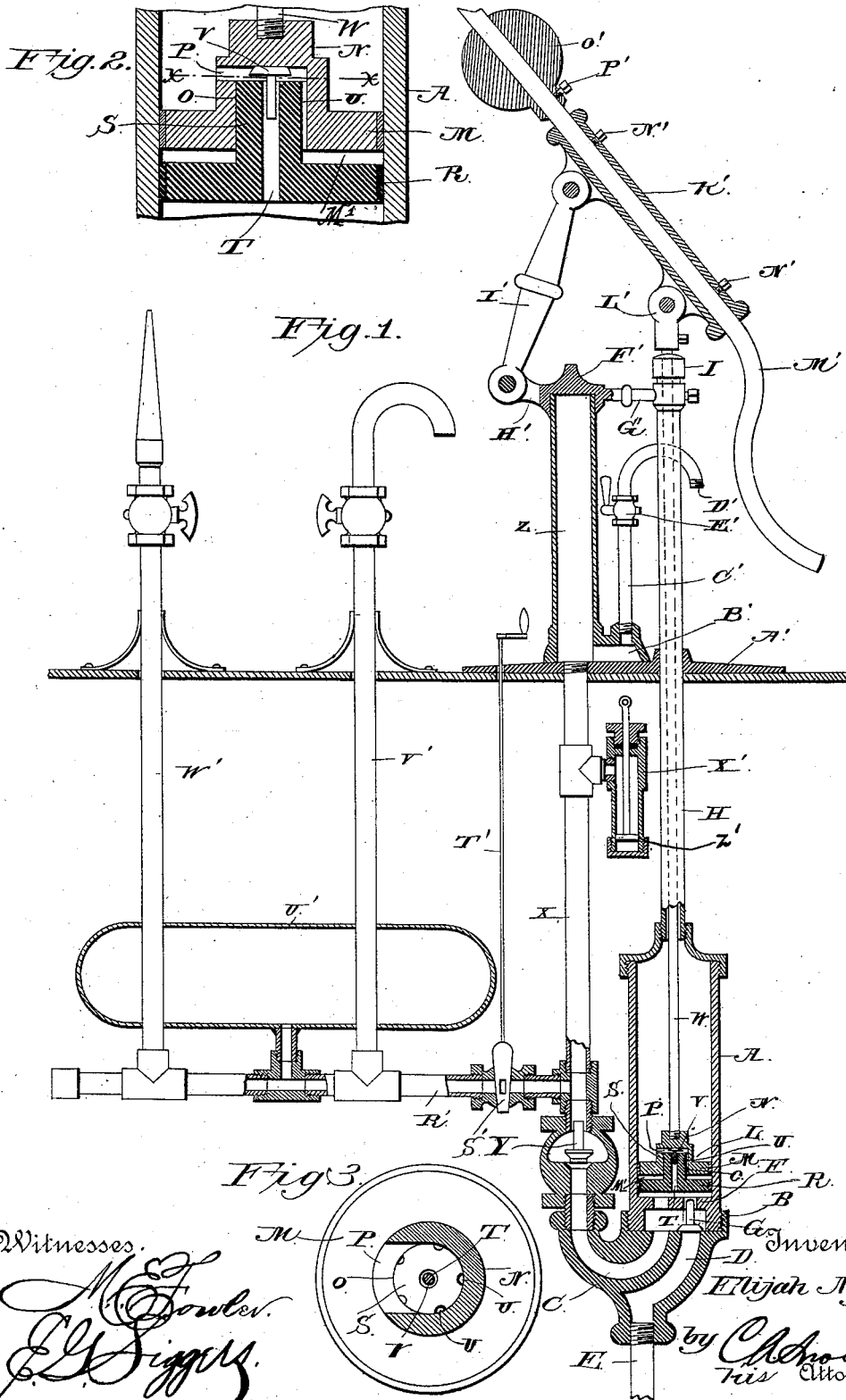


(No Model.)

E. NEFF.
PUMP.

No. 381,808.

Patented Apr. 24, 1888.



UNITED STATES PATENT OFFICE.

ELIJAH NEFF, OF MENTONE, INDIANA, ASSIGNOR OF TWO-THIRDS TO
ISAAC E. BELL AND HIRAM J. ELEY, BOTH OF SAME PLACE.

PUMP.

SPECIFICATION forming part of Letters Patent No. 381,808, dated April 24, 1888.

Application filed December 13, 1887. Serial No. 257,795. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH NEFF, a citizen of the United States, residing at Mentone, in the county of Kosciusko and State of Indiana, have invented a new and useful Improvement in Pumps, of which the following is a specification.

My invention relates to an improvement in 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 accompanying drawings, Figure 1 is a vertical sectional view of a pump embodying my improvement. Fig. 2 is a detached enlarged section showing more clearly the construction of the plunger and the packing; and Fig. 3 is a horizontal section on the line $x x$, Fig. 2.

A represents the pump-cylinder, which is provided at its lower end with a head or casting, B, in which is a semicircular channel, C, which communicates with the lower end of the pump-cylinder, and a curved channel, D, which is concentric with the channel C, communicates at its upper end with the lower end of the pump-cylinder, and communicates at its lower end with the upper end of a suction-pipe, E.

F represents a perforated plate, which is arranged in the bottom of the pump-cylinder and forms a seat for an upwardly-opening check-valve, G, that is arranged at the upper end of the channel D.

H represents a pipe, which extends from the upper end of the pump-cylinder and has its upper end closed by a cap, I.

L represents a piston or plunger, which comprises a metallic disk, M, having a boss or offset, N, in its center on its upper side. The said boss or offset is provided in its lower side with a circular recess, O, with the upper end of which communicates a channel, P.

