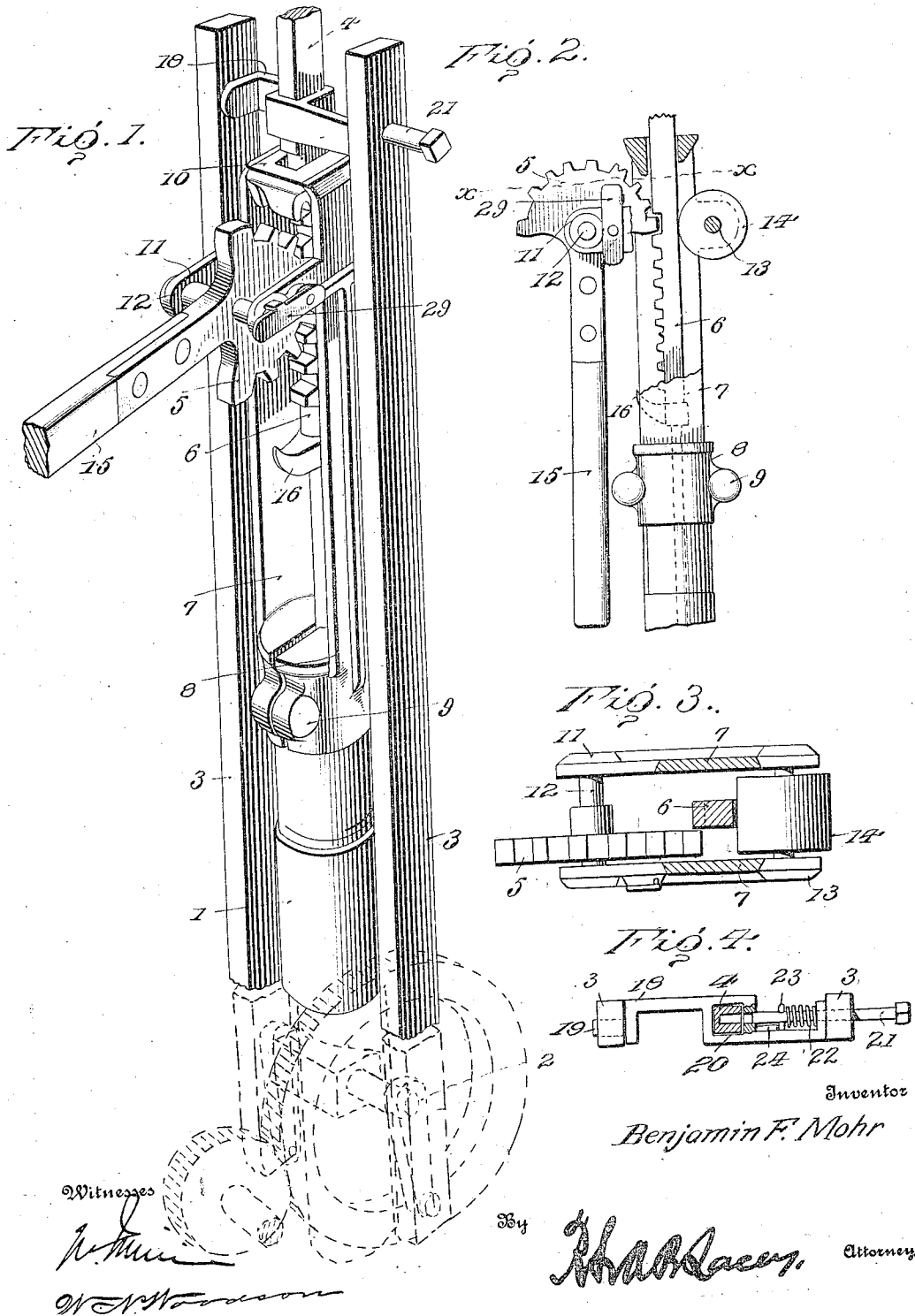


B. F. MOHR.
PUMP COUPLING.
APPLICATION FILED MAR. 21, 1908.

Patented Feb. 1, 1910.
2 SHEETS—SHEET 1.

948,072.



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Fig. 5.

