

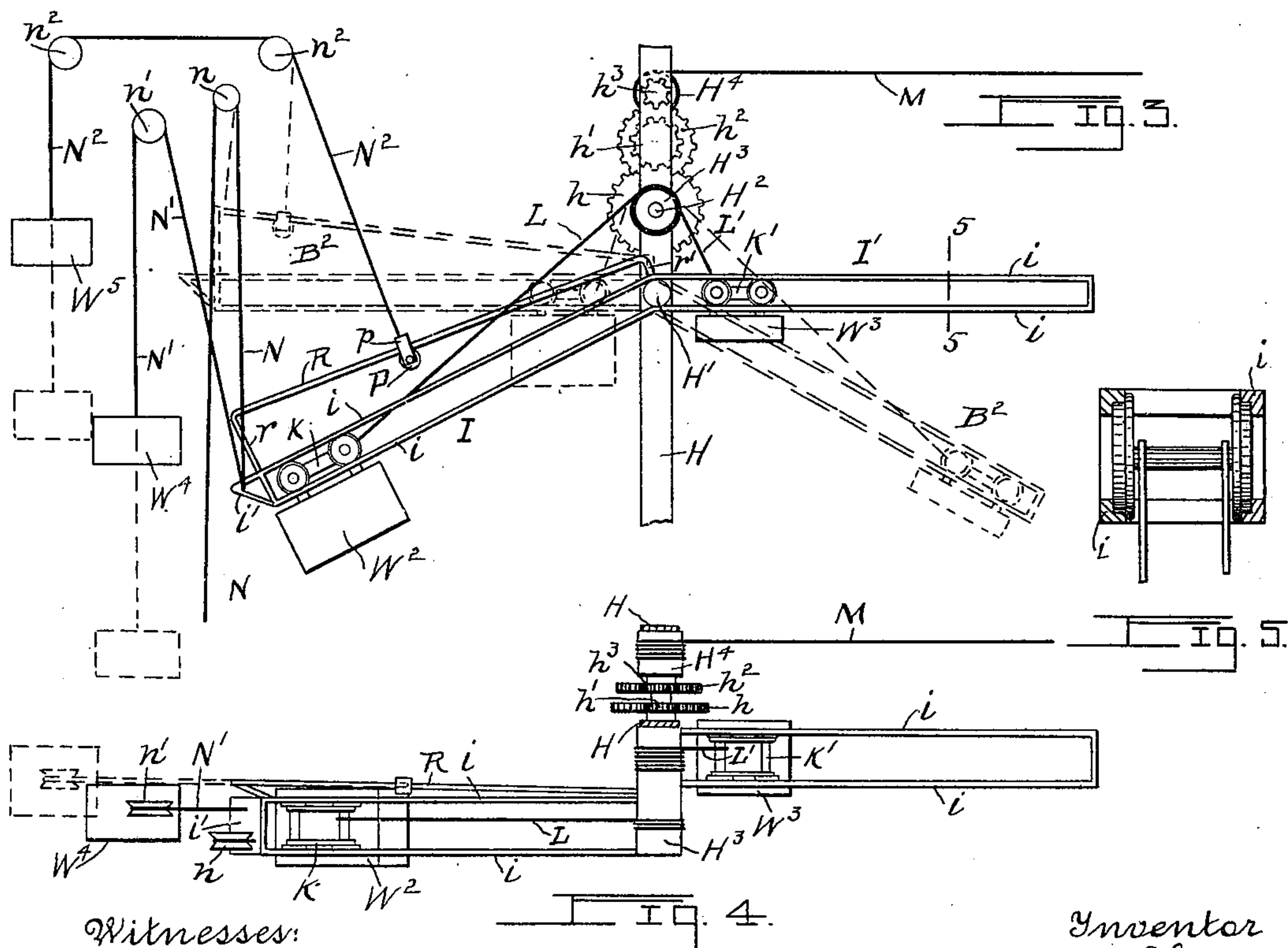
