

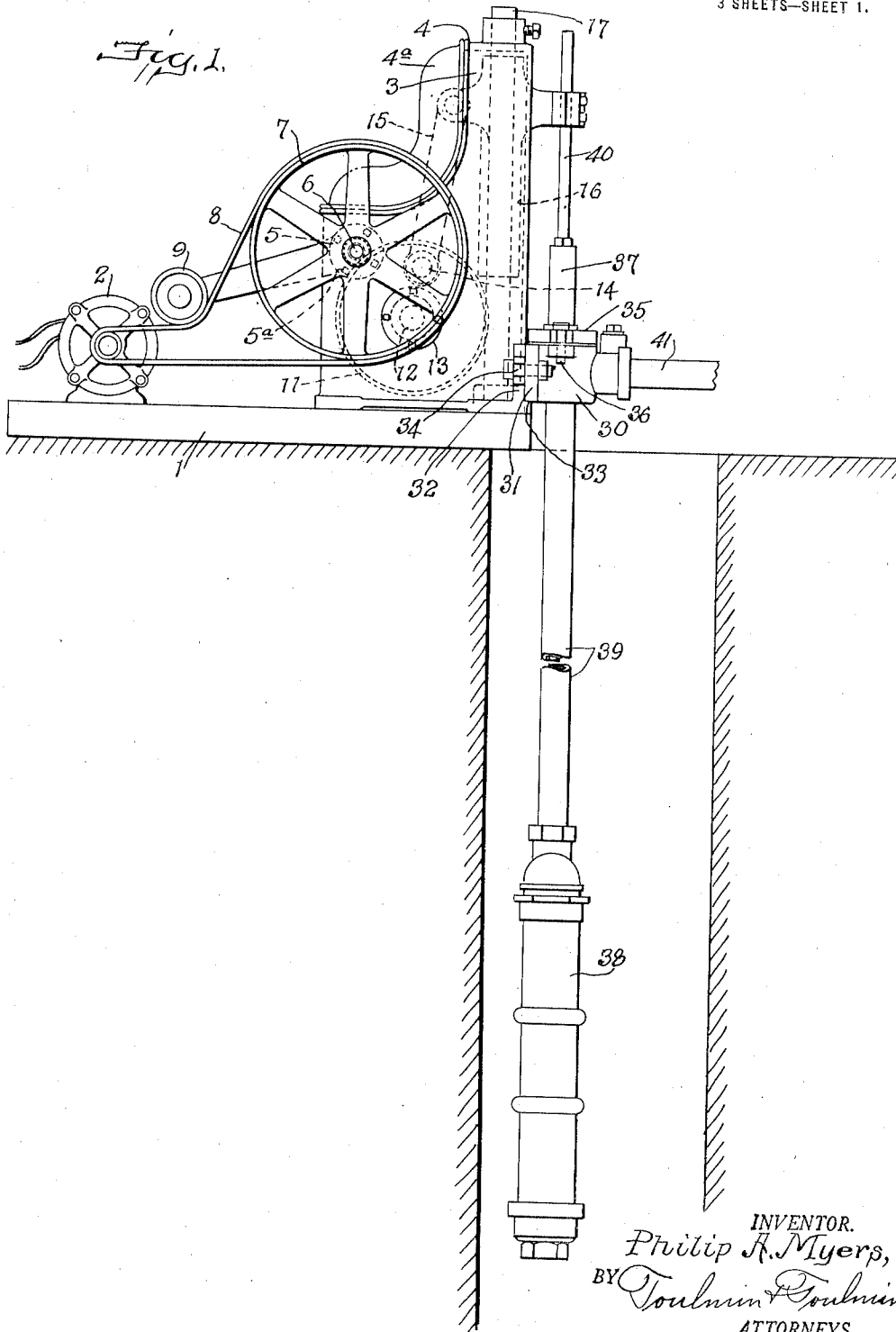
P. A. MYERS.
POWER HEAD.

APPLICATION FILED JAN. 16, 1920.

1,385,141.

