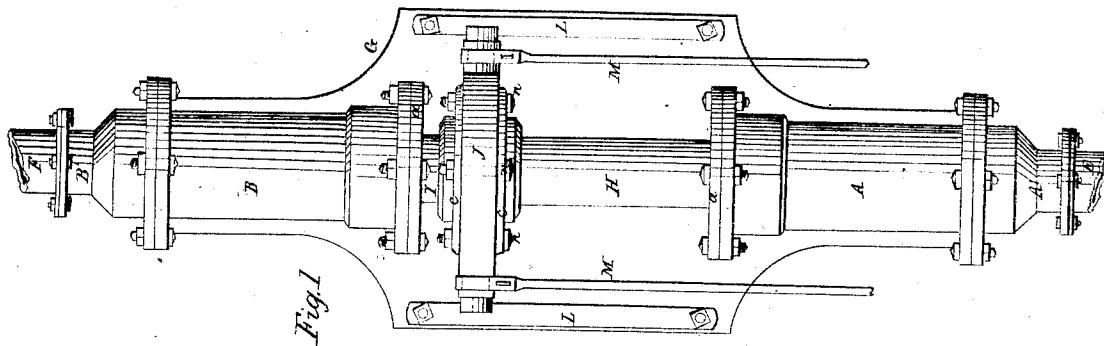
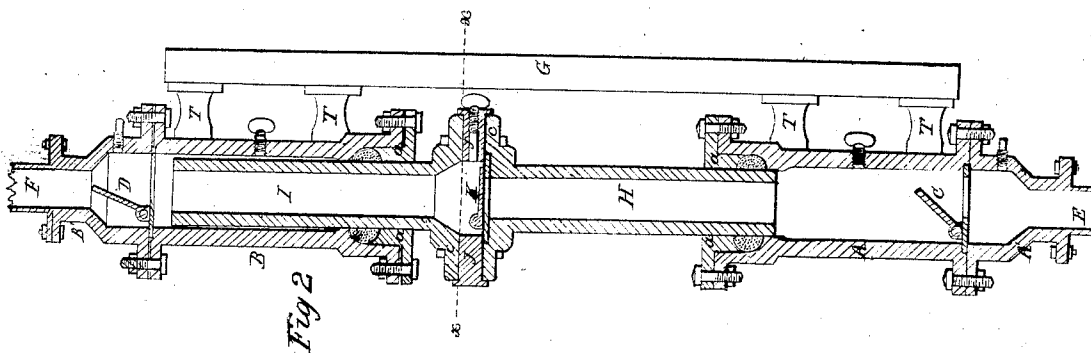
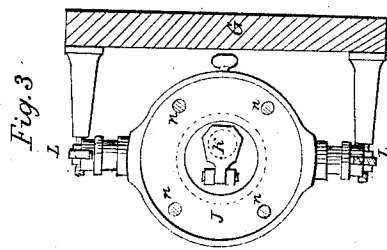


*J. Tanley,
Pump Lift.*

N^o 11,704.

Patented Sept. 19 1854.



UNITED STATES PATENT OFFICE.

JOHN TAPLEY, OF FRANKFORT, MAINE.

PUMP.

Specification of Letters Patent No. 11,704, dated September 19, 1854.

To all whom it may concern:

Be it known that I, JOHN TAPLEY, of Frankfort, in the county of Waldo and State of Maine, have invented certain new and useful Improvements in Pumps for Supplying the Feed-Water of Steam-Boilers, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which makes part of this specification, and in which—

Figure 1, represents a front elevation of my improved pump; Fig. 2, represents a vertical central section of the same, showing the double plunger at the extreme of its up stroke, and Fig. 3, is a horizontal section taken at the line *x x* of Fig. 2.

