

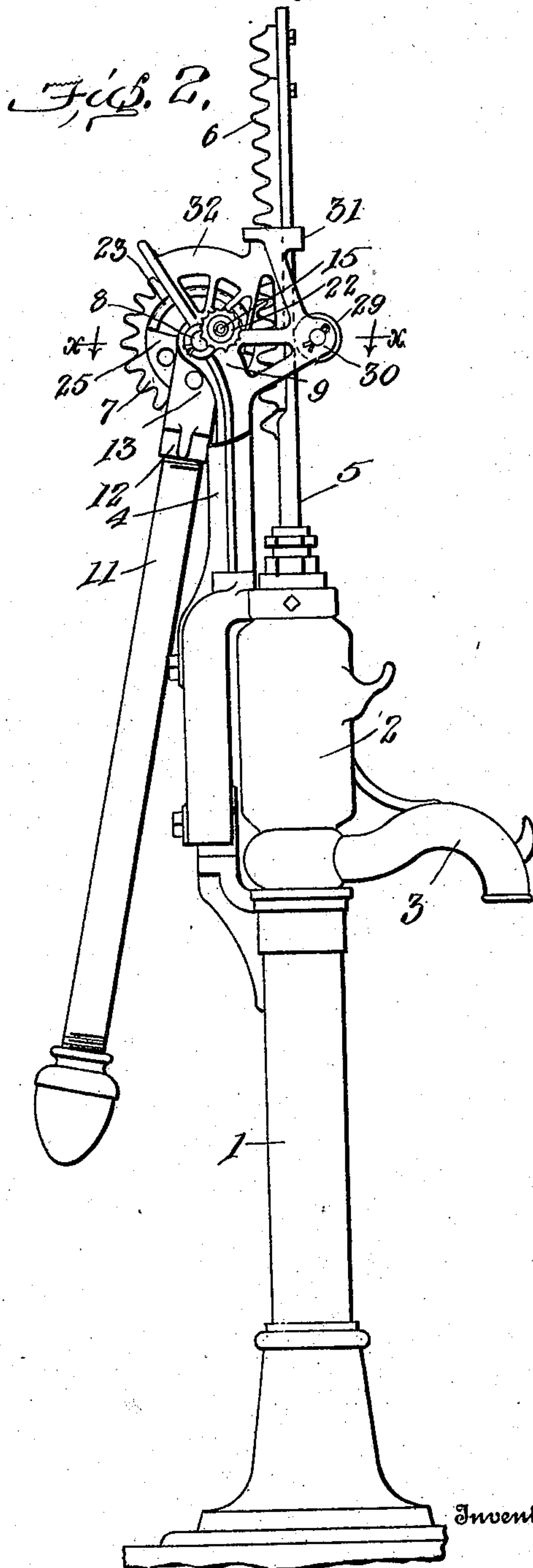
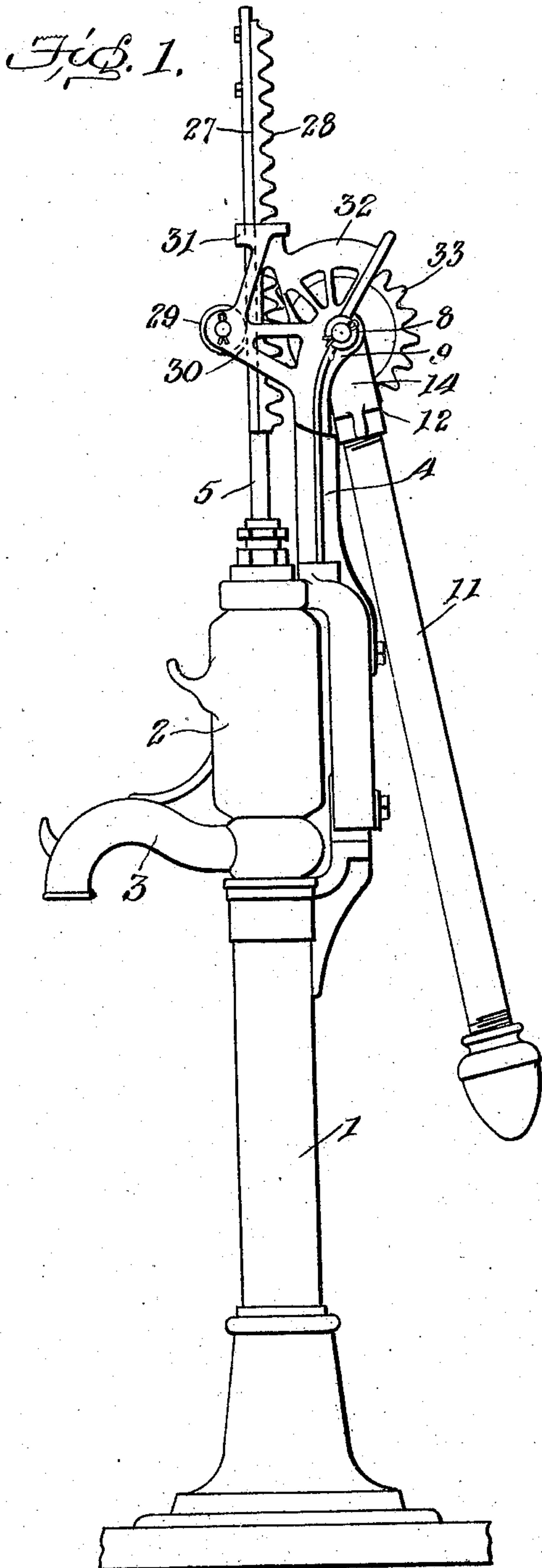
No. 858,529.