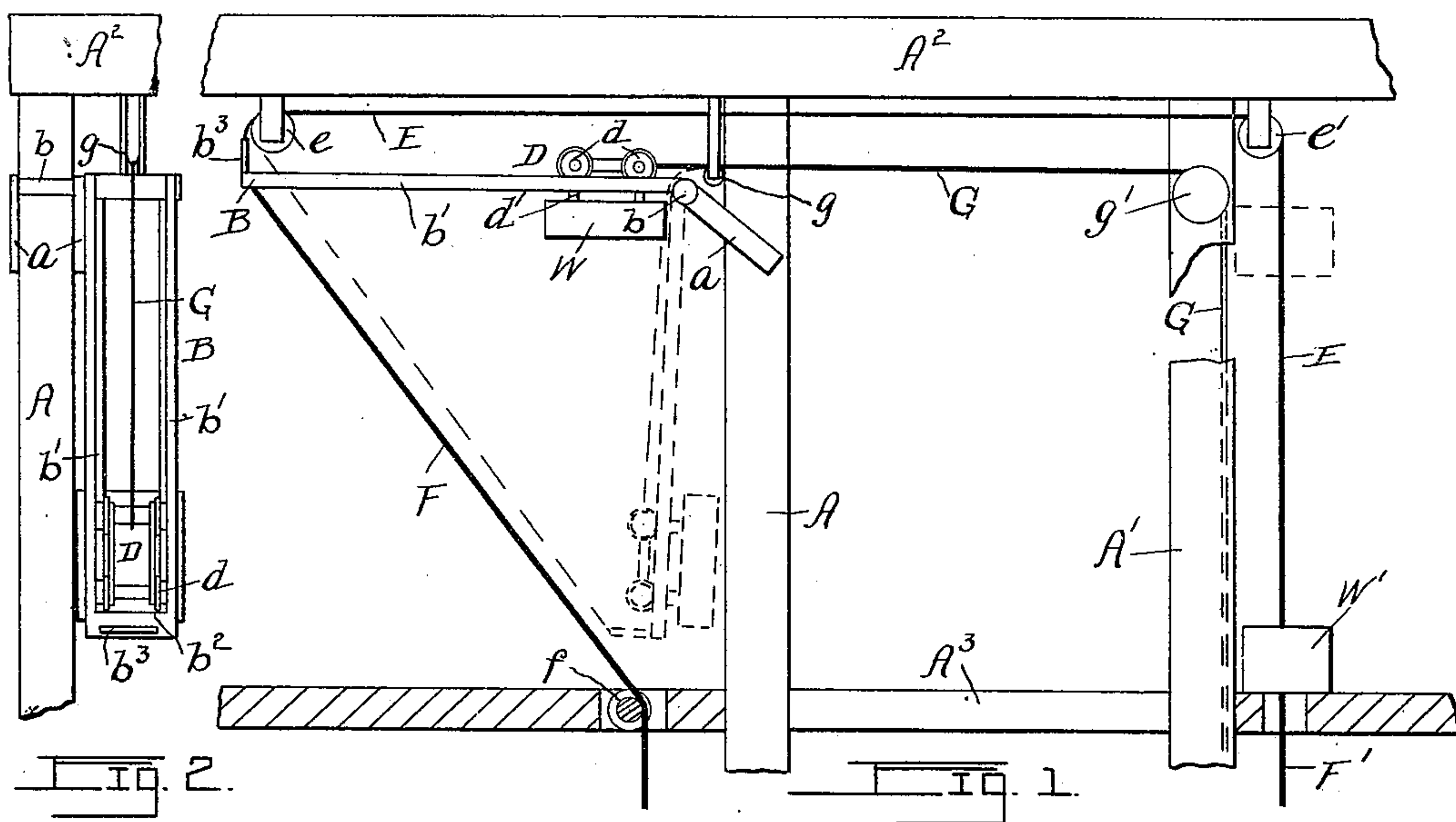
**No. 644,580.**

