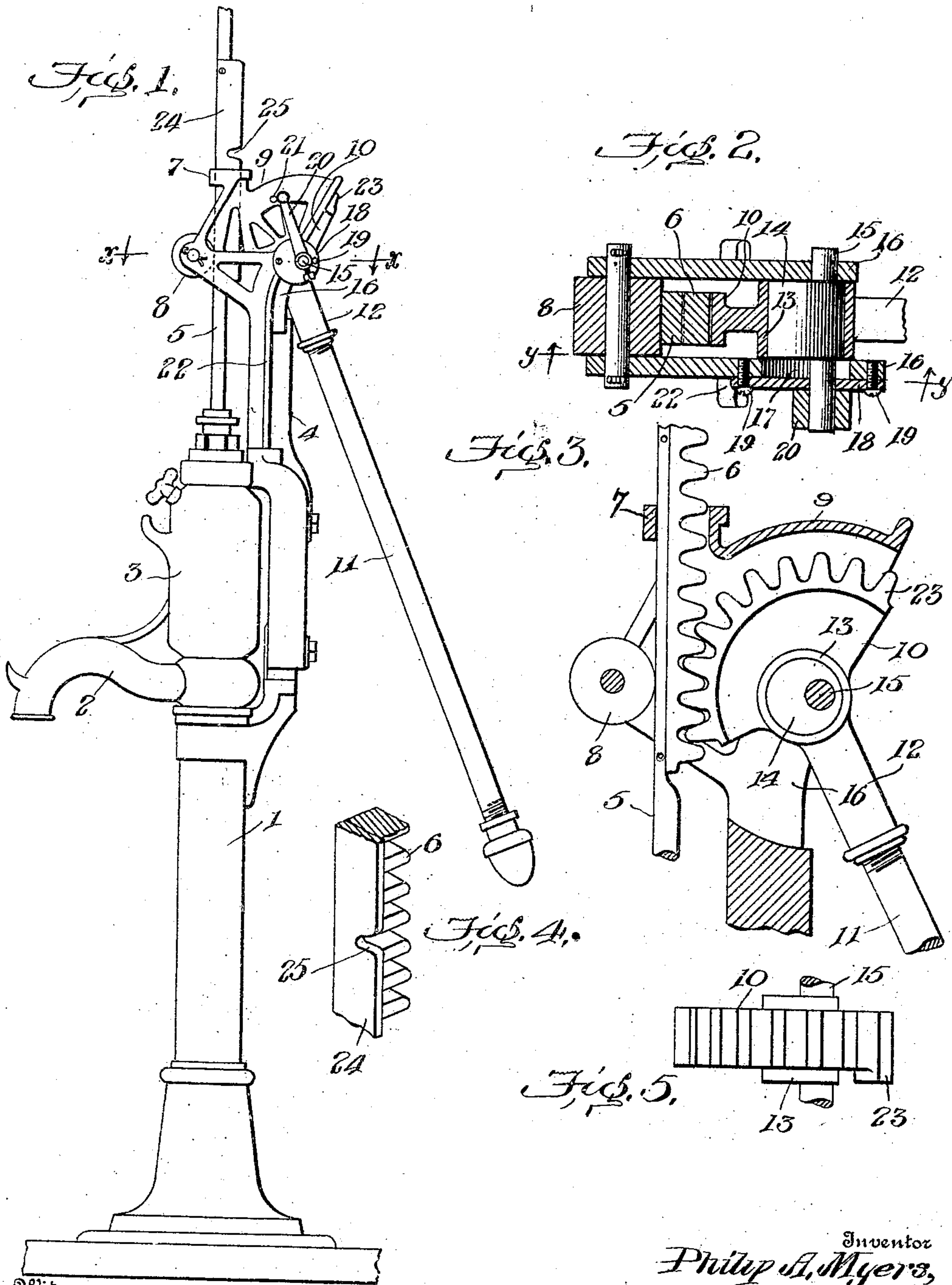


No. 869,926.

PATENTED NOV. 5, 1907.

P. A. MYERS.  
PUMP.

APPLICATION FILED FEB. 12, 1906.



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# UNITED STATES PATENT OFFICE.

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## PUMP.

No. 869,926.

