J. H. G. Hares,

Check Valve.

No. 78,873. Patented June 16, 1868.

Fig: 1.

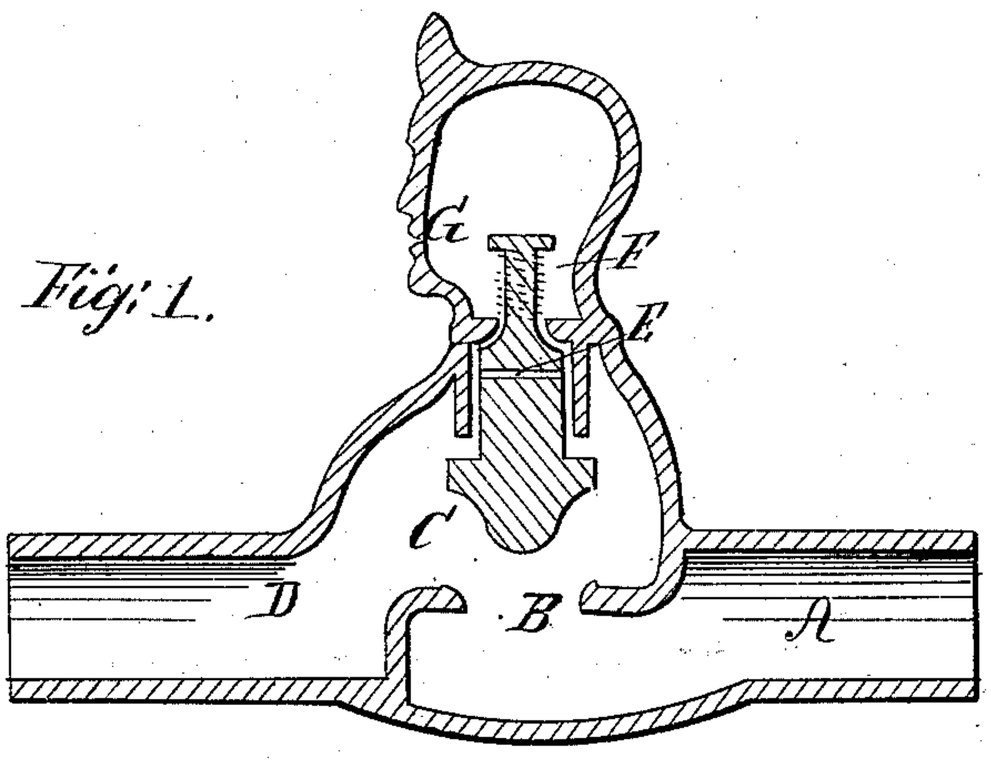


Fig: 2.

