

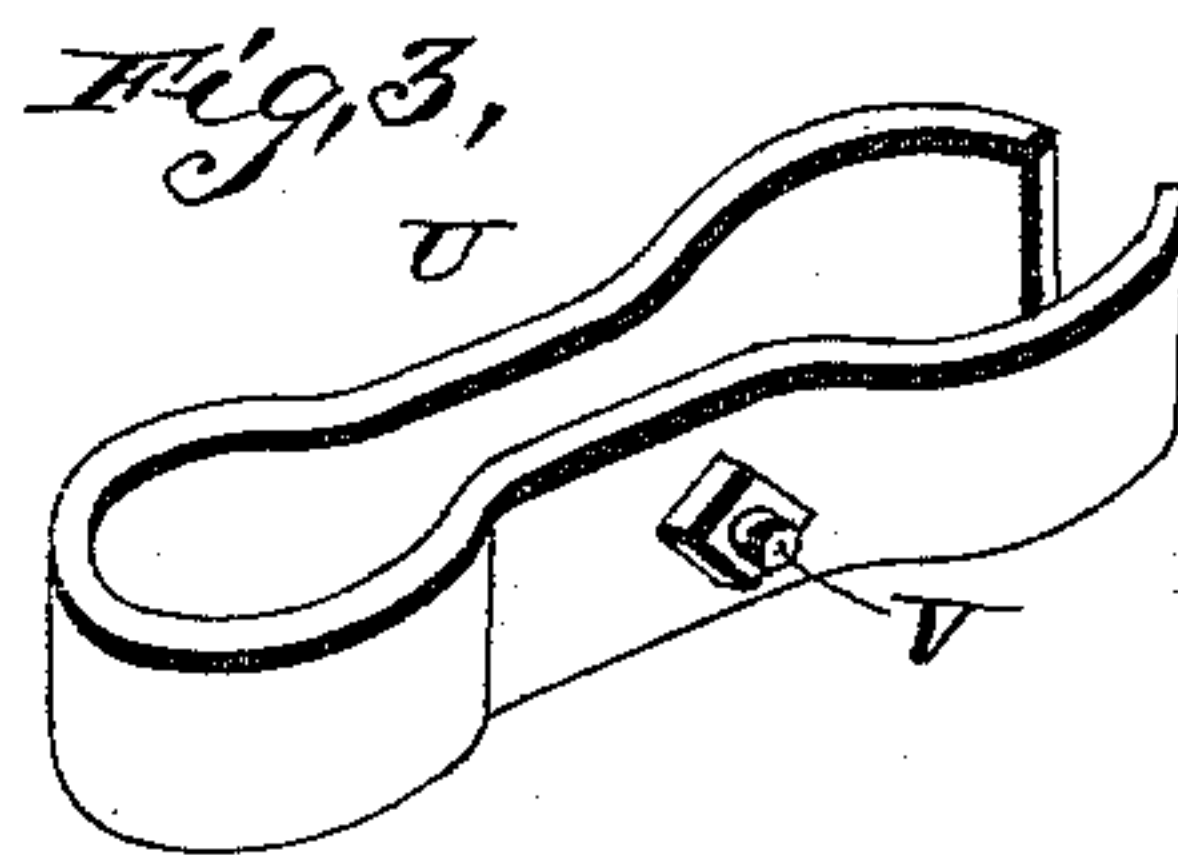
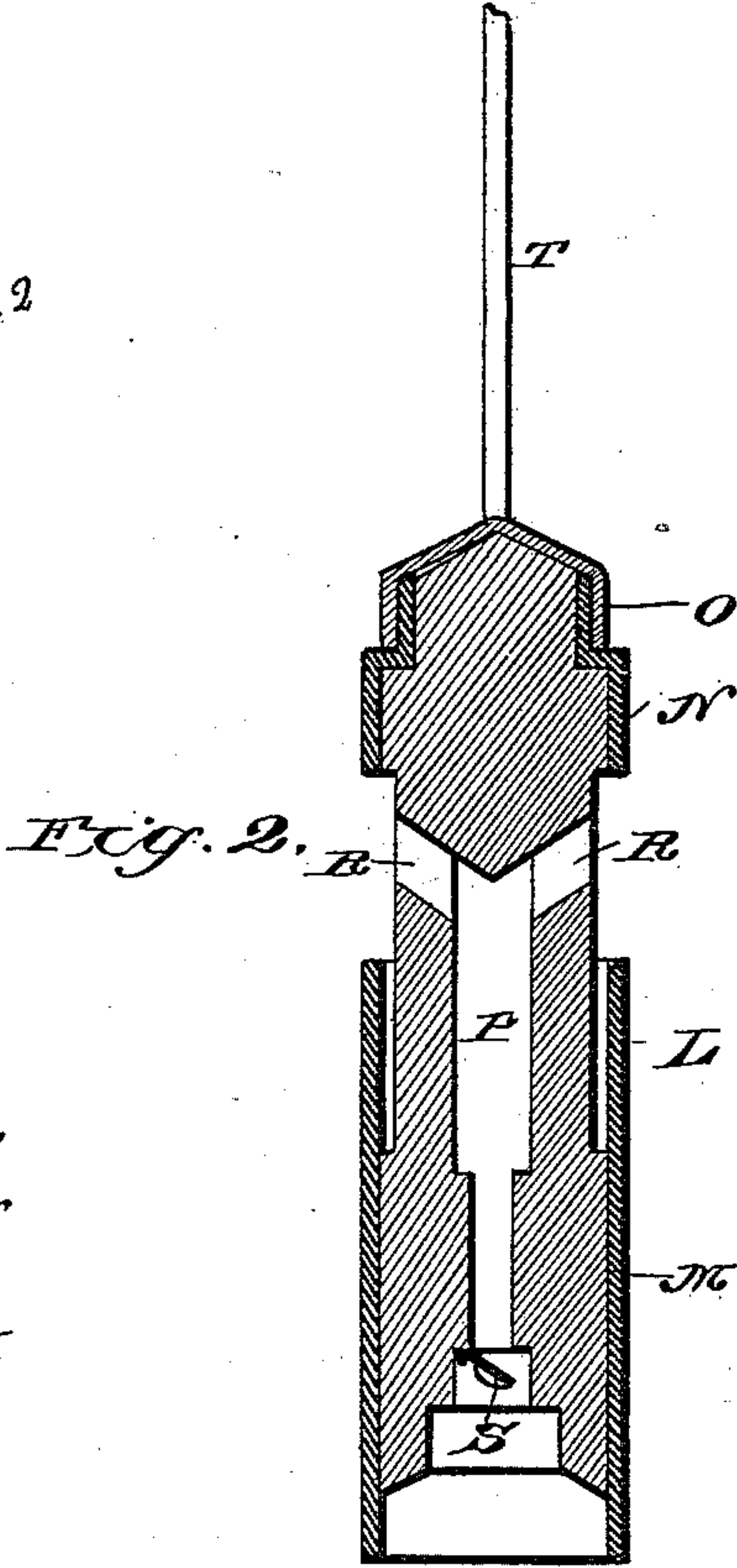
