No. 875,945. PATENTED JAN. 7. 1908.

J. L. NELSON.

POWER TRANSMISSION MECHANISM.

APPLICATION FILED MAR. 30, 1907.

2 SHEETS—SHEET 1.

FIG. 1.

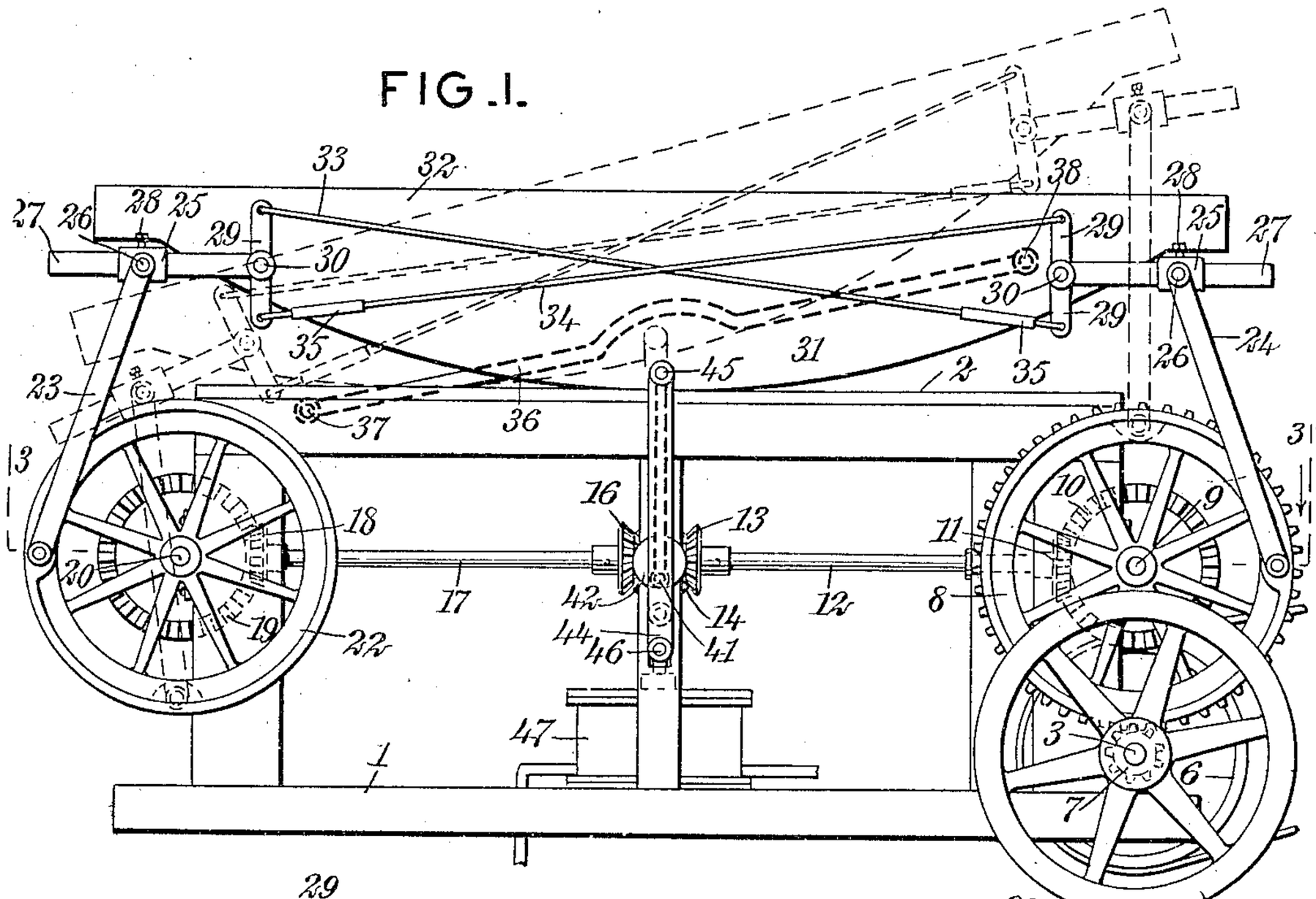
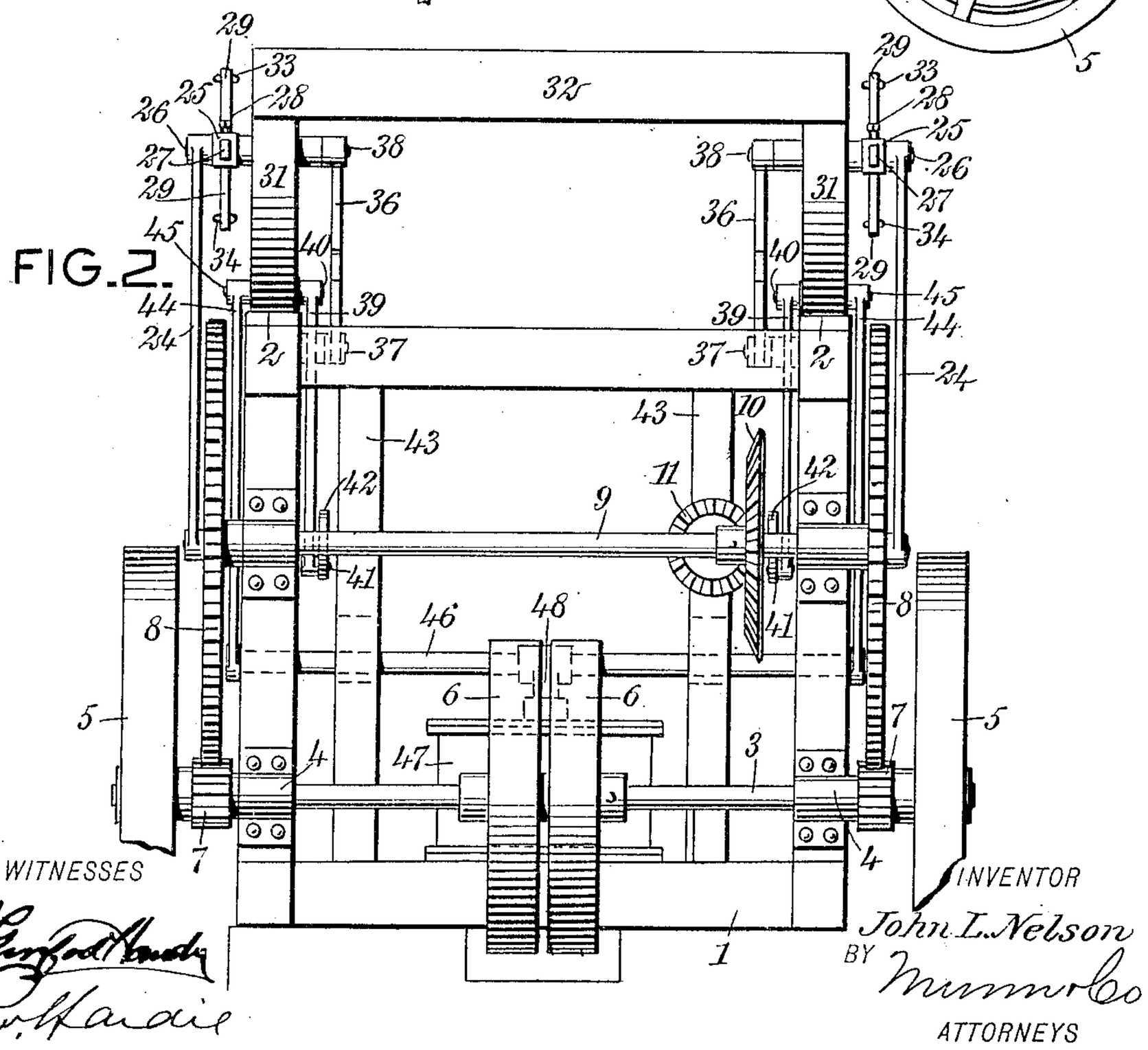