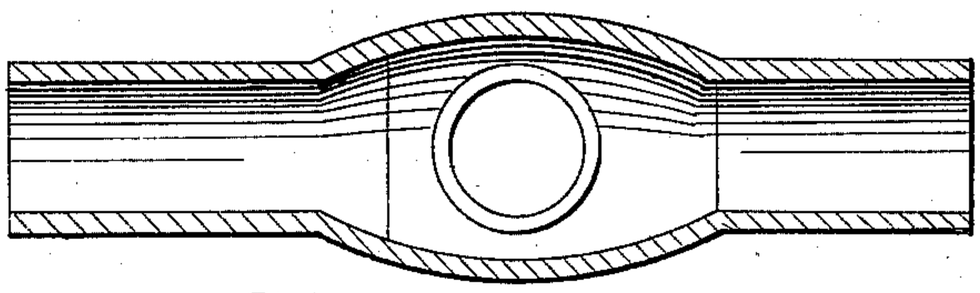
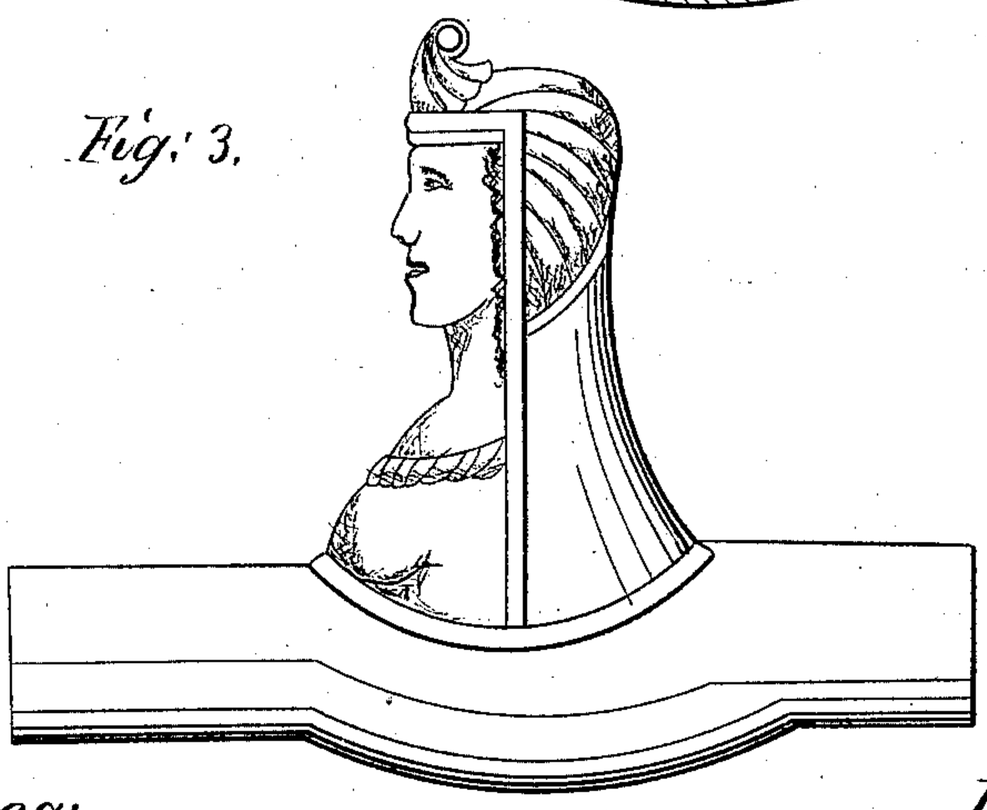


Fig: 3.



Witnesses;
Horace Harris
R P Yard

Inventor;
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United States Patent Office.

J. H. G. HAWES, OF NEWARK, NEW JERSEY.

Letters Patent No. 78,873, *dated June* 16, 1868.

IMPROVEMENT IN COMBINED INFLUX AND VENT-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, J. H. G. HAWES, of Newark, in the county of Essex, and State of New Jersey, have invented a new Combination of Valves; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in producing a combination of valves, in such a manner as effectually to prevent collapse in boilers or other closed vessels, and preventing siphonic action through the supply-pipes.

It will be seen that Figure 1 shows the parts relatively. A is the outer service-pipe, through which the water passes to the boiler or other vessel for use, either for generating steam or for heating the water. By the pressure of the water inward, the valve C is raised from its seat, B, and the water passes on to the boiler, but in case the pressure ceases, the supply diminishing or being cut off from the pipe A, the valve C drops down to the seat B, and prevents the return of any water from beyond the point D; then, if from any cause a vacuum should be produced beyond the point D, the valve C is closed, and the draught is upon the valve E, which is ordinarily held closed by the spring F. The draught causes the opening of the valves E, and the air rushes in at the point G, through the valve E, into and beyond the service-pipe D, and prevents a collapse.

Thus these valves, making a combination, are a constant guard against collapse in boilers or other vessels for a similar use.

I am aware of the patent to J. M. Stiven, for an air-valve for steam-apparatus, dated August 5, 1862, but said device is wholly useless for the purposes of my invention. He employs a single cylindrical valve, which moves to and from two seats, whereby air is admitted into or cut off from the steam-apparatus. Now when steam is let on and rises above the pressure of the atmosphere, it raises the valve, closes the seat above it, and shuts off the air. The steam condenses within the cup, and passes off accordingly.

But in my device the water flows along to the boiler in a continuous stream, until it is cut off or stops from any cause, then the valve C falls by its gravity. If a vacuum is formed, the valve E opens, and air rushes into pipe D, and thus prevents a collapse.

There are no means provided for in Stiven's for a continuous flow or passage of steam; on the contrary, it merely passes into the tube at the bottom of the reservoir and then condenses.

Since there are two important functions to be performed by the valves, it is important that they be separate and distinct, because one is open and the other is shut, and therefore the two should not be connected, so that if one is deranged or inoperative, there is still dependence on the other.

I claim the arrangement with the pipe A D of the two valves C E, separate and independent of each other, adapted to operate substantially as and for the purpose described.

J. H. G. HAWES.

Witnesses:

HORACE HARRIS,
R. B. YARD.