

No. 622,827.

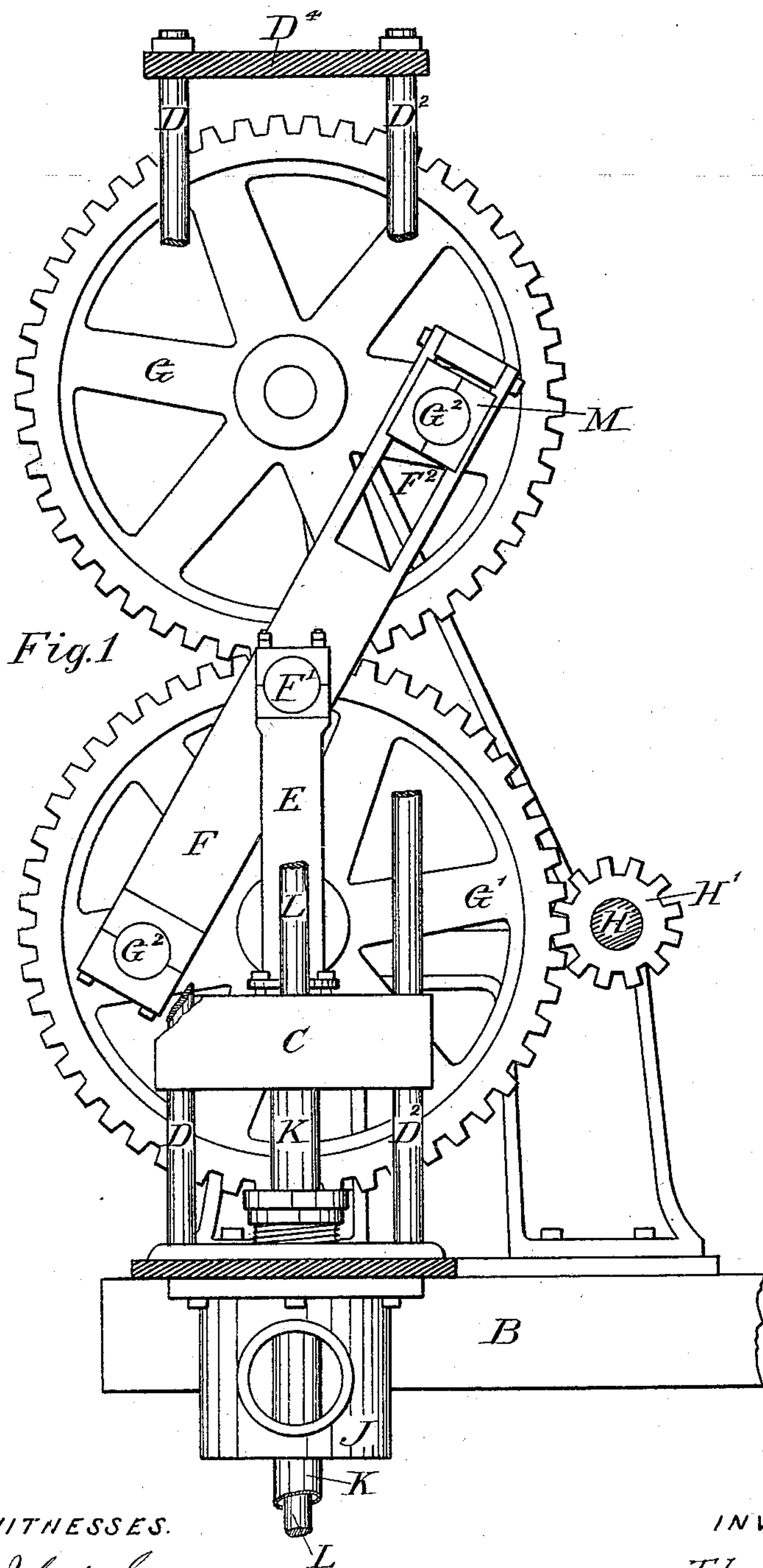
Patented Apr. 11, 1899.

