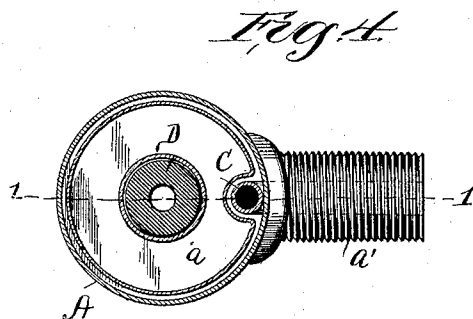
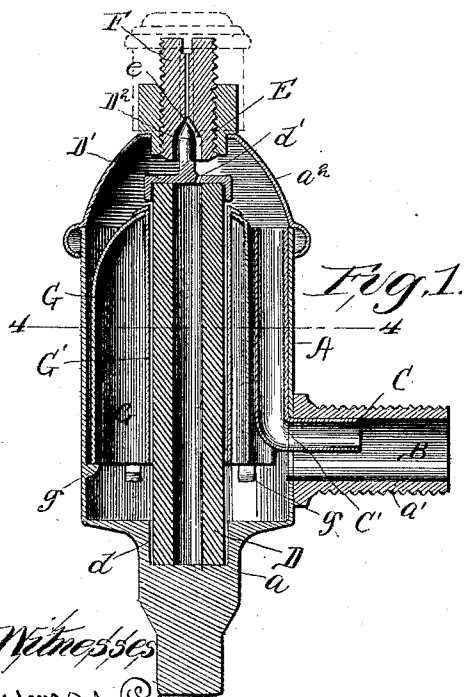
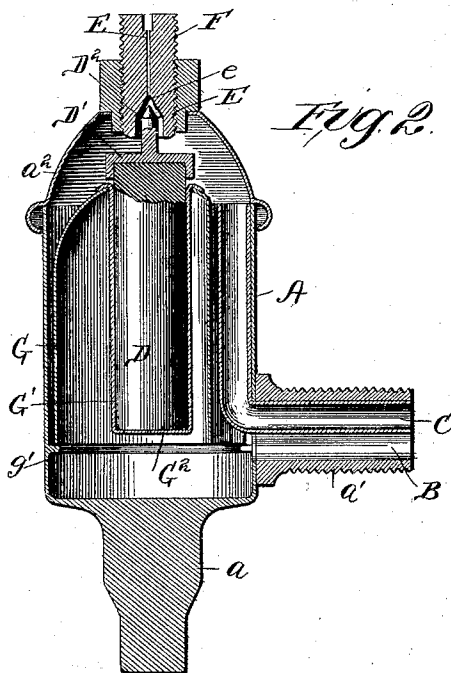
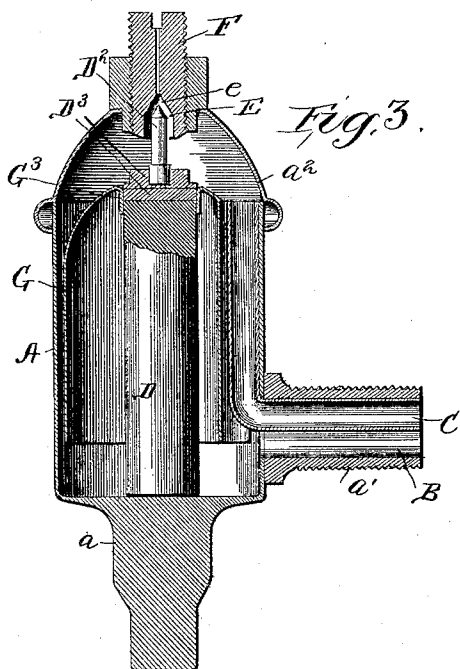


(No Model.)

C. E. VAN AUKEN.
VALVE.

No. 476,844.

Patented June 14, 1892.



Witnesses
Wm. M. Sherrin

John A. Ford

By

Inventor:
Clarence E. Van Auker.
Charles Turner Brown,
Atty.

UNITED STATES PATENT OFFICE.

CLARENCE E. VAN AUKEN, OF CHICAGO, ILLINOIS.

VALVE.

SPECIFICATION forming part of Letters Patent No. 476,844, dated June 14, 1892.

