

June 5, 1928.

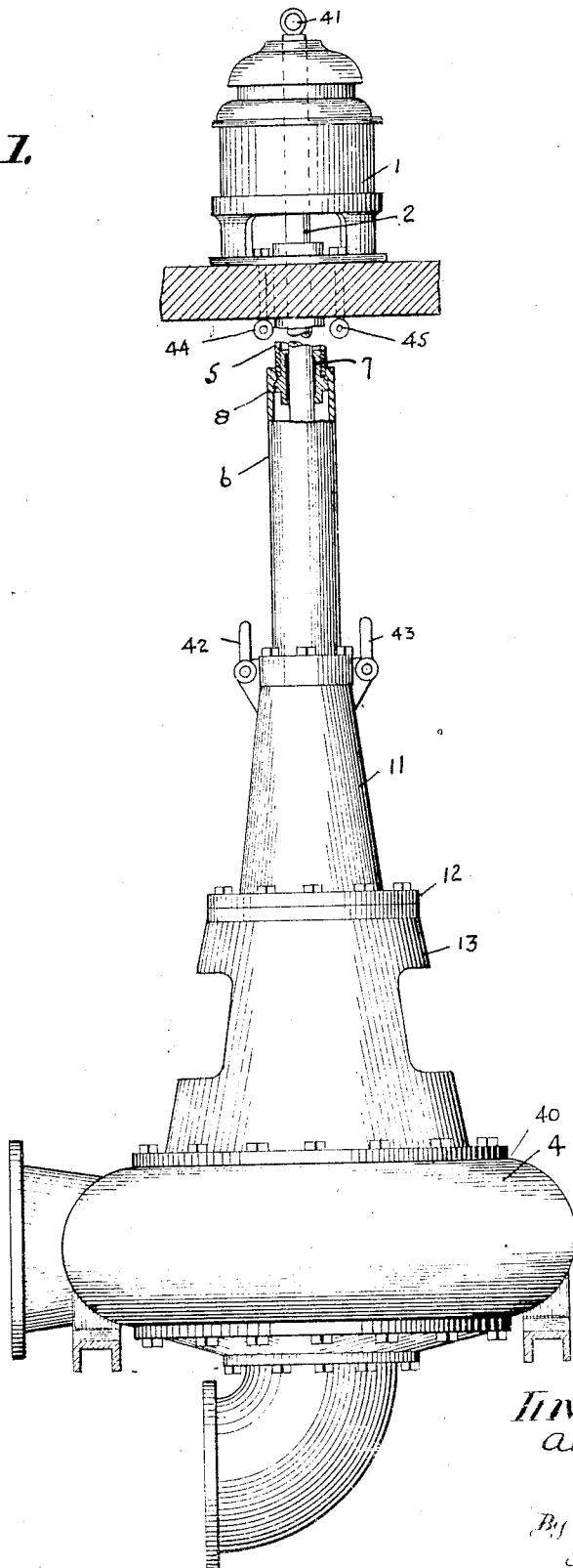
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A. HOLLANDER
VERTICAL PUMP MECHANISM

Filed March 26, 1927

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Fig. 1.



