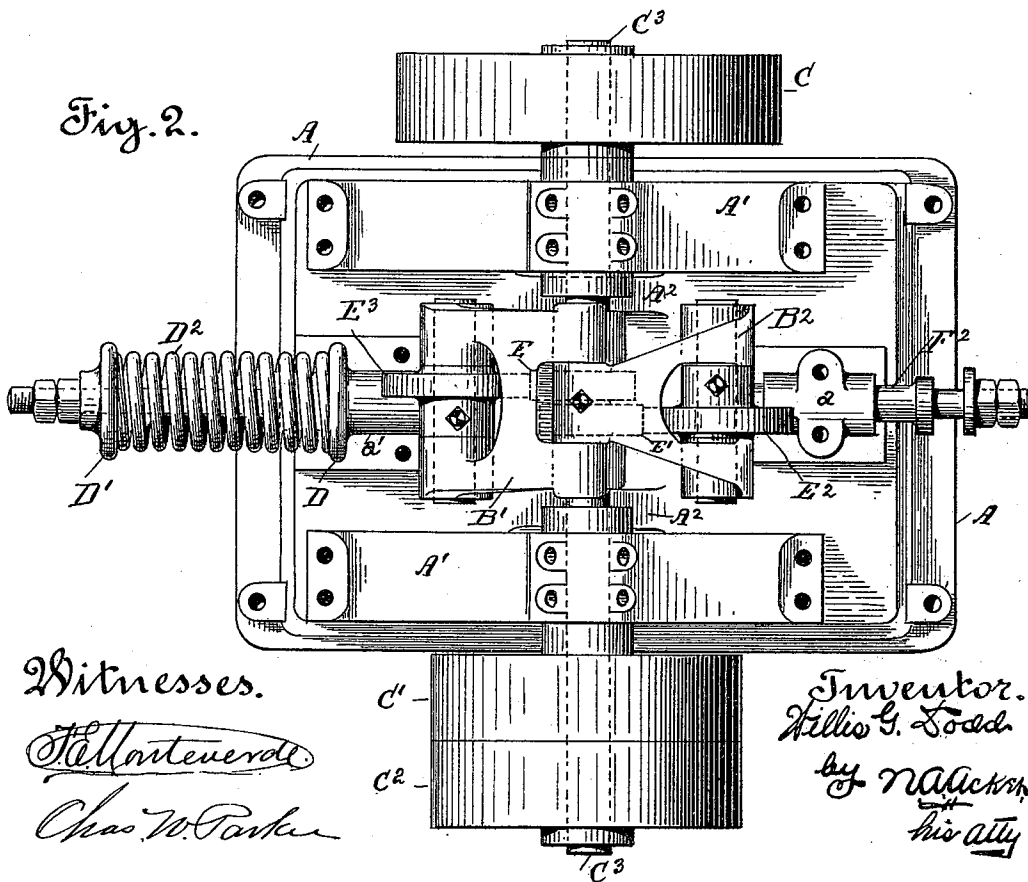
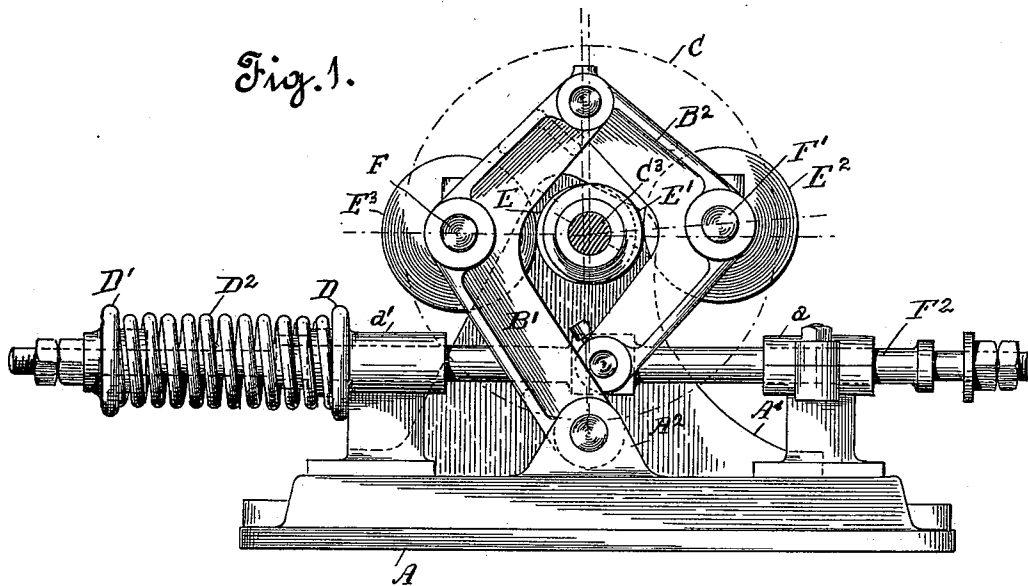


