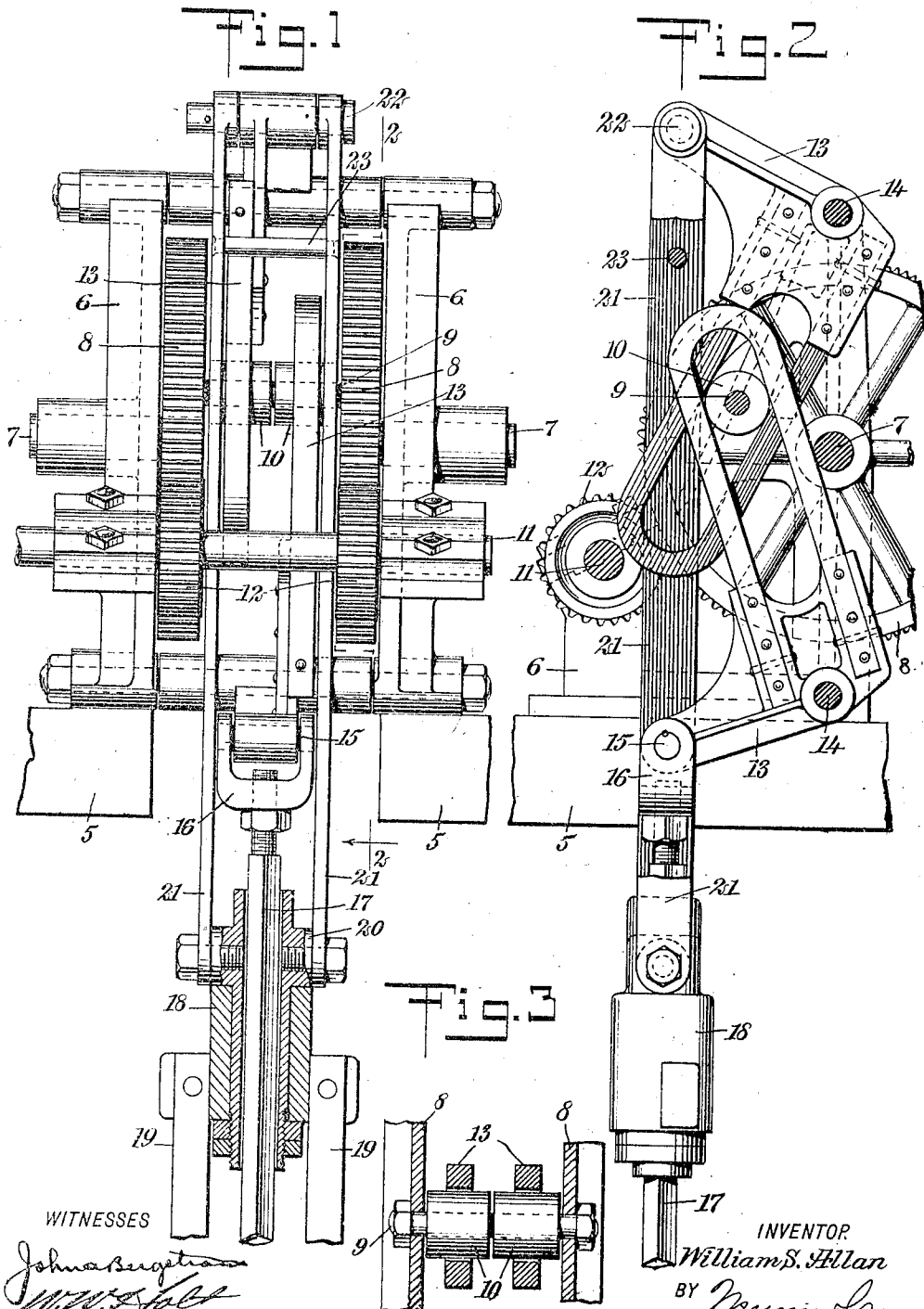


W. S. ALLAN.
MECHANICAL MOVEMENT.
APPLICATION FILED OCT. 7, 1908.

944,121.

Patented Dec. 21, 1909.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM S. ALLAN, OF MONTEREY, MEXICO.

MECHANICAL MOVEMENT.

944,121.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed October 7, 1908. Serial No. 456,652.

To all whom it may concern:

Be it known that I, WILLIAM S. ALLAN, a citizen of the United States, and a resident of Monterey, Mexico, have invented a new and Improved Mechanical Movement, of which the following is a full, clear, and exact description.

