(No Model.)

G. L. HOLMBERG.

FORCE PUMP.

No. 313,669. Patented Mar. 10, 1885.

Fig. 1.

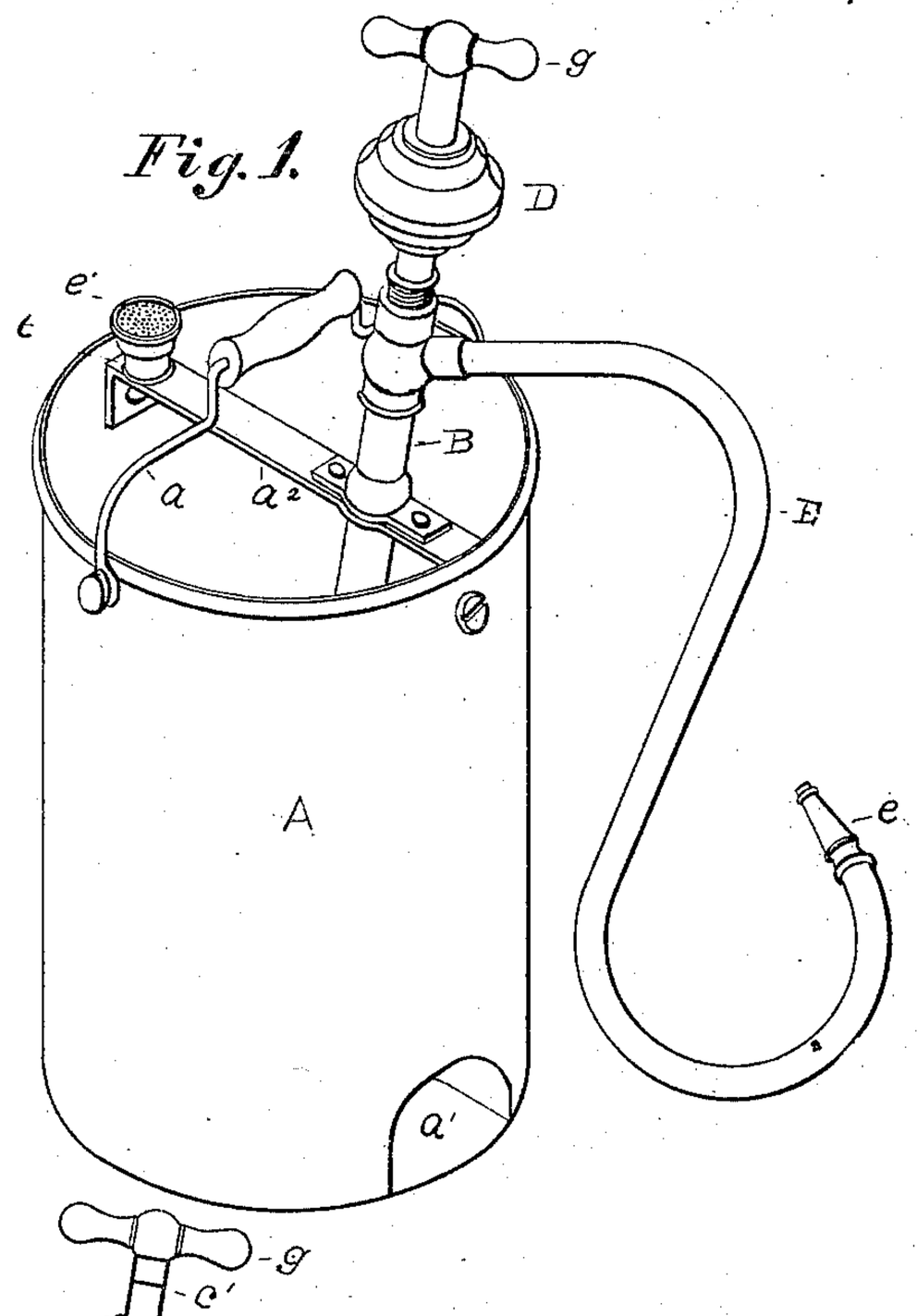


Fig. 2.