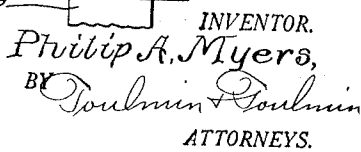
Patented July 19, 1921.

3 SHEETS—SHEET 1.



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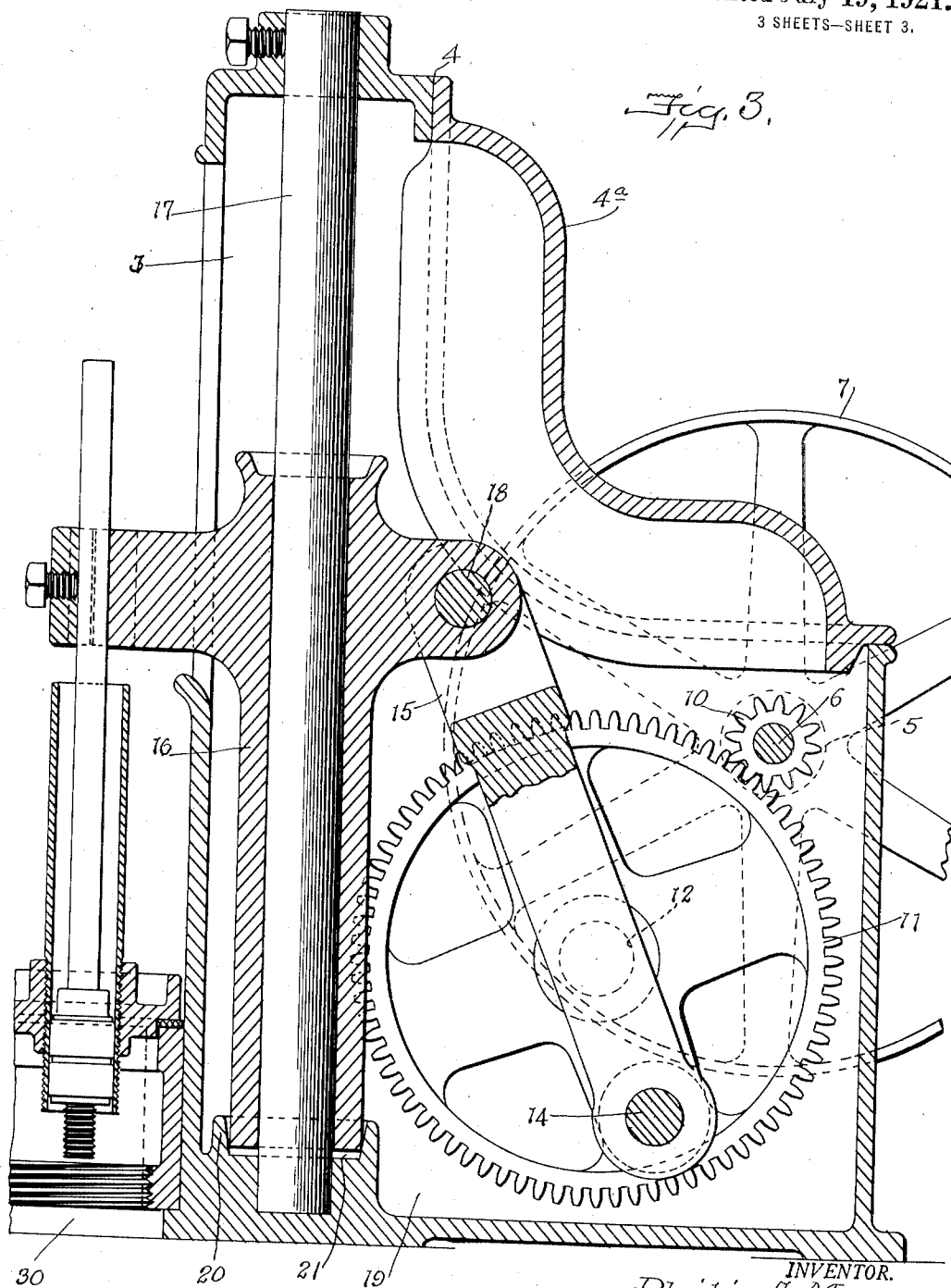
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

PHILIP A. MYERS, OF ASHLAND, OHIO, ASSIGNOR TO F. E. MYERS AND BROTHER, OF ASHLAND, OHIO, A COPARTNERSHIP CONSISTING OF FRANCIS E. MYERS AND PHILIP A. MYERS.