No. 635,372.

Patented Oct. 24, 1899.

W. G. DODD.
OPERATING MECHANISM.
(Application filed Feb. 7, 1899.)

(No Model.)



Witnesses.

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his Atty

UNITED STATES PATENT OFFICE.

WILLIS G. DODD, OF SAN FRANCISCO, CALIFORNIA.

OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 635,372, dated October 24, 1899.

Application filed February 7, 1899. Serial No. 704,847. (No model.)

To all whom it may concern:

Be it known that I, WILLIS G. DODD, a citizen of the United States, residing in the city and county of San Francisco, in the State of California, have invented certain new and useful Improvements in Operating Mechanism; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to a certain new and useful improvement in motor mechanism for the transmission of power or irregular power to air-engines, pumps, or other mechanical contrivances; and the same consists in the arrangement of parts and the details of construction, as will be hereinafter fully set forth in the drawings and described and pointed out in the specification.

The object of my invention is to provide mechanism for transmitting motion and means by which the stroke of a piston or part with which it connects—such, for instance, as the piston of an air-compressor, pump, or other mechanical device—may be varied or regulated in accordance with the movement desired to be given to the actuated piston of the said mechanical contrivance and by means of which I am enabled to give a quick or slow movement to the moving part of the said mechanical structure.

For a full and comprehensive understanding of my invention reference must be had to the accompanying sheet of drawings, wherein—

Figure 1 represents a side view in elevation of the mechanical devices for transmitting such variable or irregular motion to the actuated mechanism, one of the side brackets or plates being broken away or removed in order to better illustrate the arrangement of the parts; and Fig. 2 is a plan view of the mechanism illustrated in Fig. 1, the omitted side brackets or plates being shown in said view.

In the drawings the letter A is used to indicate any suitable base-plate or the frame-plate of the drive mechanism, from which base extend upwardly brackets or frames A'. Through these brackets or frames centrally extends the drive-shaft C³, upon one end of which shaft are mounted the fast and loose belt-pulleys C' and C³, and to the opposite end of said shaft is secured the fly-wheel C. Upon this shaft, between the brackets A', I arrange and adjustably secure the drive-cams E and E', which

cams are arranged eccentrically to one another and which during the rotation of the shaft C³ contact with and bear against the rolls E² and E³, mounted upon the shafts or axles F and F', located, respectively, between the arms or bifurcated portion of the fulcrumed levers or arms B' and B². The lever or arm B' is fulcrumed between the ears A², upwardly projecting from the base-plate A, and to said bell-crank lever or arm, at a point approximately diametrically opposite its fulcrum-point, is pivoted or hinged a shorter bell-crank arm or lever B², which lever or arm at its lower end is pivoted, hinged, or otherwise secured to the reciprocating rod or pitman F², which connects with the piston of the compression-cylinder, pump-cylinder, or mechanism to be driven. This rod or reciprocating pitman extends or works through the bearings a and a', secured to brackets upwardly extending from the base A, and to the outer end of said rod or reciprocating pitman is attached the collar D', between which collar and the collar D, located thereon beyond the bearings a', is interposed the pressure spring or cushion D². The pressure of this spring or cushion is sufficient to always maintain or exert an outward pressure upon the pitman or reciprocating rod F².