PATENTED JULY 2, 1907.

P. A. MYERS.  
PUMP.

APPLICATION FILED FEB. 12, 1906.

3 SHEETS—SHEET 1.



Witnesses

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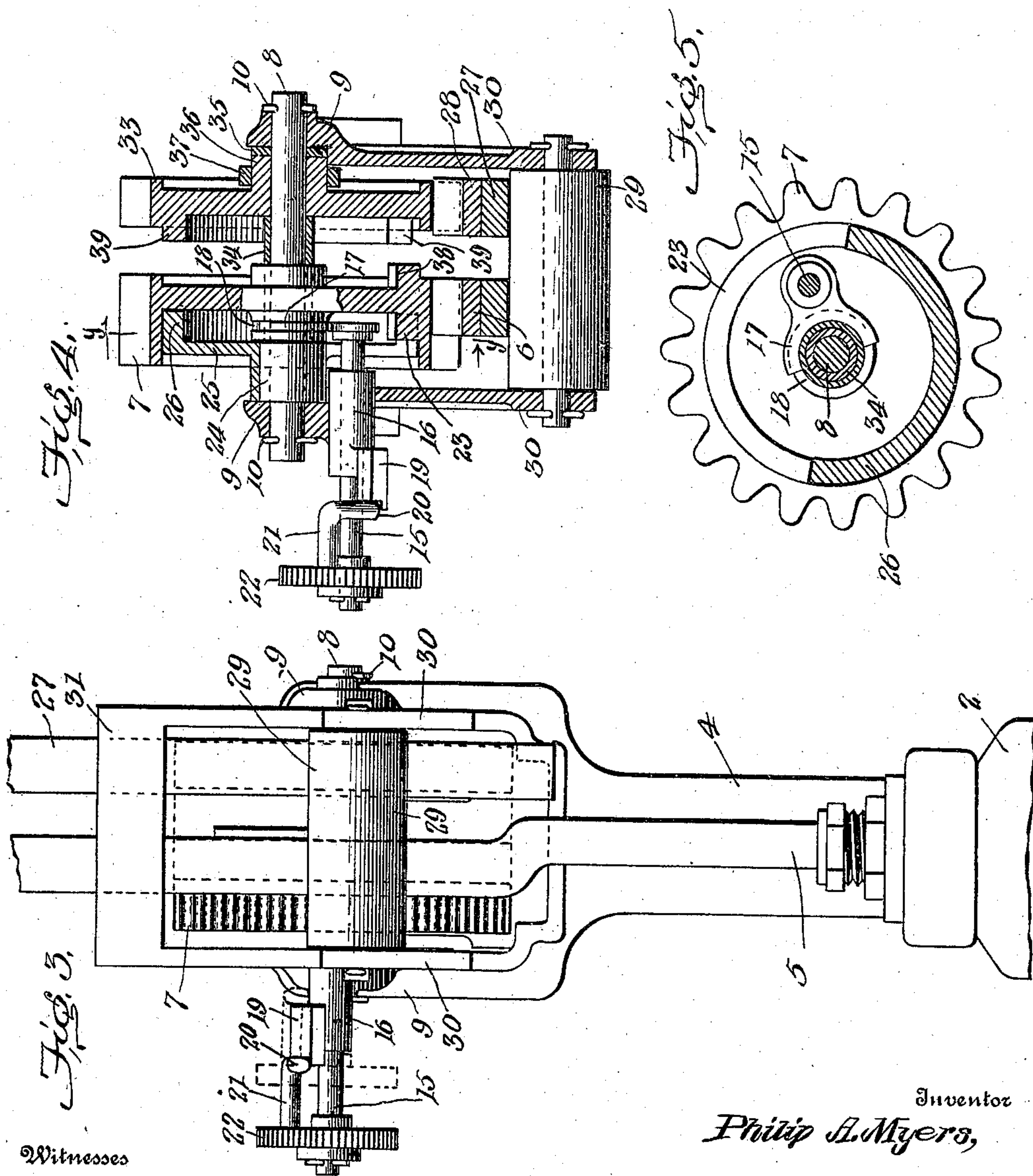
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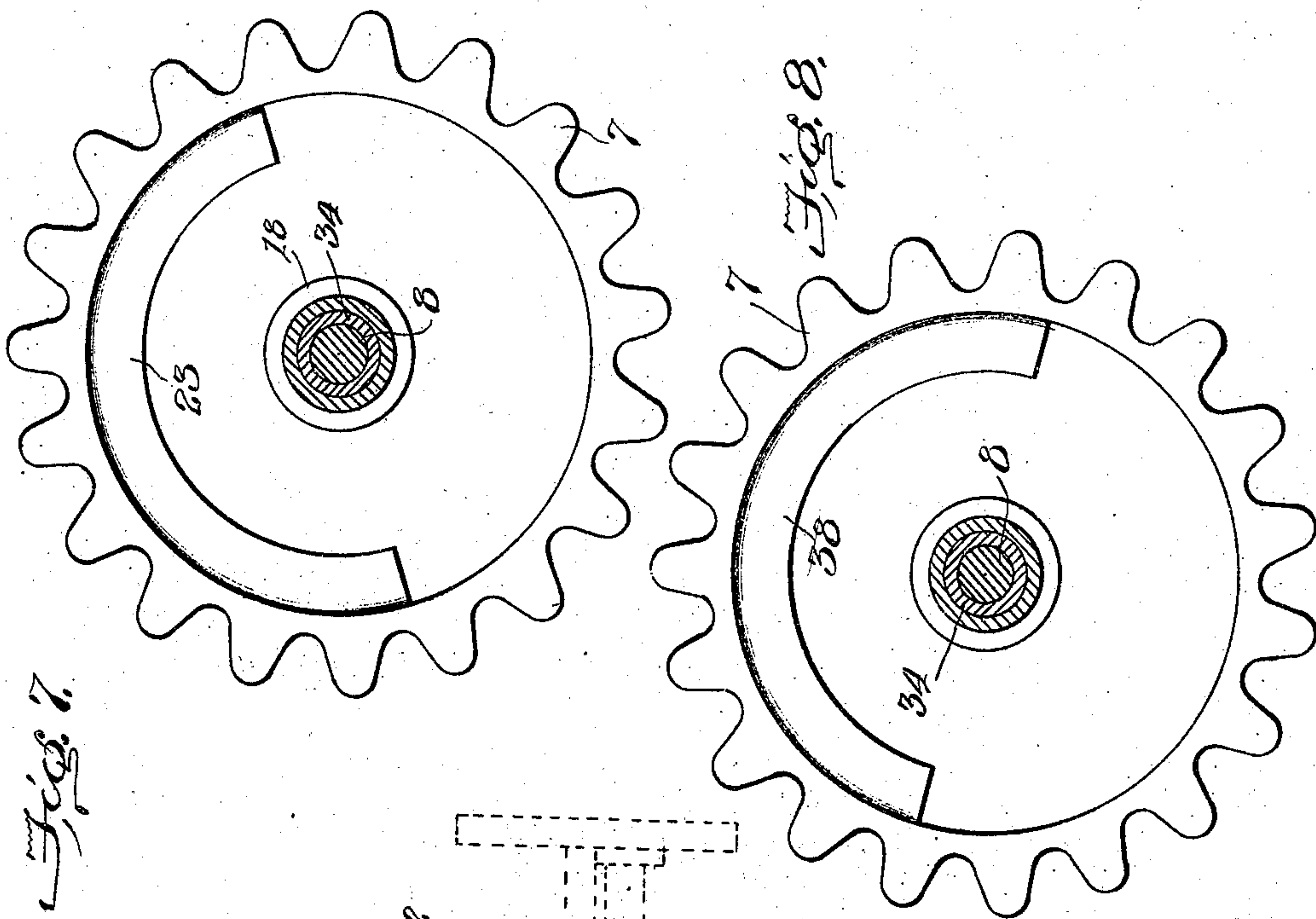
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

