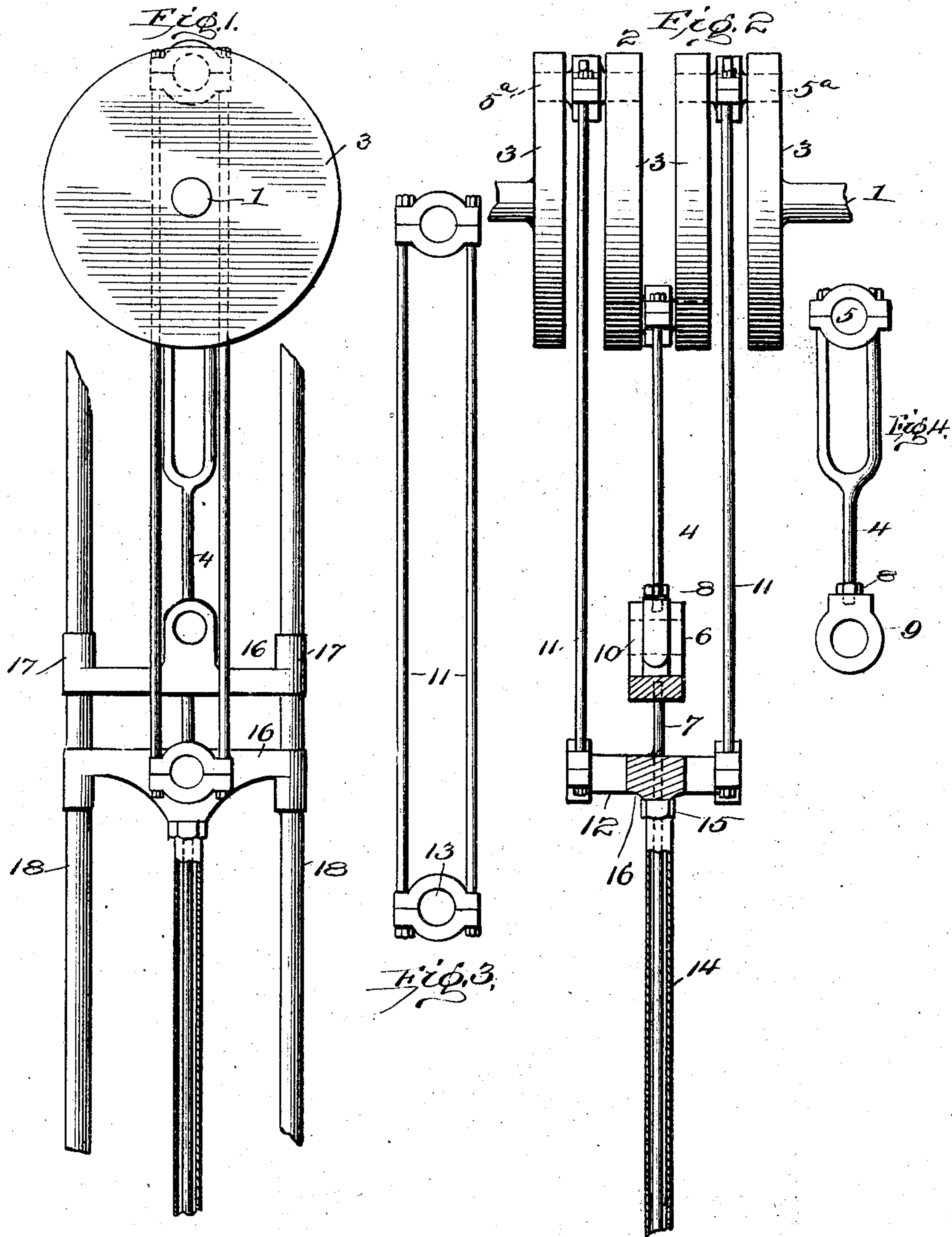


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E. HOORNBECK.
DOUBLE ACTING PUMP MECHANISM.

APPLICATION FILED SEPT. 19, 1904.



Witnesses

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UNITED STATES PATENT OFFICE.

EUGENE HOORNBEEK, OF RIVERSIDE, CALIFORNIA.

DOUBLE-ACTING PUMP MECHANISM.

SPECIFICATION forming part of Letters Patent No. 785,553, dated March 21, 1905.

Application filed September 19, 1904. Serial No. 225,026.

To all whom it may concern:

Be it known that I, EUGENE HOORNBEEK, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented certain new and useful Improvements in Double-Acting Pump Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in double-acting pump mechanisms.

The object of the invention is to improve the construction of a double-plunger mechanism for pumps, whereby any side draft is eliminated.

