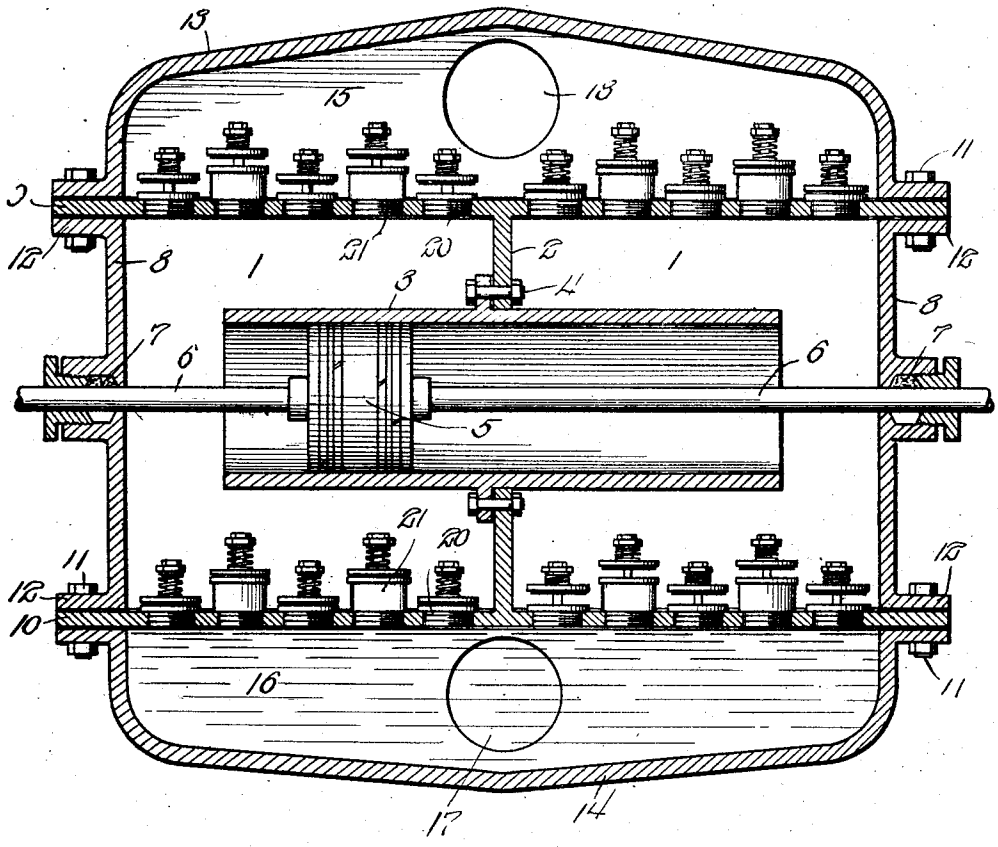
Dec. 8, 1925. 1,564,819

W. T. BIRCH

PUMP

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UNITED STATES PATENT OFFICE.

WILLIAM T. BIRCH, OF CHICAGO, ILLINOIS.

PUMP.

Application filed May 12, 1924. Serial No. 712,611.

To all whom it may concern:

Be it known that I, WILLIAM T. BIRCH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

The invention relates to improvements in pumps.

One object of the invention is to increase the efficiency and effective capacity of pumps without materially increasing their cost of production.

Another object is to provide means, in the pump chamber, which will not materially impede the velocity of the water passing thru the pump.

A more specific object is to arrange valves in a pump deck in such manner that the water stream proceeding from one valve is not materially resisted by the flow from the next adjacent valve from which water is moving in an opposite direction.

Another object is to provide valves and valve arrangement that can be applied to and arranged in existing pumps with attendant advantages.

Other objects, advantages and benefits of the invention will become readily apparent, to persons skilled in the art, from a consideration of the following description when taken in conjunction with the drawings, wherein:—

In the single view which is more or less diagrammatic but sufficient to clearly show the application of the invention, 1—1 is a pump chamber divided by a wall 2 and a cylinder 3 connected therein by bolts 4. A piston or plunger 5 is reciprocatable in the cylinder by the piston rods 6—6 which pass thru stuffing boxes 7—7 in end walls 8—8.

A pair of deck plates 9 and 10 are connected to the respective ends of the end walls 8 by bolts 11 which pass thru outturned flanges 12 on the end plates.

A cover 13 overlies the deck 9 and cover 14 underlies the deck 10, and between the cover 13 and respective deck is a valve chamber 15. A chamber 16 is located between the cover 14 and deck 10.

An inlet opening 17 admits water into the chamber 16 below the valve plate and a similar opening 18 permits discharge of the water from the valve chamber 15.

Everything described so far is old in pump structures.

The new and improved features of the invention will now be pointed out.

There are two types of valve required for the invention used in the structure shown. The valve 20 has a short cage or cylinder which is screwed into the deck with its discharge port only very slightly above the upper surface of the deck. The other type of valve 21 is taller and has an elongated cage or cylinder screwed into the deck and has its port, or discharge opening, in a horizontal plane above the similar ports of the valves 20. It is the discharge ports that are located in different horizontal planes.

When water is discharged from a valve of this character, it passes in a radial direction from the central bore of the cage. If adjacent valves have their discharge ports located in the same horizontal planes the water stream from one valve impinges upon or against the water stream of the adjacent valve, as the two streams are then moving in opposite directions the velocity of each stream will therefore be materially checked, and since the water cannot for this reason flow so fast thru the valves the capacity of the pump is decreased.

If the water does not meet obstructions until it has room to rise to a vertical path in a natural upward curve the resistance or retardation produced by the streams flowing from other valves is not so great.

By placing alternate valves in higher planes than intermediate valves more space is thus provided in horizontal planes for the flow of water from both classes of valves and in no instance does the stream of water from any valve flow directly against a stream proceeding from another valve.

When the water from the lower valves flows against the cage of the taller valves the resisting surface is not so great as when an adjacent stream is encountered in the manner described, and the reaction is not so effective to impede the flow.

The operation of the device is so apparent, to persons versed in the art, it is thought that further and more explicit description is unnecessary.

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

1. A pump having a common valve deck, and a plurality of valves alternately discharging in the same direction at different levels above the valve deck.

2. In a pump, a plurality of valves arranged in the same plane and discharging in the same direction, alternate valves discharging at different levels above the mounting plane.

3. In a pump, a perforate deck in one plane, a series of valve cages secured in the perforations with the ports thereof in different planes and discharging in the same direction.

In testimony whereof I hereunto set my hand.

WILLIAM T. BIRCH.