

No. 847,902.

PATENTED MAR. 19, 1907.

C. CANNELL.
GEAR FOR PUMPS.

APPLICATION FILED MAR. 6, 1906.

2 SHEETS—SHEET 1.

Fig-1-

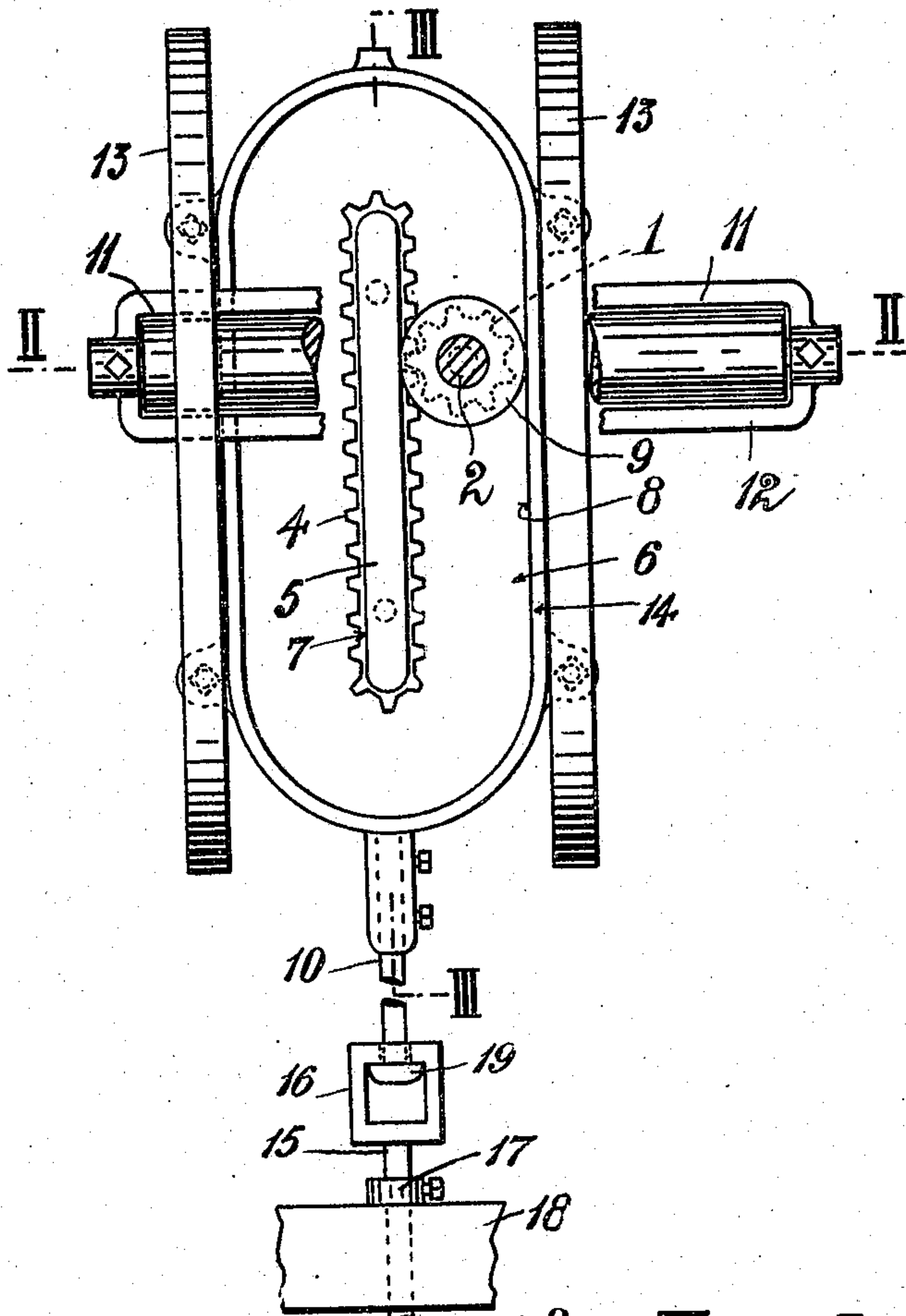
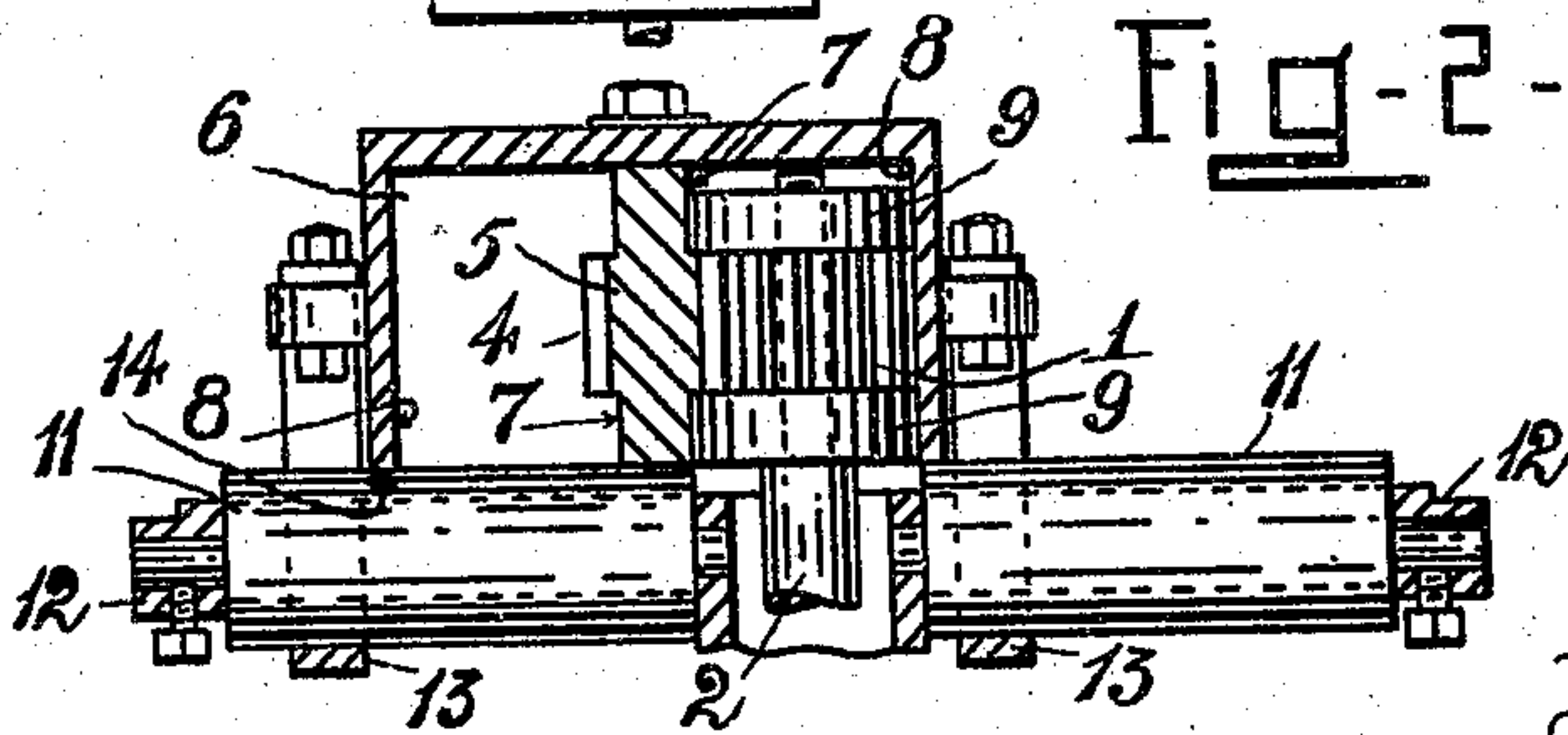