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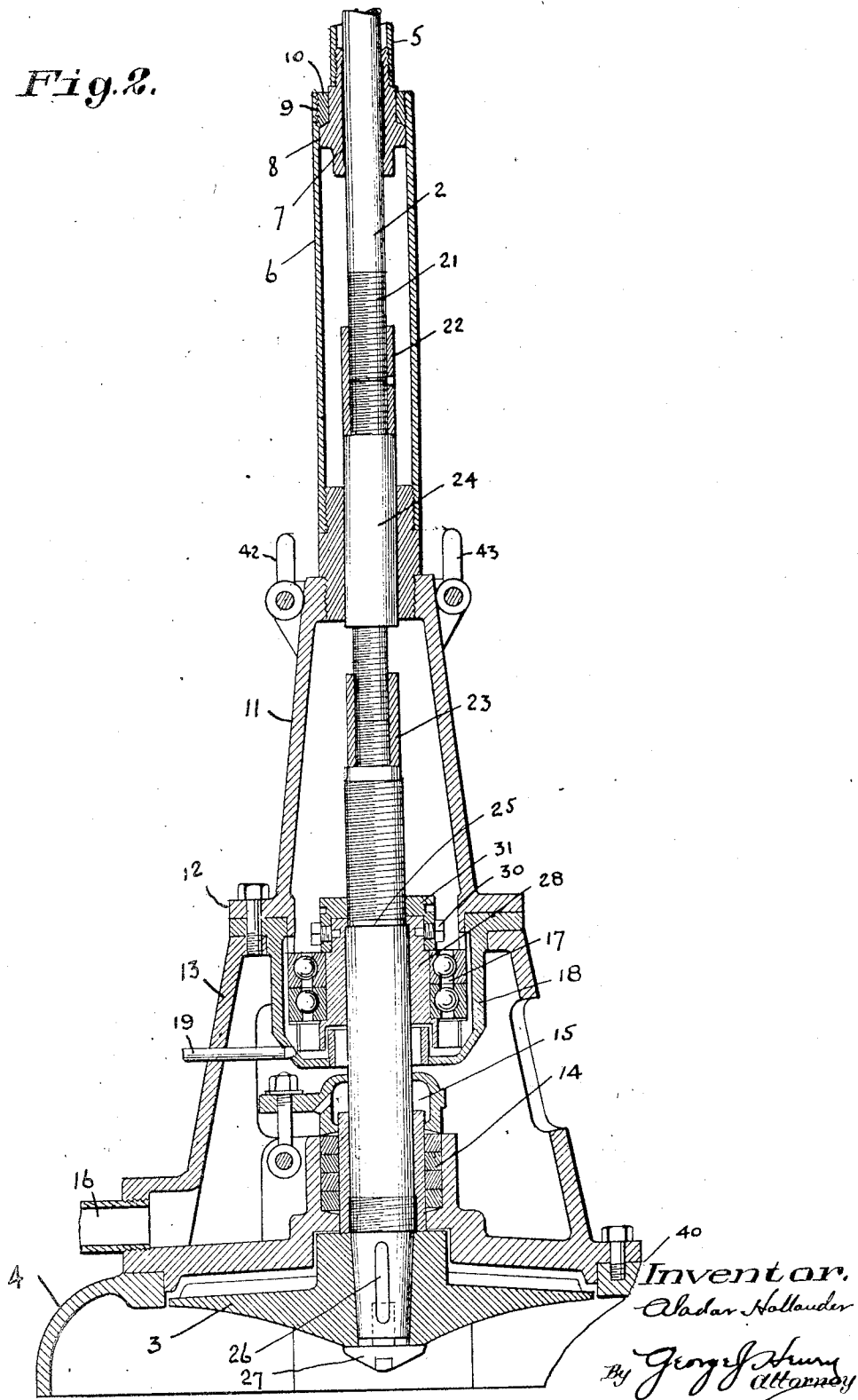
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Fig. 2.



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Fig. 3.

