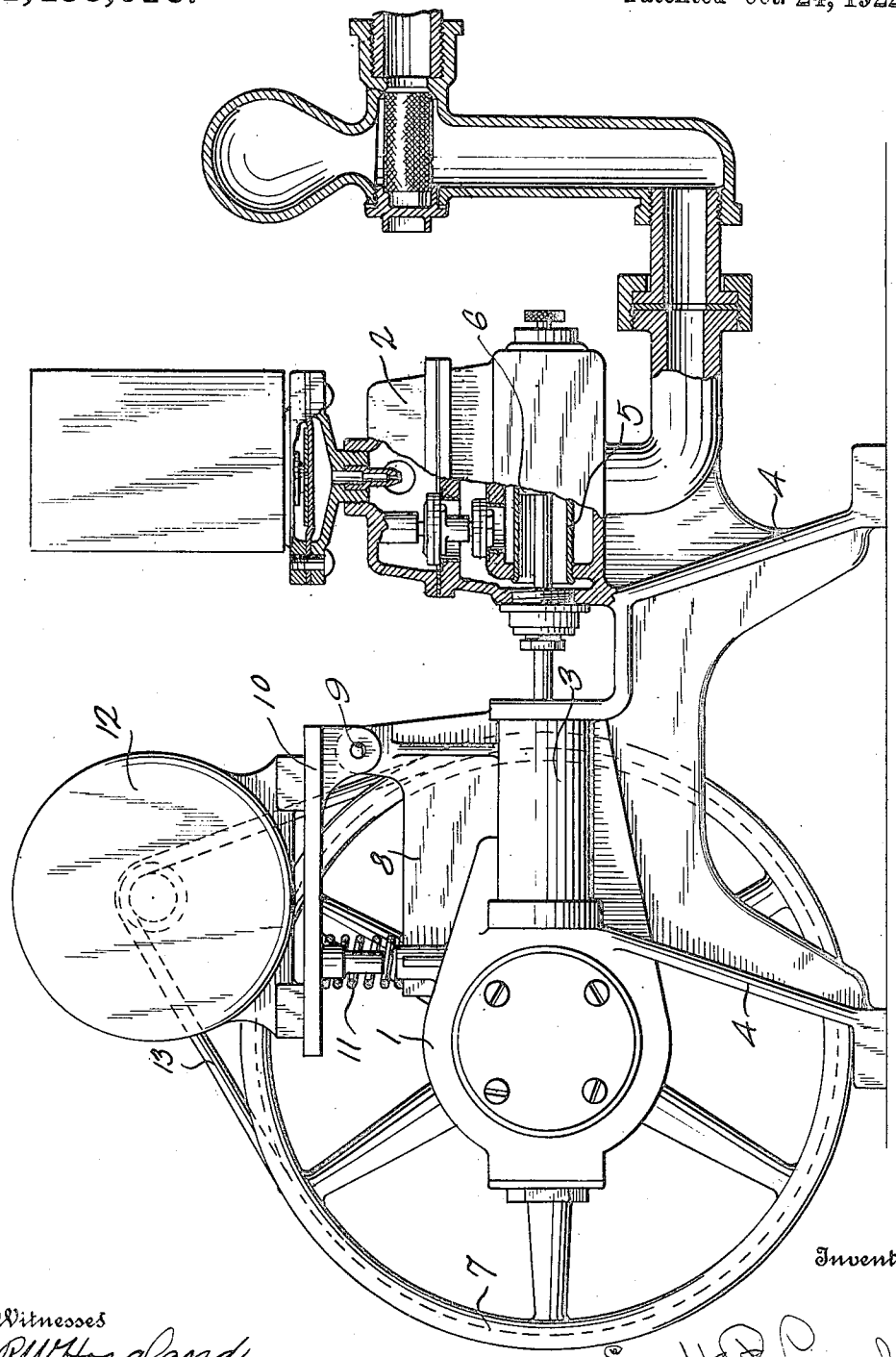
E. P. LARSH.

DRIVING MEANS FOR PUMPS AND THE LIKE.

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UNITED STATES PATENT OFFICE.