A still further object of the invention is to construct a simple and efficient mechanism which is composed of a minimum number of parts.

With these and other objects in view the invention consists in certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the claim hereto appended.

In the drawings, Figure 1 is a view in side elevation, showing the double-acting plunger mechanism partly in section. Fig. 2 is an elevated front view of the construction depicted in Fig. 1, except that the guide-rods are eliminated therefrom. Fig. 3 is a view in side elevation of one of the outer double connecting-rods. Fig. 4 is a view in side elevation of the central or inner pump-rod connection.

Referring to the drawings by reference-numerals, 1 designates a shaft of any preferred construction, to which is secured a power-head 2. The power-head 2 is a crank mechanism which comprises a plurality of disk members. Secured to two of the central disks is an inner or central bifurcated connecting-rod 4. The bifurcated end of rod 4 is pivotally connected upon a shaft 5 to said central disks 3, and its opposite end is detachably

secured to the bifurcated end 6 of the inner plunger-rod 7. An adjustable nut 8 is employed upon rod 4 for the purpose of positively retaining said rod in a fixed position with the annulus 9, which is mounted upon the transverse pin 10, carried by the bifurcated portion 6 of rod 7.

Secured between each of the outer disks 3 of the power-head 2 and the contiguous disk there are double connecting-rods 11, which are similar in detail construction, the same being secured to cross-head 12 and the disks of the power-head 2 in similar manner. Therefore detail description of one will suffice for the other double connecting-rods.

A pin or rod 5^a is secured to the outer disk and one of the central or inner disks, thereby retaining two of the disks in a fixed position, so that when movement is imparted to the outer disk simultaneous movement is also imparted to one of the central disks. As the remaining two disks are similarly connected and the two central disks are secured in a fixed position by means of member 5, all of the disks are actuated when movement is imparted to either of the outer disks by means of rotating the shaft 1. Pivotaly mounted upon each of the connecting member's 5^a is a plurality of parallel connecting-rods 11. Said rods 11 are secured to a cross-head 12 by means of pivotaly mounting the same upon pins 13, which are integrally secured in diametrically opposite positions upon cross-head 12. The inner or primary central rod 7 is adapted to work within a tubular casing 14, which is employed as an outer pump-rod. Said outer rod or casing 14 is removably secured centrally, by means of nut 15, upon the lower portion of cross-head 12. By the positioning of the parallel connecting-rods 11 and the central connecting-rod 4 it will be obvious that there is not any side draft in a mechanism constructed in accordance with the present invention. The direct strain on the pistons, to which the rods 7 and 14 are secured, obviates any side strain which would be produced if only one of the sets of connecting-rods 11 was employed.

Integral extensions 16 are secured in diametrically opposite positions to the bifurcated portion 6 of rod 7 and to the cross-head 12. Said integral extensions 16 are provided with
5 a pair of sleeves 17, which are adapted to be positioned upon guide bars or rods 18, which are employed in a complete mechanism. The guiding extension of the bifurcated portion 6 and cross-head 12 positively secures the plun-
10 ger 7 and 14 in proper coöperative position, thereby obviating any possibility of the mechanism becoming disarranged while in operation.

Owing to the positioning of the connecting
15 and guiding rods of the mechanism and the other elements of this invention, an efficient and durable mechanism is produced for the purpose of employment in double-plunger pumps for deep wells, regardless of the style
20 of the power-head or its connections to a driving mechanism.

It will be obvious from the foregoing description to one versed in the art to which this invention relates that certain alterations, modi-
25 fications, and changes may be made, and I therefore reserve the right to make such alterations, modifications, and changes as shall fairly fall within the spirit and scope of the present invention.

Having thus fully described my invention, 30 what I claim as new, and desire to secure by Letters Patent, is—

In a mechanism of the class described, the combination with parallel guide-rods, of alin-
ing cross-heads interposed therebetween, 35 sleeves integral therewith and surrounding and movably mounted in the guide-rods, a tubular pump-rod connected to the lower cross-head, a plurality of rotatable disks arranged in pairs, parallel rods connected to each pair 40 of disks and pivotally secured to opposite sides of the lower cross-head, a pump-rod movably mounted in the tubular rod and secured to the upper cross-head, a bifurcated extension upon
45 said cross-head, an annulus pivoted within said extension, and a rod detachably secured to the annulus and having a forked end between and pivotally connected to the pairs of disks whereby the parallel rods and the forked
50 rods are adapted to move in opposite directions simultaneously.

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

EUGENE HOORNBEEK.

Witnesses:

O. S. STILES,

B. E. DOUGLAS.