted centrifugal weights 40, as clearly shown in Fig. 5. These weights fly outwardly or radially as the governor is rotated and are adapted to engage a spring-stop 41, which retards them, and hence the rotation of the shaft 35. By slidably mounting the weights 40 the rotation of the plates 38 is more effectively checked without undue strain upon them and their connection with the shaft. As the weights strike the spring-stop they slide inwardly upon the plates to an extent sufficient to pass said stop, and they thus check or retard the rotation of the governor and cushion its contact with the stop. This spring-stop is in the form of a spring-plate secured at one of its ends and having its other free end projecting into the path of rotation of the governor-weights 40. A screw-stud 42 projects upwardly through a slot in the spring plate 41 and is provided with a suitable adjusting-nut 43, by means of which the free end of the plate may be held out of the path of rotation of the weights or moved to a greater or less extent into such path for the purpose of controlling the speed of the motor, as will be readily understood.

In operating the motor, each of the cables is wound upon its drum by turning the crank-handles 20, and the drums are then locked by engaging the trips 24 with the ratchets on said drums, the weights 17 being thus held elevated. In rotating the drums to wind the cables thereon it will be observed the shafts 5 will not be turned, owing to the shape of the teeth of the clutch members 12 13 and to the provision of the springs 15, which permit the members 13 to slip over the members 12. When all of the weights are elevated, or as many of them as may be necessary to run the motor a predetermined time, it may be started by releasing the first trip 24. This permits the first weight to descend and drive the mechanism 4, which transmits power to the desired machinery. When the weight 17 of the first section 1 reaches the limit of its downward movement, it engages and releases the trip 24 of the second section 2, which latter then drives the mechanism 4. When the weight of the section 2 lowers, it sets in motion the third section 3, and so on, according to the number of sections or units in the motor.

Various changes in the form, proportion, and the minor details of consruction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention, as defined by the appended claims.

Having thus described my said invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a weight-motor, spaced upright supports, a shaft mounted for rotation in bearings upon said supports, a drum loosely mounted upon said shaft, a clutch member carried by said drum, a coacting clutch member fixed upon said shaft, a coil-spring upon said shaft for forcing said drum longitudinally and holding said clutch members normally in engagement with each other, a toothed gear arranged upon one side of said drum, a crank-shaft journaled in one of said supports, a toothed pinion upon said crank-shaft and in mesh with said gear, an annular series of ratchet-teeth arranged upon the other side of said drum, a lever pivoted upon one of said supports and formed with a pawl to engage said ratchet-teeth, a cable attached to and wound upon said drum, a guide for said cable, and a weight attached to the free end of said cable, substantiallyas shown and for the purposes set forth.

2. In a weight-motor, upright supports, a shaft rotatably mounted in bearings upon said supports, a plurality of drums mounted upon said shaft, clutch connections between said drums and shaft whereby the movement of the former will be imparted to the latter when said drums are rotated in one direction, cables attached to and wound upon said drums, guides for said cables, weights attached to said cables whereby they will rotate said drums in a direction to cause them to actuate said shaft, means for rotating said drums in the opposite direction to wind said cables thereon, and means for preventing the rotation of said drums.

3. In a weight-motor, upright supports, a shaft rotatably mounted in bearings upon said supports, a plurality of drums mounted upon said shaft, clutch connections between said drums and shaft whereby the movement of the former will be imparted to the latter when said drums are rotated in one direction, cables attached to and wound upon said

drums, guides for said cables, weights attached to said cables whereby they will rotate said drums in a direction to cause them to actuate said shaft, means for rotating said drums in the opposite direction to wind said cables thereon, and trip devices for preventing the rotation of said drums, the trip devices of certain of said drums adapted to be released by the weights of the adjacent drums.

4. In a weight-motor, upright supports, a shaft rotatably mounted in bearings upon said supports, a plurality of drums mounted upon said shaft, clutch connections between said drums and shaft whereby the movement of the former will be imparted to the latter when said drums are rotated in one direction, cables attached to and wound upon said drums, guides for said cables, weights attached to said cables whereby they will rotate said drums in a direction to cause them to actuate said shaft, toothed gears arranged upon the sides of said drums, crank-shafts journaled in said supports, toothed pinions upon said crank-shafts in mesh with said gears, annular series of ratchet-teeth arranged upon the opposite sides of said drums, levers pivoted upon said supports and having their upper ends formed with pawls to engage said ratchet-teeth, the lower ends of said levers being bent and arranged in the paths of the weights connected to adjacent drums whereby their pawls will be disengaged from the ratchets upon the descent of said weights.

5. In a weight-motor, pairs of upright supports, bearings arranged therein, shafts mounted in said bearings and arranged end to end in longitudinal alinement with each other, couplings detachably connecting the adjacent ends of said shafts, drums slidably and rotatably mounted upon said shafts between said pairs of supports, clutch members fixed upon said drums, coacting clutch members fixed upon said shafts, coil-springs upon said shafts for moving said drums longitudinally thereon and holding said coacting clutch members normally engaged, cables attached to said drums, guides for said cables, weights attached to said cables, means for rotating said drums to wind said cables thereon, and means for preventing the rotation of said drums and the unwinding of said cables therefrom.

6. In a weight-motor, pairs of upright supports, bearings arranged therein, shafts mounted in said bearings and arranged end to end in longitudinal alinement with each other, couplings detachably connecting the adjacent ends of said shafts, drums slidably and rotatably mounted upon said shafts between said pairs of supports, clutch members fixed upon said drums, coacting clutch members fixed upon said shafts, coil-springs upon said shafts for moving said drums longitudinally thereon and holding said coacting clutch members normally engaged, cables attached to said drums, guides for said cables, weights attached to said cables, toothed gears arranged upon said drums, crank-shafts journaled upon said supports, pinions upon said crank-shafts in mesh with said gears, annular series of ratchet-teeth carried by said drums, and trip-levers pivoted upon said supports and having their inner ends bent to form pawls to engage said ratchet-teeth, the opposite ends of certain of said levers being bent and arranged in the path of the weights connected to adjacent drums, substantially as shown and described.

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

MANNON BROWN.

Witnesses:
L. LANGWORTHY,
J. D. YOAKLEY.