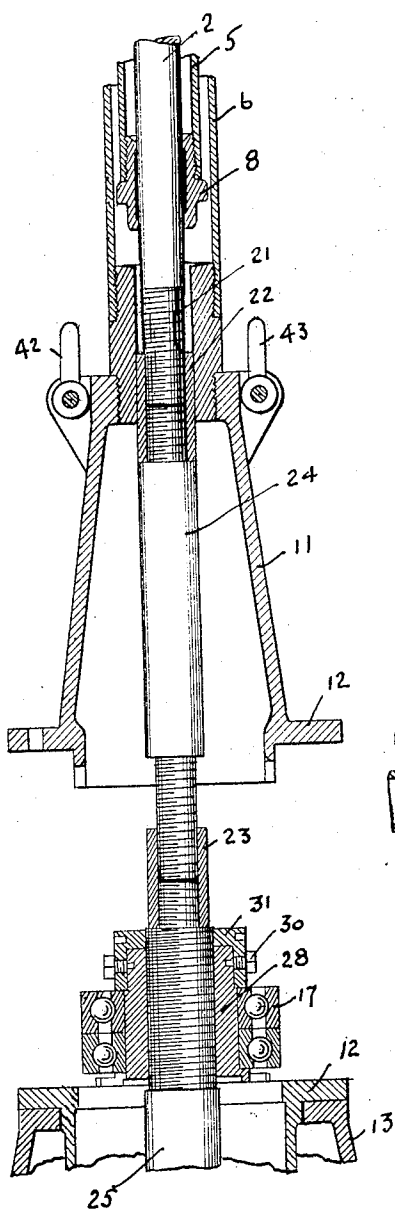
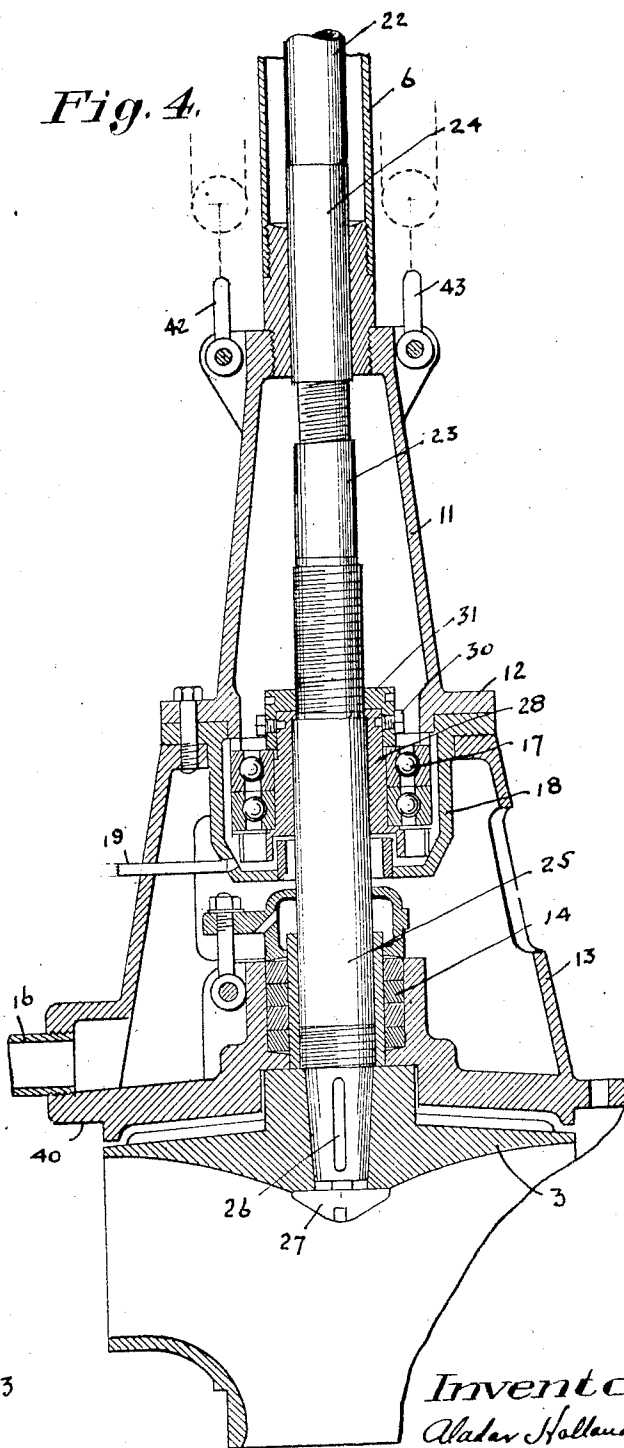


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALADAR HOLLANDER, OF BERKELEY, CALIFORNIA, ASSIGNOR TO BYRON JACKSON
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VERTICAL-PUMP MECHANISM.

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My invention has for its principal object pump mechanism for a vertical shaft direct connected pump so that the various parts of the equipment may be disassembled and re-assembled or may be adjusted, repaired or replaced with the least expenditure of time and money and with the greatest degree of accuracy and reliability.

Other objects will appear from the drawing and specifications which follow:

These objects I attain by suspending the pump parts from a stationary pump column which surrounds the rotating shaft and making said column in sections adapted to telescope with respect to each other.

I also prefer to sectionalize the driving shaft so that when the column parts are telescoped, a section of the driving shaft may be removed to facilitate access to and the handling of the parts therebelow.

I prefer to fix the pump casing independent of the pump column in which case, when the pump is telescoped by sliding one of the sections upon the other, the casing remains in its old position and the impeller and rotating element are withdrawn upward therefrom, thus giving complete access to the impeller and its associated parts and to the inside of the casing.

By referring to the accompanying drawings my invention will be made clear.

Fig. 1 is an assembly drawing of a vertical shaft pump mechanism employing a motor for driving the same and having my invention incorporated therein.

Fig. 2 is a fragmentary detail of a cross section of the lower portion of the pump column of Fig. 1 and associated parts.

Fig. 3 shows a portion of the parts of Fig. 2 with the pump column telescoped upward to expose the bearing parts, and the bearing removed from its housing.

Fig. 4 shows a portion of the lower part of the column of Fig. 2 telescoped upward to expose the impeller and its associated parts.

Throughout the figures similar numerals refer to identical parts.

An operating motor is shown by the numeral 1, driving the shaft 2, to the lower end of which is connected in a conventional manner the impeller 3, within the casing 4. The shaft 2 is enclosed by the upper column member 5, over which telescopes the lower column member 6, the shaft being provided

with such guide bearings as may be required, one of which is shown at 7 as formed with the collar 8.