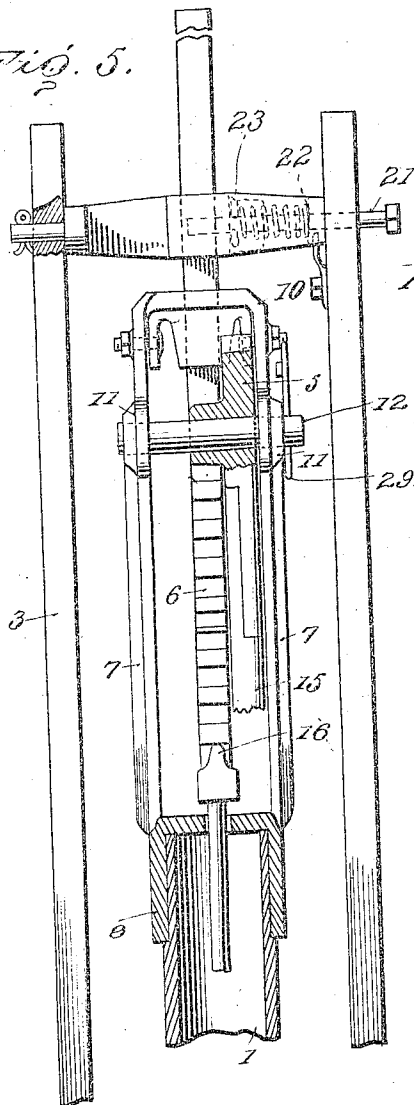


Fig. 6.

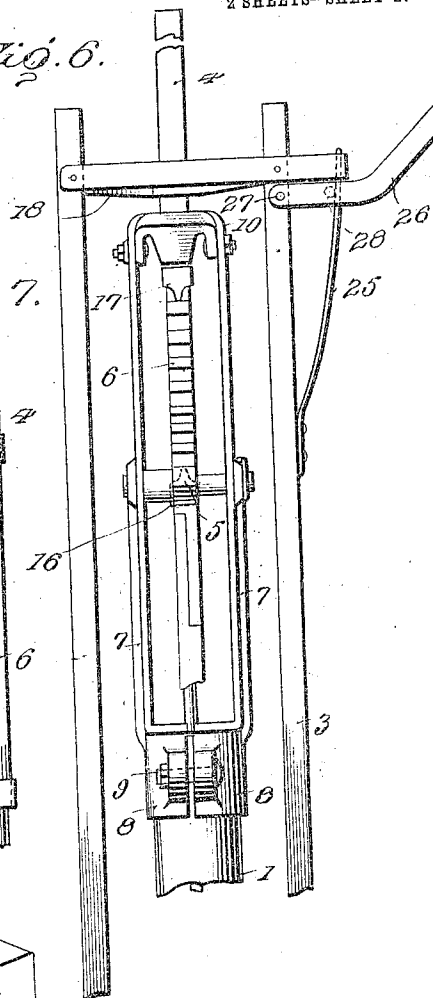


Fig. 7.

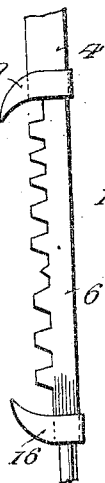
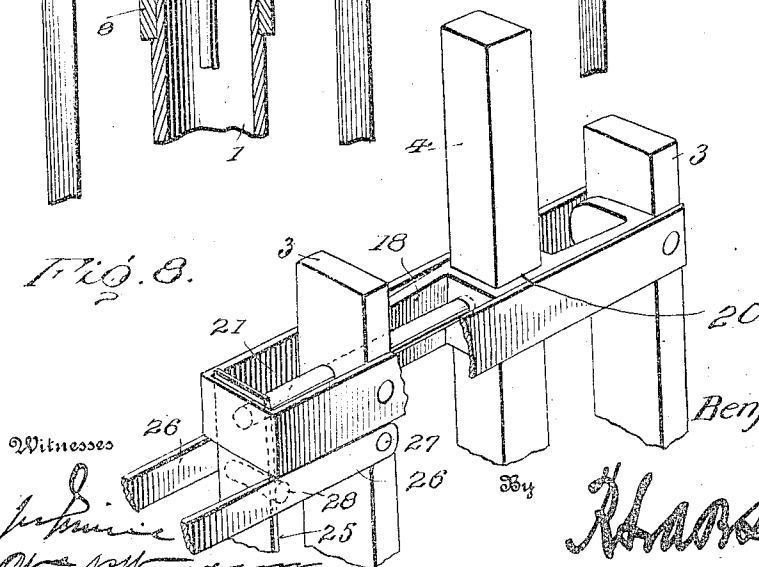


Fig. 8.



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PUMP-COUPLING.

948,072.

Specification of Letters Patent.

Patented Feb. 1, 1910.

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To all whom it may concern:

Be it known that I, BENJAMIN F. MOHR, citizen of the United States, residing at Mifflinburg, in the county of Union and State of Pennsylvania, have invented certain new and useful improvements in Pump-Couplings, of which the following is a specification.