POWER-HEAD.

1,385,141.

Specification of Letters Patent.

Patented July 19, 1921.

Application filed January 16, 1920. Serial No. 351,966.

To all whom it may concern:

Be it known that I, PHILIP A. MYERS, a citizen of the United States, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Power-Heads, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to power heads and has for its object to provide an improved power head and pump apparatus of simplified construction which will be more economical and effective in construction and operation.

15 An object of the invention is to provide a power head having improved means for self-oiling that will be positive and constant in the distribution of oil to the various parts of the mechanism requiring lubrication.

20 A further object of the invention is to provide an improved gear casing having the driving mechanism mounted therein in such a manner that assembling and disassembling of the parts may be quickly and conveniently effected, the parts being reduced in number and simplified as to construction.

25 It is an object of the invention to provide a combined power head and pump head of such design and construction that the pump head and its cooperating mechanism may be mounted relative to the power head and removed therefrom for repairs or adjustments without requiring change in the position of the power head or its actuating mechanism.

30 In a modified form of construction, the power head and pump mechanism here shown are adapted to be operated under low temperatures where freezing occurs, provision being made to protect parts of the construction, which ordinarily are rendered inoperative by hard freezing, against low temperatures, and thus prevent freezing of the liquid in the pump and interference with the proper operation thereof.

35 In the construction here shown, the self oiling feature of the power head is not merely a convenience, or labor saving provision in the operation of the apparatus, but is a decided feature of economy in operation as well, as with the improved lubrication of the working mechanism a large saving in power is effected and the wear on the mechanism is materially reduced.

In the accompanying drawings:

55 Figure 1 is a perspective elevation of the complete pumping apparatus;

Fig. 2 agrees with Fig. 1 with a modified form of pump construction applied to the power head; and

60 Fig. 3 is a vertical sectional view taken on the longitudinal center line of the power head.

Fig. 4 is an enlarged detail view showing the cylinder and attached air chambers on the frost proof pump head.

As shown in the drawings, the pumping apparatus is mounted on a suitable base 1, the operating power being supplied, as here shown, by a motor 2 which is preferably mounted on the supporting base of the machine. The power head consists of a suitable casing 3, which is preferably cast integrally, having an aperture 4 provided with a cover plate 4^a, whereby accessibility to the mechanism within the casing is afforded, the opening covered by the plate being of suitable dimensions to permit the largest piece of the mechanism to readily pass there-through.

70 Suitable detachable or slip bearings 5 are provided on opposite sides of the casing 3, the bearings being secured to the casing by stud bolts 5^a, and removable outwardly to provide for the convenient assembling and removal of the mechanism. A drive shaft 6 is supported in the bearings 5, extending transversely of the machine and having secured to a projecting end thereof a belt pulley 7 adapted to be driven by a belt 8 connecting the same to the motor, a belt tightener 9 being employed as here shown to take up the slack of the belt.

75 Within the gear casing the shaft 6 has secured thereto two opposite driving pinions 10, meshing with two opposite crank gears 11, the gears 11 being mounted respectively on opposite stud shafts 12 rigidly secured to flange plates 13 bolted to the gear casing 3 and removable outwardly therefrom; the gears being joined together by a fixed shaft 14, thus causing the gears to move in unison, the connecting shaft serving as a wrist for the pitman 15 which connects the gears 11 to an operating sleeve 16 telescopically mounted for reciprocating movement on a guide shaft 17 under the action thereon of the pitman 15, the arm be-

ing connected to the sleeve by a suitable bearing 18, the guide shaft extending vertically through the gear casing and having its ends supported in the walls thereof.

