No. 730,917. PATENTED JUNE 16, 1903.

A. JACK.

AUTOMATIC DUPLEX STEAM PUMP.

APPLICATION FILED MAR. 3, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

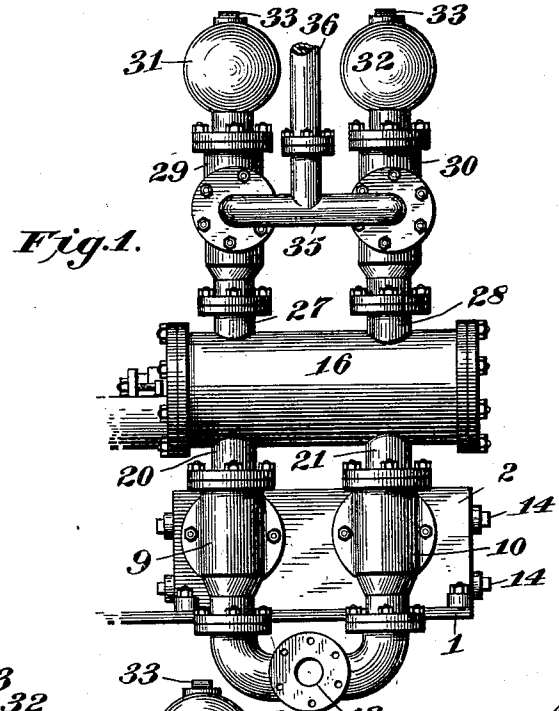


Fig. 1.

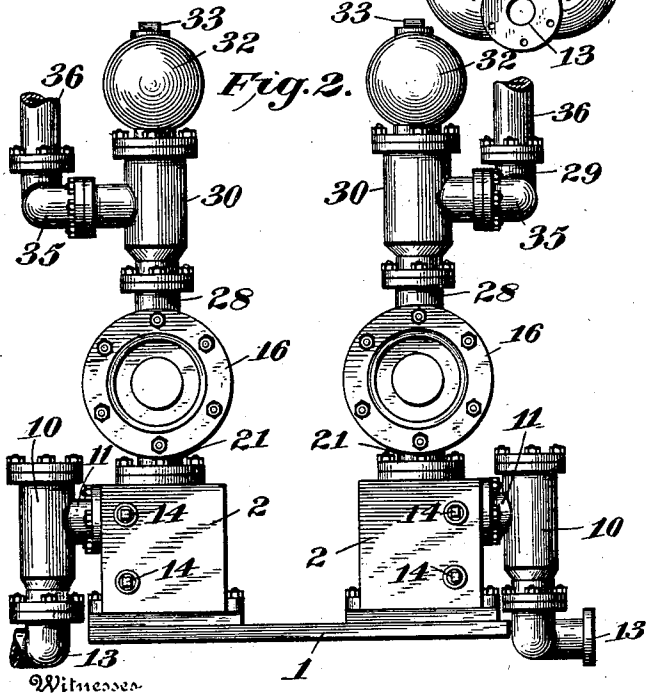


Fig. 2.

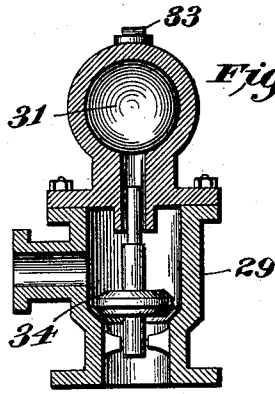


Fig. 4.

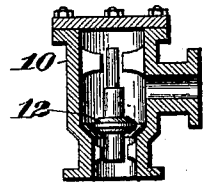


Fig. 5.

Witnesses.

Ehmer Seavey

E E Monstop

By

Inventor

Alexander Jack

Geo. P. Hamlin

his Attorney

No. 730,917. PATENTED JUNE 16, 1903.

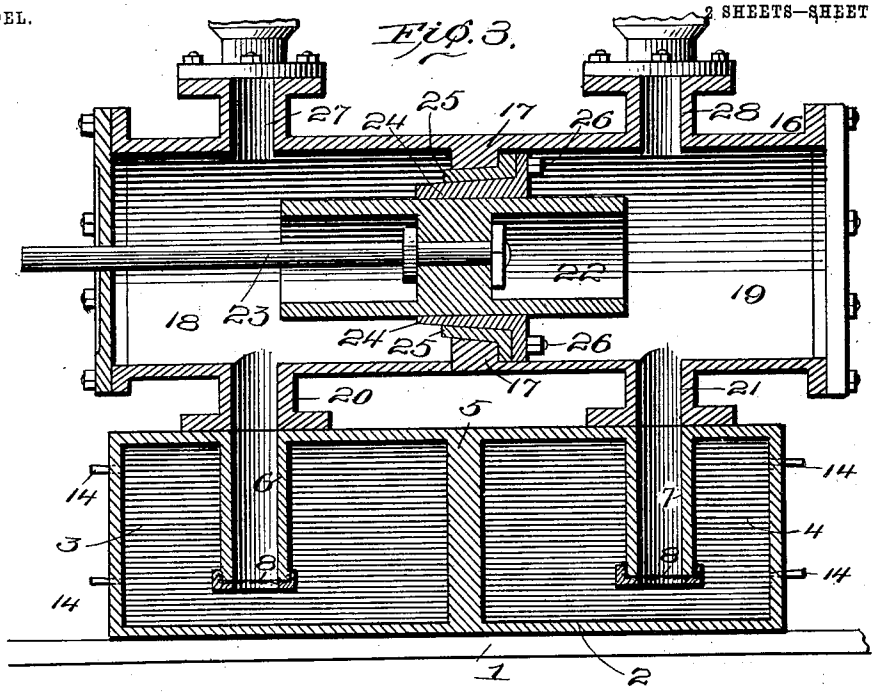
A. JACK.

