M. B. VAN NESS.

PUMP MECHANISM.

APPLICATION FILED SEPT. 21, 1908.

915,253.

Patented Mar. 16, 1909.

2 SHEETS—SHEET 1.

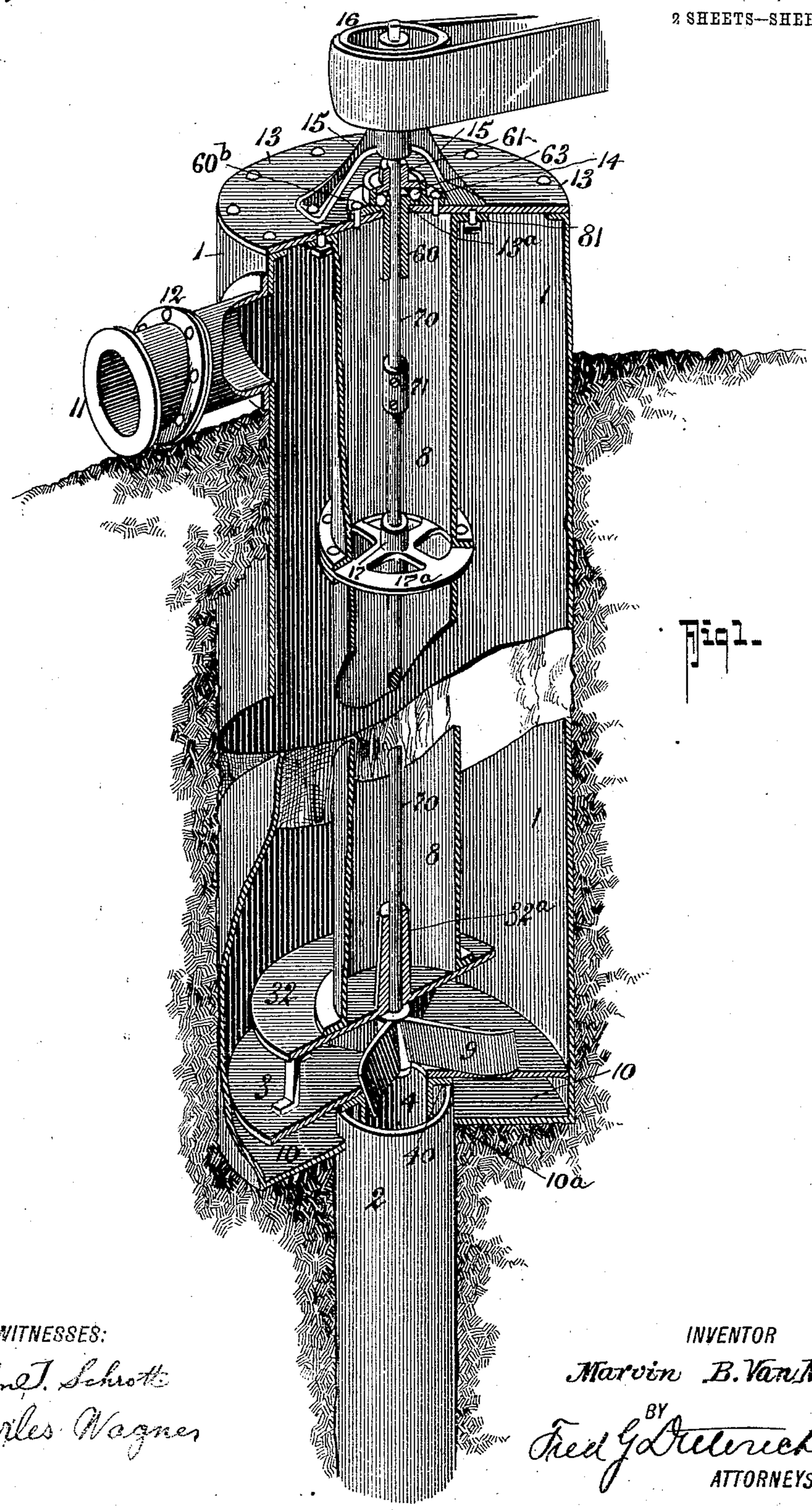

Fig. 1.