Specification of Letters Patent.

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*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 gear segment connection.

The primary object of my present invention is to provide a simple, inexpensive and efficient device whereby the gear segment on the pump handle may be readily moved into and out of mesh with the rack, the former being its position when the pump is operated by hand and the latter its position when the pump is operated by the windmill.

A further object of my invention is to provide means for insuring the proper registration of the gear segment and rack when the parts are thrown into mesh, so as to insure a full stroke of the pump when the handle is operated.

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

In the accompanying drawings, Figure 1 is a side elevation of a pump embodying my invention in one form; Fig. 2 is an enlarged detail plan section thereof, taken on the line *xx* of Fig. 1 and looking in the direction of the arrows; Fig. 3 is a vertical sectional view, taken on the line *yy* of Fig. 2 and looking in the direction of the arrows; Fig. 4 is a detail perspective view of a portion of the rack; and Fig. 5 is a detail view of the gear segment.

In the said drawings, in which I have shown my invention as applied to a well known form of pump, 1 indicates the standard, 3 the head, provided with a spout 2, 4 the fulcrum support rising from the standard, and 5 the pump rod. These parts may be of any approved construction. The pump rod is flattened at its upper end to receive or have formed thereon a rack 6, and the support 4 is provided with a guide 7 for this portion of the rod, and with a roller 8, which bears against the back of the pump rod at the point where the gear segment meshes with the same. The support 4 is also provided with a hood or housing 9, which incloses and protects the gear segment.

The gear segment, indicated by the reference numeral 10, is secured to the end of the pump handle 11, being preferably provided with an integral socket 12, into which the handle proper is threaded. Said gear segment is provided with a bearing sleeve 13, which fits upon an eccentric 14, which latter forms a pivot or

bearing upon which the gear segment turns. This eccentric 14 is secured to, or, preferably, formed in one piece with a rock shaft 15, which latter is mounted in suitable bearings in the lateral cheek pieces 16 of the upper end of the support 4, which support is bifurcated at its upper end to receive the gear segment, its eccentric bearing, and the upper end of the pump handle. Preferably, I form in one of the cheek pieces 16 an opening 17, of sufficient size to permit the introduction of the eccentric 14, the same being closed by means of a plate 18, secured in position by screws 19. The rock shaft 15 has its bearing at one end in this plate 18, while the bearing of the other end of the rock shaft is directly in the other cheek piece 16. The shaft 15 projects at one end sufficiently to receive an operating handle 20, by means of which said shaft may be rocked through a distance about equal to a half revolution or a little more. In the position of the parts shown in the drawings, the shaft 15 is at one end of its range of movement, and the eccentric 14 lies on that side of the shaft 15 nearest the rack bar 6, in which position of the parts the gear segment 10 meshes with the teeth of said rack bar, as shown. It will also be noted that, in this position of the parts, the handle 20 rests against the stop pin or projection 21, which limits its movement in this direction and insures proper relations between the gear segment and rack. There is a tendency of the eccentric 14 to turn when in this position, said tendency being in a downward direction, and being resisted by the contact of the handle 20 with the stop 21, thus holding the parts firmly in position.

When it is desired to disconnect the gear segment and rack, as in the case when the pump is to be actuated by the windmill, the rock shaft 15 is given a half turn by means of the handle 20, thereby bringing the eccentric to the opposite side of said shaft, and moving the gear segment out of mesh with the rack. This operation can be instantly performed, and the pump handle may be thrown into and out of gear in a moment. Preferably, the support 4 is provided with a stop projection 22, shown in the present instance as being in the form of a strengthening flange for said support, with which the handle 20 comes into contact when the parts are thrown out of gear, the weight of the segment and handle upon the eccentric tending to turn this latter beyond the desired point, and such excess of rotation being prevented by the contact of the handle with the stop 22.

