

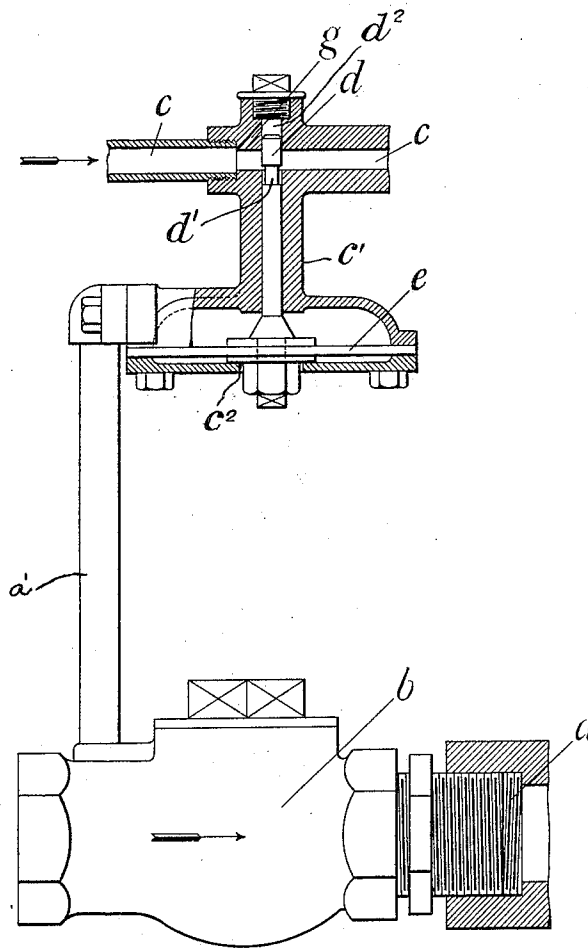
Dec. 25, 1923.

J. E. L. OGDEN

LIQUID PUMP OR ELEVATOR

Filed April 19, 1923

1,478,792



Inventor:
J. E. L. Ogden

By *Marked Clerk*
Atty's

UNITED STATES PATENT OFFICE.

JOHN EDWARD LEWIS OGDEN, OF LISCARD, ENGLAND.

LIQUID PUMP OR ELEVATOR.

Application filed April 19, 1923. Serial No. 633,291.

To all whom it may concern:

Be it known that I, JOHN EDWARD LEWIS OGDEN, a subject of the King of Great Britain and Ireland, and resident of Penshurst, Lincoln Drive, Liscard, in the county of Chester, England, have invented certain new and useful Improvements Relating to Liquid Pumps or Elevators, of which the following is a specification.

This invention relates to liquid pumps or elevators operated by steam or compressed air and has for its object to provide in a simple and effective manner for the automatic control of the pump in order to reduce its speed if the supply of liquid at the suction pipe fails.

The invention comprises the provision of automatic controlling means which permit normally a slow rate of flow of pressure fluid to the pump unless a vacuum is created in the pump suction pipe when an increased rate of flow is permitted to speed up the pump.

The invention further comprises the automatic control device consisting of a diaphragm and a piston type control valve (actuated by said diaphragm) for the pressure fluid, one side of the diaphragm being open to the pressure conditions in the pump suction pipe, the said valve being normally slightly open to ensure the slow working of the pump.

Figure 1 is a longitudinal section of the device.

Referring to the accompanying explanatory drawing which illustrates one convenient application of my invention, *a* represents the suction pipe of the pump or elevator (not shown) and *b* the non-return type of suction valve usually provided. *c* indicates the pipe by which steam or compressed air is passed to the pump to operate the same. A casing *c'* communicates with the pipe *c* in which I provide a diaphragm controlled valve *d* having a circumferential recess *d'* therein for the passage of the pressure fluid. The diaphragm *e* connected with the valve *d* is arranged in the lower portion of the casing *c'* and communicates

at one side with the atmosphere. The steam or compressed air control valve is slightly open when the diaphragm is inoperative as shown in the drawing. When, however, there is liquid in the pump suction pipe, the suction stroke of the pump creates a vacuum in the said pipe and this, acting on the diaphragm *e* through the branch pipe *a'*, opens the control valve *d* and increases the supply of pressure fluid to the pump. If no liquid be present in the suction pipe that is, if air only is in the said pipe, the pump will be unable to produce a vacuum in said pipe and the diaphragm will assume its normal position with the control valve only slightly open. The casing *c'* is provided with a passage *g* communicating with the chamber *d²* receiving the valve *d* whereby pressure in the inlet end of the pipe *c* is permitted to act on the end of the valve *d* to assist in returning the diaphragm to its normal position when no vacuum exists in the suction pipe of the pumps. The pump will then function slowly until liquid is again available.

I claim:—

In an automatic control device for pumps and the like, a pressure fluid pipe, a casing having a chamber therein communicating with said pipe, a piston type valve arranged in said chamber to control passage of fluid through said pipe and being normally open, a pump suction pipe communicating with said casing, a diaphragm arranged in said casing connected with said valve and responsive to variations in pressure conditions in said pump suction pipe whereby said valve is maintained in its slightly open position in response to relatively high pressure conditions in said pump suction pipe, said casing having a passage therein permitting the pressure fluid to enter the chamber in said casing and act directly on said valve whereby said pressure fluid is utilized to assist the diaphragm in maintaining said valve in slightly open position.

In testimony whereof I have signed my name to this specification.

JOHN EDWARD LEWIS OGDEN.