(No Model.)

# T. B. CLATWORTHY.

## SAFETY VALVE FOR KITCHEN BOILERS.

No. 491,238. Patented Feb. 7, 1893.

Fig. 1.

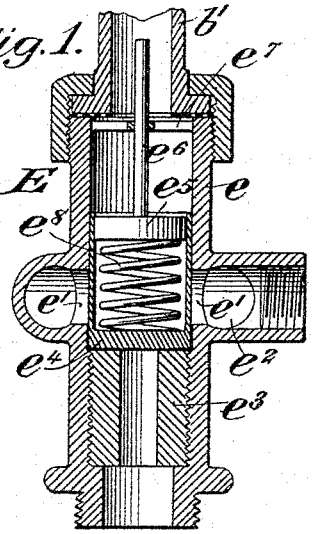
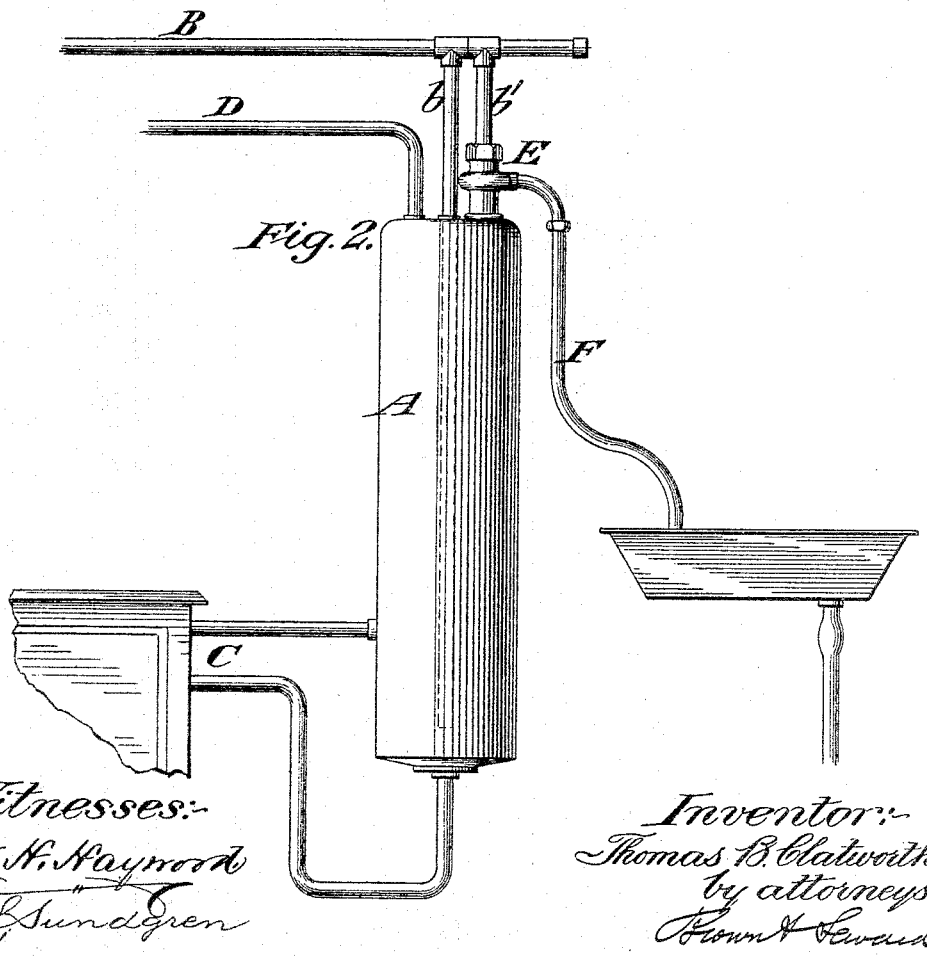



Fig. 2.




Witnesses:-
D. H. Maywood
C. L. Sundgren

Inventor:-
Thomas B. Clatworthy
by attorneys
Brown & Seward

# UNITED STATES PATENT OFFICE.

THOMAS B. CLATWORTHY, OF WATERBURY, CONNECTICUT, ASSIGNOR TO RANDOLPH & CLOWES, OF SAME PLACE.