R represents a packing of leather or other suitable material, which is arranged under the disk M at a suitable distance below the same, and is provided on its upper side with a stud, S, that fits in the recess O. Down through the center of this stud, and through the center of the packing R, extends a channel, T, and chan-

nels U are made in the sides of the stud S, as shown, which channels communicate with the upper end of the recess O, and with the space M' between the disk M and the packing R.

V represents a check-valve, which is arranged on the upper side of the stud R, and is adapted to open and close the channel P. From the upper side of the piston extends a rod, W, which passes up through the pipe H and through a central opening in the cap I, as shown.

X represents a vertical pipe, which is arranged on one side of the pump-cylinder, has its lower end coupled to the head B, communicating with the channel C, and provided with the upwardly-opening check-valve Y, and has its upper end connected to an air-chamber, Z, which is arranged on a base, A', the said base being provided with a central opening, through which the pipe H extends, and also provided with a channel or chamber, B', communicating with the lower end of the air-chamber Z, and from which extends a delivery-pipe, C', provided at its upper end with a goose-neck spout, D', and a stop-cock, E'.

F' represents a cap, which closes the upper end of the air-chamber Z, is provided on one side with an arm, G', to which the upper end of the pipe H is attached, and is provided on its opposite side with an outwardly-extending arm, H'.

I' represents a link, which has its lower end pivotally connected to the arm H' and has its upper end pivotally connected to a socket-tube, K'.

L' represents a joint, which connects the upper end of the pump-rod W to the socket-tube K'.

M' represents a pump-handle, which has its inner end curved, as shown, and its outer end straight for a considerable distance and extending through a socket-tube, K', longitudinally adjustable thereto, and secured to said socket-tube by means of set-screws N'. On the outer portion of the handle M' is secured an adjustable counterbalancing-weight, O', which is provided with a set-screw, P', by means of which it may be secured at any desired point on the pump-handle.

From the foregoing description it will be

readily understood that by operating the pump-handle the piston or plunger may be caused to reciprocate vertically in the pump-cylinder A. On the upstroke of the said piston or plunger the valve G may be opened, so as to cause water to be drawn upward through the pipe E and the channel D into the cylinder, and the valve V will be closed. On the ensuing downstroke of the piston or plunger the valve G will be closed and the water in the lower portion of the cylinder forced through the channel C past the valve Y into the pipe X, a small portion of the water passing upward through the channel P and past the valve V above the piston or plunger, so as to cause a small quantity of water to accumulate above the piston or plunger and find its way downward through the channels U into the space M' and the packing R, so as to keep the latter lubricated and prevent the same from getting dry and out of order. After the pump has been operated a short time a sufficient quantity of water has become accumulated in the chamber Z to create considerable pressure, and thereby, when the stop-cock E' is opened, the water will be discharged from the spout in a continuous stream.

R' represents a pipe, which communicates with the pipe X near the lower end thereof, and is provided with a stop-cock, S', which is operated by means of a rod, T.

U' represents an air-chamber, which communicates with the pipe R'.

V' and W' represent delivery-pipes, which also communicate with the pipe R'.

X' represents a cylinder, which communicates, near its upper end, with the pipe X. In this cylinder is arranged a piston, Z', which is adapted to be forced downward by the pressure of the water in the pipe X and cylinder X', and is adapted for the attachment of connections (not shown) for the operating-rod of a windmill or other motor, so that the same will be thrown out of gear and caused to cease to operate when a sufficient pressure is accumulated in the chamber Z and the pipe X to cause the piston to descend.

After the pump has been operated sufficiently to create the requisite degree of pressure in the chamber Z, the stop-cock S' is opened and water is forced through the pipe R' into the compressing-chamber U', and is accumulated therein under pressure. The stop-cock S' is then closed, thus maintaining the water under pressure in the chamber U', and by open-

ing the stop cocks in the pipes V' and W' water will be caused to flow from the said compression-chamber U' in a continuous stream.

Having thus described my invention, I claim—

1. In a pump, the combination of the cylinder having the check-valve in its lower side and the outlet-channel C, the plunger arranged in the said cylinder and having the recess O and the channel P communicating therewith, the packing R, arranged below the said plunger, and having the stud S extending into the said recess and provided with the channel T, communicating with the channels P and O, and the check-valve V in the upper end of the channel T, substantially as described.

2. In a force-pump, the combination of the cylinder, the plunger therein, the packing below the said plunger and at a suitable distance therefrom, so as to leave a space, M', the channel communicating with the lower end of the cylinder and with the space between the plunger and packing, and the valve V, arranged in one of said channels, substantially as described.

3. The combination, in a pump, of the pump-rod, the socket-tube connected thereto, the link connecting the said socket-tube to a fixed point, the handle M', extending through the said socket-tube and adjustable longitudinally therein, and the counterbalancing-weight O', adjustable on the outer end of the said handle, substantially as described.

4. In a pump, the combination, with the plunger, the packing R below the same and at a suitable distance therefrom, so as to leave a space, M', the recess O in the plunger, the hollow stud S, extending from the packing and fitting in the recess O, the valve V, the channel P, and the channel U, communicating with the space M', as set forth.

5. In combination with the cylinder A, the pipe H, rising therefrom, the pump-rod W, passing through the pipe, the air-chamber Z', the cap F' for the chamber, having arm G' to connect with the pipe H, the link I', pivoted to the cap, the socket-tube K', pivoted to the pump-rod, and also to the link I', as set forth.

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

ELIJAH NEFF.

Witnesses:

AMOS N. HAMLETT,
JOHN F. JOHNSTON.