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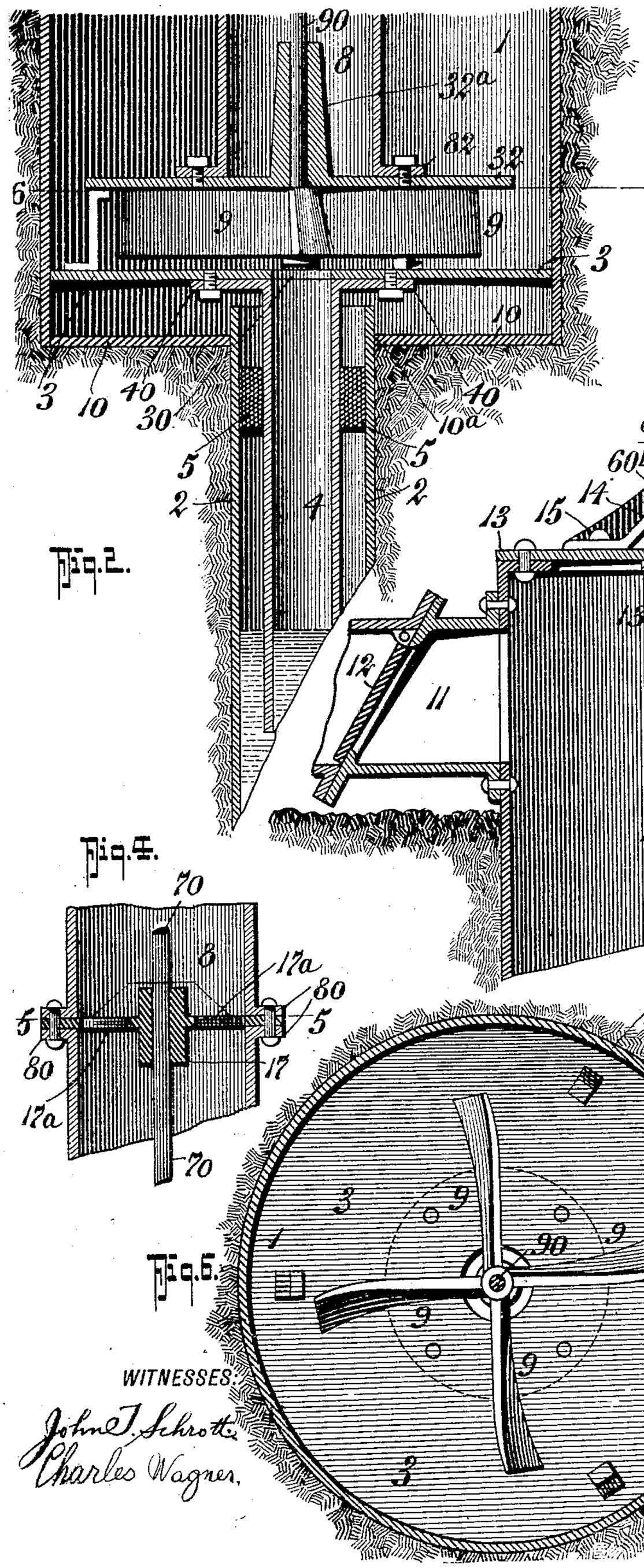

Fig. 2.

Fig. 3.

Fig. 4.

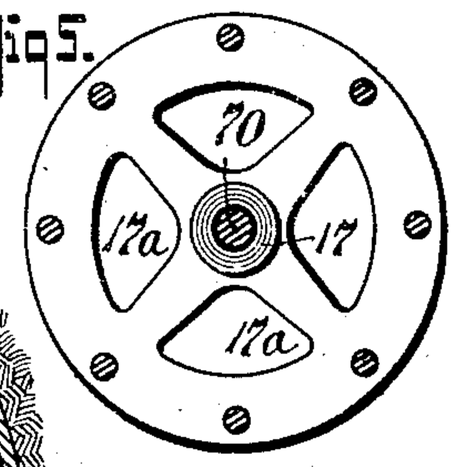

Fig. 5.

Fig. 6.

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PUMP MECHANISM.

No. 915,253. Specification of Letters Patent. Patented March 16, 1909.

Application filed September 21, 1908. Serial No. 453,903.

To all whom it may concern:

Be it known that I, MARVIN B. VAN NESS, residing at Welsh, in the parish of Calcasieu and State of Louisiana, have invented certain new and useful Improvements in Pump Mechanism, of which the following is a specification.

My invention has for its object to provide an improved construction of centrifugal pumping mechanism adapted for deep or drawer wells, and more especially for use in connection with pits in which the rotary pumping head is held, and my said invention comprehends in connection with the pumping means an improved arrangement of steel pit, whereby the pumping head can be located at a much greater depth than is possible with the ordinary types of square pits.

My invention in its more complete nature embodies an improved construction of centrifugal or rotary pumping head, *a'* sectional tubular support for a sectional drive shaft connection therefor and means for alining the shaft sections, other details of construction and peculiar construction of parts also forming a coöperative part of my invention, all of which will be hereinafter fully described, specifically pointed out in the appended claims and illustrated in the accompanying drawings, in which:

Figure 1, is a vertical section, parts being in perspective of my invention. Fig. 2, is an enlarged vertical section of the lower or rotary pumping head portion of the same, and showing the connection of the deep well tubing with the bottom of the steel pit. Fig. 3, is an enlarged vertical section of the upper end of the pump and illustrating the adjustable ball bearing for the upper drive shaft section. Fig. 4, is a detail section of one of the flange union couplings for the shaft. Fig. 5, is a horizontal section taken on the line 5—5 on Fig. 4. Fig. 6, is a horizontal section taken through the centrifugal pumping head on the line 6—6 of Fig. 1.