PHILIP A. MYERS, OF ASHLAND, OHIO, ASSIGNOR TO F. E. MYERS AND BROTHER, OF ASHLAND, OHIO, A COPARTNERSHIP.

## PUMP.

No. 858,529.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed February 12, 1906. Serial No. 300,578.

*To all whom it may concern:*

Be it known that I, PHILIP A. MYERS, a citizen of the United States, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to pumps, and more particularly to that class of pumps designed for use both as hand pumps and as windmill-actuated pumps, in which the connection between the pump handle which is used in operating the pump by hand and the pump rod is a rack and pinion connection.

The primary object of my present invention is to provide a simple, inexpensive and efficient device whereby the operative connection between the pump handle and pump rod may be readily broken or interrupted when it is desired to operate the pump by means of a windmill, and whereby said operative connection may be as readily established when it is desired to operate the pump by hand.

In its preferred form, my invention has for a further object, in addition to the object just stated, to dispense with the necessity of disconnecting the windmill from the pump rod when the pump is to be operated by hand, and to provide mechanism such, that, without disconnecting any part of the pump, the shifting of a single pinion will serve to establish at will an operative connection between the pump rod and either the pump handle or windmill, as may be desired.

To these and other ends my invention consists in certain novel features which I will now proceed to describe, and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is an elevation of one side of a pump embodying my invention in one form; Fig. 2 is a similar view of the opposite side of said pump; Fig. 3 is an enlarged front elevation of the upper part of the pump; Fig. 4 is an enlarged detail plan section, taken on the line *x x* of Fig. 2 and looking in the direction of the arrows; Fig. 5 is a detail sectional view, taken on the line *y y* of Fig. 4 and looking in the direction of the arrows; Fig. 6 is an enlarged detail view of the upper portion of the structure, viewed from the rear, that is to say, from the side opposite to that shown in Fig. 3; Fig. 7 is a view of one side of the shifting or clutch pinion; and Fig. 8 is a view of the opposite side thereof.

In the said drawings, in which I have shown my invention as applied to a well known form of pump, 1 indicates the standard, 2 the head, provided with a spout 3, 4 the fulcrum support rising from the standard, and 5 the pump rod. This latter is provided with a rack 6, with which meshes a pinion 7, mounted loosely so as to be free to revolve on a journal pin 8, which latter is

mounted in the bifurcated upper ends 9 of the fulcrum support 4. This journal pin may be secured in position in any suitable manner, and I have shown, as a simple device for this purpose, split pins 10, which are inserted through the projecting ends of the journal pin.