The invention has reference to a suitable motion for the operation of a pump having two plungers working in one cylinder, one above the other, and is especially designed to be operated by a windmill or to be used as a pumping jack in connection with other power.

The object of the invention is to provide a mechanism that will give an increase of power when the load is greatest, the mechanism consisting of a revoluble device, oppositely arranged bell-crank levers having fixed fulcrums, reciprocating members respectively connected to the corresponding arms of said levers, and means carried by the said device in engagement with the other arms of the levers.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an edge view, partly in central vertical section, illustrating the preferred construction of my improved mechanical movement; Fig. 2 is a side view of the same partly in section, the section being taken substantially on the line 2—2 of Fig. 1; and Fig. 3 is a fragmentary sectional view through the connection between the revoluble devices or gears and the bell-crank levers.

The superstructure 5 of a windmill-tower is provided with upright brackets or supports 6, spaced apart, with a stub shaft 7 journaled in each bracket, to which is fixed a gear 8 at its inner end, the gears being rigidly connected by a common crank-pin 9, which preferably carries two rollers 10, 10. Also journaled in the brackets is a driving shaft 11 driven by any suitable motive power, ordinarily a windwheel, and having secured thereto, and in mesh with the gears 8, pinions 12. At opposite sides of the gears 8 are bell-crank levers 13, ordinarily of identical construction and fulcrumed at the intersection of their respective arms on pins 14 carried by the brackets 6, these pins in the present embodiment of my invention be-

ing arranged in a vertical plane passing through the axes of the gears 8. One arm of each bell-crank lever, which is shown to be the longer of the two, is of slotted construction, with the slot longitudinally arranged and receiving and fitting over one of the rollers 10. The other arm of the lower lever is pivoted on a pin 15 carried by a yoke 16, which in turn has a screw-threaded or other adjustable connection with the upper end of a rod 17, which will generally be one of the rods of a double-acting pump. This rod is of square or other angular form and serves as a guide for a head 18, which is in connection with the other pump rod, shown in the present embodiment of the invention to be twin bars 19. The barrel or sleeve of the head 18 is constructed with trunnions 20, to which are suitably connected the lower ends of links 21, which pass upwardly to the outside of the overlapping bell-crank levers, and at their opposite and upper ends are similarly connected to the short arm of the upper bell-crank lever by a pin 22, the links being also preferably rigidly attached by a cross-pin 23 arranged at such a point as not to interfere with the operation of the mechanism.

By the particular arrangement and construction, when the gears 8 or other revoluble devices are set in motion by the operation of the driving shaft, the pump rods will be moved in opposite directions by the oscillations of the bell-crank levers, caused by the rotary travel of the crank-pin carrying the rollers 10. In the rotation of the rollers about the axis of the gears, they will make a complete reciprocation in the slotted arms of the bell-crank levers, and will move each pump rod from its extreme downward position to the extreme upward position in approximately two-thirds of their rotary travel, the other third of this travel being devoted to moving the pump rods to the initial or starting point, in this way giving the pump pistons a quick return and using the motive power most advantageously. The greatest pull required on the rod 17 in the operation of the pump will be when the crank-pin reaches its highest point, at which time the leverage on the lower bell-crank lever will be at its maximum, and accordingly in a position to take care of the greatest load. For the other pump rod the rollers will be at their lowest and highest positions when the power required for the

operation is respectively at a minimum and at a maximum.

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

5 Patent:

1. The combination of spaced gears having a common crank-pin, a driving shaft having pinions in mesh with said gears, bell-crank levers respectively fulcrumed 10 above and below said gears and having overlapping slotted arms receiving the crank-pin, a rod pivotally connected to the other arm of one of said levers, and a head slidable on said rod having a connection with 15 the corresponding arm of the other lever.
2. The combination of a revoluble mem-

ber having a crank-pin, levers fulcrumed at opposite sides of said member having arms, with one arm of each lever overlapping and operatively engaged with the crank-pin, a 20 rod pivotally connected to the other arm of one of said levers, and a head slidable on said rod, having a connection with the corresponding arm of the other lever.

In testimony whereof I have signed my 25 name to this specification in the presence of two subscribing witnesses.

WILLIAM S. ALLAN.

Witnesses:

RAPES PHEETSON,
G. S. SAWYER.