Stevens & Denton.

Steam Pump.

No. 86,111. Patented Jan. 19, 1869.

Fig. 1.

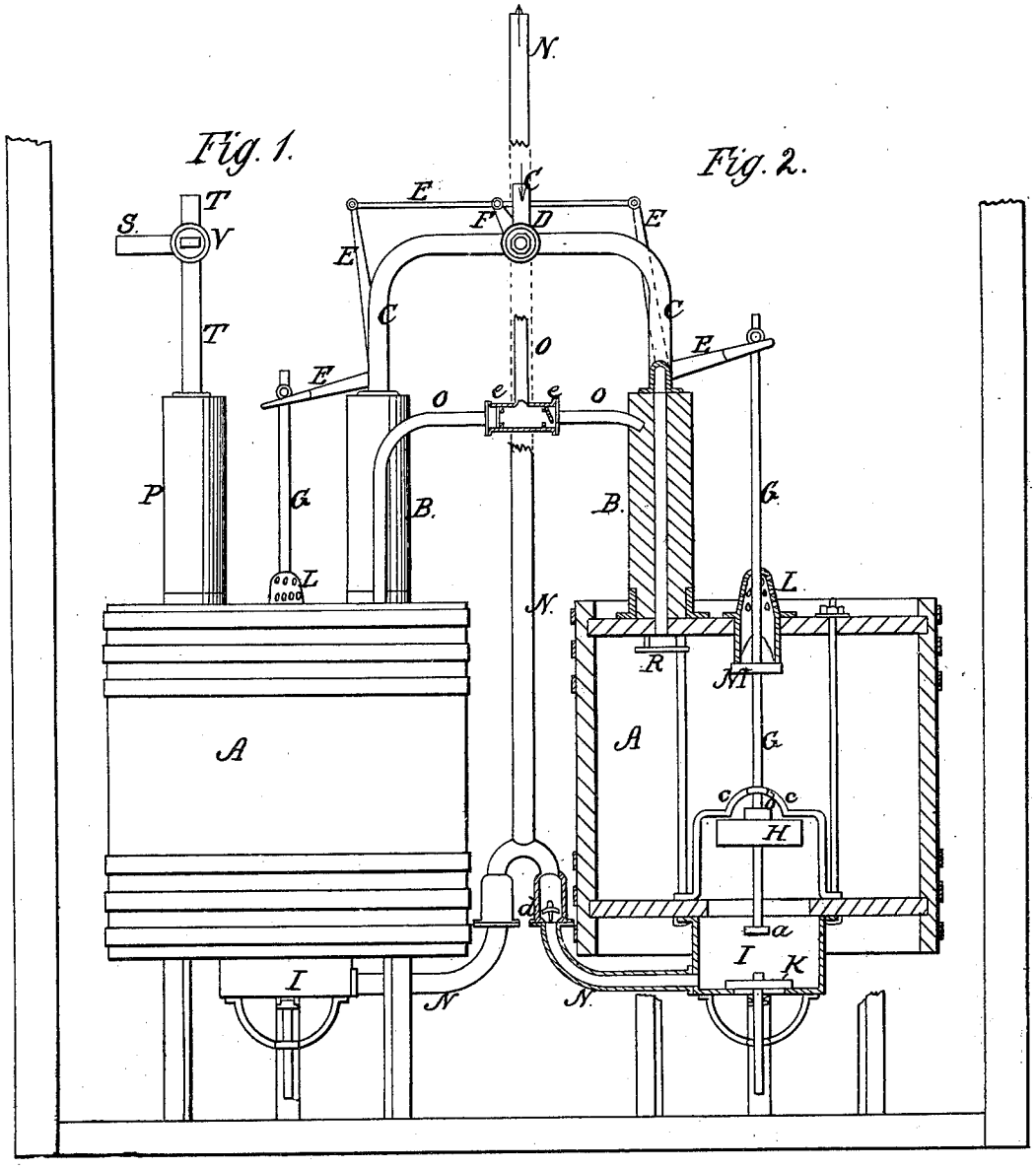


Fig. 2.

Witnesses,
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Inventor.
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United States Patent Office.

CHARLES L. STEVENS AND ALBERT A. DENTON, OF GALESBURG, ILLINOIS.

Letters Patent No. 86,111, *dated January* 19, 1869.

IMPROVEMENT IN STEAM-PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, CHARLES L. STEVENS and ALBERT A. DENTON, of Galesburg, county of Knox, and State of Illinois, have invented a new and useful Double Self-Acting Wooden Steam-Pump or Tank; and we do hereby declare that the following is a clear, full, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation.

Figure 2 is a vertical section.

Like letters in the different figures of the drawings represent like parts.

The nature of our invention consists in the construction of wooden tanks, with wooden stocks or tubes, and with steam-pipes, provided with a two-way cock, operated by means of rods, connected with a float and plugs, for letting on and shutting off the steam, the tanks being provided with proper valves and pipes for admitting and forcing out the water to and from the tanks.

Air-tubes, provided with check-valves, are also used for admitting air to the tanks, which has been found to facilitate the forcing of the water from the tanks, especially where the water is being continually discharged.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A A are the tanks, made any required size, to suit the place where and the purpose for which they are to be used, and are constructed substantially the same way as our wooden steam-tanks heretofore patented.

B B are wooden stocks or tubes, from six to twenty feet long, as may be required, according to the depth the tanks may be under water, these tanks being designed to operate under water from two to any number of feet required.