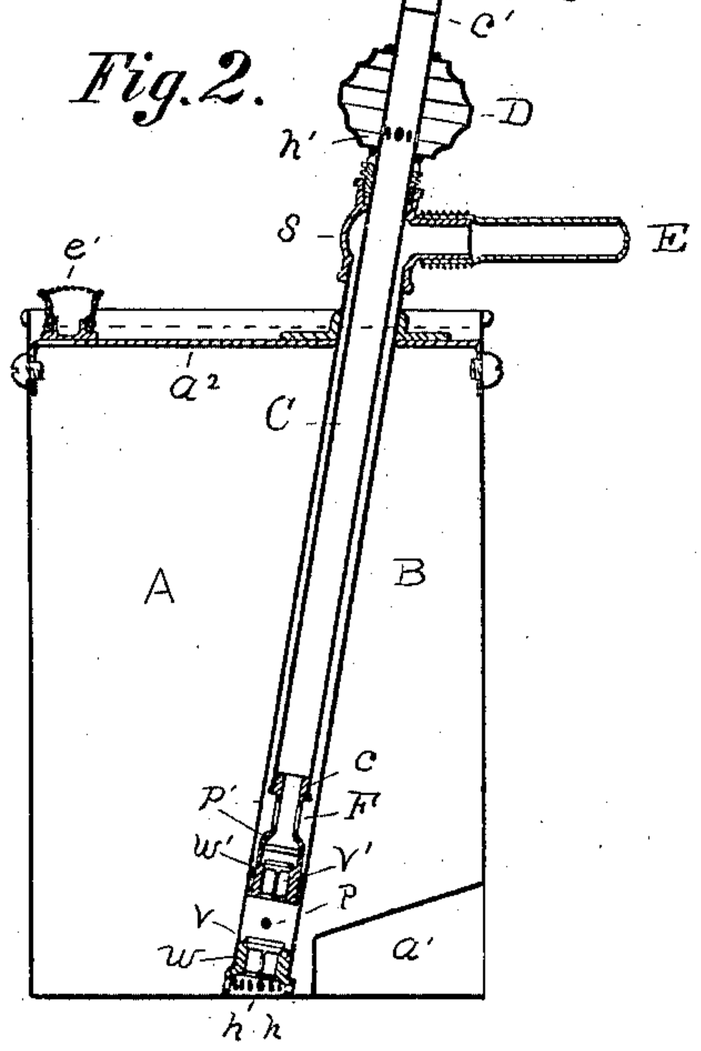
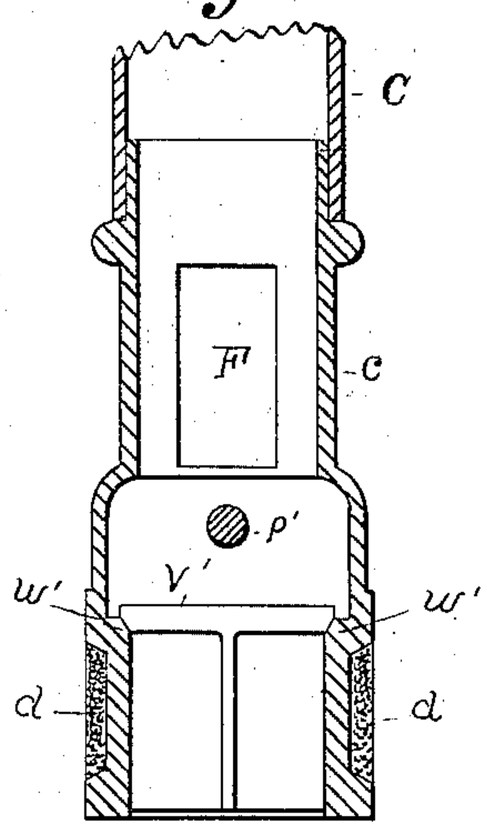


Fig. 3.



Witnesses:
J. Frank Collom
S. Kowell

Gustaf L. Holmberg
Inventor.
By P. H. Gunckel
Attorney

UNITED STATES PATENT OFFICE.

GUSTAF L. HOLMBERG, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO ANDREW CHARLES AND CARL E. CARLSON, OF SAME PLACE.

FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 313,669, dated March 10, 1885.

Application filed July 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, GUSTAF L. HOLMBERG, a subject of the King of Sweden, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Improvement in Force-Pumps, of which the following is a specification.

