

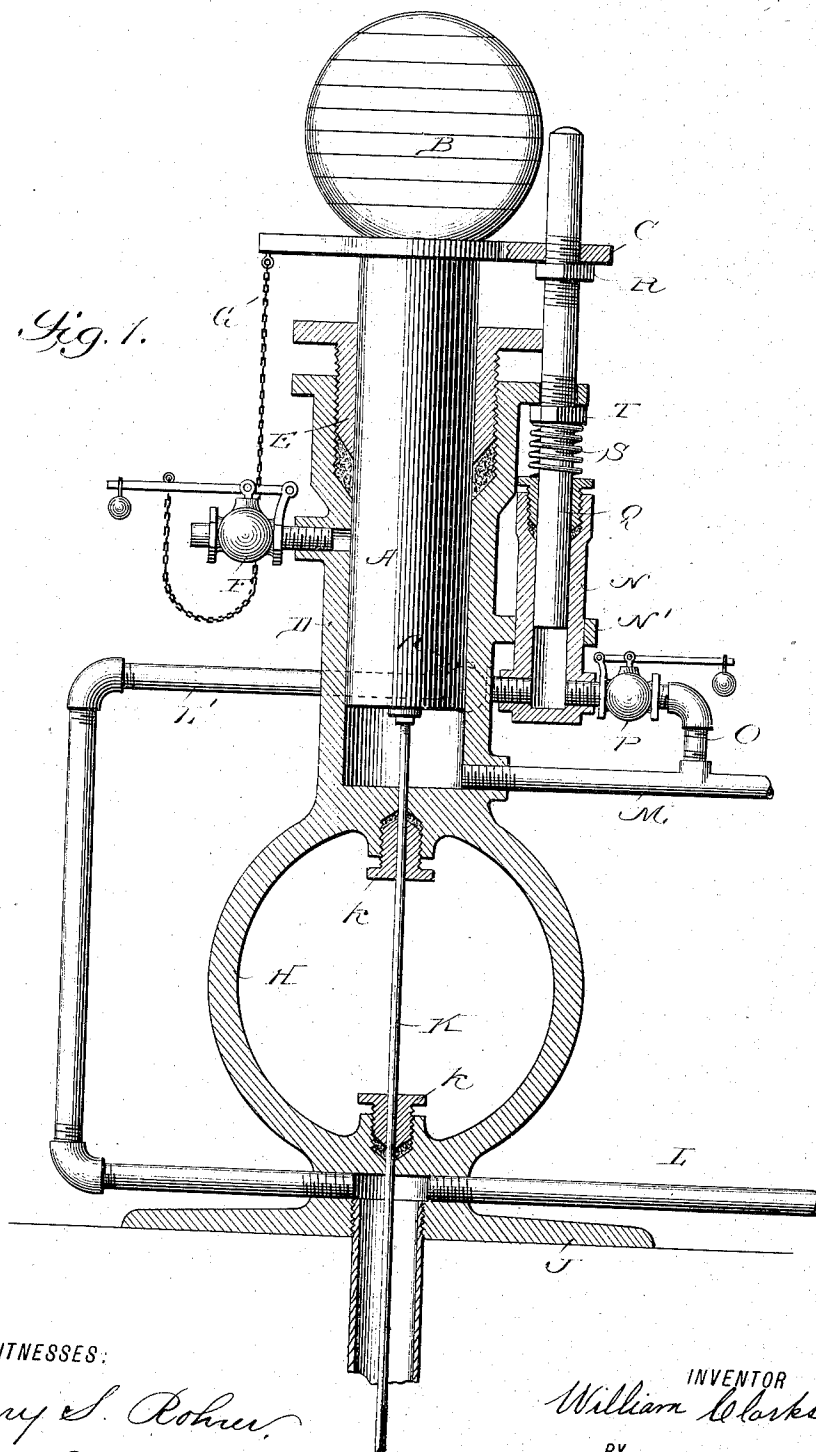
(No Model.)

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HYDRAULIC PUMP.

2 Sheets—Sheet 1.

No. 572,964.

Patented Dec. 15, 1896.



WITNESSES:

Harry S. Rohrer.
W. A. Redmond

INVENTOR

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William Clarkson

BY

J. F. Beale

ATTORNEY.

