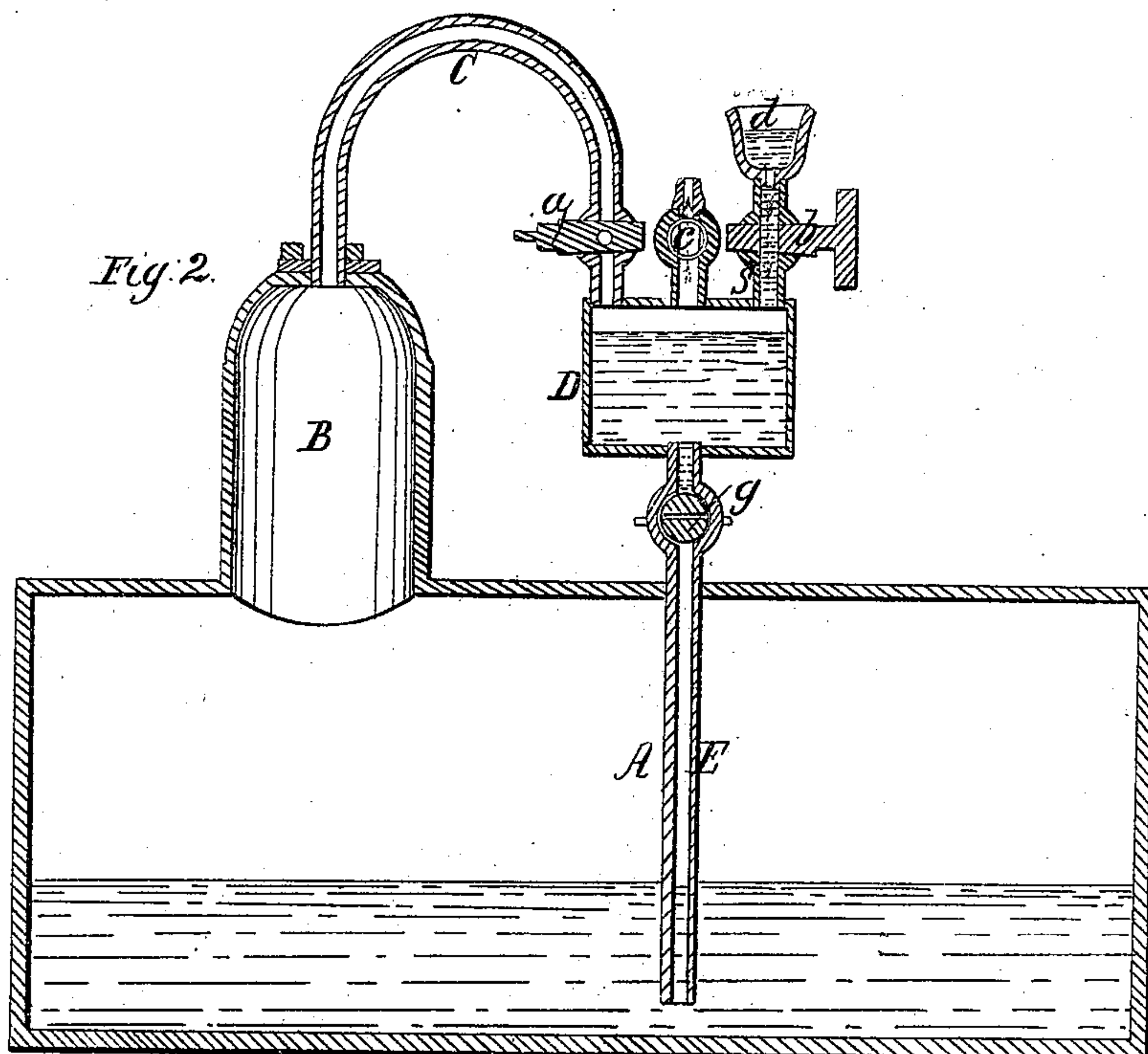
