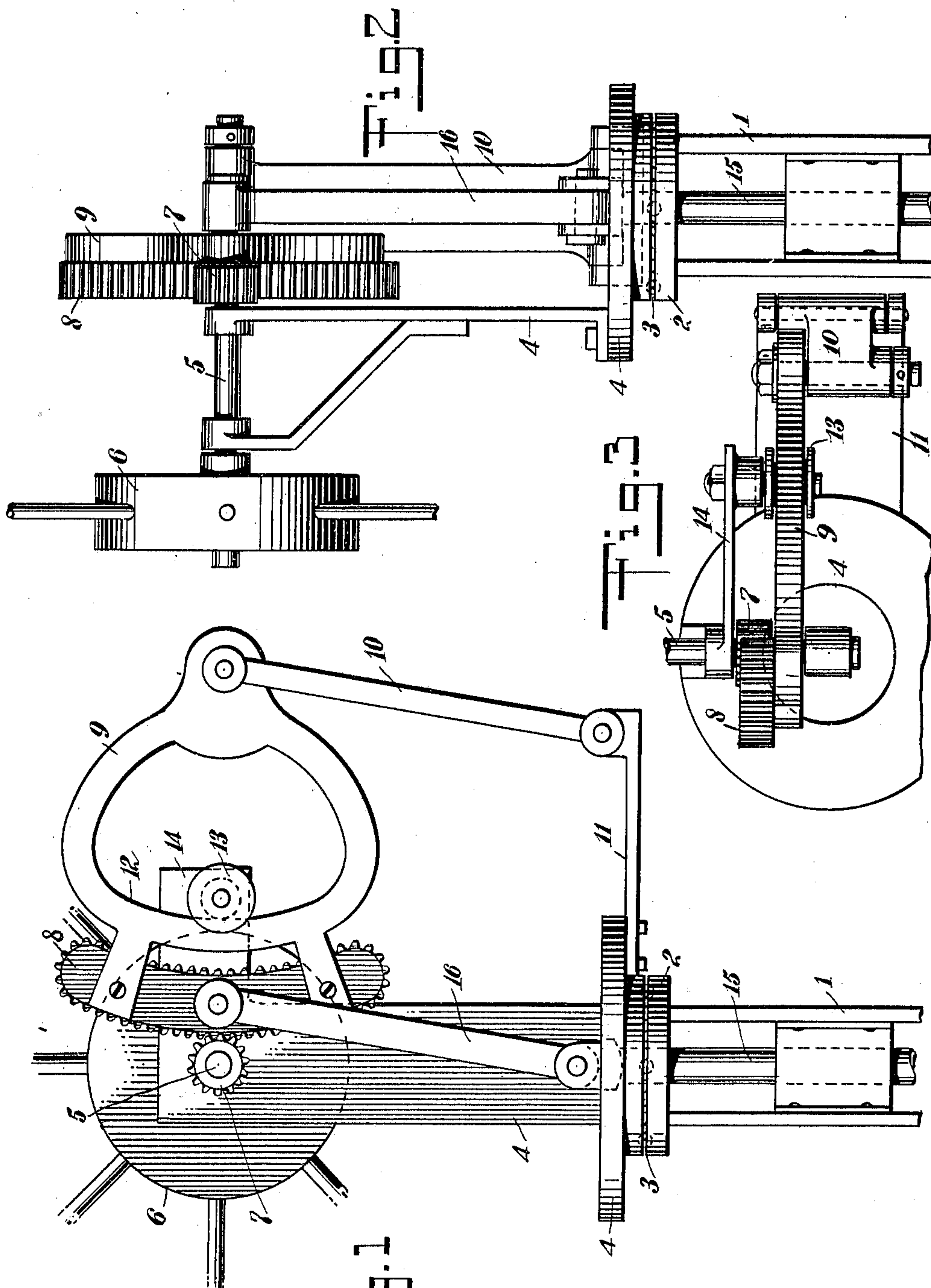


T. G. SMITH.
DRIVING MECHANISM FOR PUMPS.
APPLICATION FILED SEPT. 11, 1909.

978,669.

Patented Dec. 13, 1910.



WITNESSES
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THOMAS GILL SMITH, OF BLOEMFONTEIN, ORANGE RIVER COLONY.