FIG. 2.



WITNESSES

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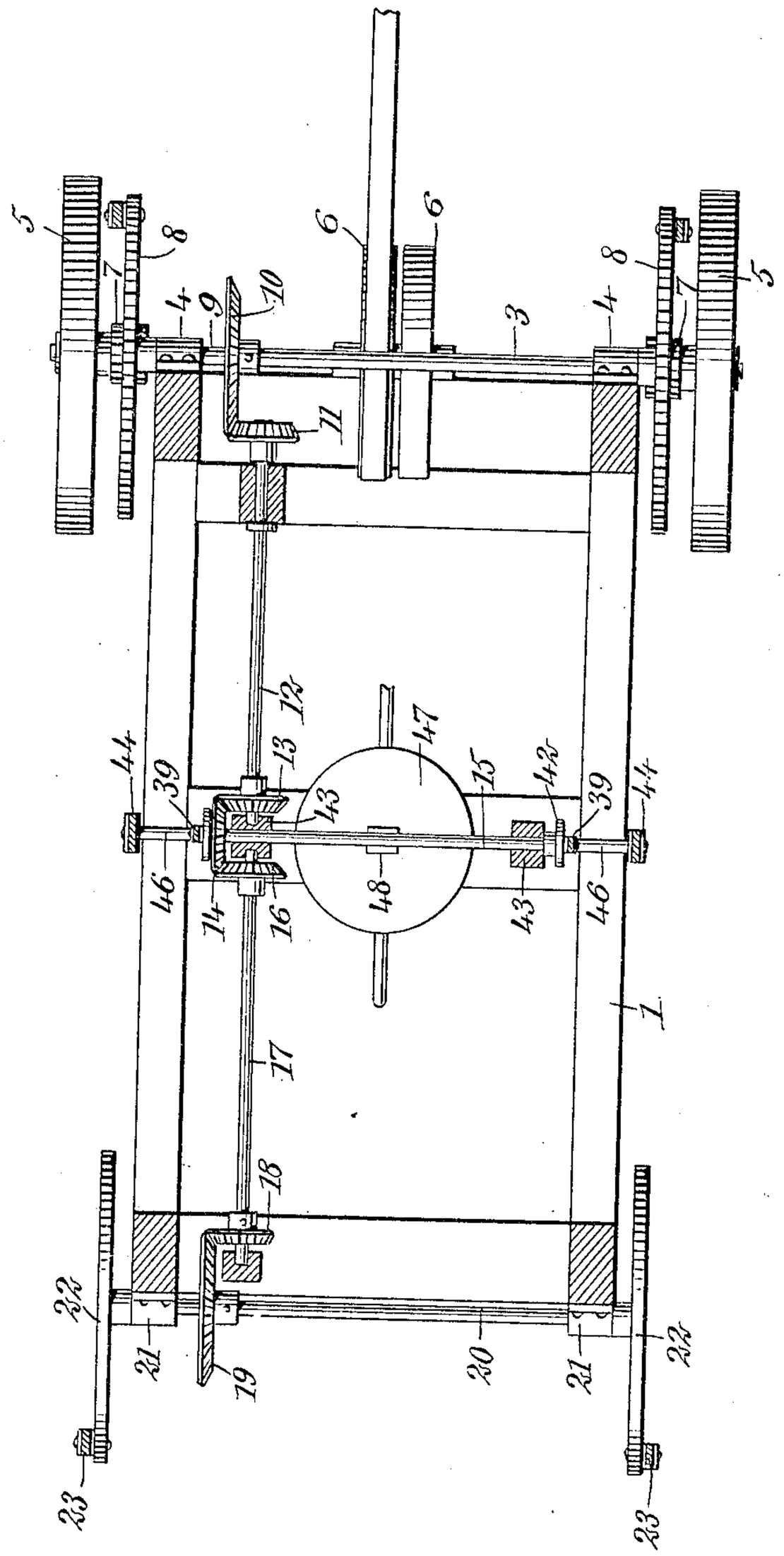
2 SHEETS—SHEET 2.

FIG. 3



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POWER-TRANSMISSION MECHANISM.

No. 875,945. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed March 30, 1907. Serial No. 365,478.

To all whom it may concern:

Be it known that I, JOHN L. NELSON, a citizen of the United States, and a resident of Colona, in the county of Ouray and State of Colorado, have invented a new and Improved Power-Transmitting Mechanism, of which the following is a full, clear, and exact description.