11 indicates the pump handle, which is fulcrumed or pivoted to swing around an axis of rotation coincident with that of the pinion 7. Preferably, the journal pin 8 forms the pivotal support for the pump handle 11, which latter is mounted thereon by means of a yoke 12 at its upper end, which yoke embraces the pinion 7, which lies between the arms 13 and 14 of said yoke. The yoke which thus constitutes the upper end of the pump handle and the pinion which meshes with the rack on the pump rod are provided with clutch members which cause the pump handle and pinion to move in unison when said clutch members are engaged, and which permit the pinion to move without affecting the pump handle when the clutch members are disengaged. To effect this engagement of said clutch members, one of said parts which bear them is movable in the direction of its axis of rotation in order to effect said engagement or disengagement. Preferably, the pinion is the movable member, and in the construction chosen for purposes of illustration it is so shown, being movable longitudinally with respect to the journal pin 8 on which it is mounted. This shifting movement of the pinion may be effected in any suitable manner, but I prefer to employ for that purpose the construction shown, in which a shifting rod 15 is mounted in a guide sleeve 16, formed on one of the members 9, and is movable longitudinally therein in a direction parallel with the journal pin 8. Said shifting rod is provided at its inner end with a yoke or fork 17, which engages in a groove 18, formed in the hub of the pinion 7. The shifting rod is locked at the end of its movement in either direction by means of a locking block 19, mounted on the sleeve 16, with the ends of which there engages a toe or projection 20 on a locking bar 21, secured to a knurled head or operating hand grasp 22. This latter is mounted to rotate on the shifting rod while moving longitudinally in unison with the same, so that it forms a convenient hand grasp by which the shifting rod may be moved longitudinally in order to move the pinion 7 along the journal pin 8. At the same time, the operating head 22 may be so turned upon the shifting rod as to cause the projection 20 of the locking rod to move clear of the locking block 19, to permit such longitudinal movement of the shifting rod. When said shifting rod is at the end of its limit of movement in either direction, the operating head may be so turned as to cause the projection 20 to engage with either one end or the other of the locking block 19 and thereby hold the pinion against longitudinal movement on the journal pin.



The clutch members on the pinion and pump handle are preferably constructed in the manner shown. The pinion is provided on its outer face with a semicircular rim 23, while the yoke 12 has formed on or attached to its arm 13 a hub or collar 24, which fits and turns directly upon the journal pin 8, said hub or collar carrying a semicircular radial segment 25, terminating in an inwardly extending semicircular flange or rib 26, which is complementary to the semicircular rib 23 on the disk.

When the pinion 7 is shifted to the position shown in the drawings, the semicircular ribs 23 and 26 extend past each other, with their ends bearing against each other, and the pump handle and pinion move in unison. Shifting of the pinion away from the position shown until the two semicircular ribs which constitute the coupling members lie in different planes of rotation breaks the operative connection between the parts, and the pinion is free to rotate without in any way affecting the pump handle.

It will thus be seen that, in the simplest form of my invention, assuming that the windmill is adapted to be connected directly to the pump rod, as is usual in structures of this character, when the windmill is actually so connected, the pinion 7 will be moved to a position such that its operative connection through the clutch members with the pump handle will be broken, and while the movements of the pump rod and rack will rotate the pinion, they will have no effect upon the pump handle.

When it is desired to operate the pump by hand, the windmill will be disconnected from the pump rod, and the pinion 7 will be shifted over into operative engagement with the pump handle by engaging the clutch members on said pinion and on the pump handle yoke, whereupon the pinion will move in unison with the pump handle, and will, through the rack 6, impart the desired movement to the pump rod. The pump handle may thus be operatively connected with and disconnected from the pump rod in a moment, and without involving the removal of any parts or the physical disconnection of any parts united together by fastening devices.