Application filed February 15, 1892. Serial No. 421,523. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. VAN AUKEN, residing at Chicago, Cook county, Illinois, have invented certain new and useful

5 Improvements in Valves, of which the following, when taken in connection with the drawings accompanying and forming a part hereof, is a full and complete description sufficient to enable those skilled in the art to make

10 and use the same.

My invention relates to that class of valves designed to be attached to a steam-radiator and adapted to permit the escape there-through of air from such radiator, and to automatically close against the escape of steam

15 or water, if any there be in the radiator.

The purpose of my invention is to obtain a valve wherein the expansible rod forming a part of the device need not be secured to the

20 shell or case of such device, and a valve wherein the several parts shall not be liable to become injured or displaced in the use thereof, which can be easily and cheaply made, and which shall be effective in operation.

25 In the drawings referred to and accompanying this specification, Figure 1 is a vertical section on line 1 1 of Fig. 4; Figs. 2 and 3, vertical cross-sections, respectively, on the same line, illustrating modifications of the invention;

30 Fig. 4, a horizontal section on line 4 4 of Fig. 1. The same letter of reference is used to designate a given part where such part is illustrated in more than one figure of the drawings.

35 A is a shell or casing; *a*, the base thereof, and *a'* a neck or projection adapted to be secured into a hole in the radiator having corresponding threads therein; *a*², the dome or top of the shell or case A.

40 B is the passage-way in neck *a'*.

C is a tube inserted in passage-way B and having a bend therein at the point thereof where it extends from such passage-way into the shell or case A and extending upward in such shell or case to or nearly to the dome or top *a*². The tube C forms an inlet for air, steam, or water from the radiator to which the device is attached into shell or case A; but such tube need not necessarily extend

50 entirely through the passage-way B, and in Fig. 1 such tube C is illustrated as not extending entirely through such passage-way.

D is a rod or post, either hollow or solid, as

preferred, extending vertically in shell or case A from the base thereof to near the top. *d* 55 is a well in base *a*, forming a seat for rod or post D, into which well or seat the rod or post D loosely fits. Rod or post D is constructed of material adapted to expand to a greater extent when heated than will the shell 60 or case A, and in the operation of the valve such rod or post is so expanded by steam when any is contained in the shell or case A.

D' is a cap fitting loosely on rod or post D and adapted to be raised therefrom. 65

d' is a hole in cap D'. Hole *d'* is not used unless the rod or post D is hollow, as illustrated in Fig. 1.

D² is a valve on cap D'.

E is a passage-way, preferably of two di- 70 ameters, through plug F, and *e* is a valve-seat in passage-way E, against which the valve D² is adapted to close.

G is an inverted bucket or float resting at its lower edge on lugs *g g* of shell or case A 75 and adapted to be raised or floated by water when any is contained in such shell or case.

G' is a tube secured in inverted bucket G. When enough water is contained in the shell or case A to extend above the lower edge of 80 the bucket G and tube G', the air contained in the bucket cannot escape therefrom, but will be retained and form an air-cushion therein. The tube holds the post D in position without securing the post to shell A. 85 These valves are made for use on steam-heating systems wherein the pressure is variable, and I have found it desirable to vary the weight of the cap and valve D' D², so that the pressure or induction produced by the air 90 escaping through the passage-way E will not raise the cap and valve off the rod or post (when the same are placed loosely thereon) or raise the rod or post D, cap D', valve D², and float G when the same are secured to- 95 gether. This difference in weight can be obtained in any suitable way, as by increasing the thickness of the cap D' or by attaching a weight, as of lead, thereto.

By inspection of Fig. 1 it will be readily 100 seen that rod or post D fits loosely in tube G', and hence when the rod or post G is expanded by steam to a greater extent than is shell or case A the cap D' will be raised thereby, and by a proper adjustment of the plug F valve 105 D² will be closed against seat *e* of passage-

way E, and that when the float G is raised by water contained in the shell or case A the cap D' will be elevated by the rod or post D, and thereby valve D² will be closed on its seat e.

5 It will be further observed that in the expansion of the rod D the float G will not be raised from the lugs g g, supporting it, or otherwise affected, and when the float G is raised by flotation and the cap D' on rod or post D
10 raised off thereof the rod or post D will not be affected thereby.