Fig-2-



Witnesses

Walter C. Hart

William J. Harris

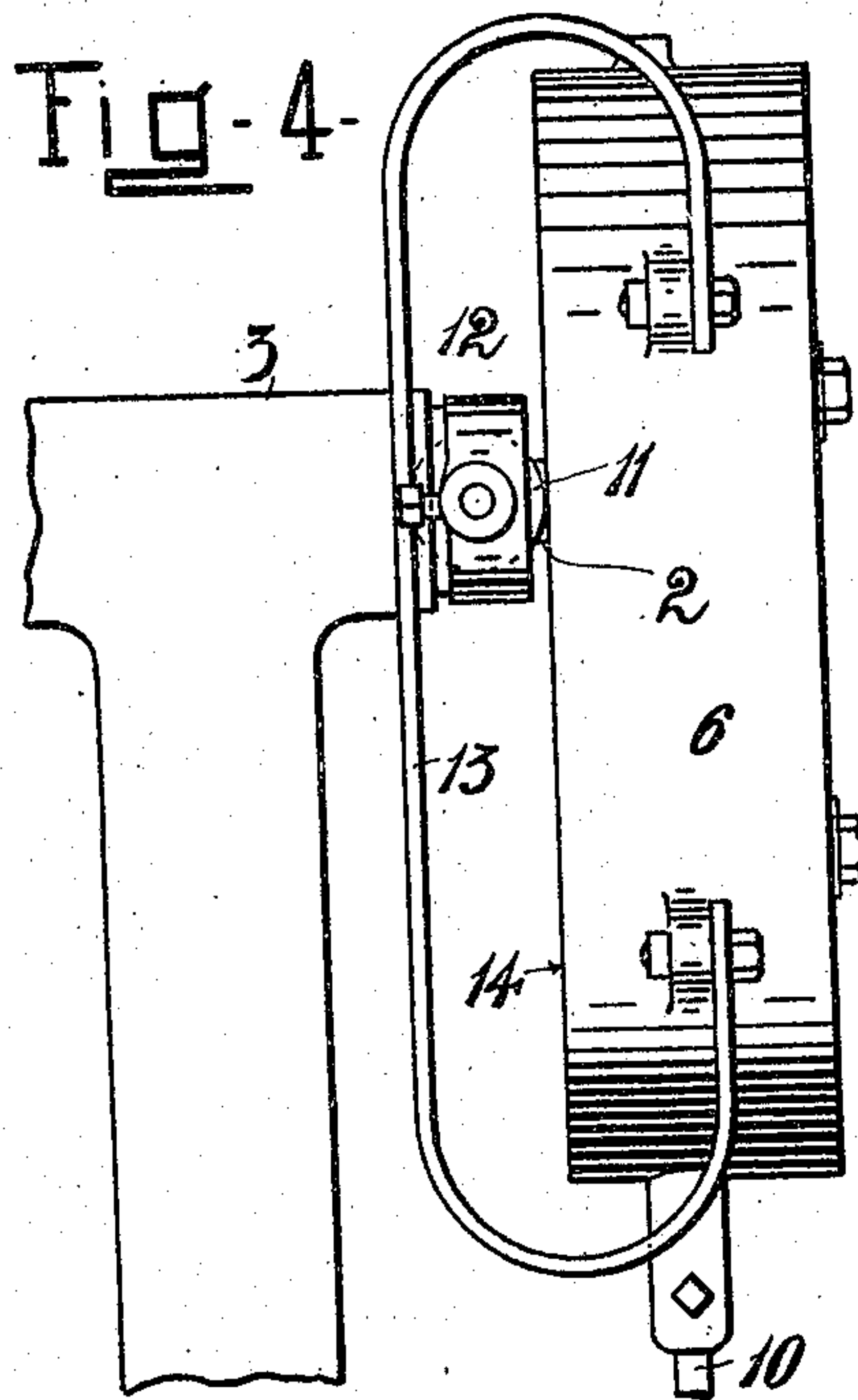
