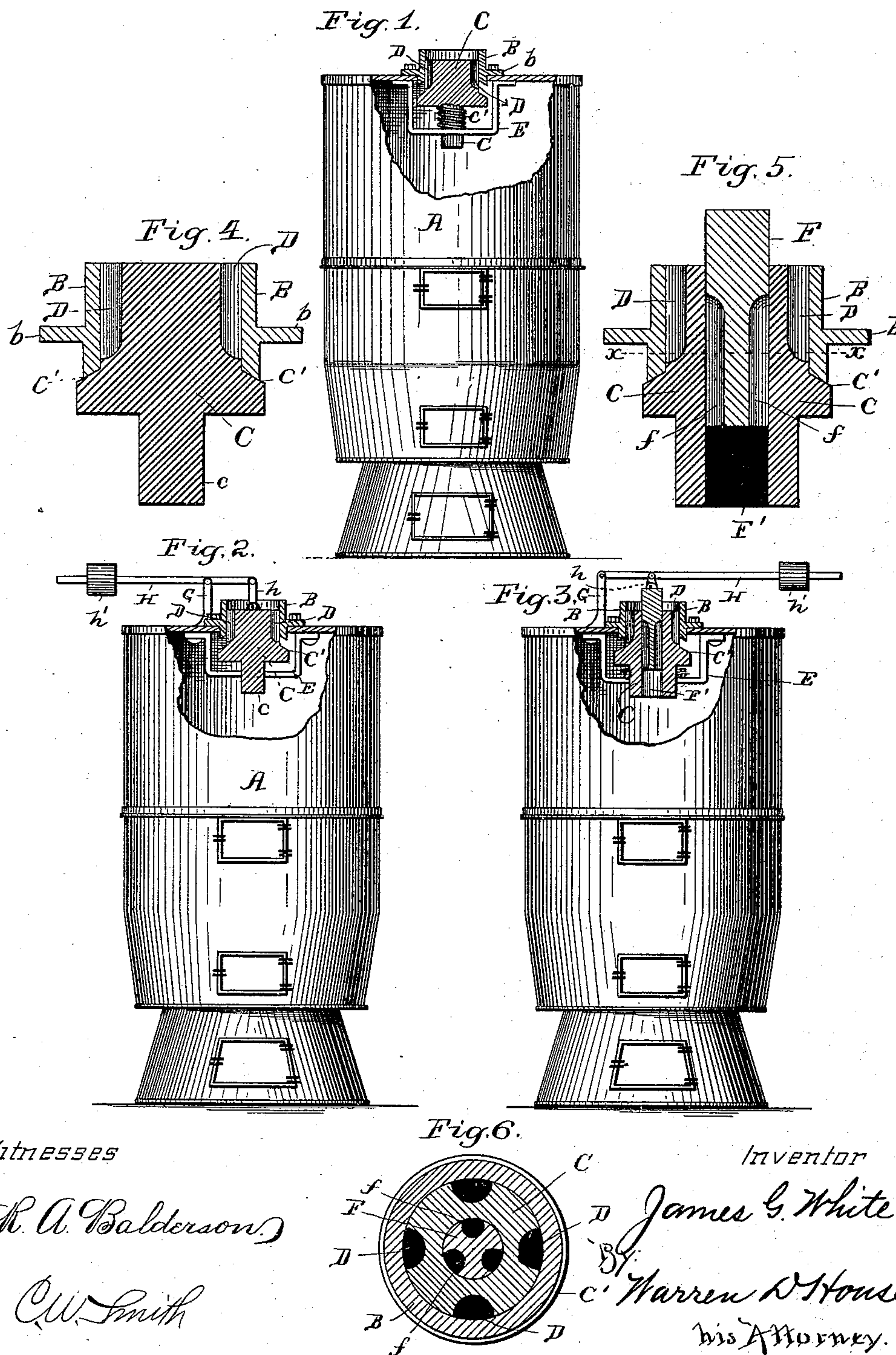


(No Model.)

J. G. WHITE.
SAFETY VALVE.

No. 487,809.