It is desirable in pumps of this description that the segment should engage the rack, when thrown into mesh with the same, in such a way that the full stroke of the pump may be obtained and the handle may move through its predetermined arc in making that stroke. It will further be noted that when the gear segment is thrown into mesh with the rack, the position of the parts is usually such that the pump rod is in



its lowermost position, since, ordinarily, the rod is disconnected from the windmill beforehand, and therefore falls by gravity into the position noted. This necessitates the moving of the pump handle into a practically horizontal position in order to cause a proper engagement of the gear segment and rack. To insure this proper engagement I have devised the construction illustrated more particularly in Figs. 4 and 5, in which it will be seen that one of the teeth of the segment, preferably the last or uppermost tooth, is given an extra width, greater than that of the rack, as indicated at 23. There is provided on the corresponding side of the rack a blocking piece 24, which may be formed in one piece with the rack or rod, but which is preferably a separate strip secured thereon, as shown. This blocking strip extends outward so as to obstruct the spaces between the teeth of the rack and prevents the wide tooth 23 from entering the rack except between the two teeth with which it should properly engage to give the full stroke, and to this end said blocking strip is notched or cut away at this point, as indicated at 25. It will be seen that when the pump handle is moved up into horizontal position prior to throwing the gear segment into mesh, the wide tooth 23 will come into contact with the blocking strip before it engages, or fully engages, between the teeth of the rack unless this latter is in a proper position, thereby preventing improper engagement of said parts. When the rack is in proper position, the wide tooth enters the notch 25, the teeth of the gear segment enter into proper mesh with those of the rack, and the rock shaft makes its full movement, bringing the handle 20 against the stop 21 and indicating that the parts are in proper mesh.

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.

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

1. In a rack and gear pump adapted for both windmill and hand operation, a standard provided with a fulcrum support, a rock shaft mounted in said fulcrum support and provided with an eccentric and an operating handle, a gear segment journaled on said eccentric and having a pump handle connected therewith, a pump rod provided with a rack with which the gear segment is adapted to mesh, means for supporting the pump rod against the thrust of the gear segment, and stop projections on the fulcrum support arranged in the path of the operating handle of the rock shaft at the limits of its motion in each direction, said handle being held against one of said

stop projections by the weight of the load on the eccentric when said eccentric is on one side of the rock shaft and the parts are in mesh, said handle being held against the other stop projection by the same means when the eccentric is on the other side of the rock shaft and the parts are out of mesh, substantially as described.

2. In a rack and gear pump adapted for both windmill and hand operation, a standard provided with a fulcrum support having cheek pieces, a rock shaft having an eccentric fixed thereon between its ends, one end of said rock shaft bearing on one of the cheek pieces, the other cheek piece having an aperture for the passage of the eccentric, a removable plate on said last-mentioned cheek piece in which the other end of the rock shaft has its bearing, means for operating said rock shaft, a gear segment mounted on said eccentric and provided with a pump handle, and a pump rod having a rack with which said gear segment is adapted to mesh, substantially as described.

3. In a rack and gear pump adapted for both windmill and hand operation, a pump rod provided with a rack, in combination with a pump handle provided with a gear segment, means for moving said gear segment toward and from said rack to throw it into and out of mesh, and positioning means for insuring the proper registry of said gear segment and rack when thrown into mesh, substantially as described.

4. In a rack and gear pump adapted for both windmill and hand operation, a pump rod provided with a rack, in combination with a pump handle provided with a gear segment, means for moving said gear segment toward and from said rack to throw it into and out of mesh, and means for insuring the proper registry of said gear segment and rack when thrown into mesh, said means comprising a tooth of extra width on the gear segment and a blocking strip on the rack provided with a corresponding notch, substantially as described.

5. In a rack and gear pump adapted for both windmill and hand operation, a pump rod provided with a rack, in combination with a pump handle provided with a gear segment, the last and uppermost tooth of said segment being of extra width, the pump rod being provided with a blocking strip having a notch to receive said wide tooth when the pump handle is raised, and means for moving said gear segment toward and from said rack to throw it into and out of mesh therewith, substantially as described.

6. In a rack and gear pump adapted for both windmill and hand operation, a pump rod provided with a rack, a blocking strip located at one side of said rack and obstructing the spaces between the teeth thereof at one end of said spaces, a pump handle provided with a gear segment, and means for moving said gear segment toward and from said rack to throw the same into and out of mesh therewith, said gear segment having one tooth of extra width, and the blocking strip having a notch to receive said extra wide tooth when the parts are in proper registry, substantially as described.

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

PHILIP A. MYERS.

Witnesses:

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A. N. MEYERS.