AUTOMATIC DUPLEX STEAM PUMP.

APPLICATION FILED MAR. 3, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.



Witnesses
J. M. Fowler Jr.
Sarah V. Goldsborough

Inventor
Alexander Jack
by Geo. N. Saunders Atty.

No. 730,917. Patented June 16, 1903.

UNITED STATES PATENT OFFICE.

ALEXANDER JACK, OF EVANSVILLE, INDIANA.

AUTOMATIC DUPLEX STEAM-PUMP.

SPECIFICATION forming part of Letters Patent No. 730,917, dated June 16, 1903.

Application filed March 3, 1902. Serial No. 96,492. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER JACK, a citizen of the United States, residing at Evansville, county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in Automatic Duplex Steam-Pumps, of which the following is a specification.

My invention relates to automatic duplex steam-pumps.

It is a well-known fact that the ordinary steam-pump has to be "primed" on being started, which is of course a drawback; and one object of the present invention is to provide novel means whereby my steam-pump will be adapted to start without the necessity of priming it.

Other objects of the invention are the provision of a novel interior construction for the guidance of the plunger in the water-cylinder, the prevention of access of foreign material to the valves, and the general improvement of a pump of this class.

To accomplish the foregoing objects, I provide certain improvements and novel combinations and arrangements of parts which are fully explained hereinafter, while the novel features are recited in the appended claim.

In the accompanying drawings, Figure 1 is a side elevation; Fig. 2, an end elevation; Fig. 3, a longitudinal section through the water-cylinder and differential chambers and the piston; Fig. 4, a detail of the discharging-valve, and Fig. 5 a detail of the receiving-valve.

Inasmuch as both pumping actions in my duplex pump are similar, only one side of the pump will be described.

The numeral 1 designates the bed-plate, which supports the various mechanisms, and seated on this bed-plate is a differential water-chamber 2, having the separate chambers 3 and 4, between which is the solid partition 5. Depending in the chambers 3 and 4 are the pipes 6 and 7, having strainers 8 at their lower portions, where they are immersed in the water, to exclude any foreign material from the valves. There are independent receiving-valve casings 9 and 10 in communication by pipes 11 with the respective chambers 3 and 4, and inside of these casings are the inlet or receiving valves 12. Both valve-casings are connected to a common suction-pipe 13, which will lead to the point from which the water is to be drawn. The common suction-pipes 13 of the two sides of the pump can be connected together, if desired. In the ends of the differential chamber 2 are drain-plugs 14, preferably two being provided for the respective chambers 3 and 4, thus providing means whereby the water within the chambers may be drawn off in cold weather. Above and supported by the differential chamber is a water-cylinder 16, having the usual cylinder-heads and provided with a septum or partition 17 for the support of the water-plunger. The water-cylinder is thus divided into two chambers 18 and 19, in communication with the chambers 3 and 4 by the pipes 20 and 21.

The numeral 22 designates the water plunger or piston, to which is connected piston-rod 23, and the plunger moves in a packing-gland 24, held in the septum 17 by a packing-ring 25, bolts 26 being employed to secure the parts.

Above the water-cylinder and supported thereon in communication with the respective chambers 18 and 19 by the pipes 27 and 28 are the discharging-valve chambers 29 and 30, which are surmounted by the cold-air chambers 31 and 32, having the removable plugs 33. In each discharging-valve casing is a valve 34, which controls the flow of water into the bridge-pipe 35, from which leads the discharging-pipe 36. The discharge-pipes 36 from the two sides of the pump can be connected together and have a common discharge-pipe, if desired.

The pump on one stroke will draw up water from one of the differential chambers into one of the chambers of the water-cylinder and force water out of the other chamber of the water-cylinder and into the discharge-valve casing communicating therewith and thence to the point where the water is to be delivered, while also drawing up water from the source of supply into the differential chamber from which the water is being drawn. On the opposite stroke of the water-plunger being made a reverse of these operations will take place. The differential chambers are thus kept continually supplied with water, and when the pump is stopped they will contain a sufficient quantity of water to start the

pump on its being again put into operation, thereby obviating the necessity for priming the pump. The operation described is the same on both sides of the pump.

I am aware that various changes of construction might be resorted to in carrying out my invention without departing from its mode of operation or materially changing its structure, and I do not, therefore, limit myself to the precise construction herein shown and described, but consider that I am entitled to all such modifications as come within the spirit and scope of the invention.

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

In a pump, the combination with a water-cylinder having independent compartments, and a piston adapted to operate in said compartments, of a casing having a partition providing therein a plurality of independent supply or reservoir chambers, pipes leading from the respective chambers of the water-cylinder, into the respective supply or reservoir chambers of the casing, valve-casings and contained valves therein for controlling the admission of water, independently, to the respective supply or reservoir chambers, and a suction-pipe leading to said valve-casings.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

ALEXANDER JACK.

Witnesses:
JOHN BROWNLEE,
WILLIAM M. SMITH.