**Patented Mar. 6, 1900.**

W. CLINE.  
MOTOR.

(Application filed Dec. 14, 1897.)

(No Model.)



Witnesses:  
H. M. Hall.  
C. G. Bassler

Inventor  
Wm. Cline.  
By Attorney  
Wm. B. Gerhardt



# UNITED STATES PATENT OFFICE.

WILLIAM CLINE, OF LANCASTER, PENNSYLVANIA, ASSIGNOR TO DANIEL D. GOOD, JOHN J. STEWART, AND JOSEPH SONDHEIMER, OF SAME PLACE.

## MOTOR.

SPECIFICATION forming part of Letters Patent No. 644,580, dated March 6, 1900.

Application filed December 14, 1897. Serial No. 661,797. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM CLINE, a citizen of the United States, residing at Lancaster, in the county of Lancaster, State of Pennsylvania, have invented certain Improvements in Motors, of which the following is a specification.

This invention relates to improvements in gravity-motors, a special adaptation of the principles of which is covered in Letters Patent No. 605,854, dated June 21, 1898, for an improvement in elevators; and the object of this invention is to impart motion by means of a weight or traveler moving down a pivoted lever having its free end depressed by said weight or traveler.

The invention consists in the construction and combination of the various parts, as hereinafter fully described, and then pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of a device embodying my invention in its most simple form; Fig. 2, a front view of the lever and the traveler when said lever is lowered, as shown by broken lines in Fig. 1. Fig. 3 is a side elevation of a device in which the power is transmitted from the traveler through a train of gearing; Fig. 4, a top plan view of the construction shown in Fig. 2, and Fig. 5 a vertical section on broken line 5 5 of Fig. 3.

Similar letters indicate like parts throughout the several views.

Referring to the details of Figs. 1 and 2, A and A' indicate the posts of the supporting-frame-work, and A<sup>2</sup> A<sup>3</sup>, respectively, the upper and lower horizontal members thereof. On opposite sides of post A are upwardly and outwardly projecting arms a, in which is journaled a rock-shaft b, having rigidly secured thereto an end of a lever B, the sides b' whereof form rails for the wheels d of the traveler D. From the axles of traveler D depend hangers d', supporting at their lower ends a weight W. The outward movement of the traveler is limited by engagement of the forward hangers d' with the cross-piece b<sup>2</sup>, connecting the outer ends of sides b'. To a tongue b<sup>3</sup> on the free end of lever B is attached a rope E, that

passes upward in front of and back over a depending pulley e and thence extends to and around a depending pulley e', whence it drops, and has attached to its lower end a counter-weight W'. A rope F, also attached to the free end of lever B, extends downward and over a pulley f, while to the under side of weight W' is attached a rope F'. To the rear axle of traveler D is secured a rope G, that passes over pulleys g and g' and transmits the power exerted by weighted traveler D as it passes down over lever B.

In operating motion is communicated to traveler D by pulling upon rope F, so as to depress the free end of lever B. As soon as the movement of traveler D begins rope F is released, and the free end of lever B continues its downward movement under the pressure of traveler D. To restore the traveler to its normal position, strain is exerted on rope F' until lever B assumes a horizontal position, and then the traveler is drawn back to the hinged end of the lever.

Figs. 3, 4, and 5 illustrate a modified construction of my invention. In these figures, H indicates the supporting-posts, H' an oscillating shaft journaled in said posts, and I I' lever-arms having their inner ends rigidly secured to shaft H'. If preferable, one of the lever-arms may form a prolongation of the other, and shaft H' may be a stationary arm about which the ends of the lever-arms move. Each of said lever-arms comprises a frame, the side bars i whereof form rails, between which run the wheels of the travelers K and K'. Beneath traveler K a weight W<sup>2</sup> is supported by hangers depending from the axles of said traveler, and beneath traveler K' a weight W<sup>3</sup> is also supported in a similar manner; but weight W<sup>3</sup> is very much lighter than weight W<sup>2</sup>. Above shaft H' is journaled a shaft H<sup>2</sup>, having on its outer end a drum H<sup>3</sup> and on the inside of said drum a gear-wheel h, which, with the other members h', h<sup>2</sup>, and h<sup>3</sup> of the train of gearing formed thereby, imparts motion to the drum H<sup>4</sup>. From the inner end of traveler K a rope L passes to and is wound around the outer part of drum H<sup>3</sup>, and from the inner end of traveler K' a similar rope L' passes to and is wound around the



inner part of said drum  $H^3$ , said ropes being so attached to said drum that when one is wound up thereon the other is unwound.