In the preferred form of my invention, however, I dispense with the necessity of disconnecting the windmill from and connecting it to the pump rod in changing from windmill to hand operation. To this end, I employ, in addition to the pump rod, a second rod, 27, to the upper end of which the windmill is connected in any suitable manner. This rod is arranged parallel with the rack bearing portion of the pump rod 5, and is itself provided with a rack 28. It may be here stated that the rack-bearing portions of both rods are supported against the thrust of the pinions which mesh with them by means of a roller 29, supported in arms 30 extending outward from the members 9 of the fulcrum support, said roller 29 bearing against the backs of the rods in the manner illustrated more particularly in Fig. 4. I also prefer to provide a suitable guide 31, located above the roller 29, through which guide the rods pass and by means of which they are supported laterally. This guide 31 is formed or mounted on a housing 32, supported on the members 9 of the fulcrum support and inclosing and protecting the gearing. A second pinion, 33, is mounted loosely on the journal pin 8 in a position to mesh with the rack 28 of the windmill rod 27, said

pinion being held in position against longitudinal movement by means of a sleeve 34, fitting on the central portion of the journal pin 8 and abutting at one end against the pinion 33, while its other end abuts against the collar or hub 24 of the arm 13 of the pump handle yoke. A washer 35 is interposed between the hub 36 of the pinion 33 and the journal pin support at that end of the journal pin adjacent to which the pinion 33 lies, and the sleeve 34 is of such length as to hold the several parts referred to in position against longitudinal movement on the journal pin. In this construction, the pinion 7 is not mounted directly upon the journal pin, but upon the sleeve 34, on which it slides and rotates, so that its wear does not fall upon the journal pin, but upon said sleeve, which may be readily replaced when necessary. It may be noted in this connection that the arm 14 of the pump handle yoke is not mounted directly upon the journal pin 8, but is provided with a hub or collar 37, fitting loosely on the hub 36 of the pinion 33. Since the collar 24 of the other arm of the yoke is held against longitudinal motion on the journal pin, the collar 37 is, of course, similarly held.

The pinions 7 and 33 are provided on their adjacent faces with complementary clutch members, by means of which said pinions may be so engaged as to rotate in unison. To this end the pinion 7 has on its inner face, which is the face opposite to that bearing the semicircular rib 23, a similar semicircular rib 38, while the pinion 33 has on its face adjacent to the pinion 7 a complementary semicircular rib 39. When the pinion 7 is moved away from engagement with the pump handle yoke to the limit of its movement in that direction, the semicircular ribs 38 and 39 constituting the clutch members of this portion of the device extend past each other and lie in the same plane of rotation, with their ends abutting, so that both pinions rotate in unison. In this construction, the pinion 7 is given a width such that it is always in mesh with the rack 6 of the pump rod 5, whatever the position of said pinion may be, and it will therefore be seen that when said pinion 7 is shifted so as to be in operative engagement with the pinion 33, the movement imparted by the windmill to the rod 27 will be transmitted through the rack 28, pinion 33, clutch members 38 and 39, pinion 7 and rack 6 to the pump rod 5.

When it is desired to change from windmill operation to hand operation, the mere shifting of the pinion 7 in the necessary direction along the journal pin 8 breaks the operative connection between the windmill and pump rod and establishes the operative connection between the pump handle and said rod.

It will be noted that the construction is such that the windmill may be attached in any desired way to the rod 27, and that it is not necessary to uncouple the windmill or detach any physically connected parts in shifting from one form of power to the other. Preferably, the arrangement of the parts is such that when the pinion 7 is midway of its travel along the journal pin, it is not in engagement with either of the operating devices, but is free from all connection therewith. However, while I deem this neutral central position desirable, by reason of the freedom which it gives to move the pump rod without any corresponding movement of the operating parts, I do not deem the same essential, although it is also advantageous for the reason that it pre-



vents the pinion from being in simultaneous engagement with both sets of operating devices.

I do not wish to be understood as limiting myself to the precise details of construction hereinbefore described and shown in the accompanying drawings, as it is obvious that these details may be varied without departing from the principle of my invention. For instance, although I have referred to the parts which mesh with the racks as pinions, it is obvious that any unnecessary portions of these pinions may be omitted, thus constituting them, in effect, gear segments, and I wish to be understood as including such gear segments within the meaning of the term "pinion" as employed herein.