EVERETT P. LARSH, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE DURO PUMP AND MANUFACTURING COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

DRIVING MEANS FOR PUMPS AND THE LIKE.

Application filed July 5, 1917. Serial No. 178,530.

To all whom it may concern:

Be it known that I, EVERETT P. LARSH, citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Driving Means for Pumps and the like, of which the following is a specification.

My invention relates to belt tighteners and is illustrated as applied to pumps of that type commonly known as power driven force pumps. The pump herein shown is particularly adapted for use in private water distribution systems, but is also capable of use as a bilge pump for drainage and for other purposes.

The object of the invention is to simplify the structure, as well as the means and mode of operation of such devices, whereby they will not only be cheapened in construction, but will be more efficient in use, positive in operation, uniform in action and unlikely to get out of repair.

A further object of the invention is to provide improved driving connections or power pumps of this type whereby the drive belt will be maintained at uniform driving tension, and provides a resilient motor support.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described and set forth in the claims.

Referring to the drawings, the Figure 1 is a side elevation partly broken away, of the assembled pump construction forming the subject matter hereof.

Like parts are indicated by similar characters throughout the views.

The pump disclosed herein, as well as the automatic control mechanism and driving motor are of the same general type referred to in my prior Patent No. 1,308,850, dated July 8, 1919, for mounting for fluid pressure systems. The unitary pump frame construction as hereinafter described is provided as a substitute for the mounting which forms the subject matter of the aforementioned application. While the construction herein shown and described is particularly adapted for small pumps where electrically driven, it is susceptible of application to pumps of larger size.

The main frame of the apparatus comprises a substantially cylindrical crank casing 1 and the water box or pumping head 2 intermediate which is located the cross head housing 3. These parts are supported upon integral legs 4. The water box or pumping head 2 is provided with the usual cylinder 5 within which is located a reciprocatory piston 6 actuated by a driving crank within the circular crank casing 1. Upon the crank shaft of said driving crank is mounted a comparatively large wheel 7 which serves not only as a drive pulley, but also as a fly wheel or balance wheel. Projecting upward from the cross head housing 3 and crank case 1 is a bracket or support 8 to which is pivoted at 9 a swinging or oscillatory motor table or support 10. This motor table 10 is supported at its free end upon an interposed cushion spring 11 against the tension of which the table is capable of yielding downwardly. Mounted upon the depressible table 10 is an electric driving motor 12 which may be of any suitable type or character. A suitable pulley upon the armature shaft of the motor 12 is connected by a driving belt 13 with the drive pulley 7 of the pump. The belt 13 is adjusted sufficiently tight to place the spring 11 under tension, whereby the upward pressure of the spring 11 tends to maintain the belt at a normal uniform driving tension. Any variation in the belt will be compensated for by the yielding of the spring 11. Likewise, the expansion of the spring 11 will automatically compensate for any stretch or wear upon the belt 13, thereby maintaining the tension of said belt uniform.

The formation of the main frame of the apparatus whereby the pump casing including the crank casing and cross head housing together with the water box or pumping head are formed integral with the supporting legs 4 and the provision of the bracket or support 8 for the oscillating depressible motor table 10 forms a self contained unitary structure of compact, convenient and economical construction and arrangement which eliminates sundry parts of the usual construction and enables the apparatus to occupy less space. A further advantage of this unitary construction is that it enables the apparatus to be assembled

complete at the time of manufacture and to be transported to the place of use in condition for direct installation. It obviates the necessity for the use of skilled labor for installation and provides suitable and convenient support for all of the operating mechanism.

From the above description it will be apparent that there is thus provided a device of the character described, possessing the particular features of advantage before enumerated as desirable but which obviously is susceptible of modification in its form, proportion, detail construction or arrangement of parts, without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statutes, the invention has been described in language more or less specific as to certain structural features, it is to be understood that the invention is not limited to any specific details, but that the means and construction herein described comprise but one mode of putting the invention into effect, and the invention is therefore claimed broadly in any of its possible forms or modifications within the scope of the appended claims.

Having described my invention, I claim:—

1. An actuating motor, a pump to be driven by such motor, driving and driven elements carried thereby, power transmission means operatively connecting said driving and driven elements, a motor support hinged to the frame of the pump in eccentric relation with the driven element of the pump, and a spring against the tension of which the support and motor carried thereby are movable about the hinge connection.

