W. S. HOLDAWAY.

PUMP.

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1,423,768. Patented July 25, 1922.

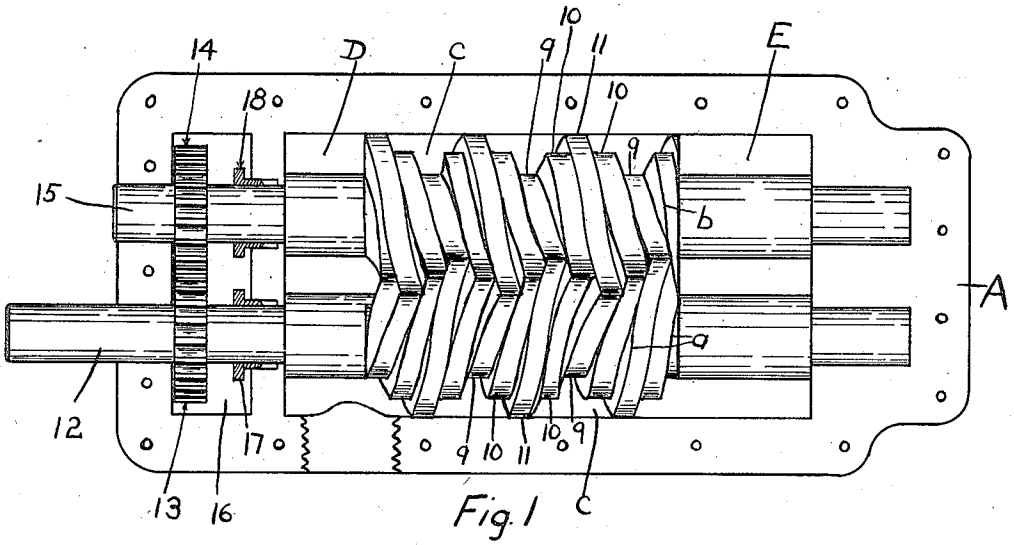


Fig. 1

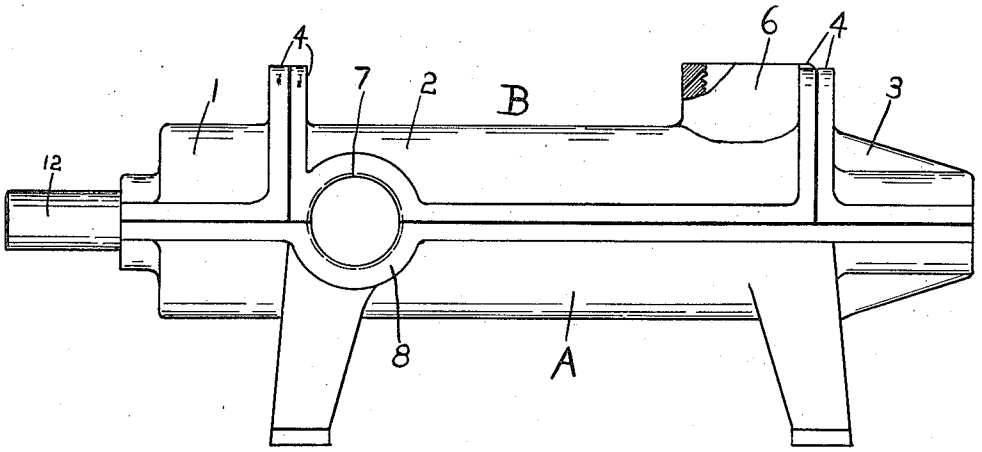


Fig. 2

William S. Holdaway
INVENTOR

BY J. M. Thomas

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM S. HOLDAWAY, OF SALT LAKE CITY, UTAH.

PUMP.

1,423,768. Specification of Letters Patent. Patented July 25, 1922.

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To all whom it may concern:

Be it known that I, WILLIAM S. HOLDAWAY, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

My invention relates to pumps of the screw type and has for its object to provide a pump, for raising fluid a limited distance by suction and then to force the same fluid to any desired height, which pump is economical in construction, does not require much power to operate, efficient in quantity of water delivered and very durable.