T. S. SMITH.  
MECHANICAL MOVEMENT.

(Application filed Feb. 10, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

J. L. des Granges.  
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INVENTOR

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his Attorneys

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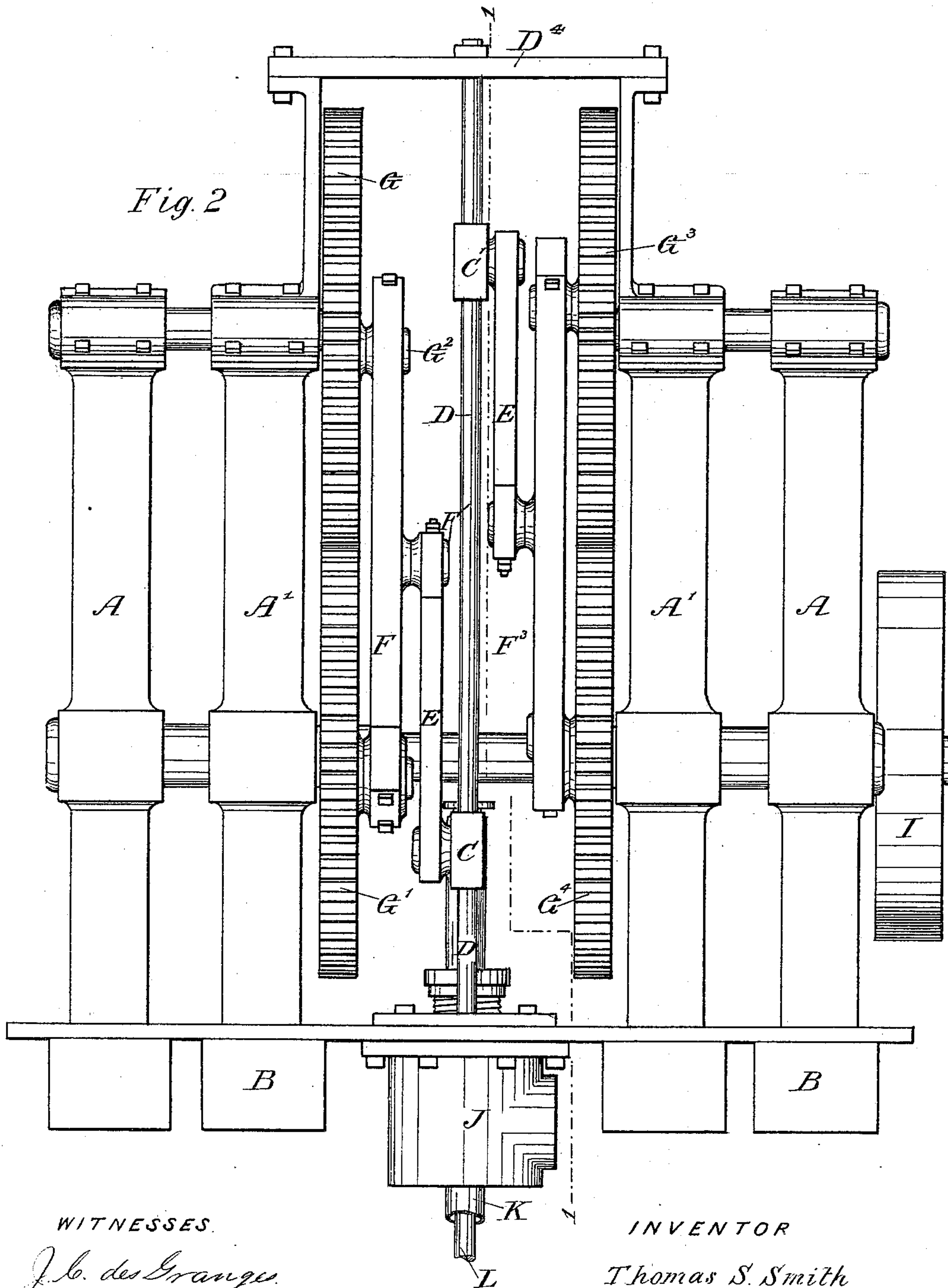
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# UNITED STATES PATENT OFFICE.

THOMAS S. SMITH, OF LOS ANGELES, CALIFORNIA.

## MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 622,827, dated April 11, 1899.

Application filed February 10, 1899. Serial No. 705,203. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS S. SMITH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Mechanical Movement, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to mechanism adapted to be used in operating double-acting pumps or like machinery, and has for one, among others, of its objects the transmission of power from a rotating shaft to a vertical reciprocating piston-rod and at the same time avoid the side strain usual to an oscillating piston-rod connecting the piston with the crank-pin of the crank on the rotating shaft.

The nature of my invention will be more fully understood by reference to the accompanying drawings, in which—

Figure 1 is an elevation of that part of my device which is to the left of the dotted line 1 1 of Fig. 2, the central portion of the guides D and the cross-head C' being cut away. Fig. 2 is a front elevation of my device, showing two of my devices attached to and adapted to operate one pump, giving to the pump a double action.

A is a frame in which my device is mounted.

B is the base on which the frame rests.

C is a cross-head for the connecting-rod E, working on the guides D.

E is pivotally attached at F' to the rock-lever F. This lever is rotatively mounted on wrist-pins G<sup>2</sup>, affixed to the spokes in the gear-wheels G. These wrist-pins are mounted at points (on the spokes) equidistant from the center of the respective gear-wheels on which they are mounted. The gear-wheels G, alike in size and number of teeth, are rotatively mounted one above the other and meshing together, in this case power being applied through the spur-gear H' on the operating-shaft H. However, power may be applied to either wheel. In the upper end of this rock-lever F is a longitudinal slot F<sup>2</sup>, in which the sliding block M has a longitudinal movement to compensate for the difference in distance between the wrist-pins G<sup>2</sup>. (The distance between them will depend upon the position of the wheels G, the position of the wheels, as

shown in Fig. 1, giving to the sliding block M the extreme outward stroke, the wrist-pins being farthest apart while the wheels are in this position.) This sliding block, made in two sections, forms a bearing for the wrist-pins G<sup>2</sup>. The lower end of the rock-lever has bearings for the wrist-pin which is mounted on the lower wheel. Motion being imparted to these wheels will give to the rock-lever a rocking movement on the trunnion or wrist-pin F', and at the same time this trunnion being approximately at the center of the rock-lever will move almost in a vertical plane, carrying with it the connecting-rod E, operating thereby the pump.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a mechanical movement, the combination of the rock-lever F, the companion gear-wheels G and the connecting-rod E, the rock-lever being pivotally mounted on wrist-pins G<sup>2</sup> on the spokes of the gear-wheels and equidistant from the center thereof and having longitudinal slot F<sup>2</sup>, the connecting-rod E being mounted at its upper end on trunnion F' on the center of the rock-shaft, and its lower end being attached to the piston-rod L.

2. The combination substantially as shown of the companion gear-wheels G, alike in size and number of teeth, arranged to mesh one into the other and having wrist-pins G<sup>2</sup> on the spokes, equidistant from the center thereof, with a rock-lever F, provided with trunnion F' approximately in the center thereof and having longitudinal slot F<sup>2</sup> and the connecting-rod E movably mounted on said trunnion and the slide-box M in said slot, whereby the rotation of the gear-wheels will give to the connecting-rod E a vertical reciprocating motion.

3. In a mechanical movement, two gear-wheels equal in size and number of teeth, mounted to mesh one into the other and having on a spoke of each one respectively a wrist-pin adapted to receive the bearing of a rock-lever, a rock-lever having bearings in the ends thereof and mounted on the said wrist-pins, the rock-lever having in one end a longitudinal slot for the reception and operation of a sliding block mounted on one of the aforesaid wrist-pins; at a point near the center of said rock-lever a trunnion adapted to

receive the outer end of the connecting-bar of a pump, substantially as shown and described.

4. The combination in a double-acting  
5 pumping device of two sets of companion gear-wheels equal in size and number of teeth arranged to mesh one into the other, as shown and described, one set arranged to operate one plunger and the other set arranged to op-  
10 erate the other plunger; each set of gear-wheels provided with a rock-lever mounted on wrist-pins on the spokes of the respective

gear-wheels; the rock-lever having near its center a trunnion adapted to receive the outer end of the connecting-rod of the plunger of  
15 the pump as and for the purpose shown and described.

In witness that I claim the foregoing I have hereunto subscribed my name at Los Angeles, California.

THOMAS S. SMITH.

Witnesses:

HENRY T. HAZARD,  
M. MCGINNIS.