My invention relates to force-pumps operated by hand, and has for its object the providing of an easily-operated portable force-pump and water-tank capable of throwing water a considerable distance for use on small fires, and as a sprinkler.

In the drawings, Figure 1 is a perspective of the complete pump; Fig. 2, a vertical sectional view of the same, and Fig. 3 a detail of the plunger-head.

A is a vessel for containing water, preferably a can of light sheet metal, open at the top, and of about eighteen inches height and twelve inches diameter. It has an ordinary bail, *a*, for convenience in carrying it, and is provided with a recess, *a'*, at its bottom, of a size suitable to admit the foot of the operator of the pump for the purpose of steadying the can while the pump is being worked.

a^2 is a cross-piece at the top of the can for supporting the pump.

B is the pump-barrel, secured at the bottom of the can and to the cross-piece a^2. For this barrel I prefer to use a light tube of about one and one-fourth inch bore.

h h are perforations for water-inlets in the barrel B near its lower end.

v is a lifting-valve in the lower end of the barrel B, and consists of a disk with its under edge beveled and supported on a short stem of angular or T-iron shape.

w is the seat for the valve *v* near the bottom of the barrel, and *p* is a pin through the barrel to limit the upward movement of the valve.

C is a hollow plunger, provided with the plunger-head *c*. The plunger-head is made to fit air-tight within the barrel B by means of the packing *d*.

v' is a valve in the head *c*, and is of the same form as the valve *v*, and is seated on the valve-seat *w'*.

p' is a pin through the plunger-head *c* for limiting the upward movement of the valve *v'*.

F is an opening through the head *c* for the passage of water from the head into the barrel B above the head *c*. The upward movement of the plunger-tube C lifts the valve *v* and fills the space in the pump-barrel between the two valves with water, and the downward movement of the tube C closes the valve *v* and allows the water to escape through the valve *v'* and port F into the barrel B above the valve *v'*.

s is a collar on the upper end of the barrel B, within which the plunger-tube C slides air-tight, and to which is connected an ordinary rubber hose, E. The plunger C has an air-tight head, *c'*, near its upper end.

D is an air-chamber of any suitable shape, preferably of spherical form, and of about four inches diameter about the plunger-tube C near its upper end. Small holes *h'* are made in the tube C within the chamber D, by which means the air-chamber D is made auxiliary to the air-chamber in the plunger-tube.

g is a handle on the tube C for operating the pump.

e and *e'* are respectively an ordinary nozzle and a sprinkling-nozzle. A threaded projection, *t*, on the cross-piece a^2 serves to hold the one nozzle while the other is in use on the hose, and thus prevents its being mislaid.

The barrel B, plunger-tube, and head and the valves are preferably made of brass, to insure durability and the smooth working of the parts.

A pump of the construction described obviates the objectionable intermittent or pulsative flow of water common to almost all pumps, and enables a constant stream to be thrown, whether the plunger is being forced down or drawn up and during the brief intervals required to change the direction of the plunger movement.

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

1. In a force-pump, the combination, with an exterior fixed tube having a lifting-valve at the bottom and at the top a collar provided with an opening for a plunger-rod and a water-outlet, of a smaller interior plunger-tube having a close-fitting plunger-head provided

with a lifting-valve and an opening into the larger tube, an enlarged air-chamber on said plunger-tube near its top, and small holes in the tube within said chamber.

2. A force-pump consisting of a barrel having a valve at its lower end and a collar at its upper end provided with an opening for a plunger-rod and a water-outlet, a hollow plunger smaller than the bore of said barrel, having a tight-fitting plunger-head provided with a valve and an opening above the valve, a closed top, and an enlarged air-chamber near its top with small holes connecting said tube and chamber.

3. The combination, with a pump-barrel secured to the top and bottom of a suitable water-vessel, and having a valve and openings near its lower end, and a collar with water-outlet above said vessel, of a hollow plunger provided with an auxiliary air-chamber near its top and small holes communicating therewith, and a close-fitting plunger-head at its lower end, provided with a valve and openings into the pump-barrel.

GUSTAF L. HOLMBERG.

Witnesses:
P. H. GUNCKEL,
A. CHARLES.