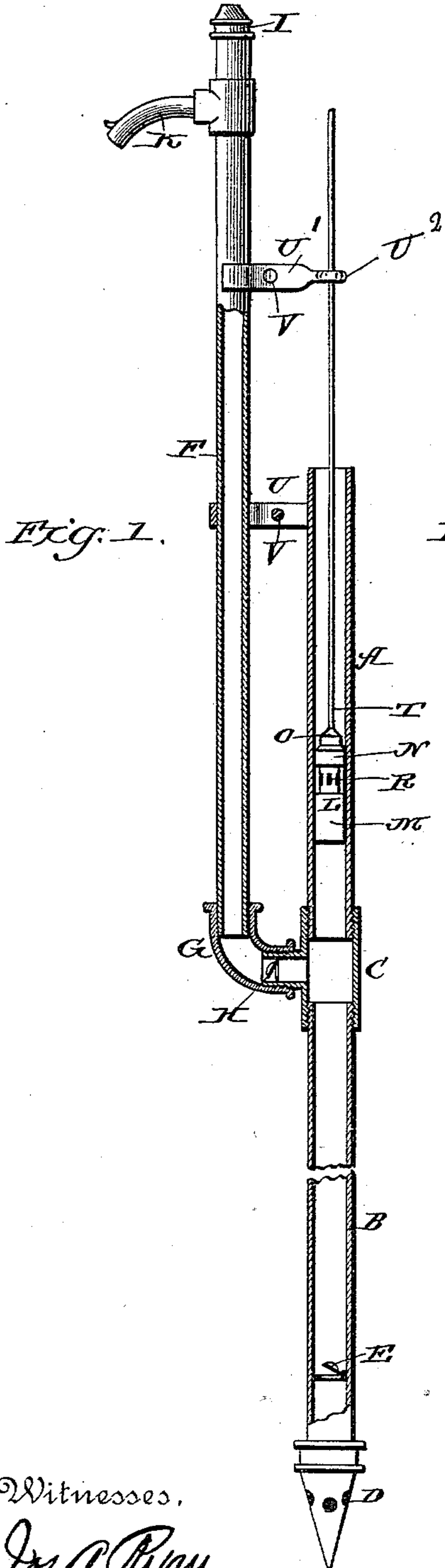
(No Model.)