The present invention relates to pumps which are designed to be operated either by hand, a pump jack, or other power, and has for its object to provide novel means for throwing the connections into and out of gear according to the power to be applied for working the pump.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a perspective view of a pump embodying the invention. Fig. 2 is a detail view partly in section of the pump head, rack bar and coöperating segment. Fig. 3 is a section on the line X-X of Fig. 2. Fig. 4 is a top plan view of the cross bar, the pump rod being in section. Fig. 5 is a front view of the parts shown in Fig. 2. Fig. 6 is a view similar to Fig. 5 of a modification, the segment being moved into gear with the rack bar. Fig. 7 is a side view of the modified form of rack bar illustrated in Fig. 6. Fig. 8 is a detail perspective view of the connecting means between the pump rod and pitmen shown in the modification, Fig. 6.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The pump 1 may be of any type, as well as the pump jack, the latter including the crank shaft 2 and the crank arms to which the pitmen 3 are connected. The pump head is secured to the upper end of the pump and provides a support for the pump rod 4 and a support for the segment 5 which coöperates with the rack bar 6 connected to

or forming a part of the pump rod. The pump head is preferably formed of similar sections, each consisting of a member 7 and a clamp element 8. The clamp elements 8 are adapted to embrace opposite sides of the pump body or barrel and are secured thereto by means of bolts or like fastenings passed through apertured ears forming a part of said clamp elements 8. The members 7 are transversely spaced and are connected at their upper ends to a block 10 which is apertured to receive the pump rod 4 and direct the same in its reciprocating movements. Arms 11 project laterally from the members 7 and are transversely apertured to receive the axle 12 of the segment 5. Other arms 13 project from the members 7 in an opposite direction to the arms 11 and support a roller 14 which sustains the lateral thrust upon the bar 6 when the pump is operated by hand. The teeth of the rack bar 6 are irregular, as shown most clearly in Figs. 2 and 7, and the teeth of the segment 5 are likewise irregular and constructed to match with the teeth of the rack bar when the parts 5 and 6 are in proper position. The irregularity of the teeth is such as to prevent throwing the segment into mesh with the rack bar until said parts have been properly adjusted to bring corresponding teeth into matching position. As a result of this construction, the segment when in coöperative position with the rack bar, occupies a given or predetermined relationship so as to insure proper operation of the pump by means of the handle 15 attached to or forming a part of said segment. A projection 16 is provided at the lower end of the rack bar 6 to limit the upward movement of the pump rod and the downward movement of the outer end of handle 15. A corresponding projection may be provided at the upper end of the rack bar, as indicated in Figs. 6 and 7, to limit the downward movement of the pump rod and the upward movement of the handle 15. The projections 16 and 17 also prevent lateral movement of the segment when the pump rod is at or near the limit of its stroke in each direction. The axle 12 of the segment 5 is mounted in the arms 11 so as to turn freely therein, as well as to move longitudinally, thereby admitting of the segment being moved laterally to bring its teeth into or out of meshing relation with the teeth of the rack bar 6.

The object of the stops 16 and 17 is to

prevent any possible disconnection between the rack 6 and the segment. It will be seen that with a construction of this class a disconnection between these two members in operating might be disastrous, as the segment would disconnect from the pump rod and allow the pump rod to drop. The advantage of the irregular teeth for the rack bar and segment is also obvious inasmuch as otherwise there is no positive way by which the segment may be placed in mesh with the rack bar, so that the middle of the segment shall come against the middle of the rack. The extremity of the rack bar might be engaged with the middle of the segment, and hence a very small stroke would be allowed. The change of one tooth more or less to one side or the other of the segment would alter the stroke of the pump and very much lessen its efficiency. The construction shown provides therefore, for an easy connection of the segment with the rack bar by a laterally sliding movement, an extremely simple construction which cannot easily get out of order and is of very little cost. It also provides for the positive relation between the segment and rack bar and means for preventing the disconnection of the rack bar with the segment at the extremities of its movement. All these elements are peculiarly necessary with my construction and with pumps in general.