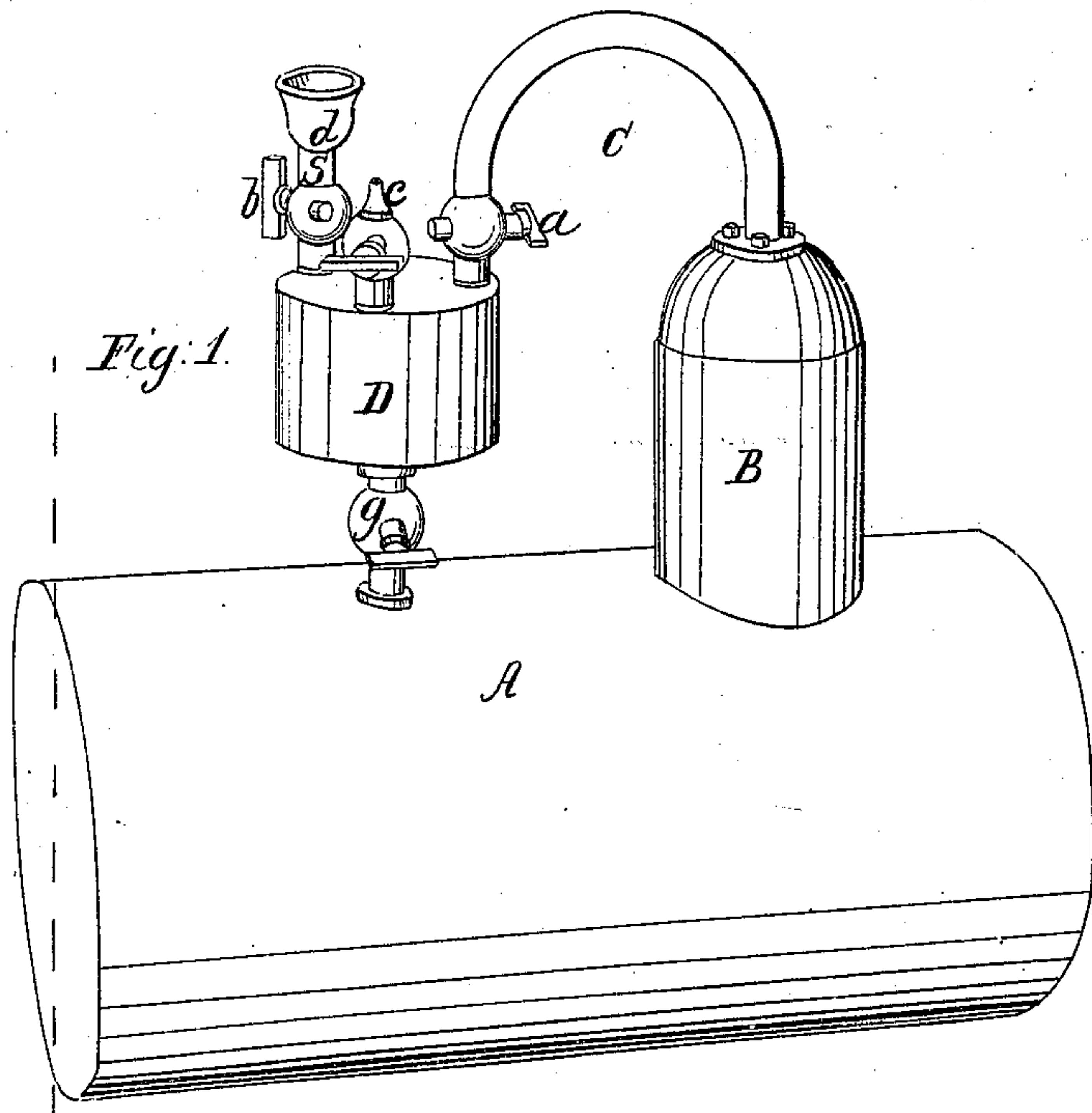


