

E. H. CLARKSON.  
VALVE FOR WATER BOILERS.

No. 105,549.

Patented July 19, 1870.

Fig. 1.

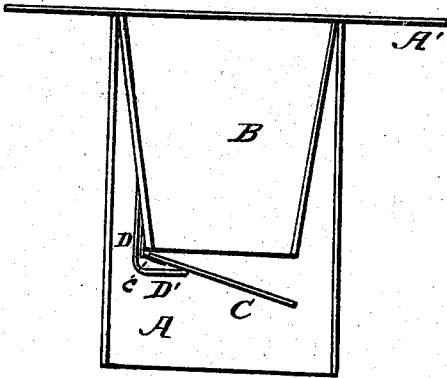


Fig. 2.

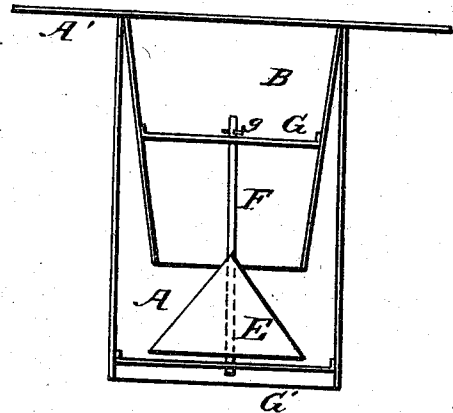
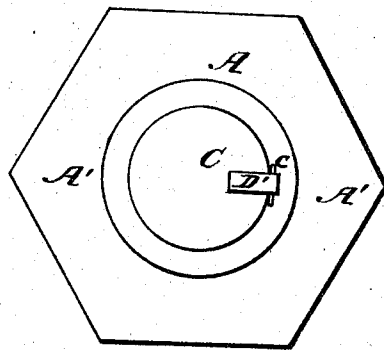


Fig. 3.



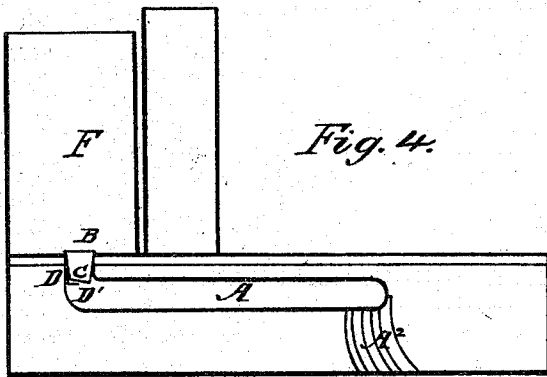
Witnesses.  
Edwin James.  
J. D. James Jr.

Inventor.  
Edward H. Clarkson  
per J. E. F. Holmead  
Attorney.

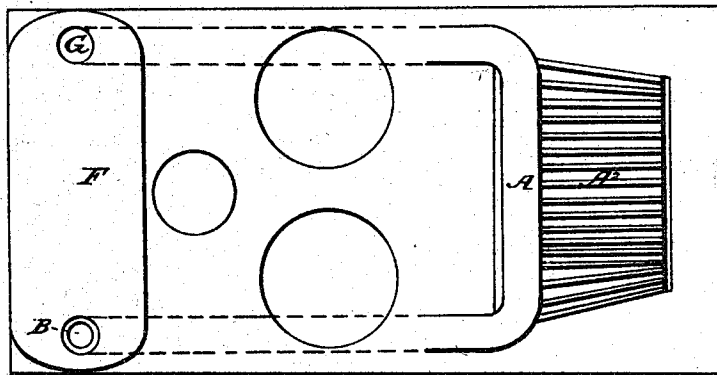
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*Fig. 4.*



*Fig. 5.*

*Witnesses.*  
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Edward C. Savill

*Inventor:*  
Edward H. Clarkson  
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# United States Patent Office.

EDWARD H. CLARKSON, OF ALEXANDRIA, VIRGINIA, ASSIGNOR TO HIMSELF AND JAMES H. ROBINSON.

Letters Patent No. 105,549, dated July 19, 1870.

## VALVE FOR WATER-BOILERS.

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, EDWARD H. CLARKSON, of Alexandria, in the county of Alexandria and State of Virginia, have invented certain new and useful Improvements in Back-pressure Valves; 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 and to the letters of reference marked thereon making a part of this specification, in which—

Figure 1 is a side view, one-half of the connecting-pipe being removed.