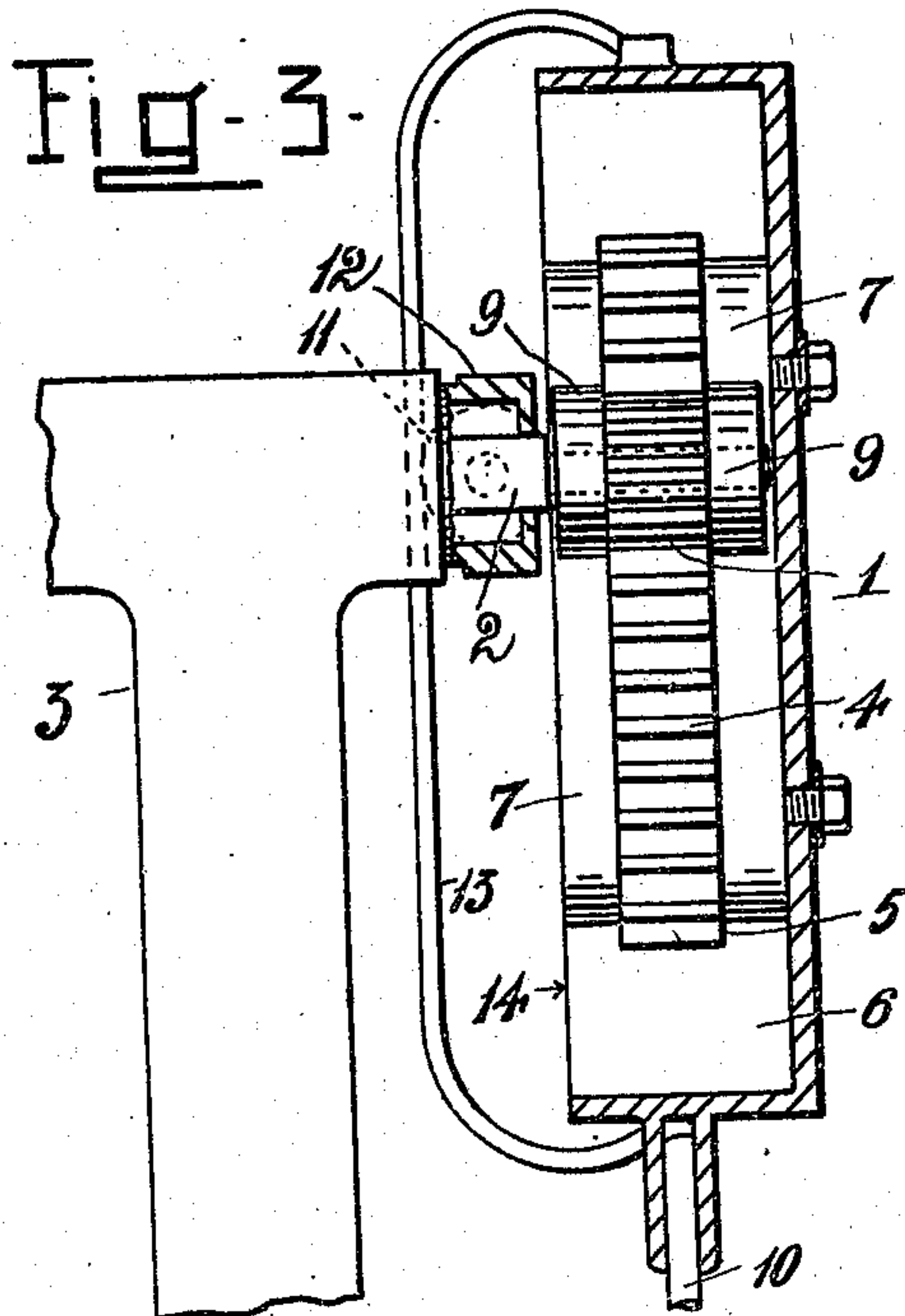
Inventor
by Charles Cannell
Law Water & Sons
Attorneys