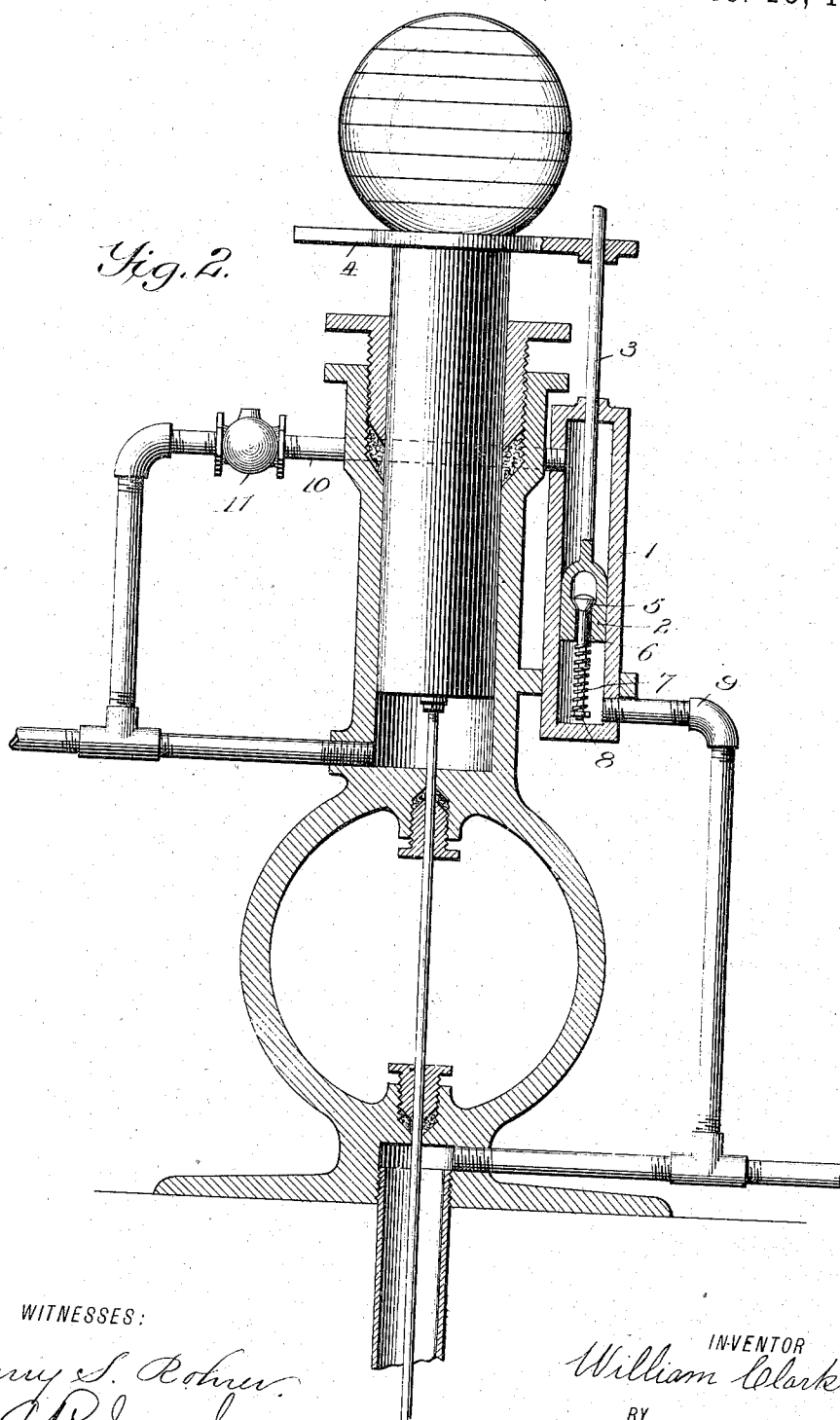
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UNITED STATES PATENT OFFICE.

WILLIAM CLARKSON, OF CLEBURNE, TEXAS.

HYDRAULIC PUMP

SPECIFICATION forming part of Letters Patent No. 572,964, dated December 15, 1896.

Application filed September 10, 1896. Serial No. 605,355. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CLARKSON, a citizen of the United States, residing at Cleburne, in the county of Johnson and State of Texas, have invented certain new and useful Improvements in Hydraulic Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to pumps, and more particularly to my improved system of pumping shown and described in two applications for patents filed in the United States Patent Office by me March 4, 1896, Serial No. 581,771, and May 12, 1896, Serial No. 591,296.

My present invention relates more particularly to means for automatically supplying water to the pressure-pipe while the pump is working to replenish waste or leakage.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation, partly in section, of a pumping-ram embodying my invention and showing the pressure-pipe and supply-pipe which communicate with a driving-ram and water-tank. (Not shown.) Fig. 2 is a like view showing a modification of my invention.

Referring more particularly to the drawings, A denotes a plunger having a series of weights B secured to its upper end. C denotes a collar rigidly secured to the upper end of said plunger below the weights.

D denotes a cylinder open at its upper end and provided with a stuffing-box E. F denotes a safety-valve located at the upper end of said cylinder and connected by a chain G to said collar. H denotes an open yoke having a base J cast integral with said cylinder. K denotes a sucker-rod secured to the lower end of said plunger and extending through stuffing-boxes *k k* in said yoke to the well or water supply.

