

A. F. ALLEN.

Improvement in Fire-Engines.

No. 132,426.

Patented Oct. 22, 1872.

Fig. 1.

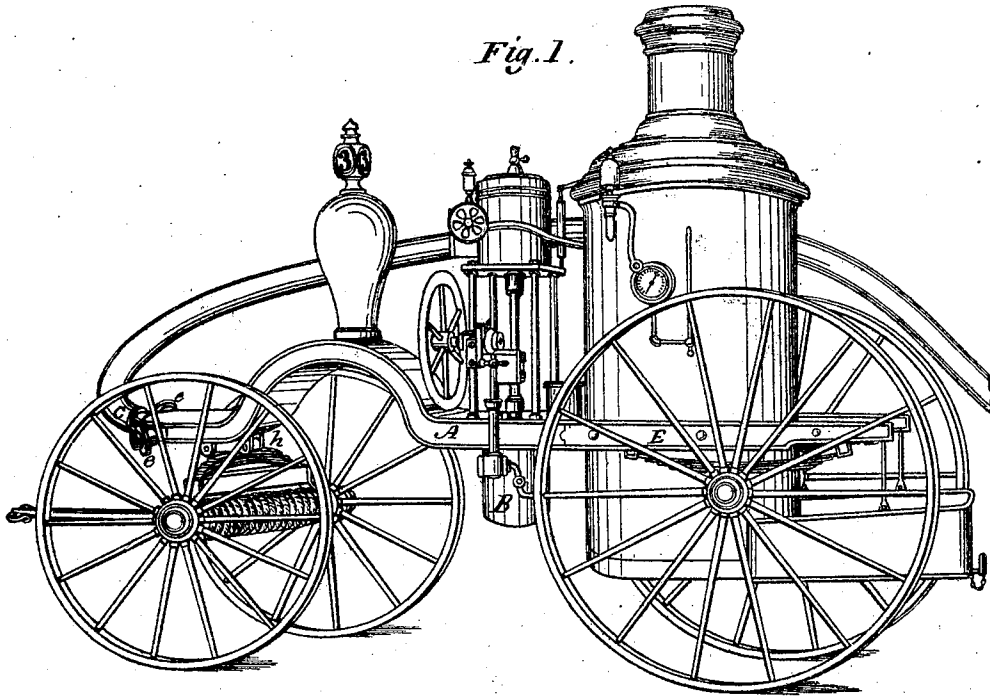


Fig. 2.

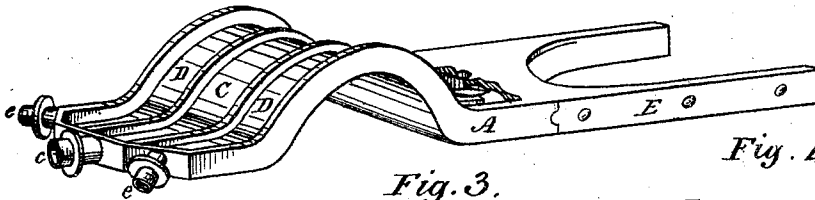


Fig. 3.

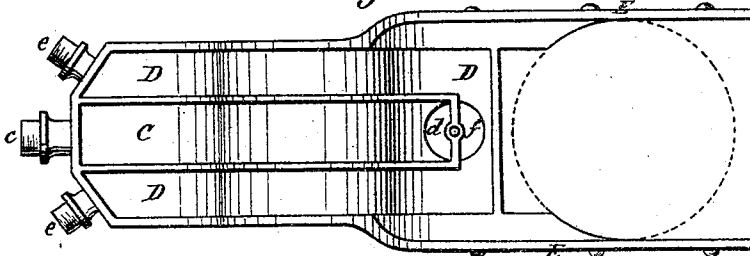
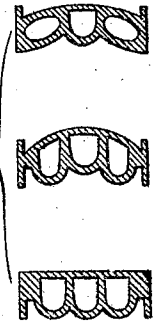


Fig. 4.



Witnesses
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ALBERT F. ALLEN, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN FIRE-ENGINES.

Specification forming part of Letters Patent No. **132,426**, dated October 22, 1872.

To all whom it may concern:

Be it known that I, ALBERT F. ALLEN, of the city and county of Providence, in the State of Rhode Island, have invented a certain new and useful Improvement in Steam Fire-Engines.