The stocks or tubes are made by boring the proper-size hole lengthwise through the centre of a solid stock, of suitable thickness and length, similar to the manner of boring pump-stocks, and may be secured against liability of bursting, by the pressure of the steam, by iron hoops.

The stocks are attached to the upper ends of the tanks by means of metallic collars with flanges, so as to prevent the escaping of steam.

A proper-sized hole is made through the head of the tank, under the stock, to admit the steam.

C C C represent the steam metallic pipes connecting with the wooden stocks at the top, and provided with the two-way cock D, for the purpose of conducting the steam to the tanks, first to one, and then changing it to the other, as the water is forced out, first from one, and then from the other.

E E E are rods and levers, connected with the two-way cock by the crank F, and connected also with rods G G by loops in the ends of levers E E, through which the upper ends of rods G G pass loosely, being held from slipping out by means of a pin through the ends of rods G G. This attachment is arranged thus loosely for the purpose of allowing rods G G to slide up by the force of the water upon the metallic float, as will be more fully described.

H represents a metallic float, placed loosely on rod G, between the two collars *a b*, the rod G being kept in proper position by guide *c*.

I I are valve-boxes, attached on the bottom of the lower end of the tanks, and

K is a valve, (made separate from rod G, as seen in fig. 2,) for admitting the water into the tank.

L L are blow-off pipes, inserted through and extending a few inches above and below the upper ends of the tanks. The upper ends of these pipes are perforated with small holes, for the escaping of the steam.

M is a plug, on rod G, for closing the blow-off pipe L. A similar plug is on rod G, in the other tank. These rods pass through pipes L.

N N N are water-pipes, connecting with valve-boxes I I, and provided with check-valves, as represented by *d* in fig. 2.

O O O are air-tubes or pipes, provided with check-valves *e e*, and communicating with the tanks, through the upper ends thereof.

P represents a wooden stock, similar to stocks B B, with the metallic pipes S and T, and two-way cock V, to be used only in case one tank, instead of two, is used.

Plates are placed under the stocks or tubes, through which the steam is admitted, a few inches below the heads of the tanks, being held in place by two or more bolts, screwed into the tank-heads, as shown by R, in fig. 2, for the purpose of arresting the column of steam, preventing it from being projected with its full force directly into the water, scattering it, and throwing it up against the heads of the tanks, and thus lessening the condensation of the steam while the water is being discharged.

Operation.

The steam enters through pipe C, and is conducted to one of the tanks by the two-way cock D, forcing the water out through pipe N, the check-valve *d* opening upward, valve *k* and blow-off pipe L being closed when the steam is admitted.

As the water sinks below the float H, it slides down on rod G against collar *a*, and is then caught by the current, and forced through the tank-head into the valve-box I, drawing down the rod G, and removing plug M from blow-off pipe L, allowing the steam in the tank to escape, and at the same time, by means of the rods and levers E E E, reverses the two-way cock D, changing the column of steam into the other

tank, forcing the water out of it, and, by means of the float and rods, blowing off the steam, and changing the two-way cock so as to throw the steam again into the other tank, which has been filled again with water; a vacuum having been created almost immediately in the first tank, after the water was discharged, and filled again almost instantly through the large valve-box I in the bottom.

The force of the water, rushing in to fill the tank, presses the float up out of the valve-box, through the hole in the bottom of the tank, against collar *b*, and lifts rod G till plug M closes the blow-off pipe L, the end of rod G sliding up through the loop in lever E, and the plug M is held in place, so as to close the blow-off pipe by the pressure of the steam, when the water is being forced out of the tank.

It has been ascertained that there is considerable loss by condensation of the steam, in conducting it through water in metallic pipes, which loss is avoided by the use of the wooden stocks or tubes, which should always be long enough to extend from the top of the tank to a point above the water.

We have found, by experiment, that a small quantity of air is necessary where the water is being continually discharged, as designed by these pumps. The quantity is regulated by the size of the pipes, and is admitted to first one and then the other of the tanks, as each is being filled, by means of the check-valves *e e* in pipes O O.

The pumps made with a single tank, as represented by stock P, and pipes S T, and the two-way cock V, are for railroad-purposes. They may be made to contain any required quantity of water, say from one to two thousand gallons, and can be placed at the bottom of a well, or submerged in a stream or pond, and well secured by proper stays. There need be no check-valve, to hold the water in the discharge-pipe.

When the desired amount or all of the water has been discharged from the tank by the force of the steam which is admitted through pipe T, the two-way cock is then turned one-fourth around, which cuts off the steam from the tank, and allows it to escape through pipe S, and almost instantly the tank refills through the large valve in the bottom, the two-way cock is turned back, and the steam turned into the tank, and the discharge of the water commences again.

Thus the largest railroad-tender tank can be filled in a few seconds.

Claims.

Having thus fully described our invention,

What we claim therein as new, and desire to secure by Letters Patent, is—

1. The stocks or tubes B B and P, with steam-arrester plates R, as arranged with the tanks A A, substantially as herein described.

2. The blow-off pipes L L, plug M, float H, collars *a* and *b*, and guide *c*, constructed and arranged as herein described.

3. The construction and arrangement of the tanks A A, stocks B B, pipes C C, two-way cock D, levers E E, crank F, rods G G, floats H H, valve-boxes I I, valves K K, blow-off pipes L L, plugs M M, pipes N N, air-tubes O O, and collars *a* and *b*, as herein described.

As evidence that we claim the foregoing, we have hereunto set our hands, in the presence of two witnesses.

CHAS. L. STEVENS.
ALBERT A. DENTON.

Witnesses:

C. THEO. GRIFFITH,
JESSE ZEPP.