D. M. COOPER.
Fire-Engine.

No. 207,165. Patented Aug. 20, 1878.

Fig. 1.

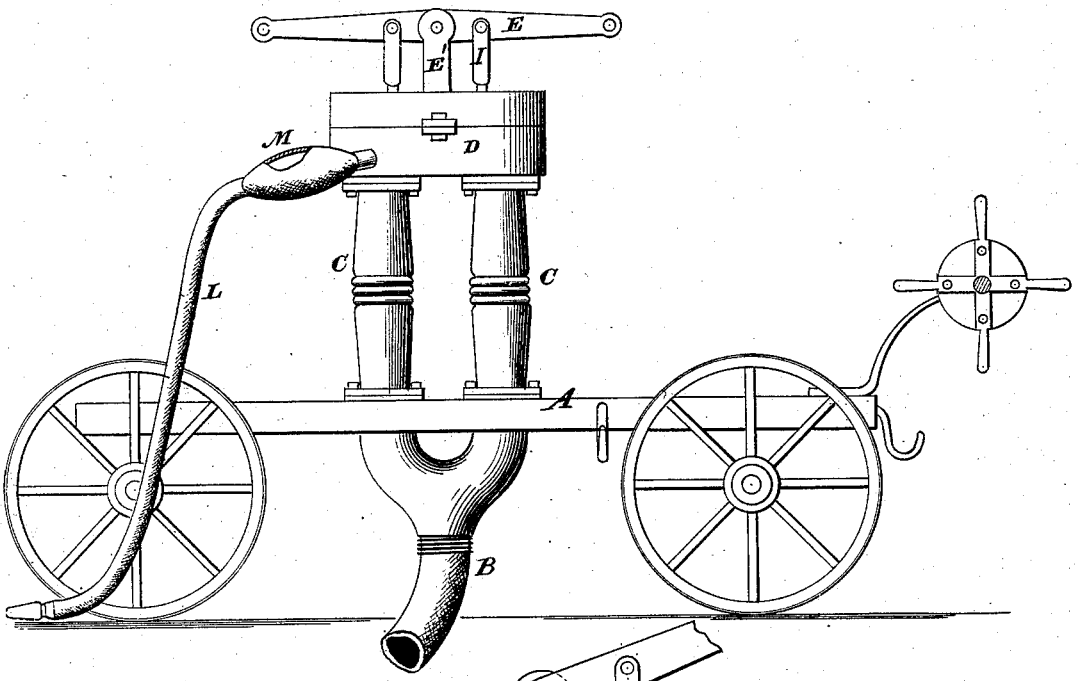


Fig. 2.

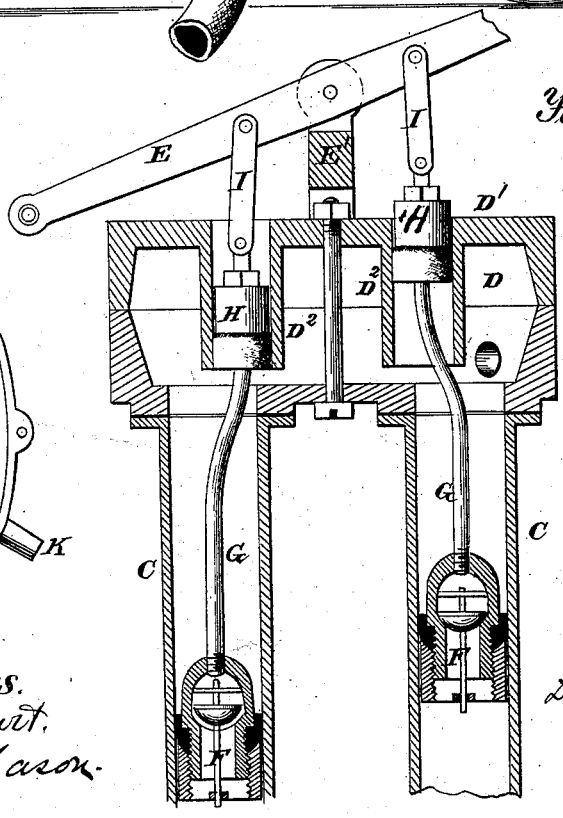
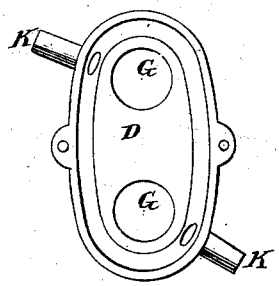


Fig. 3.



