J. N. Dennisson,

Steam Fire Engine.

No. 46,219. Patented Feb. 7, 1865.

Fig: 1.

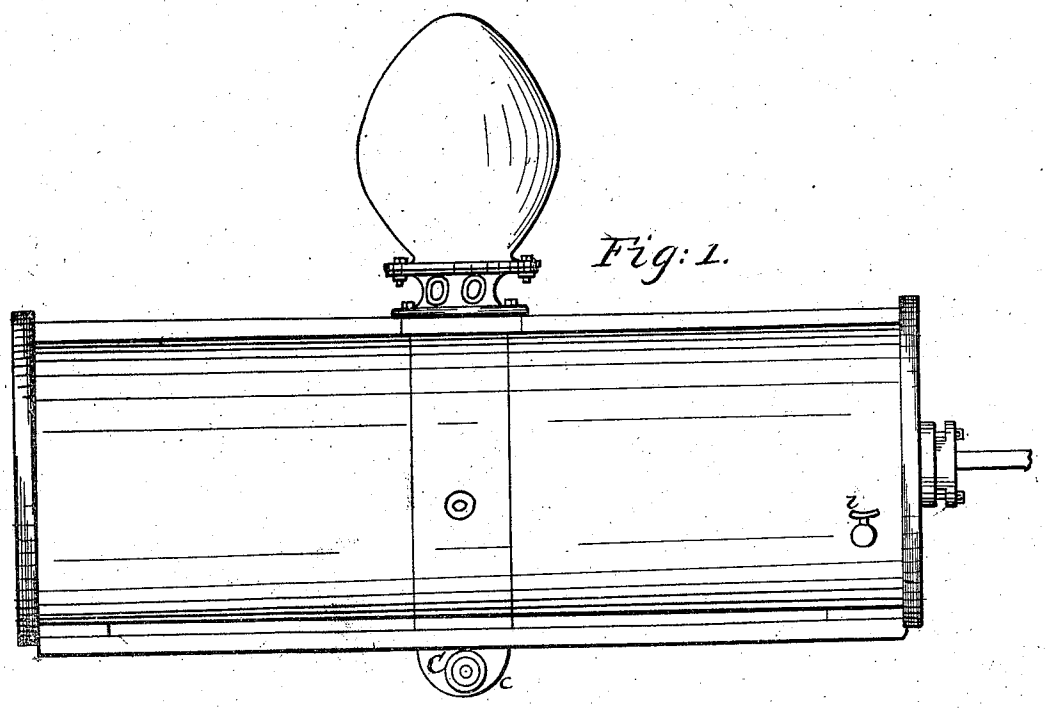
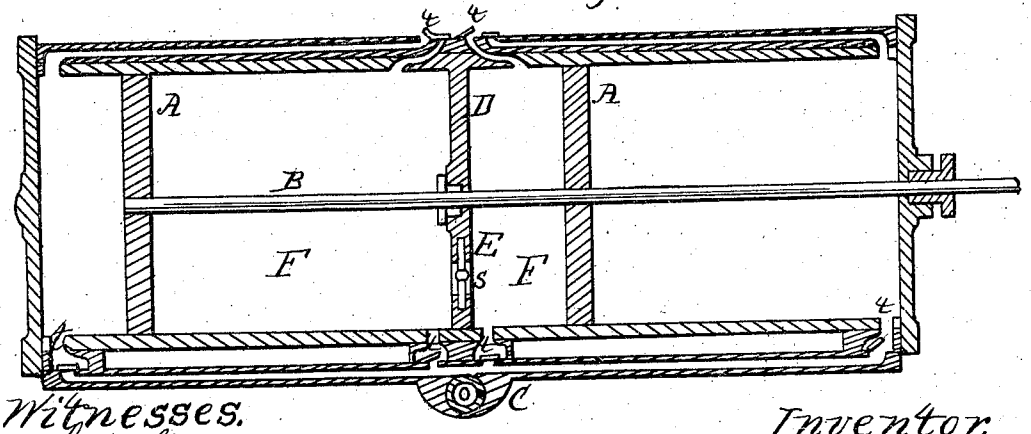


Fig: 2.