No. 847,902.

PATENTED MAR. 19, 1907.

C. CANNELL.
GEAR FOR PUMPS.
APPLICATION FILED MAR. 6, 1906.

2 SHEETS—SHEET 2.



Witnesses

Walter C. Hart

William J. Harris

Inventor
Charles Cannell

Edw. Watson & Son
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES CANNELL, OF ST. MARY'S, TASMANIA, AUSTRALIA, ASSIGNOR TO
JAMES ALSTON, OF SOUTH MELBOURNE, VICTORIA, AUSTRALIA.

GEAR FOR PUMPS.

No. 847,902.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed March 6, 1906. Serial No. 304,593.

To all whom it may concern:

Be it known that I, CHARLES CANNELL, a subject of the King of Great Britain, residing at Groom street, St. Mary's, in the State of Tasmania, Australia, coach-builder, have invented an Improved Gear for Increasing the Stroke of Pumps, of which the following is a specification.

This invention relates to an improved gear for operating the pump-rod of windmills or other pumps; and its object is to provide for a stroke of any required length and at the same time minimize the strain on the mill inherent with crank-gearing generally employed for the purpose.

The invention is illustrated in the accompanying drawings, whereof—

Figure 1 is a front elevation of the gear with parts removed; Fig. 2, a horizontal section on line II II, Fig. 1; Fig. 3, a vertical section on line III III, Fig. 1; and Fig. 4, a side elevation.

Referring now to these drawings, a pinion 1 is mounted on the end of the power-shaft 2, journaled in the main frame 3 of the windmill or other pump, and said pinion is geared with the teeth 4 of a rack-bar 5, secured to an open-faced casing 6, inclosing the gear and formed with semicircular ends, as shown. The teeth 4 are formed in the vertical centers of the sides of the bar 5 and extend completely around same, while the parts of said bar on either side of the teeth act as roller-tracks 7 in conjunction with the sides 8 of the casing.

The pinion is provided on either or both sides with vertical friction-rollers 9 of larger diameter than the pinion, preferably mounted on ball-bearings on the power-shaft 2, said rollers being adapted to fit on either side of the teeth of the rack-bar and roll between said roller-tracks 7 and the sides 8 of the casing, and so insure the pinion meshing with the rack-bar and at the same time acting as vertical guides for the casing.

The casing is detachably connected to the pump-rod, so that when the pinion is rotated by the windmill or other motor it causes the rack-bar to travel around said pinion, thus imparting to the pump-rod a comparatively long reciprocatory motion, the length of which is governed by the length of the rack-bar.

The pump-rod is formed in two pieces 10

15, joined together by a suitable joint to allow the casing to have a small vertical and horizontal movement independent of the pump in order to overcome the undue friction created at the top of said casing when the end of the rack is passing under the pinion. The joint comprises a swivel slotted link 16, attached to the part 15 of the pump-rod, and the latter is provided with an adjustable collar 17, adapted to rest on an arm 18 on the fixed frame and limit the downward movement of said pump-rod. The end of the other part 10 of the rod is passed through a hole in the top of the link and secured within the slot thereof by a button 19. By this arrangement the casing has a movement independent of that of the main pump-rod 15, the length of which is controlled by the length of the slot in the link.

In order to guide the casing vertically, and so prevent an exceptionally long casing twisting at the ends of its up or down strokes, a pair of horizontal friction-rollers 11 are provided, which are loosely mounted in a bracket 12, extending across the face of the casing and secured to the stationary frame 3. The casing is provided with vertical guides 13, secured to either side thereof, and said rollers fit between said guides and the face 14 of the casing. The effect of this arrangement is that the horizontal rollers 11, in conjunction with the vertical rollers 9, counteract any tendency of the casing to tilt or twist in any direction and at the same time constitute practically frictionless bearings for said casing.

It will be understood that in order to lengthen or shorten the stroke of a pump-rod it is only necessary to detach the casing and substitute another therefor.

With the foregoing gear in addition to the extra long stroke obtainable an even motion is imparted to the pump-rod, which is an advantage not apparent with cranks usually employed for the purpose.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A gear for pumps comprising an open-fronted casing formed with sides and with semicircular ends, a rack-bar secured to the back of said casing and formed parallel to the sides thereof, said bar having an endless

row of teeth and recessed roller-tracks on each side of the teeth thereof, a pinion mounted on a rotatable shaft and geared with said teeth, friction-rollers on said shaft
5 situated on each side of said pinion and adapted to roll between said tracks and the sides of the casing, in combination with vertical guides attached to said casing and arranged parallel to the front thereof and friction-rollers situate between said guides and
10 the front of said casing substantially as set forth.

2. A gear for pumps comprising a casing, a rack-bar secured to the casing, having an
15 endless row of teeth and adapted to be detachably connected to a pump-rod, a pinion mounted on a power-shaft and gearing with

said teeth, recessed roller-tracks on each side of the teeth, frictional rollers on each side of said pinion, said rollers adapted to travel
20 between said tracks and the sides of said casing, a bracket secured to a suitable support, a pair of horizontal rollers mounted in said bracket, and vertical guides carried by the casing and adapted to be engaged by said
25 rollers.

In testimony whereof I have hereunto set hand in presence of two subscribing witnesses.

CHARLES CANNELL.

Witnesses:

HARRY STUKERD,
LINDSAY TULLOCH.