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

1. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a pinion mounted on the standard and adapted to mesh therewith, and a pump handle pivoted to swing in both directions independently of the pinion, cooperating clutch members mounted on said pinion and said pump handle and one of said two elements being laterally movable to engage and disengage said clutch members, substantially as described.

2. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a journal pin mounted on the standard, a pinion mounted on said journal pin and free to rotate and slide longitudinally thereon, and a pump handle independently pivoted on said journal pin, said pinion and pump handle having cooperating clutch members, substantially as described.

3. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a pinion mounted on the standard and adapted to mesh therewith, and a pump handle pivoted to swing in both directions independently of the pinion, cooperating clutch members carried by said pinion and said pump handle and one of said two elements being laterally movable to engage and disengage said clutch members, and means for shifting said laterally movable element, substantially as described.

4. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a pinion mounted on the standard and adapted to mesh therewith, and a pump handle pivoted to swing in both directions independently of the pinion, said pinion and pump handle having cooperating clutch members and one of them being laterally movable to engage and disengage said clutch members, and means for shifting said laterally movable element and for locking the same in adjusted position, substantially as described.

5. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a journal pin mounted on the standard, a pinion mounted on said journal pin and free to rotate and slide longitudinally thereon, and a pump handle independently pivoted on said journal pin, said pinion and pump handle having cooperating clutch members, and a shifting rod mounted to slide in the standard, engaging the pinion, and provided with means for locking said rod, substantially as described.

6. In a pump of the character described, the combination, with a standard and shifting pinion, of a guiding sleeve on the standard provided with a locking block, a

shifting rod engaging the pinion and mounted to slide in said sleeve, a head mounted to rotate on said shifting rod and moving longitudinally therewith, and a locking rod attached to said head and provided with a locking projection adapted to engage the locking block, substantially as described.

7. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a windmill rod provided with a rack, a pinion meshing with the last-mentioned rack, a pump handle pivoted to swing independently, a shifting pinion meshing with the pump rod rack, and means for connecting said pinion at will with either the pump handle or the other pinion, substantially as described.

8. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a windmill rod provided with a rack, a pinion meshing with the last-mentioned rack, a pump handle pivoted to swing independently, a shifting pinion meshing with the pump rod rack, said pump handle and first-mentioned pinion being provided with clutch members, and the shifting pinion lying between them and being provided with cooperating clutch members, and means for moving said shifting pinion to engage it with either the pump handle or the first-mentioned pinion, substantially as described.

9. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a windmill rod provided with a rack, a pinion meshing with the last-mentioned rack, a pump handle pivoted to swing independently, a shifting pinion meshing with the pump rod rack, said pump handle and first-mentioned pinion being provided with clutch members, and the shifting pinion lying between them and being provided with cooperating clutch members, means for moving said shifting pinion to engage it with either the pump handle or the first-mentioned pinion, and means for locking said shifting pinion in either of said engagements, substantially as described.

10. In a rack and pinion pump adapted for both windmill and hand operation, a standard, a pump rod provided with a rack, a windmill rod provided with a rack, means for guiding said rods and racks, a journal pin mounted on the standard, a pinion mounted on said journal pin and meshing with the rack of the windmill rod, a pump handle having a yoke pivoted to swing independently on said journal pin, one of its arms having a clutch member, a sleeve mounted on said journal pin between said clutch member and pinion, said pinion being also provided with a clutch member on its inner face, a shifting pinion mounted on said sleeve, meshing with the rack of the pump rod, and having clutch members on its opposite faces cooperating with those of the pump rod and first-mentioned pinion, and means for shifting and locking in engaged position said shifting pinion, substantially as described.

11. In a pump adapted for both windmill and hand operation, a standard and a shaft mounted thereon, in combination with separate pump and windmill rods, an independently pivoted pump handle, and connecting mechanism mounted on said shaft between said elements comprising a member movable longitudinally of said shaft whereby the pump rod may be connected at will with either the windmill rod or the pump handle, substantially as described.

In testimony whereof, I affix my signature in presence of two witnesses.

PHILIP A. MYERS.

Witnesses:

W. W. INGMAND,  
A. N. MYERS.