Sheet 1, 2, Sheets.

J. B. Tarr.  
Feed Water App'is.

No 93,021.

Patented Jul. 27, 1869.



Witnesses;  
R. J. Campbell,  
L. W. Campbell

Inventor;  
John Blake Tarr  
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Sheet 2, 2 Sheets

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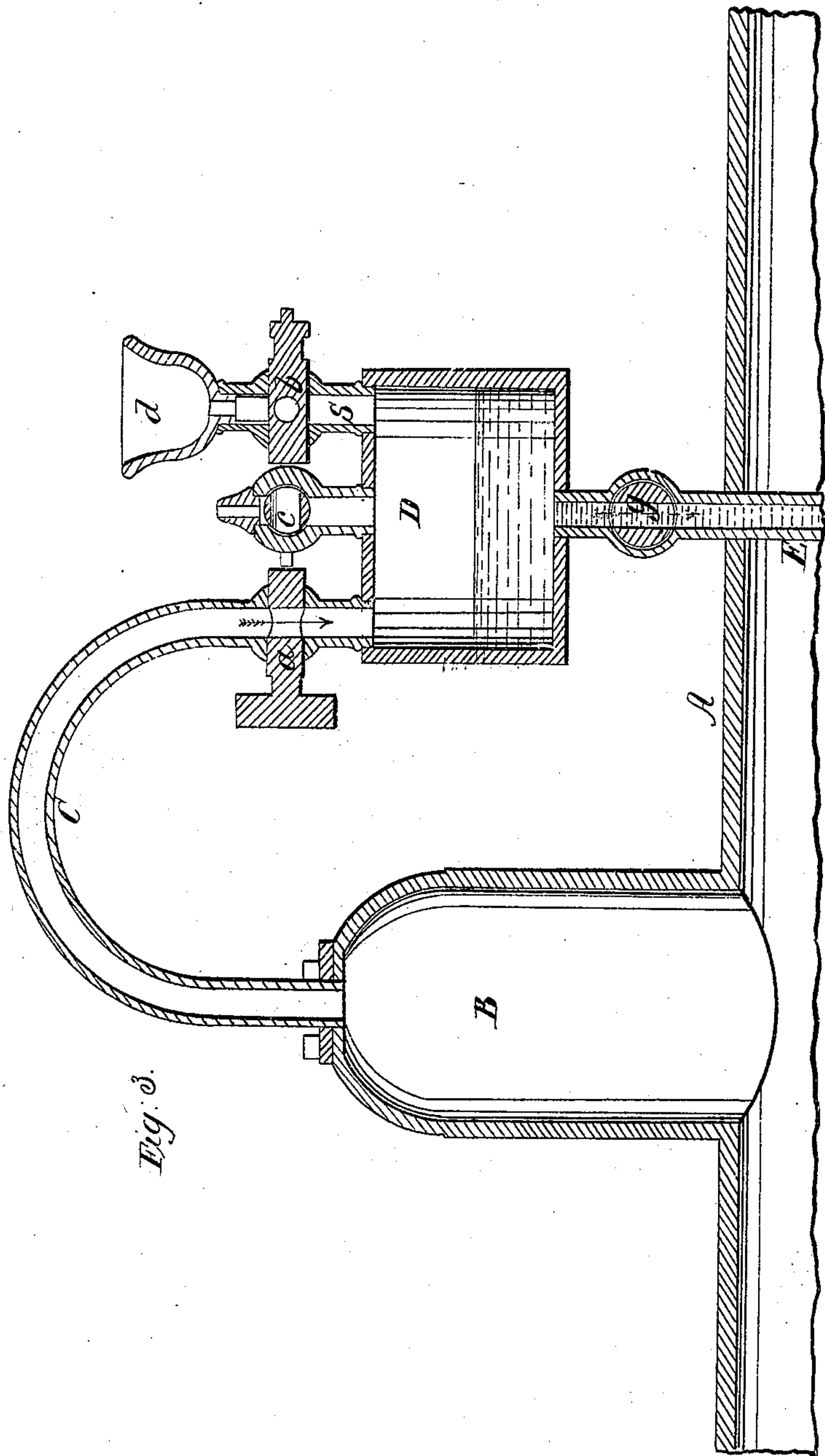


Fig. 3.

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J. A. Campbell

Inventor;  
John Blake Tarr  
by  
Mason Hunt and Lawrence



# UNITED STATES PATENT OFFICE.

JOHN BLAKE TARR, OF FAIRHAVEN, MASSACHUSETTS.

## IMPROVEMENT IN STEAM-GENERATOR FEED DEVICES.

Specification forming part of Letters Patent No. **93,021**, dated July 27, 1869; antedated July 12, 1869.