B. F. SAMMONS.

AIR JET.

No. 379,543.

Patented Mar. 13, 1888.



Witnesses.

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UNITED STATES PATENT OFFICE.

BENJAMINE F. SAMMONS, OF CUNNINGHAM, MISSOURI, ASSIGNOR OF ONE-HALF TO THOMAS DOBBINS, OF SAME PLACE.

AIR-JET.

SPECIFICATION forming part of Letters Patent No. 379,543, dated March 13, 1888.

Application filed June 13, 1887. Serial No. 241,209. (No model.)

To all whom it may concern:

Be it known that I, BENJAMINE F. SAMMONS, a citizen of the United States, residing at Cunningham, in the county of Chariton and State of Missouri, have invented a new and useful Improvement in Air-Jets, of which the following is a specification.

My invention relates to an improvement in compressed-air pumps; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the drawings, Figure 1 is a vertical sectional view of a pump embodying my improvements. Fig. 2 is an enlarged detailed sectional view of the plunger. Fig. 3 is a detached perspective view of the clamping jaws and bolts.

A represents the pump-stock, which comprises a vertical pipe of suitable diameter, the upper end of which is open.

B represents a suction-pipe, which is coupled to the lower end of the pipe A by means of a T-coupling, C. The lower end of the coupling-pipe is provided with a pointed strainer, D, adapted to stick in the sand or mud at the bottom of the well, so as to steady the pump.

E represents an upwardly-opening valve, arranged in the suction-pipe near the lower end thereof.

F represents a delivery-pipe, the diameter of which is considerably less than the diameter of the suction-pipe. The lower end of this delivery-pipe is connected to the coupling C by a curved elbow, G. In coupling C is arranged a gravity-valve, H. The upper end of the delivery-pipe is closed by a cap, I, and from the delivery-pipe, at a suitable distance from its upper end, projects a spout, K.

L represents the plunger or piston, which fits in the stock A and has its lower portion provided with a leather packing-collar, M, which fits snugly in the bore of the stock. The upper portion of the plunger is reduced in diameter and is provided with a leather packing-collar, N, which is secured by an annular clamping-nut, O.