This invention relates to mechanism for transmitting power, and has for its primary object to provide means simple in construction, effective in operation and durable in use, for overcoming the dead centers of a prime motor, by means of a rocking weight, so constructed and arranged that when the motor is exerting its maximum effect one end of the weight is raised, and as the motor passes one of the dead centers the weight restores itself to its horizontal position, thereby supplying force to carry the motor over the center.

Other objects relating to the specific construction and special arrangement of the several parts of my invention will be understood from the accompanying drawings and following description, in which drawings like characters of reference indicate like parts throughout the views, and in which

Figure 1 is a side elevation of a device embodying my invention; Fig. 2 is an end view of the same; and Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1.

As illustrated in the drawings, the operative mechanism is mounted upon a main frame 1 having on its upper portion oppositely disposed rails 2. A drive shaft 3 is journaled in bearing boxes 4 which are secured to uprights of the main frame. The drive shaft is provided on its outer ends with fly wheels 5, and on its central portion with tight and loose pulleys 6 and with pinions 7 attached to the outer ends of the driving shaft. These pinions mesh with gears 8 which are mounted upon a transverse shaft 9 at one end of the machine. The shaft is provided with a bevel gear 10 which meshes with a gear 11 attached to a longitudinal shaft 12, having on its inner end a bevel gear 13 meshing with a gear 14 mounted upon a transverse shaft 15. The gear 14 also meshes with a corresponding bevel gear 16 attached to a longitudinal shaft 17, the outer end of which shaft is provided with a bevel gear 18 meshing with a larger gear 19 attached to a transverse shaft 20 journaled in bearing boxes 21 secured to the standards at one end of the main frame. The shaft 20 is provided on its outer ends with wheels 22 pivotally connected with the lower ends of links 23. Similar links 24 are attached at their lower ends to the gears 8 at the opposite end of the machine, and the upper ends of said links are pivotally connected to sleeves 25 by means of pivot pins 26. The sleeves are mounted upon levers 27, and adapted to be adjusted on said levers by means of set screws 28 attached to the sleeves. The inner ends of the levers 27 are provided with offset arms 29, and pivotally attached by means of pins 30 to the sides 31 of a weight 32. The lower edges of the sides 31 are curved so as to rock on the rails 2 of the main frame and the arms 29 of the levers 27 on each side of the weight are reversely connected by means of rods 33 and 34 crossed at their center and provided on their ends with tightening sleeves 35 or turnbuckle adapted to adjust the rods 33 and 34 in length, and thereby hold the arms 29 of the oppositely-disposed levers 27 in proper position relatively to each other.

The weight is held against longitudinal displacement on the main frame by means of connecting rods 36 pivotally attached at 37 to the main frame, and connected at their opposite ends with the weight by means of pivot pins 38. The weight is held against lateral displacement on the main frame by means of vertical links 39 which are pivotally attached at their upper ends to the lower central portion of the sides 31 of the weight by means of pivot pins 40, and the lower ends of said links are pivotally connected with wrist pins 41 of eccentrics 42 attached to the transverse shaft 15, said shaft being journaled in standards 43 attached to the main frame. Links 44 are attached by means of pivot pins 45 to the lower central portion of the sides 31 of the weight, the lower ends of said links being attached to a cross bar 46 connected with a power receiving apparatus of any suitable construction, such as a pump having a cylinder 47 and a plunger 48 attached to the cross bar 46.

When the device is in operation, the tight and loose pulleys 6 are connected by means of a belt with the prime motor the dead centers of which are to be overcome. The motor rotates the drive shaft 3 and transverse shaft 9 by means of the pinion 7 and gears 8 connected therewith. The shaft 9 rotates the longitudinal shaft 12 and 17, thereby communicates power to the transverse shaft