*To all whom it may concern:*

Be it known that I, JOHN BLAKE TARR, of Fairhaven, in the county of Bristol and State of Massachusetts, have invented a new and Improved Method of Applying Water to Steam-Generators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of a steam-boiler having my improved feed-water apparatus applied to it. Fig. 2 is a diametrical section through the boiler, its steam-dome, and the feed-water apparatus, showing the water-tank open to receive a supply of water. Fig. 3 is a similar section of the same parts, showing the communications between the water-tank and boiler open to allow the water to descend into the boiler.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to a new and improved apparatus which is adapted for supplying boilers or steam-generators with feed-water without the use of a pump.

The nature of my invention consists in a tank or reservoir which is connected to the steam-dome of the boiler by a steam-inlet pipe having a cock applied to it, and with the body of the boiler by a water-inlet pipe, also provided with a cock, said tank being provided with a feed-pipe and cock and a steam-escape and cock, all of which are so constructed and arranged that water can be readily supplied to the tank, and then, by closing the cocks of the feed and steam-escape pipes which lead from the tank and opening the cocks of the pipes which lead from the boiler to the tank, the water in the latter will flow by its own gravity into the boiler at the bottom thereof, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents a steam-boiler, which may be of a cylindrical or other well-known form, and B represents the steam-dome, from which latter a pipe, C, leads to a tank or feed-water receiver, D, to which water is supplied before it can be

introduced into the boiler A. This tank D is made strong enough to resist the same pressure as that in the boiler, and it is supported upon the boiler by a feed-pipe, E, which extends down beneath the low-water mark of the boiler.

The cock *g*, which is applied to pipe E between the boiler and tank, is designed to close or open a communication between these two vessels. The steam-pipe C is also provided with a cock, *a*, which when open will allow steam from the boiler to enter the tank D.

Tank D is provided with a steam and air escape cock, *c*, and also with a funnel, *d*, applied to a feed-water pipe having a cock, *b*, as clearly shown in the drawings. This tank D may be made of any suitable size, and its feed-water pipe *s* may communicate with any convenient reservoir or source from which to obtain a head of water. The pipe C, the blow-off cock *c*, and feed-water pipe *s* should be applied on top of the said tank, and the pipe E, which leads through the top of the boiler A into the water therein, should communicate with the bottom of the tank.

It is preferable to have the pipe C lead from the steam-dome B of the boiler; but this is not absolutely necessary, as the pipe C may proceed from any part of the boiler above high-water mark in the boiler.

To supply a boiler with water by this apparatus, cocks *c* and *b* are opened and cocks *a* and *g* are shut, thereby obtaining an equilibrium of pressure in tank D and the surrounding atmosphere. Water will then flow freely into the tank and fill it, the air escaping through cock *c* during this filling operation. When tank D is full of water, and it is desired to conduct this water into the steam-boiler A, the cocks *b* and *c* are closed and cocks *g* and *a* opened, when an equilibrium of pressure in the tank D and boiler will be instantly established, which will, of course, allow the water in tank D to flow into the boiler, beneath the water therein, by its own gravity. Cocks *a* and *g* are then closed and cocks *b* and *c* opened again, to allow the steam to escape from tank D, preparatory to refilling the tank to repeat the supply of water to the boiler. In this way, and by this very simple and complete apparatus, boilers under any head of steam can be

supplied with water without the use of forcing-pumps.

The advantage derived from having the feed-pipe E lead beneath the water in the boiler is, that the comparatively cool water flowing into the boiler from the tank will not materially reduce the temperature of the steam in the steam-space above the water-line.

I do not claim, broadly, the general principle of supplying steam-boilers with water without the use of a pump, or by employing the pressure of steam taken from the boiler for such purpose, as this is not new; but

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

1. The feed-water receiver D, arranged upon the feed-pipe E, leading into the boiler, the steam-pipe C, leading to the steam-space in the boiler, the blow-off cock c, and the feed-water pipe s, said pipes being provided with cocks, and said parts being combined and adapted to operate substantially as described.

2. The feed-pipe E, leading from tank D into the boiler, and beneath the water-line therein, in combination with the feed-water apparatus, as herein described.

JOHN BLAKE TARR.

Witnesses:

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THOS. L. BAYLISS.