In the accompanying drawing (A and B) represent respectively a suction, and lifting cylinder, the axis of the one, being coincident with that of the other, the two separated a suitable distance, and each made in two parts, at the juncture whereof is confined in the one an induction valve (C), and in the other an eduction valve (D). The outer ends of the smaller of the two parts (A' and B') of both cylinders are contracted or reduced in diameter to connect with the suction and discharge pipes (E and F), and the two parts of each cylinder are furnished with flanges by which they are bolted together, so as to secure and allow the valves (C and D) to operate freely. The cylinders thus constructed and arranged, are mounted on a frame (G) by flanged legs (T) cast with and projecting from the cylinders, or they may be secured by clasp-bands, bolted to the frame, and embracing the said cylinders, or in any other convenient manner.

A double plunger is arranged between the cylinders, and working in both; it is composed of two tubes (H and I) united to a cross-head (J); these plungers work through stuffing boxes (*a a*) of the usual construction, fitted to the ends of the cylinders to guide the plungers and prevent leakage. The diameter of each plunger is a little less than the bore of the cylinders, so that the friction of the plunger is confined to the packing of the stuffing-box, which, when worn out can be replaced with but little trouble and expense. These plungers are of equal length and diameter, and are secured to the opposite sides of an annular cross-head (J), having an opening coincident with the bore of the plungers, but

slightly larger, to receive a valve (K), and the bore of the plunger at its end is also slightly enlarged (as seen in Fig. 2) to allow the free action of the valve. I have represented the adjacent ends of the plungers as enlarged, or furnished with annular flange-heads (*c c*) and fitted into recesses formed in the adjacent sides of the cross-head (J), and confined by screw bolts (*n n*), but it is very obvious that the three parts may be formed and united together in any convenient manner provided they are so formed and connected that they will receive a valve between them, and can be easily separated to repair, or replace the valve.

The length of each plunger is about equal to that of the cylinder within which it works, and the distance of the traverse of each plunger between the cylinders, is a little more than one-third of its length, so that it will be seen, when the double plunger is at the extreme of its up stroke, the end of the lower plunger will be near the top of the suction cylinder, and the cross-head near the bottom of the lifting cylinder, and in this position of the parts the air floating on the water always passes from the cylinder (A) into the lifting cylinder (B), leaving the water to occupy the entire space of the cylinder, so that on the descent of the plunger whatever air may be above the water will be expelled in advance of the water. The cross-head of the double plunger is fitted to ways (L L) on which it traverses with the movement of the plungers and by which the latter are steadied and prevented from turning. The double plunger is operated by attaching connecting-rods (M M) to the arms of the cross-head, and uniting said rods to a crank operated by an engine or other prime-mover.

The action of my pump is very simple, for, it will be seen, that the double plunger operates in the suction and lifting cylinders at the same time, at its up stroke drawing water into one (A), and expelling it from the other (B), and at its down stroke, displacing the water from the suction cylinder (A), and causing it to ascend into the forcing cylinder (B); the first of these movements of the double plunger acting as a suction and forcing pump, with the induction and eduction valves open, and the latter as a forcing pump with the plunger valve open only.

I have not given a minute description of

the clack-valves deeming it unnecessary, as they are so well known that any intelligent mechanician will readily understand how to construct and apply them, and to substitute for them valves of other kinds whenever it is expedient to do so.

5 Having thus described my improved pump for feeding steam-boilers, and for other purposes where certainty of action and the free passage of the water in a straight
10 current are important, what I claim as my invention and desire to secure by Letters Patent, is—

15 The arrangement of two cylinders in a line with each other, connected by a frame and fitted with valves, stuffing boxes and

a tubular plunger which works in both and has a valve arranged in its middle as described the plunger and each of the cylinders being made in two pieces at the junction of which a valve is secured, so that, without separating the cylinders and plunger, or dismounting either of them, any one of the valves, or the packing of the plungers can with facility be adjusted, removed, or re-
20 placed.
25

In testimony whereof I have hereunto subscribed my name.

JOHN TAPLEY.

Witnesses:

F. G. FONTAINE,
P. H. WATSON.