A cross bar 18 is provided at opposite ends with journals 19 which obtain a bearing in the pitmen 3 so as to transmit motion to the pump rod when the latter is connected with said cross bar. An eye 20 is provided centrally of the cross bar 18 to receive the pump rod 4, and when said pump rod is disconnected from the pitmen and is operated by hand, or by a wind mill, said pump rod moves freely in the eye or opening 20 of the cross bar. When it is required to operate the pump by means of the pump jack, the cross bar 18 is secured to the pump rod by means of a lock device which consists, essentially, of a lock bolt 21, the same operating through a portion of the eye 20 and a part at the outer end of said cross bar and adapted to have its inner end enter an opening provided in said pump rod. The lock bolt 21 may be operated by hand and is normally pressed inward by means of a spring 22 mounted thereon. A pin 23 passed through an opening of the lock bolt 21 sustains the end thrust of the spring 22 and forms a stop to engage with a shoulder 24 to hold the lock bolt out of engagement with the pump rod when the pump jack is thrown out of gear, Fig. 4. In the modification shown in Figs. 6 and 8, the lock bolt 21 is engaged by means of a flat spring 25 secured at one end to a pitman 3. A lever 26, pivoted at 27 to the pitman provided with the spring 25, has a projection 28 extended into

the path of the spring 25 to throw the lock bolt out of engagement with the pump rod, when it is required to operate the pump by hand.

When the pump is to be operated either by means of the pump jack, or other power than by hand, the segment 5 is moved laterally, as indicated in Figs. 3 and 5, to throw its teeth out of mesh with the teeth of the rack bar 6, thereby admitting of the pump rod being reciprocated without imparting any movement to the handle 15, which would be objectionable as readily comprehended. When the pump is to be operated by hand, the lock bolt 21 is moved so as to disconnect the cross bar and pitmen from the pump rod 4, and the segment 5 moved laterally to bring its teeth in meshing relation with the teeth of the rack bar. After this change has been effected, the pump may be operated by hand through the instrumentality of the handle 15 without imparting any movement to the cross bar 18 or the pitmen 3. A latch 29 is pivoted to one of the arms 11 and serves to hold the axle 12 when moved to bring the segment in mesh with the rack, so as to prevent casual displacement of the parts 5 and 6 when operating the pump by hand.

Having thus described the invention, what is claimed as new is:

1. In a pump, the combination with a rack bar connected with a pump rod, of a pitman for transmitting power to the pump rod, means for detachably engaging the pitman to the pump rod, a yoke located on the pump structure and having a transverse pivot pin, a toothed segment pivotally mounted on the pivot pin and shiftable laterally thereon, the said segment in one position engaging with the rack bar and in the other position being disengaged therefrom, and said segment being provided with a handle whereby it may be operated, and means for limiting the movement of the rack bar relative to the segment.

2. In a pump, the combination with a rack bar connected to a pump rod, of a pitman for transmitting power to the pump rod, means for detachably engaging the pitman with the rod, a yoke supported on the pump structure and having a transverse pivot pin, a toothed segment mounted on the pivot pin and transversely shiftable thereon, in one position engaging with the rack and in the other position being disengaged therefrom, and stops on the rack at opposite ends of same engageable with the segment to limit the upward and downward movement of the rack bar.

3. In a pump of the character described, the combination with a pump rod and a rack bar connected thereto, said rack bar having its teeth irregular along its whole extent, of a pitman for transmitting power to

the pump rod, means for detachably engaging the pitman with the pump rod, a yoke supported on the pump structure and having a transverse pivot pin, and toothed segment laterally shiftable on the pin to bring its teeth into or out of engagement with the rack, said segment having a handle and the teeth of the segment being irregular to correspond with the irregular teeth of the rack bar, the said rack bar being provided with stops at each end limiting the movement of the segment relative thereto.

4. In a pump, the combination of a rack bar connected to a pump rod, said bar having teeth irregular along the whole extent of the rack bar, of a pitman for transmitting power to the pump rod, means for detachably connecting the pitman with the rack bar, a yoke supported on the pump structure, a transversely extending pivot pin in the yoke, and a segment laterally shiftable along the pin into and out of engagement with the rack bar and having a handle, the teeth of said segment being irregular and so shaped that the middle teeth of the segment will engage with the middle teeth of said rack bar, the rack being provided with

means for limiting its motion relative to the segment.

5. The combination with a pump barrel, of a yoke mounted thereon, a pump rod, a rack bar connected to the pump rod, pitmen located on either side of the pump barrel, a cross bar connected to said pitmen and having an eye through which the rack bar passes, a spring actuated bolt passing transversely through one end of the pitmen and into the said eye and engageable with the rack bar, means for holding the bolt out of engagement with the rack bar, a transverse pivot pin mounted on said yoke, and laterally shiftable therein, a segment gear shiftable transversely with said pivot pin into and out of engagement with the rack bar, said gear having a projecting handle, and a latch for holding the segment in its adjusted position.

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

BENJAMIN F. MOHR. [L. s.]

Witnesses:

V. B. HILLYARD,
W. N. WOODSON.