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G. H. STAUP

2,052,497

PUMP

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2 Sheets-Sheet 1

Fig. 1.

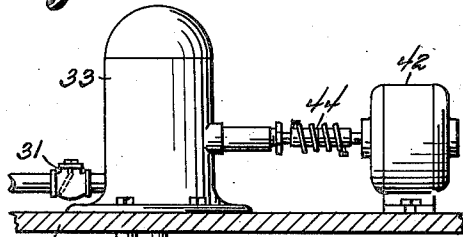


Fig. 2.

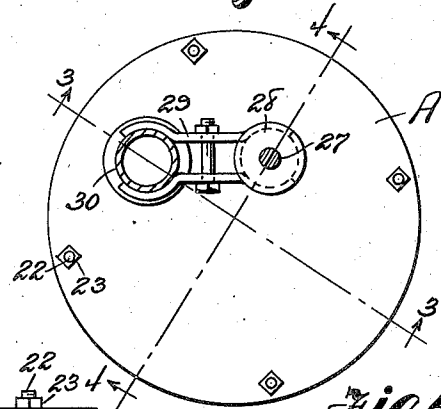


Fig. 3.

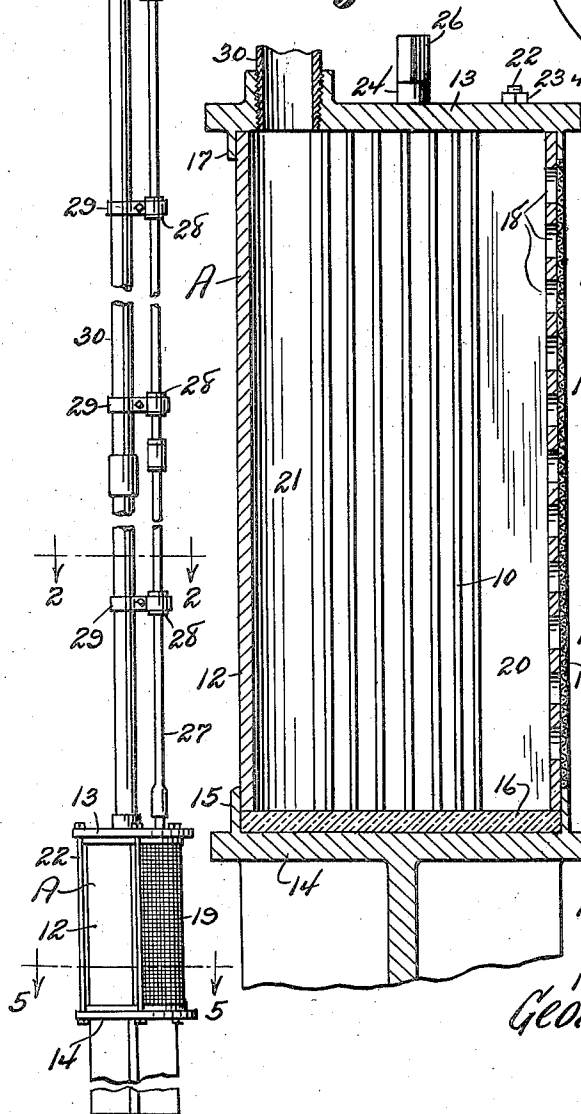
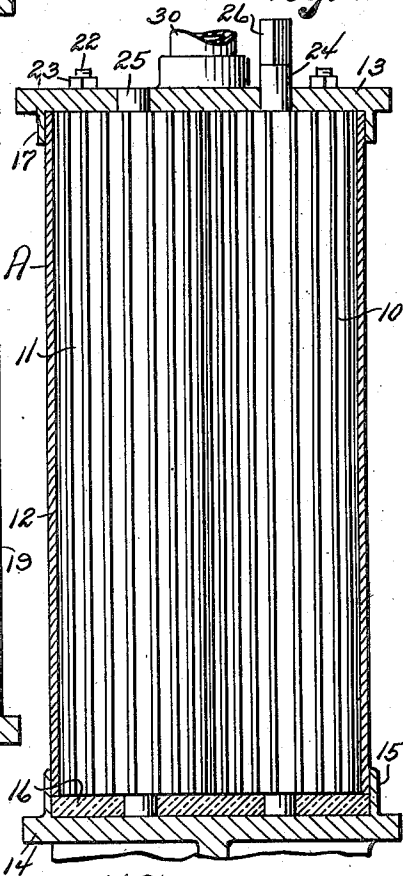


Fig. 4.



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1 Claim. (Cl. 74-417)

The invention relates to a fluid pump and more especially to motor operated rotary double piston pumps.

The primary object of the invention is the provision of a pump of this character, wherein through the instrumentality of gears, these acting as pumping pistons located at the bottom of a well, water will be pumped therefrom and the delivery pipe requires but a single check valve, the gears being of novel construction and the operating shaft is supported in glass bearings while the pistons work against a glass support to prevent friction and wear.