2. A driven mechanism, a power receiving element carried thereby, a driving motor, power transmission means, operatively connecting the driving motor and power receiving elements of the receiving mechanism, a yielding support for said driving motor mounted upon the driven mechanism in eccentric relation with the operative driven element, and means for automatically retracting said yielding support, substantially as specified.

3. A driven mechanism, an actuating motor therefor, driven and driving elements carried by the mechanism and motor respectively, power transmission means operatively interconnecting the driving and driven elements, a motor support pivotally connected to the driven mechanism for oscillatory movement and yielding means for retracting the support after each oscillation thereof about its pivotal connection whereby said driving and driven elements are moved relatively to and from each other.

4. In a construction of the character described, a pump mechanism, an actuating motor therefor, driven and driving elements carried by the pump and motor respectively, power transmission means, interconnecting the driven and driving elements, an oscillatory table adapted to support the motor and pivotally connected to the pump mechanism for oscillatory movement in a path of travel eccentric in relation with the driven element of the pump mechanism, and a resilient supporting leg for said motor supporting table spaced from the pivotal connection thereof, substantially as specified.

5. In a motor driven pump, a pump mechanism a driving motor therefor, driven and driving elements carried by the pump and motor respectively, power transmission means operatively connecting the driven and driving elements, a motor support movably mounted upon the pump structure, and means for automatically moving said support to and from the pump actuating element to maintain uniform driving engagement between the pump and motor, substantially as specified.

6. In a motor driven pump construction, a pump, an actuating motor therefor, driven and driving elements carried by the pump and motor respectively, power transmission means, operatively connecting the driven and driving elements, a motor support flexibly mounted upon the pump structure in eccentric relation with the driven element thereof and means for automatically varying the relation of the motor support and pump structure to vary the distance between the driving element of the motor and driven element of the pump, substantially as specified.

7. In a motor driven pump construction, a pump, an actuating motor therefor, driven and driving elements carried by the pump and motor respectively, power transmission means, operatively interconnecting the driven and driving elements, a connection for said motor hinged to the pump structure in eccentric relation with the driven element of the pump structure, and a yielding abutment for the motor against the tension of which the motor is movable about such hinge connection to and from the driven element of the pump structure.

8. In a motor driven pump construction, a pump, an actuating motor therefor, driven and driving elements carried by the pump and motor respectively, power transmission means, operatively interconnecting the driven and driving elements, means for mounting the driving motor upon the pump structure for movement to and from the pump structure, and a tension spring tending to relatively move the motor away from the pump structure to automatically maintain uniform driving engagement between the motor and pump structure.

9. In a motor driven pump construction,

a pump, a driving motor therefor, driven and driving elements carried by the pump and motor respectively, a resilient support for the motor mounted upon the pump structure, and an operative connection between the motor and pump driving and driven elements maintained in uniform driving condition by the resiliency of said support, substantially as specified.

10. In a construction of the character described, a pump, a driving motor therefor, driving and driven pulleys carried by the pump and motor respectively, a drive belt connecting the pulleys, a motor support hinged to the pump in eccentric relation with the driven pulley and a spring against the tension of which the support and motor carried thereby are movable about the hinge connection.

11. The combination with a pump and a drive shaft therefor, of an electric motor flexibly supported upon a stationary part of the pump frame for movement to and from the drive shaft of the pump, and power transmission means operatively connecting the motor shaft and pump shaft, the driving engagement of which is varied by the vibration of the motor.

12. The combination with a driven mechanism of a driving mechanism pivotally mounted thereon for oscillatory movement, driven and driving elements carried by the respective mechanisms, and power transmission means connecting the driving and driven elements, the oscillatory movement of the driving mechanism about its pivotal connection being eccentric in relation with the driving and driven elements whereby said driving and driven elements are moved to and from each other to regulate the driving effect of the power transmission means.

In testimony whereof, I have hereunto set my hand this 3rd day of July, A. D. 1917.

EVERETT P. LARSH.

Witnesses:
ALFRED MCCRAY,
H. L. WALKER.