## SAFETY-VALVE FOR KITCHEN-BOILERS.

SPECIFICATION forming part of Letters Patent No. 491,238, dated February 7, 1893.

Application filed April 19, 1892. Serial No. 429,743. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS B. CLATWORTHY, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Safety-Valves for Kitchen-Boilers, of which the following is a specification.

One object of my invention is to provide a safety valve for use in connection with boilers which shall prevent the explosion of the boiler when the pipes become frozen, obstructed or when check valves are used in the supply pipe from the water main.

A further object is to provide a safety valve which will not only prevent the bursting of the boiler by excessive pressure of steam but will also form a cushion for the water hammer or hydraulic throb caused in the pipes by the quick cutting off of water when running, thereby preventing the bursting of the boilers from that cause.

My invention is especially adapted for use in connection with kitchen range boilers and it is its use with such boilers that I am now about to describe.

A practical embodiment of my invention is represented in the accompanying drawings in which,

Figure 1 is a vertical section through the valve, and Fig. 2 is a view showing its relation to a kitchen range system of pipes.

A is an ordinary kitchen boiler supplied as usual with water through a feed pipe *b* from the water supply pipe B.

C is the circulating pipe which passes through the range for heating the water.

D is the hot water pipe through which hot water is delivered to all parts of the house.

E is an upright cylindrically bored casing containing the safety valves, the bottom of said casing being in communication with the upper part of the boiler and the upper part of said casing being in communication by a pipe *b'* with the water supply pipe B. The bottom of the said casing is contracted to form a valve-seat, the said contraction and seat being represented as formed by a bushing $e^3$. A short distance above this seat there are in the sides of this valve casing E, a series of openings *e'* which communicate with a hollow band formed in the casing around its cylindrical bore. This band has an outlet at $e^2$ from which there is an overflow provided through a pipe F represented as leading to the kitchen sink. The valve consists of a hollow cylindrical plunger $e^4$ which is open at the top and has a cushion fitted to it, the said cushion consisting of any yielding body but represented as a piston $e^5$ fitted to work in the interior of the hollow plunger and a spring $e^8$ applied between the said piston and the bottom of the plunger or valve $e^4$. The latter is made of a weight to overcome the equilibrium of the pressure from within and without. It is deep enough to close the openings *e'* while seated on the seat $e^3$. The piston $e^5$ is represented as furnished with a central guide rod $e^6$ which works in a guide in a stationary bridge $e^7$ in the upper part of the valve casing E.

The operation is as follows: So long as the service pipe remains unobstructed either by the freezing of the water within it, or by the check valve, when one is employed, the pressure being equal above and below the valve $e^4$, the latter remains closed, but when by reason of the obstruction in the supply pipe any excess of pressure that occurs in the boiler through the generation of steam cannot be thrown back upon the water main through the feed pipe *b* and supply pipe B, the valve is lifted from its seat $e^3$ and steam and water are allowed to escape through the openings *e'* and the outlet $e^2$ and pipe F, the cushion formed by the piston $e^5$ and spring $e^8$ allowing the valve to so open notwithstanding that the water above in the pipe *b* will not yield. The cushion formed by the piston $e^5$ and spring $e^8$ also serves to relieve the boiler of the effect of what is termed the water hammer or hydraulic throb produced by quickly shutting off water from other parts of the service.

It is obvious that a cushion similar in effect to the piston and spring might be made of a hollow water-tight rubber ball placed in the plunger $e^4$.

What I claim as my invention and desire to secure by Letters Patent is:

1. In combination, a hollow cylindrical valve casing open at top and bottom and having a lateral opening, a valve consisting of a hollow plunger fitted to said cylinder to open and close the bottom and lateral openings of

said cylinder, a piston fitted to said hollow plunger and a spring between said piston and the bottom of the plunger, substantially as herein set forth.

2. In combination, a boiler, a water supply pipe and a feed pipe forming uninterrupted communication between the said supply pipe and the boiler, a valve-casing having lateral openings therein and having at its lower end a communication with the boiler and at its upper end communication with the supply pipe independently of the feed pipe, a valve for opening and closing communication between the lower end and lateral openings of said valve casing, and an elastic cushion above said valve, substantially as herein set forth.

THOMAS B. CLATWORTHY.

Witnesses:
FREDK. HAYNES,
GEORGE BARRY.