Figure 2 is a modification of fig. 1.

Figure 3 is a bottom view.

Figure 4 is a side sectional view of a stove and boiler, with my back-pressure valve attached.

Figure 5 is a top plan view of a stove and boiler, with my back-pressure valve attached.

This invention is designed principally to remedy a great defect in the successful operation of those wash-boilers which are arranged in the rear of the cooking-stove, and are so connected as not to interfere with the cooking apparatus.

In this class of inventions the receiving and discharge-tubes of the boiler are connected by a pipe, which passes through the fire-pot of the stove, and it is designed that the water in the boiler shall pass into this pipe, become heated in its passage through the fire-pot, and be discharged in a continuous stream through the exit-tube.

Practical experience, however, has demonstrated that when the water becomes heated, the steam generated in seeking its exit is just as apt to force the water back through the receiving-tube as to force it forward through the discharge-tube.

The object of this invention, therefore, is to prevent this back flow, and cause the water to be discharged through the exit-tube in a constant and regular stream.

The nature of my invention consists in securing inside the connecting-pipe, and close to its junction with the boiler, a short conical-shaped pipe.

To the bottom of this short pipe is suitably hinged a circular plate, a little greater in diameter than the mouth of the conical pipe.

The natural tendency of this circular plate is to fall, and leave perfectly open and free the mouth of the conical pipe.

To the outside of the conical pipe is securely attached an L-shaped bearing-plate, so arranged that when the circular plate is in its natural position, it rests upon the end or arm of this bearing-plate, occupying an angle of about forty-five degrees. This allows the water in the boiler or other vessel to pass freely into the connecting-pipe, while, when the same

becomes heated, and is forced back by the steam, it will strike the bottom of the circular plate, and close the mouth of the conical pipe.

By this action, the heated water is forced to seek its exit through the discharge-tube, and fresh water from the boiler in the meanwhile pressing upon and opening the mouth of the conical pipe, a constant stream of hot water is thrown into the boiler or other vessel.

By this method, a large quantity of water can be heated in a boiler or other vessel more rapidly than by placing the vessel directly over the fire.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A is the connecting-pipe, which passes through the fire-pot A<sup>2</sup>, and is provided with a flange, A<sup>1</sup>, by means of which it is securely attached to the boiler F, or other vessel.

B is the cone-shaped pipe, and is attached to the pipe A, near its connection with the boiler.

O is a circular plate, whose diameter is a little greater than the diameter of the mouth of the conical pipe B.

This plate O is hinged to a curved rod, c, secured to the outside of the pipe B, and extending a little below the mouth of the same.

D is an L-shaped bearing or support-plate, which is securely fastened to the outside of the pipe B, and immediately behind the curved rod c.

This bearing or support-plate D extends down below the mouth of the pipe B a sufficient distance, so that when the circular plate O falls, it shall rest upon the arm D' of the plate D, preserving an angle of about forty-five degrees.

This enables the water to pass freely into the connecting-pipe from the boiler, while, at the same time, when the steam forces the water back, it causes the plate O to be pressed against the mouth of the pipe B, closing the same, when, of necessity, the water is compelled to seek its discharge through the exit-pipe G into the boiler.

Instead of the circular plate O, there may be used a hollow cone, E, as clearly shown in fig. 2, the diameter of its base being a little greater than the diameter of the mouth of the pipe B.

To the apex of this cone E, and extending entirely through the same, is a guide-rod, F, which works in suitable guide-plates G G', the guide-plate G being attached to the interior of the pipe B, and the guide-plate G' to the interior of the connecting-pipe A.

This rod F and hollow cone E are prevented from falling over a certain distance by means of the pin g, which passes through the rod above the guide-plate G.

In sheet 2 of the drawing my invention is shown

as connected with a wash-boiler on a stove, but I do not desire to be understood as confining myself to this, as my invention is well applicable to heating water in other vessels, such as cauldrons, &c.

Having thus fully described my invention,

What I claim therein as new, and desire to secure by Letters Patent of the United States, is—

The conical pipe B, with its hinged plate C and bearing or support-plate D, when the whole is so combined and arranged within the connecting-pipe A as

to prevent the water, after being heated, or steam from flowing backward, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

E. H. CLARKSON.

Witnesses:

EDWD. JAMES,  
J. H. ROBINSON.