Witnesses.
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J. G. Mason.

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D. P. Holloway & Co
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UNITED STATES PATENT OFFICE.

DANIEL M. COOPER, OF DUBLIN, INDIANA.

IMPROVEMENT IN FIRE-ENGINES.

Specification forming part of Letters Patent No. **207,165**, dated August 20, 1878; application filed February 27, 1878.

To all whom it may concern:

Be it known that I, DANIEL M. COOPER, of Dublin, in the county of Wayne and State of Indiana, have invented new and useful Improvements in Fire-Engines, of which the following is a specification:

This invention relates to that class of force-pumps that may be used for extinguishing fires, watering gardens, and other analogous purposes.

In the annexed drawings, making a part of this specification, Figure 1 is a side elevation. Fig. 2 is a longitudinal vertical section. Fig. 3 is a plan view of the water-chamber.

The same letters are employed in all the figures in the indication of identical parts.

A is a frame, upon which the cylinders are supported, which may be mounted upon wheels for convenience in transportation.

E is the water-induction pipe, through which the water is lifted to supply two pump-cylinders, C C, which are connected by a branch pipe with the induction-pipe, and which open above into a water-chamber, D, common to both.

E is the lever by which the pumps are operated, after the manner common in such engines, being centrally pivoted upon the standard E′, and furnished with handles at each end.

In each cylinder C is a valve, F, composed, substantially, of a brass tube, with leather or india-rubber packing, and an interior valve composed of a half-ball of india-rubber, and fitted with a stem, which moves freely up and down in guides formed on the interior of the tube for the purpose.

Other of the well-known forms of plungers in common use may be adopted, if preferred.

G G are the pump-rods, extending from the valves F through the reversed buckets H H, and pivoted to communicating rods I I, which are in turn pivoted to the lever E on each side of the fulcrum. The reversed buckets H H work in cylinders D^2, formed on the under side of the cap D^1 of the water-chamber D. The reversed buckets H are fitted to the interior of the cylinders D^2 by leather or rubber packing, so as to prevent the escape of the water. They are not fitted with valves, as no water is intended to pass out through them; but they serve to apply pressure to the water in the water-chamber as they are alternately forced down by the lever, and so assist in forcing the water from the water-chamber. The water is ejected from the water-chamber D through pipes K K into the hose L.

As a substitute for the ordinary metallic air-chamber employed in such engines for giving continuity of the flow of the water through the nozzle of the hose, I employ an elastic bulb, M, which is connected with the hose, so that the water shall flow through it, and is made of elastic india-rubber, and with a strength proportioned to the force intended to be applied in the ejection of the stream of water.

When an excess of pressure is applied, the bulb M will be expanded, yielding to such pressure. When the pressure is diminished, the contraction of the elastic bulb will drive out the water contained within it, and thus maintain within the limits of its capacity a uniform delivery of the stream, with a varying pressure.

I am aware that force-pumps with a similar arrangement of plungers and valves have been long known; but my invention is distinguished from them in this, that instead of having a single long chamber to receive both the plungers on the same rod, I make the upper cylinder, D^2, independent of the cylinder C, the former being cast in one piece with or bolted to the cap, whereby I greatly simplify and cheapen the construction.

What I claim as my invention, and desire to secure by Letters Patent, is—

In combination with a force-pump and its delivery-pipe, an elastic bulb, M, in the delivery-pipe, the expansion and contraction of which are designed to maintain a uniformity of outflow, substantially as set forth.

In testimony whereof I have hereunto signed my name.

D. M. COOPER.

Witnesses:

LEWIS CRIPE,

JOSEPH HINKLE.