5 From the foregoing description of the crank shaft casing and mechanism it will be apparent that with the removal of the stud shafts 12 and the bearings 5 and drive shaft 6, the driving pinions 10 and gears 11 may be readily removed from the gear casing through the aperture 4; also that the pitman 15 will be free to operate between the gears 11, having a direct driving relation with the operating sleeve; thus forming a correct crank construction, there being no overhang and the thrust being direct on the gears. By this arrangement also the pitman on the up-stroke may travel near the guide shaft, thus giving a direct lift against the load of the liquid that is being pumped. A further advantage is obtained by connecting the pitman to the sleeve on one side of the guide shaft and the pump piston to the sleeve on the other side of the guide shaft. Thus, binding action of the sleeve on the shaft will be prevented and power will be transmitted therethrough with the minimum of friction.

The provision for self-oiling of the mechanism of the power head consists of an oil reservoir or sump 19 formed in the lower portion of the gear casing 3 a considerable portion of the crank gears 11 being submerged in oil when the oil is at normal level in the casing. Thus the stud bearings 12 and the wrist bearing 14 will be directly lubricated by contacting with the oil, and the pinions 10 and their bearings will be lubricated by oil carried or splashed upwardly by rotation by gears 11.

To lubricate the sleeve 16 and guide shaft 17 a housing 20 having an oil well 21 formed therein is provided in the lower portion of the gear casing, surrounding the end of the guide shaft and in longitudinal alinement with the sleeve 16. The top of the well being below the oil level in the sump, it is obvious that it will be constantly filled with oil. The lower end of the sleeve 16 projects into the oil well upon each down stroke of the pitman with the result that oil will be carried and forced upwardly along the guide shaft and between the shaft and sleeve to effect lubrication thereof.

55 An important feature of the invention consists in the construction and arrangement of the pump head relative to the power head, the arrangement consisting essentially in a simplified construction which adapts the pump head and its cooperating parts to be assembled on the power head and removed therefrom without displacement of the power head mechanism.

As here shown, the pump head consists of a housing 30, having oppositely extend-

ing flanges 31 by means of which the pump head may be bolted to the power head casing, corresponding flanges 32 and a shoulder 33 being provided on the power head casing to form a suitable mounting for the pump head, the parts being secured together by bolts 34. Thus in assembling the parts the pump casing will be alined vertically by the flanges 31 resting on the shoulder 33, and horizontally by the bolts 34, the bolt apertures in the flanges 32 being slotted to provide for more convenient assembling and disconnecting of the parts comprised in the construction.

The pump head housing is provided with the usual cylinder head 35, secured to the casing by bolts 36 in a manner similar to the mounting of the pump head on the power head casing.

The pumps here shown are of two general types, *i. e.*, the non-frost-proof type as shown in Fig. 1, and the frost-proof type as shown in Fig. 2. In the non-frost-proof pumps, the upper cylinder 37 is mounted above the pump head, both the head and cylinder being above the ground and therefore exposed direct to the atmosphere and subject to freezing at low temperatures. This type of pump is adapted only to inside installation in climates where the temperature falls below the freezing point. The pump mechanism and pipe connections below the ground may be either the single or double action type of well known construction, the detail arrangement of which is not claimed as a part of the present invention.

The pump shown in Fig. 1 is the type commercially known as the submerged cylinder double acting force pump, and consists of a submerged pump cylinder 38 connected to the pump head 30 by a drop pipe 39, the piston rod 40 provided with suitable plungers extending through the pipe 39 and operating in both cylinders 37 and 38, whereby water will be discharged from the pump in a continuous stream on both the up and down stroke of the piston, the water being discharged through a suitable outlet 41.

In Fig. 2 the frost-proof type of pump is shown in which the upper pump cylinder is located a considerable distance, about four feet as here shown, below the surface of the ground, thus protecting the mechanism against low temperatures. In this construction a frost-proof pump head 42 is substituted on the power head casing for the pump head shown in Fig. 1, the mounting of the head 42 being the same as that of the pump head 30. The pump coupling 43 and upper cylinder 44 are supported from the head 42 by means of pipes 45 which have their upper ends threaded into the head 42 and their lower ends threaded to the coupling 43, thus forming air chambers which influence the ac-

tion of the pump in the usual manner of air pressure pumps. The pump mechanism and pipe connections below the coupling 43 may be of any suitable construction. For the purposes of illustration they are here assumed to be similar to the construction shown in Fig. 1, a single piston rod 46 serving to operate both the upper and lower cylinders, as in the other construction.