L denotes the supply-pipe leading to a suitable tank, (not shown,) and L' denotes a branch of the supply-pipe connected to a feed-pump hereinafter described.

M denotes a pressure-pipe connecting a driving-ram (not shown) and provided with a feed-pipe O, hereinafter described.

The feed-pump consists of a cylinder N,

open at its upper end and provided with a stuffing-box.

N' denotes a standard secured to cylinder D, in which cylinder N is mounted. The lower end of said cylinder communicates with the pipe L' through a check-valve *n*. O denotes a feed-pipe connecting the lower end of said cylinder with the pressure-pipe M. P denotes a safety-valve in said pipe. Q denotes a plunger for said cylinder, extending upward above said cylinder and passing through a perforation in the collar C.

R denotes a nut secured to the stem of the plunger below the collar C. The position of said nut is such that the collar will not come in contact with it so long as the plunger A performs only its normal downstroke.

S denotes a coiled spring surrounding the plunger-stem, its lower end bearing on the stuffing-box of cylinder N and its upper end bearing on a nut T, secured to the plunger-stem.

When the pressure-pipe and cylinder D have the requisite supply of water, the feed-pump is not brought into play, and it is only when there is insufficient water in said pipe and cylinder that the feed-pump automatically supplies the leakage or waste by forcing in water from the pipe L'.

The operation is as follows: There being insufficient water supply in the pressure-pipe and cylinder the plunger A on its downstroke will descend into the cylinder D below its normal position. This will cause the collar C to strike the nut R and force down the plunger in cylinder N, forcing the water in the latter through the pipe O into the pipe M, the safety-valve P yielding to this pressure, while the check-valve *n* prevents back-flow into the pipe L'. Upon the completion of downstroke of plunger in cylinder N it is forced back to its normal position by the coiled spring S.

It should be understood that the safety-valve P is sufficiently weighted to resist the pressure from the head of water in the water-tank, while it will yield to the greater pressure from the feed-pump. Said valve also acts as a check-valve to prevent the water in pipe M from passing into the cylinder N.

In the modification shown in Fig. 2 the feed-

pump consists of a cylinder 1, provided with a piston 2, having a rod 3, extending above said cylinder, secured to a collar 4 on the pumping-ram plunger. 5 denotes a valve seated in said piston and provided with a depending stem 6, on which is arranged a compressed or coiled spring 7. Said spring abuts against the lower surface of said piston, and its lower end is secured to or abuts against a nut 8, secured to the valve-stem 6, and serves to hold said valve in its seat under normal conditions, as hereinafter described. The lower end of said cylinder is connected to a pipe 9, which is a branch of the supply-pipe, and the upper end of the cylinder is connected to a pipe 10, which communicates with the pressure-pipe through a check-valve 11.

The supply-pipe keeps a constant supply of water in the lower end of the feed-pump cylinder, and under normal conditions this water is prevented from passing through the valve 5 by the expansion of the coiled spring holding it in its seat. Should the water in the pumping-ram cylinder become insufficient by leakage or waste in the pressure-pipe, it would cause the pumping-ram plunger which carries the collar 4 to descend below its normal position, lowering piston 2 until the valve-stem was forced down in contact with the bottom of cylinder 1, thereby compressing spring 7 and releasing the valve from its seat, when the water in the lower end of the cylinder will flow through into its upper end and be forced into the pressure-pipe upon the upstroke of the piston.

It is evident that the feed-pump shown in Fig. 1 utilizes the downstroke of plunger A to force water into the pressure-pipe, while the construction shown in Fig. 2 utilizes the upstroke of said plunger for this purpose. In the former instance water is supplied to

the pressure-pipe while the pressure in said pipe is low or only a gravity-pressure, while in the latter instance water is supplied to said pipe when the pressure is high or a power-pressure is exerted therein.

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

1. In a pump having a driving-ram and pumping-ram connected by a pressure-pipe, the combination with the pumping-ram having a vertically-acting plunger of a feed-pump for the pressure-pipe having a vertically-acting plunger or piston connected to and operated by said pumping-ram plunger, a connection between the supply-pipe or water-tank and said feed-pump, a connection between said pressure-pipe and feed-pump, and means for automatically operating said feed-pump by said pumping-ram plunger to supply waste or leakage in the pressure-pipe, substantially as shown and described.

2. In a compound pump, the combination with a pumping-ram having a gravitating plunger actuated by water under pressure, of a feed-pump for the pressure-pipe having a piston connected to and operated by the pumping-ram plunger, a valve seated in said piston having a depending stem and a spring mounted upon said stem which normally retains said valve in its seat, a pipe connecting the lower end of said feed-pump with the supply-pipe, and a pipe connecting the upper end of said pump with the pressure-pipe; substantially as shown and described.

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

WILLIAM CLARKSON.

Witnesses:

R. G. HALL,
O. J. LOGAN.