Witnesses.
Chas. H. Skinner
E. F. Marshall

Inventor.
J. N. Dennisson

UNITED STATES PATENT OFFICE.

JOHN N. DENNISSON, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN FIRE-ENGINES.

Specification forming part of Letters Patent No. **46,219**, dated February 7, 1865.

To all whom it may concern:

Be it known that I, JOHN N. DENNISSON, of the city of Newark, in the county of Essex and State of New Jersey, have made certain new and useful Improvements in Relation to Steam Fire-Engines; and I do hereby declare the following to be a full and exact description of the same, reference being herein had to the drawings accompanying this specification, and which make part of the same.

The nature of my improvement consists in regulating the effective area of the pump or pumps attached to steam fire-engines, so as to obviate the difficulties now experienced, contingent upon the number of streams used and the varied distances steam fire-engines have to be placed from a fire to procure the needed supply of water.

The relative proportions of the steam-cylinder and the pump attached to steam fire-engines as heretofore constructed are a fixture, and remain the same under all circumstances, while the demands upon them when working at fires render a variable variation in their proportions a great desideratum, because water when forced through one thousand feet of two-and-three-fourths hose and through a one-and-one-eighth nozzle requires a pressure of two hundred pounds on the water at the pump to give forty-five pounds at the nozzle, while a pressure of one hundred pounds on the water at pump, forced through four hundred feet of two-and-three-fourths hose and through a one and one-eighth nozzle, will give the same pressure at nozzle—namely, forty-five pounds. Therefore, a steam-cylinder and pump proportioned so as to give forty-five pounds pressure on the water at the nozzle when forced through one thousand feet of hose can work double the area of pump when forcing water through four hundred feet of hose, and throw two streams of the same size without increasing the speed of engine, and will give the same pressure at nozzles as when one stream is forced through one thousand feet—namely, forty-five pounds. I therefore proportion my cylinder and pump so that by using one-half of each pump gives the necessary pressure when forcing water through one thousand feet of hose, thereby being able to throw two such streams of the same size when using four hundred feet of hose, which is done by closing the valve between the two pumps, thereby doubling the working area of the pumps and accomplishing the purpose as the pressure is reduced by a reduction in the length of hose, as only one half the pressure is required at the pump.

Figure 2 in the drawings shows a sectional view of two double-acting pumps so connected.

The two pistons A are attached to the one piston-rod B. The water enters by the induction-passage C and passes out at the valve T. In the partition D, between the pumps, is shown a slide-valve, E, and an opening, S, by means of which water can pass alternately from the one to the other with the stroke of the pistons without receiving or discharging water, thus entirely neutralizing the action of one-half of each double-acting pump, if so required, and increasing or diminishing the quantity of water thrown at a stroke as the various circumstances may require—such as the number of streams thrown or the length of hose used—thereby overcoming the difficulties above mentioned by working a part or the whole of the pumps; or by opening the air-cock P, placed between the upper and lower valves *t t*, the pump will discharge its water and then take in air, preventing the operation of said pump; or by placing a cock or valve in the induction pipe or passage C, between the pumps, the same result will be accomplished, as it cuts off the supply of said pump, although it will not answer the purpose as well, as it is liable to leak, let in the air, and also labor under a vacuum, or if the whole of one pump is cut off the pump itself becomes heated from the friction of the piston.

What I claim and desire to secure is—

The increasing or diminishing the effective area of the pump or pumps by means of a valve placed in the partition between them, or other means substantially the same, when attached to steam fire-engines, so that the quantity of water discharged at a stroke can be increased or diminished at pleasure without altering speed or stroke, for the purposes herein set forth.

J. N. DENNISSON.

Witnesses:

GARRET SANDFORD,

JOHN M. TREAR.