The collar 8 is fixed to the lower end of the member 5 and freely within the member 6.

An internal thread at 9 in the upper portion of the member 6, fixes thereto the secondary sleeve 10, which normally rests upon the collar 8.

To the lower end of the member 6 is secured the connection 11, which is fixed with a flange 12 to the bearing chamber 13, the latter in turn being mounted upon the casing 4. The gland at 14 has a drain compartment at 15 from which leakage water is delivered through the duct 16 and which prevents water from getting into the double ball bearing shown at 17. This bearing may be thus retained properly lubricated in its sealed housing 18, and oil may be supplied thereto from above through the pump column, or pumped in, or drained out or circulated through the pipe 19 as desired. When the flange 12 of the connection 11 is disconnected from the bearing chamber 13 and the column members 5 and 6 telescoped, full access is given to the bearing parts around the shaft.

The shaft 2 is provided with a long thread at 21 a sleeve coupling at 22 and a second sleeve coupling at 23 with a stub shaft 24 interposed therebetween.

A terminal shaft 25 with a long thread supports the impeller 3, through the key connection 26, and bolt head 27.

It will thus be seen that when the motor 1 is operated, the shaft 2 transmits the power through the coupling 22, stub shaft 24, coupling 23, terminal shaft 25 to the impeller 3.

A bearing sleeve at 28 is fixed by the set screws 30 to rotate with the terminal shaft 25, and these screws also engage the threaded member 31 on the terminal shaft threads.

The bolts 30 may be loosened for the purpose of effecting relative rotation between the sleeve 28 and terminal shaft 25 and thus sleeve 28 may be raised or lowered with respect to the shaft 25 by first rotating the collars 22 and 23 upon the threads 21 in a direction opposite to the direction of rotation of the rotating element. The coupling between the shaft members may be broken and the stub shaft 24 may now be removed, access being had thereto as indicated by the

telescoping upward of the lower column member as shown in Fig. 3, the flange joint 12 having been unbolted for that purpose and the member 11 raised the necessary space distance from the bearing housing 13.

In this way complete access is had to the bearing 17, the drain compartment 15 and the packing gland 14 for any desired purpose, as replacement or repair.

When the flange joint at 12 is retained bolted to the bearing compartment 13 and the flange joint at 40 is broken the entire shaft with its impeller and lower column member may be raised as by the eye bolt 41 (see Fig. 1) so that the parts are separated as shown in Fig. 4.

In each of these dis-assembled operations illustrated in Figs. 3 and 4 the lower column member 6 telescopes upward over the upper column member 5 and in the case of Fig. 3 the telescoping of the lower column member is effected as by chain blocks connected with the eyes 42, 44 and 43, 45 respectively.

It will now be seen that without disturbing the operating motor 1, or the pump casing 4, any and all of the operating parts of my pump structure may be dis-assembled, repaired, and re-assembled as desired.

I claim:

1. In vertical pump mechanism, the combination comprising a column having a plurality of joined sections adapted to telescope over each other, a pump casing, an impeller in said casing, a shaft passing through said column and into said casing and adapted to drive said impeller, a bearing housing adjacent said casing, a bearing for said shaft within said housing, a connecting member between said column and joined to said housing whereby when the said joint between the connecting member and the housing is broken and the sections are telescoped the connecting member is separated from the

said housing and the bearing and housing are exposed.

2. In a vertical pump mechanism, the combination comprising a column having a plurality of joined sections adapted to telescope over each other, a pump casing, an impeller in said casing, a shaft having a removable stub portion and passing through said column and into said casing and adapted to drive said impeller, a bearing housing adjacent said casing, a bearing for said shaft within said housing and positioned between said stub portion and said casing, a connecting member between said column and joined to said housing whereby when the said joint between the connecting member and the housing is broken and the sections are telescoped the connecting member is separated from the said housing and the bearing and housing are exposed.

3. In a vertical pump mechanism, the combination comprising a column having a plurality of joined sections adapted to telescope over each other, a pump casing, an impeller in said casing, a shaft having a removable stub portion and passing through said column and into said casing and adapted to drive said impeller, a bearing housing adjacent said casing, a bearing for said shaft within said housing and positioned between said stub portion and said casing, a connecting member between said column and joined to said housing whereby when the said joint between the connecting member and the housing is broken and the sections are telescoped the connecting member is separated from the said housing and the bearing and housing are exposed and whereby on the said stub portion being removed the bearing may be removed without disturbing the other portions of the said shaft.

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