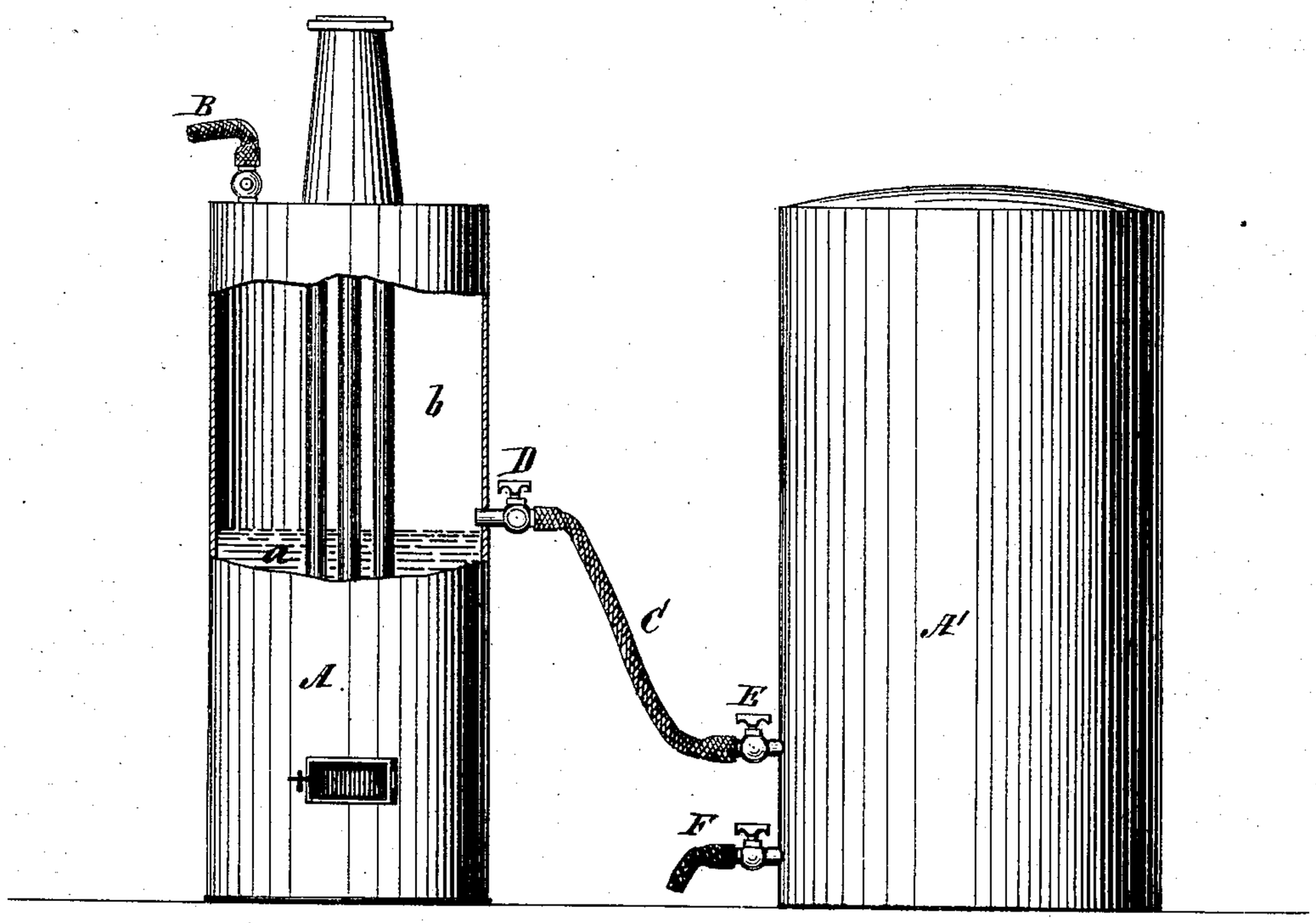
J. B. VAN DYNE.

Methods of Operating Steam Fire-Engines by Compressed Air and Steam.

No. 157,041. Patented Nov. 17, 1874.



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JACOB B. VAN DYNE, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN METHODS OF OPERATING FIRE-ENGINES BY COMPRESSED AIR AND STEAM.

Specification forming part of Letters Patent No. **157,041**, dated November 17, 1874; application filed November 5, 1874.

To all whom it may concern:

Be it known that I, JACOB B. VAN DYNE, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and Improved Method of Operating Steam Fire-Engines by Compressed Air or Gas in the Boiler while the Steam is being Generated; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which the figure is a side elevation.

The object of this invention is to utilize the valuable time usually wasted by steam fire-engines in getting up steam; and it consists in charging the space above the water in the steam-boiler with compressed air or gas, by means of which a motive power is instantaneously available, the fire under the boiler being kindled at the start, and the evolution of the steam taking place in proportion to the reduction of the pressure by the utilization of the compressed medium, whereby the action of the engine is made instantaneous, and also continuous from the start.

In the useful application of my invention I do not confine myself to any particular device, as I may use either air, carbonic-acid gas, or any other elastic fluid as a medium, and may charge the boilers from large store-receivers at the stations, or from supplemental receivers, made portable with the fire-engine, and provided with air-pumps, which recharge the air-receivers with the head of steam left after a fire is out.

One mode of illustrating the principle of my invention is shown in the drawings, in which—

A represents a boiler of a steam fire-engine, in which *a* represents the water-space, and *b* the compressed medium. B is the feed-pipe, communicating with the cylinders which actuate the water-pump. A′ is a large stationary store-receiver, capable of receiving air or gas under a compression sufficient to charge the space *b* in the steam-boiler with a pressure of from eight to ten atmospheres. C is a detachable hose-connection, which admits the air or gas in compression in A′ to the steam-boiler. D and E are cocks that cut off said communication, and F is a connection, through which the store-receiver A′ is charged by pumping air in when the latter medium is to be used.

With an engine thus charged the hose-connections are soon made, and the action is commenced immediately, whereby a gain in time is secured, which in the first stages of a fire is of paramount importance. As the unit of pressure is reduced from the utilization of the compressed medium, the steam is developed and takes its place, the evolution of the latter being proportionate to the pressure.

So far I have spoken of my invention as being specially applicable to fire-engines, and this is the immediate object of the invention; but it is shown that the same principle is equally applicable to all other steam-boilers in which instantaneous action is required, as, for example, in the quick starting of Government vessels in time of war, the re-enforcement of factory-engines after the fires have been banked or drawn, &c.

Having thus described my invention, what I claim as new is—

The herein-described method of operating steam-engines by compressed air or gas in the boiler, the compressed medium furnishing instantaneous motive power, which is afterward re-enforced by the generated steam, substantially as and for the purpose described.

JACOB B. VAN DYNE.

Witnesses:

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