My improvement relates to the hydraulic portion of the engine, and is applicable to engines provided either with rotary or piston pumps. My invention consists in the novel interior structure of the hollow metallic bed, which is divided into two or more separate chambers, which communicate, respectively, with the induction and eduction sides of the pump; and I do hereby declare that the following specification, taken in connection with the drawing furnished and forming a part of the same, is a clear and true description of a steam fire-engine embodying my invention.

Figure 1 represents, in perspective, one of my improved engines. Fig. 2 represents, partially in perspective and partially in section, the engine-bed detached. Fig. 3 represents the interior of the bed in plan view, with the upper side broken away.

For the purpose of convenience in illustration, I show and will describe my invention in connection with a vertical piston-pump, and one which has a central piston-cylinder surrounded by a larger one which is vertically divided, so as to form induction and eduction chambers.

A denotes the hollow bed-plate of the engine. It is preferably cast in one piece and arched at the proper point so as to allow the front wheels of the engine to "cut under." The bed is also greatly strengthened by the presence of the arch. B denotes the pump. The interior of the hollow bed is divided by partitions into two separate chambers. C denotes the induction-chamber, and extends from the front end of the bed (where, by the usual means, it connects with the suction-pipe at *c*) to the pump, where it connects with the induction-valves through the port *d*. D denotes the eduction-chamber, which occupies the entire interior of the bed back of the center of the pump, and extends on both sides of the induction-chamber C from the pump to the front end of the bed, at which it connects with hose in the usual manner at the ports *e*. This

chamber connects with the eduction side of the pump through the port *f*.

The partition which separates the induction and eduction chambers crosses the pump at or about its center, and in this instance is shown with the pump-piston passing upward through it. It is evident that the mode of connection with pumps must necessarily vary according to the character of the pump used, and that many different arrangements of the interior chambers can be made without departing from the spirit of my invention, as, for instance, the bed may be divided into two chambers by a transverse partition at the central line of the pump with the forward part, arranged, as now shown, to connect with the suction, and the rear or discharge chamber by branch-pipes to the several lines of hose. In constructing my bed it is, preferably, to be cast solid in one piece, properly tested by hydrostatic pressure, and united with the pump by bolts in a manner well known. The lugs *h* are cast upon the under side of the bed, and are arranged to be readily attached to the front springs by means of bolts. The side rails *E* may be secured to the sides of the bed by bolts, and a proper depth or thickness of cast metal should be provided at those points where the bolts are desired to enter the sides of the bed. In combining within the bed the induction and eduction chambers, and in connecting them direct with the pump, I am enabled to dispense with all outside pipes and connections hitherto employed, and, therefore, not only to lessen the weight of the engine, which is an important feature, but to largely decrease the cost of construction. So far as relates to dispensing with the exterior pipes and connections, it is evident that the bed may be constructed of heavy sheet-iron riveted after the manner of tanks, boilers, and other similar structures. The great cost of such a bed would, however, seem to be a practical bar to such construction, especially in view of the fact that a cast-iron bed of sufficient strength can be made at comparatively little cost with all the practically-desirable features of the sheet-metal bed, and only less desirable in having a slightly-increased weight. When desired, a "vacuum-chamber" can be connected to the induction-chamber through

the top of the bed, and an "air-chamber" can also be applied to the eduction-chamber, as they have heretofore been constructed. To save stock and give additional strength to the bed the interior chambers may be made round, half-round, or oval, and all that portion which is located forward of the pump may be cast with its under surface ribbed, so as to conform in general outline with the interior of the chambers, as illustrated in section in several ways in Fig. 4.

I am aware that hollow beds for steam fire-engines are not new—that they have heretofore been made with the interior chamber connecting direct with the eduction side of the pump; but the induction-chamber of the pumps in said engines have always been connected

to the front part of the bed by separate curved pipes outside of and below the bed, and I, therefore, do not, broadly, claim the hollow bed; but

I claim as new and desire to secure by Letters Patent—

The combination, within the hollow metallic bed of a steam fire-engine, of the induction-chamber and the eduction-chamber, which are arranged to directly communicate, respectively, with the suction and discharge chambers of the pump, as and for the purposes specified.

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Witnesses:

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