Another object of the invention is the provision of a pump of this character, wherein the same operates while submerged in a well and is constructed to be operated for a considerable period of time without necessitating frequent lubrication or repair, the antifriction bearings for the power shaft being in a bath of oil for constant lubrication.

A still further object of the invention is the provision of a pump of this character, which is comparatively simple in construction, thoroughly reliable and efficient in its operation, strong, durable, having the drive or power shaft entirely outside of the discharge pipe for the water and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claim hereunto appended.

In the accompanying drawings:

Figure 1 is an elevation of a pump constructed in accordance with the invention.

Figure 2 is an enlarged sectional view on the line 2-2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a sectional view on the line 3-3 of Figure 2 looking in the direction of the arrows.

Figure 4 is a sectional view on the line 4-4 of Figure 2 looking in the direction of the arrows.

Figure 5 is a sectional view on the line 5-5 of Figure 1 looking in the direction of the arrows.

Figure 6 is an enlarged fragmentary sectional view through the gear casing of the pump.

Figure 7 is a fragmentary detailed plan view of the hub formation for one gear.

Figure 8 is an enlarged fragmentary side ele-

vation of a motor coupling the same being partly in section.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, the pump A is of the gear type having the elongated gears 10 and 11, respectively, these being comparatively small in diameter and are arranged within a pump cylinder 12 fitted at opposite ends with the top and bottom caps 13 and 14, respectively, the latter being formed with the annular flange 15 for a glass disk like bearing 16 supporting the weight of the gears 10 and 11 and also for the fitting of the lower end of the cylinder 12 in said cap 14 while the cap 13 has the annular flange 17 receiving the upper end of the cylinder 12. The cylinder at one side thereof is provided with the inlet openings 18, these covered by wire mesh screen 19 and communicate with an intake chamber 20, the fluid or water received therein being passed between the gears 10 and 11 which constitute the double pistons into an outlet chamber 21, these chambers 20 and 21 being formed in the cylinder 12 at opposite sides of the gears 10 and 11 operating therein.

The caps 13 and 14 are held fast on the opposite ends of the cylinder 12 by the tie rods 22, these being arranged an equidistance and are passed through the caps and have threaded thereon the binding nuts 23.

The trunnions 24 and 25 of the gears 10 and 11 are journaled in the cap 13 and the bearing 16 and with the trunnion 24 at its squared extended coupling end 26 exteriorly of the pump cylinder is connected a power shaft 27 the same being fitted in bearings 28 distributed at intervals of the length of the shaft 27 and held by clamps 29 engaged with the outlet pipe 30 leading from the chamber 21. This pipe 30 above the ground surface has fitted therewith a return check valve 31 and such pipe extends to a point of discharge for water lifted by the pump in the operation thereof within a well.

Upon a suitable support 32 at the top of the well is arranged a gear head or casing 33 providing therein a lubricating chamber 34 in which are arranged the meshing gear and pinion 35 and 36, respectively, the gear 35 being provided with a capping hub 37 telescoped over a tube 38 stationarily mounted in the bottom 39 of the head or casing 33, the hub being fixed to the upper end of the shaft 27 and closes the upper end of the tube 38 to avoid the escape of lubricant from the

chamber 34 through the tube 38. This tube 38 projects beneath the bottom 39 and has coupled with this projected end a glass bearing 40 for the shaft 27. The pinion 36 is fixed to the drive shaft 41 of an electric motor 42 carried upon the support 32. The head or casing 33 carries a packing gland 43 surrounding the driving shaft 41 and this shaft is divided with the flexible universal coupling 44 joining the divided parts thereof.

10 The gear 35 coacts with an antifriction bearing 45 located between the bottom 39 and said gear. The coupling 44 functions as a shock absorber and allows flexibility both as to alignment and torque in addition to preventing shock in the starting of

15 the motor 42.

The coupling for the glass bearing 40 carries a sleeve like nut serving to hold the bearing 40 in place. It will be apparent that leakage is prevented by the capped hub 37 and the chamfered

20 end at the top of the tube 38.

The gears 10 and 11 rotate oppositely in suitable bores 47 provided in the cylinder 12 and the gear 10 drives the gear 11, these as previously stated being the pumping pistons for the water.

What is claimed is:

A gear box, for the purpose set forth, comprising a lubricant chamber, a tube in the chamber screwed in and extending beneath the bottom of said chamber, a shaft guided through the tube and a packing between the outer end of the tube and said shaft, a capping hub in the chamber telescoped over the tube and having the upper end of the shaft fixed thereto, a gear wheel finding a bearing on the bottom of the casing and secured to the capping hub, a drive pinion in mesh with the gear having a shaft extending through a lateral bearing on the casing, and a packing for said shaft.

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