These objects I accomplish with the pump illustrated in the accompanying drawings in which similar letters and numerals of reference indicate like parts throughout the several views and as described in the specification forming a part of this application and pointed out in the appended claims.

In the drawings in which I have shown a substantial embodiment of my invention, Figure 1 is a plan view of the lower casing and the screws in place therein. Figure 2 is a side elevation of the pump, parts cut away.

My pump is of the screw type in which a pair of screws are employed with intermeshing threads and arranged within a casing having a suction or inlet chamber at one end and an eduction or outlet chamber in the other end. The said screws are on parallel horizontal shafts and one has right turned threads and the other left, with the perimeter of one screw bearing against the shaft of the other screw.

The present invention consists of providing stepped threads to prevent any by pass of fluid from the outlet chamber to the inlet chamber, and to introduce the fluid from the side of the intake chamber and above the bottom of the screws to keep them always primed and to provide an upper portion of the casing having three portions any one of which may be removed to clean out the screw and shaft chambers.

The casing consists of a bottom portion A and the top or upper portions B each of which has two irregular screw chambers C therein within which the screws *a* and *b*, one right and the other left hand threads, are operated. Said casings are bolted together through flanges thereon. The said upper casing B is made in three pieces or parts shown at 1, 2 and 3, and have vertical flanges 4 through which the said pieces are fastened together. The part 3 has a vertical or upwardly projecting portion 6 which is internally threaded to receive the discharge pipe. Also one portion of the said part 2 has a boss portion 7 extending outwardly from its side and which in connection with a similar boss portion 8 formed on the side of the bottom casing A, constitute the intake conduit of the pump. The said boss portions 7 and 8 are each semi-cylindrical and have internal threads cut therein to receive the end of the intake pipe. The interior of said casings A and B when thus bolted together has the appearance of two intersecting chambers with the screws so positioned therein as to leave an inlet chamber D at one end and an outlet chamber E at the other end. The inlet or suction pipe enters the said inlet chamber D on its side and above its bottom while the outlet or discharge pipe enters the said chamber E at the top. The perimeters of the said screws *a* and *b* contact with the interior walls of portion of said chambers D and E and the threads of one section of each screw intermesh with the threads of a coacting section of the other screw thus forming a plurality of fluid chambers through which when the screws are operated a quantity of fluid is advanced from the inlet chamber D to the outlet chamber E and from the outlet chamber it is forced out through the discharge pipe to any desired height. In order to prevent any by-pass of fluid from one fluid chamber to the other I cut the threads of each screw in steps or portions of different diameters as shown at 9, 10 and 11, thus enabling me to make a closer fit between the intermeshing threads of the screws, and thereby prevent any bypass or slip of the fluid from the outlet to the inlet chambers.

I thus provide a new and novel casing for coacting screw pumps and new and novel intermeshing screws for pumps.

The screw *a* is secured on the horizontally disposed shaft 12 which is to be suitably journaled in said casings and on which shaft is secured the gear 13 the teeth of which mesh with the gear 14 that is secured on a counter shaft 15, which is also journalled in said casings A and B. A gear

chamber 16 is formed in said casings A and B and said shafts 12 and 15 are packed by the respective glands 17 and 18.

Having thus described my invention and shown a new and novel casing for coacting screws, and new and novel intermeshing screws for pumping fluids, I desire to secure by Letters Patent and claim:—

1. A pump comprising a casing having a gear chamber and screw chambers therein; parallel shafts mounted in said casing; intermeshing screws having stepped threads on each and fastened on said shafts and rotatable therewith and with the ends of said screw spaced from the interior walls of said chambers to form an inlet at one end of said chambers and an outlet at the other end and intermeshing gears on said shafts.

2. A pump comprising a casing having a one piece bottom and a three piece top and with its interior divided to form a gear case on one end and two intersecting screw chambers in the other portion; parallel shafts mounted for rotation within said casing; screws having intermeshing stepped threads on said shafts and rotatable therewith; an inlet and outlet chamber at the ends of said screws; and means for rotating said shafts synchronously.

In testimony whereof I have affixed my signature.

WILLIAM S. HOLDAWAY.