20 and drive wheels 22 on the opposite end of the main frame, the rotation of the drive wheels 22 being in an opposite direction to that of the gears 8. The wheels 22 and gears 8 are directly connected with the ends of the weight 32 by means of links 23 and 24 and levers 27 pivoted to said weight, thereby supplying force to both ends of the weight, and rocking the weight on the rails 2. When in a horizontal position, the central portion of the sides 31 rests on the rails 2, but when one end of the weight is raised and the opposite end depressed the bearing point of the weight on the main frame is shifted in the direction of the lower end of the weight, as indicated by dotted lines in Fig. 1. To compensate for such shifting of the bearing points of the weight on the main frame, and at the same time permit both ends of the weight to be connected with the driving mechanism, the levers 27 are pivotally attached to the weight 32, and the levers of the same side of the weight connected together by means of the tie rods 33 and 34, thereby maintaining a direct pivotal connection between the driving mechanism and the ends of the weight, and permitting the vertical movement of the ends and a continuous shifting of the contact points between the weight and the main frame. The weight 32 may be of any suitable construction adapted to rock on the main frame, preferably consisting, however, of a heavy plate or beam 32 mounted upon the sides or rockers 31.

When the device is in operation, the prime motor is so connected with the transmitting mechanism, that when the motor is exerting its maximum effect the pivotal connection between the links 23 and wheels 22 will be moving, for example, downward from the position shown in full lines in Fig. 1, while the pivotal connection between the links 24 and gears 8 will be moving upward, bringing the links into the position indicated by dotted lines in Fig. 1. As the motor passes one of its dead centers, the pivotal connection between the links 23 and wheels 22 travels through the succeeding ninety degrees of a circle, thereby raising such pivotal connection from the lowest point indicated by dotted lines in said figure, while the pivotal connection between the links 24 and gears 8 will descend in traveling the succeeding ninety degrees of a circle, during which operation the weight restores itself to its horizontal position. As the links 23 and 24 make one stroke, the connecting rods 44 attached to the lower central portion of the side of the weight make two strokes, and operate the plunger 48 of the pump 47 twice during each stroke of the links 23 and 24.

In the construction herein shown and described, I have embodied my invention in its preferred form. I do not desire to be limited to such construction, however, as other means having similar capabilities may be used without departing from my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A power transmission mechanism comprising a main frame, a weight having curved bearing surfaces, means for applying power directly to the opposite ends of said weight, and compensating mechanism connected with said means.

2. A power transmission mechanism comprising a main frame, a weight having curved bearing surfaces, means for applying power directly to the opposite ends of said weight, compensating mechanism connected with said means, and power receiving mechanism connected with the weight in the vertical central plane thereof.

3. A power receiving mechanism comprising a main frame, a weight having curved bearing surfaces adapted to rock on the main frame, driving wheels mounted on the main frame at opposite ends thereof, adapted to rotate in opposite directions, and means for operatively connecting said driving wheels with the opposite ends of said weight.

4. A power transmitting mechanism comprising a main frame, a weight having curved bearing surfaces, means for applying power directly to the opposite ends of said weight, compensating mechanism connected with said means, and links connected with said main frame and weight adapted to prevent longitudinal displacement of said weight on the main frame.

5. A power transmitting mechanism comprising a main frame, a weight having curved bearing surfaces adapted to rock on said frame, means for applying power directly to the opposite ends of said weight, compensating mechanism connected with said means on opposite sides of the weight, connecting rods attached to the lower central portion of said weight at their upper ends, eccentrics pivotally connected to the lower ends of said rods, and a shaft supporting said eccentrics.

6. A power transmitting mechanism comprising a main frame, a weight having curved bearing surfaces adapted to rock on the main frame, driving wheels mounted on the main frame at opposite ends thereof, adapted to rotate in opposite directions, means for connecting said driving wheels directly with the opposite ends of said weight, and equalizing mechanism connecting said means on opposite sides of the said weight.

7. A power transmitting mechanism comprising a main frame, a weight having curved bearing surfaces adapted to rock on said frame, oppositely disposed wheels, a pair of wheels mounted on each end of the main frame, the wheels on one end rotating in an

opposite direction from those of the opposite end, longitudinal connections adapted to cause the wheels on opposite ends of the main frame to operate in unison in opposite directions, means connected with said driving wheels and with the opposite ends of said weight, and equalizing mechanism connected with said means.

8. In a power transmitting mechanism, the combination with a main frame, of a rocking weight, driving wheels mounted on the ends of the main frame, levers pivotally attached to the ends of the weight, rods adjustably mounted on said levers and connected with said driving wheels, and crossed equalizing rods connecting the levers on the same side of said weight.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN L. NELSON.

Witnesses:
IRA H. MONELL,
W. H. FLEMING.