DRIVING MECHANISM FOR PUMPS.

978,669.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed September 11, 1909. Serial No. 517,223.

To all whom it may concern:

Be it known that I, THOMAS GILL SMITH, a subject of the King of Great Britain, and a resident of Bloemfontein, Orange River Colony, South Africa, have invented a new and Improved Driving Mechanism for Pumps, of which the following is a full, clear, and exact description.

This invention relates to a new and improved means for translating rotary motion into reciprocatory motion, whereby the power of a wind-mill or other motive means may be used to operate a pump.

An object of the invention is to provide a device which will be simple in construction, efficient in operation, strong and durable and with the fewest parts consistent with positive action.

A further object of the invention is to provide simple means for keeping the co-acting parts always in positive engagement.

These and further objects, together with the construction and combination of parts, will be more fully described hereinafter and particularly set forth in the claims.

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, and in which—

Figure 1 is a vertical front elevation; Fig. 2 is a vertical side elevation; and Fig. 3 is a top plan view.

Referring more particularly to the separate parts of the device, 1 indicates a suitable base, which may be in the form of a tower or the like, on the top of which is secured in any well known manner a raceway 2, in which are adapted to travel suitable anti-friction balls 3. Superposed on the anti-friction balls 3, there is provided a suitable support 4, which is adapted to rotate on the base 1. Journaled in the upper end of the support 4, there is provided a suitable shaft 5, to the outer end of which is secured any suitable motive means, such as a wind-mill 6. Intermediate the ends of the shaft 5, there is secured thereon a gear 7, which meshes with a quadrant-shaped or concavo-convex gear 8, having external teeth. The concavo-convex gear 8 is supported by a suitable hanger 9, which is secured thereto in any well known manner, and which in turn is pivotally supported at its opposite end by means of a fulcrum lever 10, which is pivotally secured in any well known man-

ner to a bracket 11 on the support 4. The hanger 9 has an internal cam 12 in the form of an inclosed rim. Engaging the cam 12, there is provided a suitable anti-friction roller 13, which is rotatably supported in any well known manner on an extension 14 on the support 4. The roller 13 engages the cam 12, and thereby retains the concavo-convex gear 8 always in positive engagement with the gear 7, no matter what their relative positions.

Slidingly supported in the support 4 and the base 1, there is provided a suitable reciprocable member 15, which is shown in this case in the form of a pump rod. The motion of the concavo-convex gear 8 is transmitted to the pump rod 15 by means of a connecting link 16, which is pivoted in any well known manner to both the concavo-convex gear and the pump rod 15.

The operation of the device will be readily understood from the above description. When the wind wheel 6 or other suitable motive means is rotated, the gear 7 will be rotated by the shaft 5. The rotation of this gear will cause the concavo-convex gear 8 to reciprocate up and down and around, the gear 7, always being held in positive contact with the gear 7 by means of the roller 13, which engages the cam 12 at all times. The reciprocatory motion of the gear 8 is transmitted to the pump rod 15 through the connecting link 16.

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

1. The combination with a support, of a link pivoted to said support, a member pivoted to said link at one end, an externally-toothed concavo-convex gear at the opposite end of said member, a link connected to said gear, and a rod connected to said link, adapted to receive the motion of said member, a rotary member on said support, a gear driven by said member and engaging said first-mentioned gear, whereby the rotation of said rotary member is translated into oscillating motion of said member, said member having an internal cavity located intermediate its ends, and a roller engaging said cavity and adapted to maintain said concavo-convex gear in engagement with said first-mentioned gear at all times.

2. The combination with a support, of a link pivotally connected to said support, a member pivotally connected to said link at

one end and a concavo-convex gear secured to said member at its other end, the convex and concave sides of said gear being arranged concentric with the pivot point of
5 said member, a pinion engaging said gear, said member having a cut-out portion intermediate its ends, the sides of which have curvatures concentric with the curvatures of said gear, a roller mounted on said support, located within said opening and adapted to maintain said gear in mesh with said
10 pinion, a sliding member on said support,

and a link connecting said gear with said sliding member, whereby the rotation of said pinion is translated into reciprocation 15 of said last-mentioned member.

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

THOMAS GILL SMITH.

Witnesses:

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