As the shaft C³ is rotated or driven the cams E and E' will engage, respectively, or bear against the face of the rolls E³ and E², and as carried against said rolls will force or swing the levers or arms B' and B² apart, and through the connection of the lever or arm B² with the reciprocating rod F² will cause or serve to move the said rod in an inward direction—that is, as the cam E' is carried against the roll E² the said rod F², through the intermediate connection, will be thrown or forced inwardly, while upon the cam E engaging or bearing against the face-roll E³ the said roll will be moved in the same direction. It is owing to the eccentric relations which the cams E and E' bear to each other that governs the stroke or movement imparted to the arms B' and B², the movement of which arms controls the length or stroke of the pitman or reciprocating rod F², or, in other words, a slow motion may be imparted to the rod F² in one direction and a rapid motion in the opposite direction. The movement of the parts before described

is dependent upon the position in which the said cams E and E' are placed or located relatively to each other upon the shaft C, as it is obvious that as the point of contact of these
5 cams with the rolls E² and E³ is increased or decreased as to distance the stroke or movement of the reciprocating rod or connecting-rod F² will be increased or decreased in accordance therewith.

10 It is not necessary that the rolls E² and E³ be rotating ones, for any point of contact interposed between the arms B' and B² and the cams mounted upon the shaft C³ will serve to give the proper movement or stroke to the
15 said fulcrum-arms in order to change or vary the movement or stroke of the reciprocating rod or pitman F², and for this reason I do not wish to be understood as limiting myself to rolls connecting to said arm, nor do I wish
20 to be understood as limiting myself to any particular form, shape, or style of cams mounted upon the drive-shaft C³ for imparting this variable movement or stroke to the reciprocating rod or pitman F².

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

1. The combination with a reciprocating rod, and a spring for moving the same in one
30 direction, of a lever fulcrumed to a fixed part, a second lever connected to said first lever and to said reciprocating rod, a driven shaft, and cams secured thereon which cams impart movement to the said levers.

35 2. The combination with a reciprocating rod, and a spring for moving the same in one direction, of a lever fulcrumed to a fixed part, a second lever pivoted to said first lever and to said reciprocating rod, a driven shaft, and
40 cams adjustably secured on said shaft and adapted to engage parts carried by said levers to impart movement thereto, substantially as described.

3. The combination with a reciprocating rod, and a spring for moving the same in one
45 direction, of a lever fulcrumed to a fixed part, a second lever connected to said first lever and to said reciprocating rod, a driven shaft between said levers, cams secured on said shaft which cams engage parts carried by said
50 levers and impart movement thereto, substantially as described.

4. The combination with a reciprocating rod, and a spring for moving the same in one
55 direction, of connected levers one of which is fulcrumed to a fixed part, and the other of which is connected to said reciprocating rod, and adjustable cam mechanism for imparting movement to said levers, substantially as described.

5. The combination with a reciprocating rod, and a spring for moving the same in one
60 direction, of a lever fulcrumed to a fixed part, a second lever connected to said first lever and connected to said reciprocating rod, contact-rolls carried by said levers, a drive-shaft
65 between said levers, and cams connected to said shaft and adapted to engage said contact-rolls, to impart motion to said levers, substantially as described.

6. The combination with a reciprocating rod, and means for moving the same in one
70 direction, of oppositely-arranged connected bent levers, one of which is fulcrumed to a fixed part, and the other of which, is connected
75 to said reciprocating rod, a driven shaft between said levers, and cams secured to said shaft which impart movement to the levers, substantially as described.

In testimony whereof I hereunto affix my
80 signature, in presence of two witnesses, this 28th day of January, 1899.

WILLIS G. DODD.

Witnesses:

N. A. ACKER,

D. B. RICHARDS.