Patented Dec. 13, 1892.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES G. WHITE, OF KANSAS CITY, MISSOURI.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 487,809, dated December 13, 1892.

Application filed July 21, 1890. Serial No. 359,455. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. WHITE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Safety-Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of my invention is to provide an improved safety-valve for use in boilers, stills, or other apparatus in which it is desirable to prevent collapse or other accidents due to the sudden rarefaction within the vessel.

15 My invention is also designed to be used particularly to prevent the filling of a boiler with water in cases where inspirators are used and to prevent the collapse of a still or retort in cases where the vessel is not adapted to withstand a full atmospheric pressure on its outer surface.

My invention is also adapted to be used upon vessels in which a vacuum of any desired tenuity is required.

25 In the accompanying drawings I have illustrated my invention and the manner of its use in connection with a boiler.

Similar letters of reference indicate similar parts throughout the drawings.

30 Figures 1, 2, and 3 represent in front elevation boilers provided with valves constructed in accordance with the principles of my invention. Fig. 4 represents a vertical sectional view of a portion of the valve shown in Fig. 1. Fig. 5 represents a vertical sectional view of a portion of the valve shown in Fig. 3. Fig. 6 represents a plan view taken on the dotted line *xx* in Fig. 5.

40 Attached preferably to the top of boiler A is valve-seat B, secured thereto by means of flange *b*. Grooves D in the periphery of vacuum-valve C are adapted to communicate with the interior and the exterior of the boiler when the vacuum-valve C lowers. Projection *c* serves to guide the lower end of the vacuum-valve C within the supporting-strip E. Spiral spring *c'* retains the vacuum-valve C against the valve-seat C'.

50 In Fig. 2 I have illustrated how the vacuum-valve may be held in place by means of a weight instead of a spring. A pivoted lever

H, supported by projection G, secured to the top of the boiler, is provided with a weight *h'* and connected by means of *h* to the vacuum-valve C. The weight *h'* may be made to slide upon the lever H, so as to permit of any desired adjustment of pressure of the valve in its seat.

In Fig. 3 I have illustrated the application of my invention in connection with an escape-valve. The escape-valve F is provided with exit-grooves *f* and is adapted to slide within the central opening F' of the vacuum-valve C. In this figure the spiral spring *c'* is omitted; but in this construction it is to occupy the position corresponding to its position shown in Fig. 1. The same lever and weight attachment, as shown in Fig. 2, may be used to act upon the escape-valve F, excepting in the arrangement of the positions of the fulcrum and the power with regard to the weight *h'*, their positions being reversed. The force by which the vacuum-valve C is held against its seat should be just enough to secure it in position, so that the valve may be readily depressed by the atmospheric pressure. Any rarefaction within the vessel A will be followed by a depression of the vacuum-valve C, permitting air to pass into the vessel through the grooves D, thus preventing a collapse of the vessel or otherwise a filling of the vessel with any liquid with which it may have a pipe connection.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In safety-valves, the combination, with a vacuum-valve provided with suitable guides, of an escape-valve located within the vacuum-valve, means for loading the escape-valve, and means for holding the vacuum-valve normally closed, substantially as described.

2. In safety-valves, the combination, with a vacuum-valve provided with suitable guides, of an escape-valve located within the vacuum-valve, a pivoted arm carrying a load and connected with the escape-valve, and means for holding the vacuum-valve normally closed, substantially as described.

3. In safety-valves, the combination, with a vacuum-valve provided with suitable guides, of an escape-valve located within the vacuum-

valve, a pivoted arm carrying a load and connected with the escape-valve, and a spring holding the vacuum normally closed, substantially as described.

- 5 4. In safety-valves, the combination, with a vacuum-valve provided with suitable guides, of an escape-valve located within the vacuum-valve, means for loading the escape-valve, and

a spring holding the vacuum-valve normally closed, substantially as described. 10

In testimony whereof I affix my signature in presence of two witnesses.

JAMES G. WHITE.

Witnesses:

LESLIE E. BAIRD,
D. R. FRANCIS.