In operating, the parts being in the position indicated by broken lines  $B^2$  of Fig. 3, traveler K being given an impulse outward gradually lowers and descends lever-arm I and imparts motion to power-rope M, attached to and adapted to be wound around drum  $H^4$ , through rope L, drum  $H^3$ , the train of gearing connected with drum  $H^3$ , and drum  $H^4$ . As the free end of lever-arm I descends the free end of lever-arm I' is raised, and traveler K' is drawn inward by rope L'. The outer end of lever-arm I is again raised and that of lever-arm I' depressed through a rope N passing over pulley  $n$ , after which traveler K is drawn inward by traveler K' descending lever-arm I'. The descent of the free end of lever-arm I is retarded by a weight  $W^4$ , to which is attached one end of a rope N', passing over a pulley  $n'$  and having its other end secured to a lip  $i'$  on the free end of said lever-arm. The rope N is also secured to said lip  $i'$ . The descent of the free end of lever-arm I is further retarded by a weight  $W^5$ , having attached thereto a rope  $N^2$ , which passes over pulleys  $n^2$  and has an end attached to the carrier  $p$  of a running pulley P, that engages the under side of a rail R, attached to the side of said lever-arm by posts  $r$  and  $r'$ , which extend above the top of the lever-arm, post  $r$  being higher than post  $r'$ , as shown.

I do not limit myself to the manner herein set forth of applying the power exerted by the descending traveler. Neither do I restrict myself to the other details of construction herein shown and described, as it is obvious that many changes may be made therein without departing from the principle and scope of my invention.

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

1. The combination, in a motor, of a lever-arm having one end hinged to a support, a traveler adapted to move lengthwise of the lever-arm, the lever-arm being adapted to move under the weight of the traveler after a downward impulse is given the free end of said lever-arm, means for imparting a downward impulse to the free end of the lever-arm, means for raising the free end of the lever-arm, means for automatically restoring the traveler to its normal position by the raising of the free end of the lever-arm, and a connection between the traveler and mechanism to which power is to be applied, for the purpose specified.

2. The combination, in a motor, of lever-arms having their adjacent ends hinged to a

support, a traveler on each of the lever-arms and adapted to move lengthwise thereof, one of said travelers being of greater weight than the other, the lever-arms being adapted to be moved by the weight of the heavier traveler after a downward impulse is given the free end of the lever-arm carrying the same, means for imparting a downward impulse to the free end of the lever-arm carrying the heavier traveler, a connection between the travelers, whereby the movement of one traveler toward the free end of its lever-arm actuates the other traveler toward the hinged end of the other lever-arm, and a connection between the heavier traveler and mechanism to which power is to be applied, for the purpose specified.

3. The combination, in a motor, of lever-arms set at a vertical angle the one with the other and having their adjacent ends rigidly connected with an oscillating support, a traveler on each of the lever-arms and adapted to move lengthwise thereof, one of said travelers being of greater weight than the other, the lever-arms being adapted to be moved by the weight of the heavier traveler after a downward impulse is given the free end of the lever-arm carrying the same, means for imparting a downward impulse to the free end of the lever-arm carrying the heavier traveler, a connection between the travelers, whereby the movement of one traveler toward the free end of its lever-arm actuates the other traveler toward the hinged end of the other lever-arm, and a connection between the heavier traveler and mechanism to which power is to be applied, for the purpose specified.

4. The combination, in a motor, of lever-arms set at a vertical angle the one with the other and having their adjacent ends rigidly connected with an oscillating support, a traveler on each of the lever-arms and adapted to move lengthwise thereof, one of said travelers being of greater weight than the other, the lever-arms being adapted to be moved by the weight of the heavier traveler after a downward impulse is given the free end of the lever-arm carrying the same, means for imparting a downward impulse to the free end of the lever-arm carrying the heavier traveler, a drum, ropes connecting the rear ends of the travelers with said drum and being wound in opposite directions about the same, and a connection between said drum and mechanism to which power is to be applied, for the purpose specified.

WILLIAM CLINE.

Witnesses:

C. G. BASSLER,  
WM. R. GERHART.