In carrying out my invention I use a steel pit 1 having a skeleton bottom 10 formed with a central opening 10^a to seat over the upper end of the deep well tubing 2, as best shown in Fig. 2, by reference to which it will be also noticed a false bottom 3 is fitted in the lower end of the pit 1 which forms the bottom plate of the pump shell and which extends entirely across the pit and forms a closure for the lower end of the pit. The steel bottom 3 has a central opening 30 that communicates with a suction pipe section 4 that extends some distance down into the tubing 2, and carries a collar 40 at the upper end that is bolted tight on the bottom 3, and to cut off the tubing from discharging into the extreme lower end of the pit 1, a packing 5 is fitted onto the section 4, as clearly shown in the drawings.

It should be here stated that in practice the pit 1 is of a small diameter, the said diameter depending on the capacity of pump desired and size of the centrifugal pumping head. In practice, I have found for ordinary uses a pit of 24 inches diameter as desirable, since a pit of this size can be readily sunk to a great depth through water and quicksands,—it being possible to go down one hundred feet or more. The upper end of the pit 1 extends above ground level and has a discharge lateral 11, which, when the pump is used for flooding rice fields or other flat land irrigation, may have a back check valve 12, as shown in Fig. 3. The pit has a top closure plate 13 formed with a central opening 13^a through which extends the pendent member 60 of an adjustable ball bearing for the upper shaft section and which has cup-shaped head 60^a formed with a ball-race 60^b to receive the balls 63, that also engage the race 61^a in an upper bearing section 61, that runs in the cup head 60^a and has a hub 61^b that carries a clamp screw 64 for adjustably setting the section 61 on the upper sh... section 70, as best shown in Fig. 3, which also clearly shows the bearing member 60 securely clamped to the top plate 13 by the bolts 14—14, and the bracket bearing 15 also bolted to the head 13, through which the shaft section 70 extends to receive the drive pulley 16. By making the lower ball bearing section cup-shaped, as shown, the same forms an oil receiver to provide for running the bearing surfaces in oil.

As the pit is usually of considerable depth the pump driving shaft is made up of sections 70—70, joined by screw couplings 71—71 and to hold the said shaft sections in perfect alinement, a casing is provided, that extends from the pit top dome to and is made fast to upper pump shell member 32 which has a short vertically extended hub 32^a to receive the neck 90 of the centrifugal pumping head 9.

The shaft casing is formed of a series of sections 8 connected with each other by

flanged unions 80, the upper and lower sections also having flanges 81—82 for connecting with the pit top 13 and the upper and pump shell 32 respectively. Between each union connection of the casing sections 8 is clamped a flange or disk member 17ª formed in a boxing 17 that form guides for the shaft sections, said boxings serving to hold the said shaft sections in perfect alinement.

The rotary or impelling pumping head may be of any well-known construction.

From the foregoing taken in connection with the accompanying drawings, the complete construction, the manner of operation and the advantages of my construction of pumping mechanism will be readily apparent to those skilled in this line of invention.

By reason of arranging the centrifugal pump at the bottom of a deep pit, connected with a deep well tubing, as shown and described, a great head of water can be taken care of and constantly since by having a continuous or annular discharge between the pump rim and the pit, there can be no impairment to a free delivery of the water as fast as it is drawn through the suction tube.

By incasing the shaft as shown and described, and providing the supports therefor, as shown, it is kept in perfect alinement and free from sand and dust and may, if desired, be kept flooded with oil its entire length and the correlation of the several parts is such that the entire rigging can be conveniently and economically put up.

What I claim is:

1. In a pumping means of the character described, the following elements in combination, a bottom closed pit whose lower end is adapted to fit over a deep well tubing, the upper end of the pit being closed and provided with a lateral discharge, a rotary pump horizontally disposed in the bottom of said pit, said pump having an annular discharge in the upper portion thereof, a drive shaft that extends down into the pit and carried with the pumping head, and extends through the top of the pit, a casing that surrounds the shaft inside the pit, a suction pipe that extends from the well tubing into the bottom of the pit.

2. The combination with the pit closed at the top and bottom having a lateral discharge at the upper end and a central aperture at the bottom to receive the upper end of the well tubing; of a pump shell mounted on the lower end of the pit having an annular upwardly directing fluid discharge and a suction tube that fits down into the tube, a rotary pumping head horizontally mounted in the shell, a shaft connected to the pumping head that extends through the pit top, a casing that surrounds the shaft, and a ball bearing and support for the upper end of the shaft mounted on the upper end of the tubing.

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Witnesses:
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