In the modification of my invention illustrated in Fig. 2 the float G is constructed in the same manner as the float G in the device
15 when constructed as illustrated in Fig. 1, and the tube G' is secured in the float G in the same manner. Such tube G' has, however, in this modification a bottom G², and the rod or post D rests at its lower end on such
20 bottom G². The float G is supported on the projecting ring g', such projecting ring having the functions of the lugs g g in Fig.

1. Rod or post D, it should be noted, fits loosely in tube G' in the modification illustrated in Fig. 2, and hence when the rod or post is expanded by steam being contained in the shell or case A the cap D' and valve D² thereon is raised against the valve-seat e, while float G remains immovable on ring g,
30 such float, however, supporting the rod or post D on the bottom G² of tube G'. When in this modification the float G is raised by water contained in the shell or case A, the rod or post D is raised therewith, together with
35 the cap D' and valve D².

In the modification illustrated in Fig. 3 the float G is supported by the rod or post D, such rod or post fitting tightly in the short tube or flange G³. In this modification the
40 cap D' of the aforedescribed construction is replaced by the head D³, on which is secured the valve D². It follows that in this construction when the rod or post D is expanded by steam contained in the shell or case A the
45 float G is raised in unison with the rising of the head D³ and valve D², and when the float G is raised by water contained in the shell or case G the rod D is raised in unison therewith.

50 By those skilled in the art it will be understood that when the horizontal passage-way B is made sufficiently large in diameter with reference to its length the portion of the tube C placed therein by me can be dispensed
55 with and such tube C cut off—on, say, the line lettered C' in Fig. 1, such passage-way B acting as an inlet and water outlet to the shell or case A; but as valves of this character are ordinarily made with the neck a' of a
60 prescribed size, and that size is not large enough to permit such passage-way B to act to the best advantage as a water-outlet, so that when water is contained in the shell or case A it will run freely therefrom through
65 such passage-way B back into the radiator without placing therein tube C, I ordinarily construct the valve with the inlet-tube C

therein extending horizontally either wholly or partially through the passage-way B, as well as to near the top of the float G.

70 It will be noted that if the tube G³ be extended sufficiently down on rod D to hold such rod in position when it is fitted loosely in such tube G³ that such rod D may be fitted loosely in such tube and yet be allowed to rest loosely
75 on the bottom a of the shell or case A.

It will thus be seen that in all the constructions hereinbefore illustrated and described the rod or post D need not be and by me is not secured in any way to the shell or case A, such
80 feature being common to all of the several constructions.

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

1. In a valve, a shell having an inlet and an outlet, in combination with an expansible post within the shell but not secured thereto, an inverted bucket forming a float, surrounding the post, a tube in which the expansible post
90 extends, secured in the float, a cap having a valve thereon mounted on the expansible post, and a valve-seat against which the valve is adapted to fit, thereby closing the outlet, whereby air in the shell or case can escape
95 therefrom and whereby such valve is closed against the escape of steam by the expansion of the post and against the escape of water by the flotation of the float, substantially as described.

2. In a valve, a shell having an inlet and an outlet and a water-outlet, in combination with an expansible post within the shell but not secured thereto, an inverted bucket forming
105 a float surrounding the post, a tube in which the expansible post extends, secured in the float, a cap having a valve thereon mounted on the expansible post, and a valve-seat against which the valve is adapted to fit, thereby closing the outlet, whereby air in the
110 shell or case can escape therefrom and whereby such valve is closed against the escape of steam by the expansion of the post and against the escape of water by the flotation of the float, substantially as described.

3. In a valve, a shell having an inlet and an outlet and a water-outlet, in combination with an inverted bucket forming a float, a tube secured in the float, an expansible post fitting
120 loosely in the tube and not secured thereto or to the shell, a cap having a valve thereon mounted on the expansible post, such cap extending partially over the float, and a valve-seat therefor in the outlet, whereby the expansion of the post will raise the cap and
125 close the valve without moving the float and whereby the floating of the float will raise the cap and close the valve without moving the post, substantially as described.

CLARENCE E. VAN AUKEN.

Witnesses:

CHARLES TURNER BROWN,
FLORA L. BROWN.