P represents a vertical bore or opening, which is made centrally in the plunger and extends from the lower end of the same to within a

suitable distance of the upper end thereof, where it communicates with a series of air openings or inlets, R. The lower portion of the bore P is of less diameter than the upper portion thereof, and in the extreme lower end thereof is located a downwardly-opening valve, S.

T represents a plunger-rod, which extends from the upper end of the plunger and projects above the upper end of the stock A, and is adapted to be connected to an operating-lever, which is not here shown, as it may be of any preferred construction.

U represents a clamp having a pair of jaws which embrace opposite sides of the delivery-pipe and of the pump-stock, and are clamped in position thereon by means of a clamping-bolt, V, that extends through transverse aligned openings made in the centers of the jaws.

U' represents a similar clamp having a pair of jaws at one end which engage the delivery-pipe at a distance above the clamp U, and is provided at the opposite extremity with an eye, U², through which the plunger-rod extends, as clearly shown in Fig. 1.

The operation of my invention is as follows: The operator first closes the mouth of the spout with one hand, and with the other he operates the plunger-rod, so as to cause the plunger to reciprocate vertically in the pump-stock. During the major portion of each upstroke of the plunger air is prevented from being admitted by reason of the packing N at the upper end of the plunger and consequently a vacuum is formed in the lower portion of the pump-stock, and water is sucked into the same through the valve E. When the plunger reaches the upper limit of its stroke, the packing N rises above the upper end of the pump-stock, and consequently the openings R in the plunger become uncovered and air is drawn into the pump-stock. On the descent of the plunger the valve S closes, and air in the pump-stock is forced downward on the column of water therein. At the succeeding upstroke of the plunger the valve E opens and the valve H closes, causing the water to rise in the pipe B to the elbow, and from thence up the pipe A to within a short distance of the plunger.

On the next downstroke of the plunger the valve E closes and the check-valve H opens, and the water in the lower portion of the pipe A, together with the air above the column of water, is forced upward through the delivery-pipe F. After a few strokes of the plunger the water begins to flow from the spout K, as will be very readily understood.

A pump thus constructed can be operated with great ease and is adapted to raise water to a great height.

It will be readily understood that the water does not pass through the plunger, and consequently the pump may be advantageously employed for pumping water in which sand, mud, and other impurities are held in suspension, and the pump is also adapted for raising sand from the beds of streams.

The size of the bore P in the plunger and the diameter of the pipes A, B, and F must be of course proportioned to the height the water is to be elevated.

Having thus described my invention, I claim—

1. The combination of the pipe A, the pipe B, depending therefrom and having the valve E, the delivery-pipe F, communicating with the pipes A and B and having the check-valve H, and the plunger L, having the packing N at its upper end and adapted to reciprocate in the pipe A above the lower end of the delivery-pipe and provided with the downwardly-opening valve S and with openings leading from a point below packing N to said valve,

whereby air is compressed in the lower portion of the pipe A at each downstroke of the plunger, substantially as described.

2. The combination of the valved inlet-pipe or pump-stock, the valved discharge-pipe communicating therewith, and the plunger adapted to reciprocate and fitting snugly in the inlet-pipe or stock above the juncture of the discharge-pipe, said plunger having the downwardly-opening valve S at its lower end, and the bore P, extending upward from said valve and communicating with openings R near the upper end of the plunger, substantially as described.

3. In combination with the delivery-pipe F, the pipe B, the pipe A, the plunger L in the pipe A, the valve H in pipe F, the valve E in pipe B, the valve S, carried by the plunger, the series of air-openings R in the top of the plunger, the vertical bore or opening P, extending from the valve S to the openings R, and the packing-collars M N around the outside of the plunger, the openings R being arranged between the two collars M N, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

BENJAMINE ^{his} ~~×~~ F. SAMMONS.
mark.

Witnesses:

R. M. HARDESTY,
D. B. HOWARD.