An important feature of the invention consists in the manner of mounting the detachable pump head on its power head, and the interchangeability of the non-frost proof pump head of one type with the frost-proof head of another type, thus providing for using the different types of mountings interchangeably with a standard power head. This, as will be apparent, effects material economies in manufacturing and therefore tends to cheapen the cost of the apparatus to the customer.

The further feature of mounting the upper pump cylinder on the pump head, and supporting the lower cylinder on a drop pipe connected to the pump casing and extending into the well the required depth are also important features of novel construction which tend to add to the effectiveness of the pump and also to simplify and cheapen the construction, the arrangement being of particular advantage in installing the pump, or in making subsequent adjustments or repairs thereof.

From the foregoing detailed description the construction and operation of the complete apparatus will be readily understood. The invention relative to important features thereof is a radical departure from common practice in the design and construction of pumping apparatus of this character. I desire to claim these features broadly and also specifically as illustrated in the drawings and defined in the appended claims.

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

1. In a pumping apparatus, the combination of a power head having oppositely disposed substantially vertical base flanges, and a pump head having substantially vertical flanges corresponding to the flanges of the power head casing, whereby the pump head may be detachably mounted relative to the power head casing in a substantially vertical plane and the pump mechanism alined with the power head actuating mechanism.

2. In a pumping apparatus, the combination, of a power head having a substantially vertical base flange and shoulder, and a pump head having a substantially vertical flange and shoulder corresponding to the

flange and shoulder of the power head, whereby the pump head may be detachably mounted relative to the power head in a substantially vertical plane and the pump mechanism alined with the power head actuating mechanism.

3. In a pumping apparatus, the combination, with a power head having substantially vertical slotted base flanges, of a pump head having substantially vertical flanges corresponding to the flanges of the power head casing and having bolts adapted to cooperate with said slots, whereby the pump head may be detachably mounted relative to the power head casing in a substantially vertical plane and the pump mechanism alined with the power head actuating mechanism.

4. In a pumping apparatus, the combination, with a power head casing, of a pump head detachably secured to said casing, in a substantially vertical plane, and a pump cylinder suspended from the pump head below the base line of the power head, whereby the pump mechanism will be operatively alined with the power head.

5. In a pumping apparatus, the combination, with a power head having a substantially vertical base flange and shoulder, a pump head detachably secured to the power head and having a substantially vertical flange cooperating with the flange and shoulder thereof, and a pump cylinder suspended from the pump head below the base line of the power head, whereby the pump mechanism will be operatively alined with the power head.

6. In a pumping apparatus, the combination, with a power head comprising a supporting structure and operating mechanism carried thereby to transmit power, of a pump head detachably secured to said power head in a substantially vertical plane and adapted to support and suspend conventional vertical pumping mechanism including a vertical piston rod connectible to said operating mechanism, whereby the pumping mechanism is held in alinement with the well and is operated to deliver the water.

7. In a pumping apparatus, the combination, with a power head comprising a casing, a power shaft, transmitting gears and a vertical reciprocating member mounted in the casing and operated by such shaft and gearing, of a substantially vertical pump head detachably secured to said casing and adapted to support vertical conventional pumping mechanism including a vertical piston rod connectible to said vertical reciprocating mechanism.

In testimony whereof I affix my signature.
PHILIP A. MYERS.

DISCLAIMER.

1,385,141.—*Philip A. Myers*, Ashland, Ohio. POWER HEAD. Patent dated July 19, 1921. Disclaimer filed October 12, 1928, by the assignee by mesne assignments, *The F. E. Myers & Bro. Company*, the patentee, *Philip A. Myers*, concurring.

Hereby enters a disclaimer limiting claim 7 of said patent as follows:

By restricting the elements "vertical reciprocating member mounted in the casing" to a single slide on a single guide; and
By restricting the element "operated (referring to the reciprocating member) by such shaft and gearing" to include a pitman.

[*Official Gazette October 30, 1928.*]