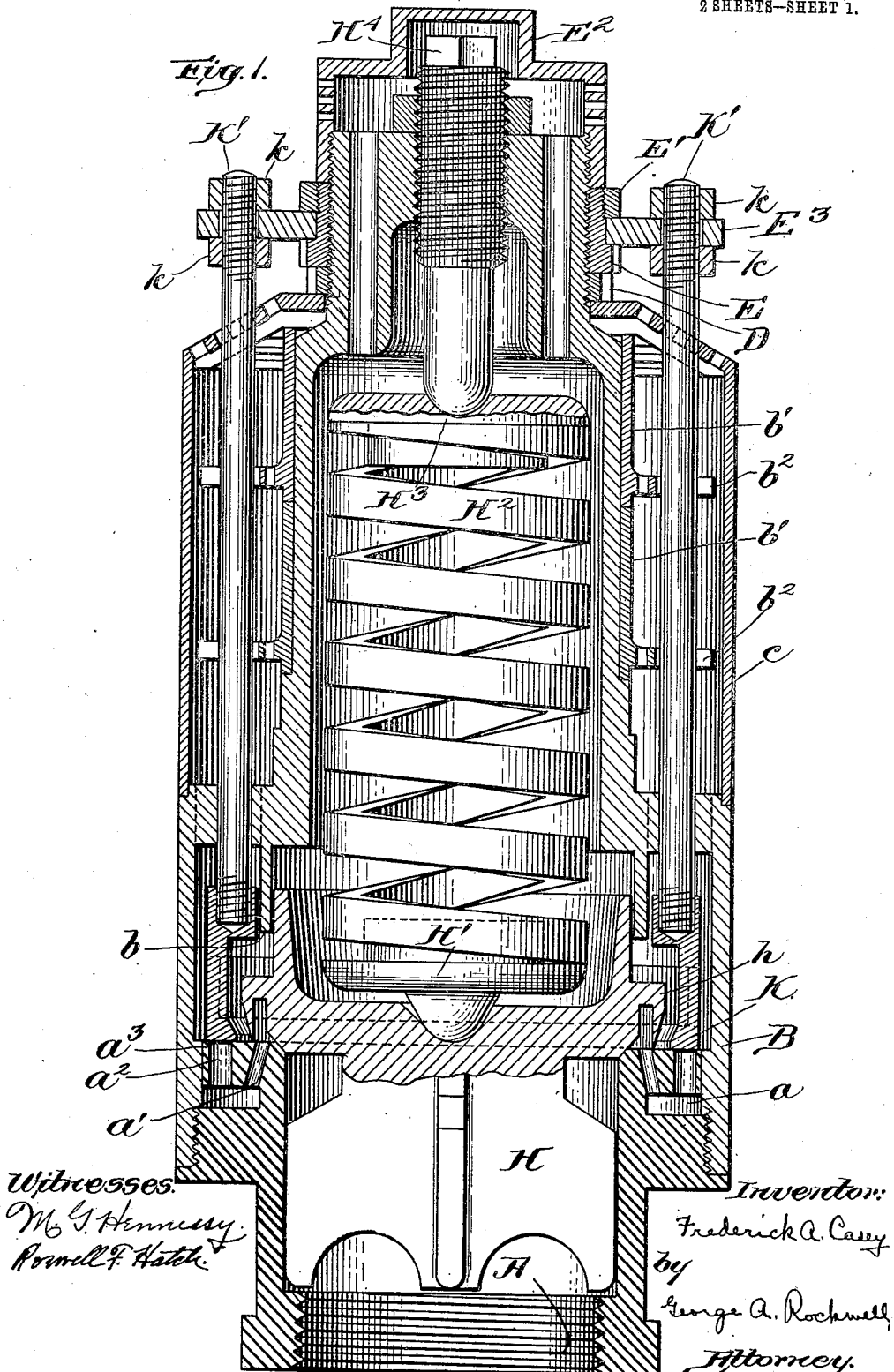


APPLICATION FILED MAY 5, 1906.

Patented May 11, 1909.

2 SHEETS--SHEET 1.



F. A. CASEY.
SAFETY VALVE.
APPLICATION FILED MAY 5, 1908.

921,360.

Patented May 11, 1909.
2 SHEETS—SHEET 2.

Fig. 2.

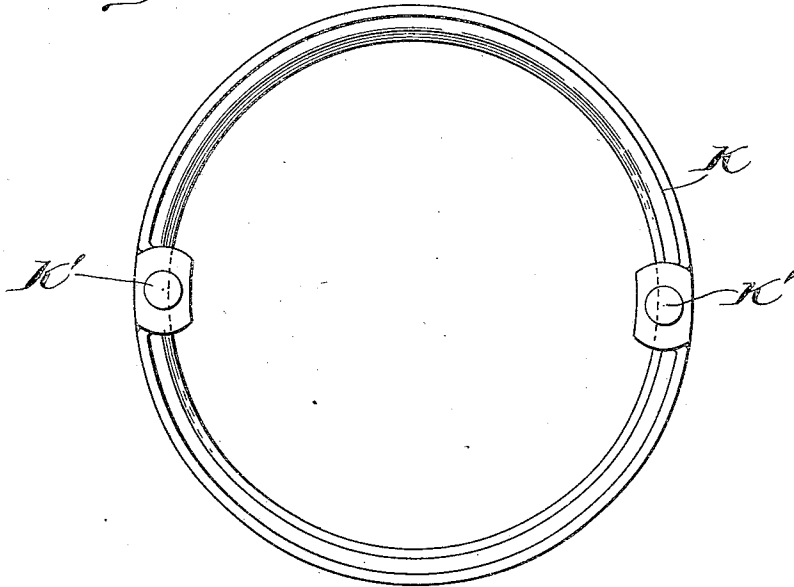
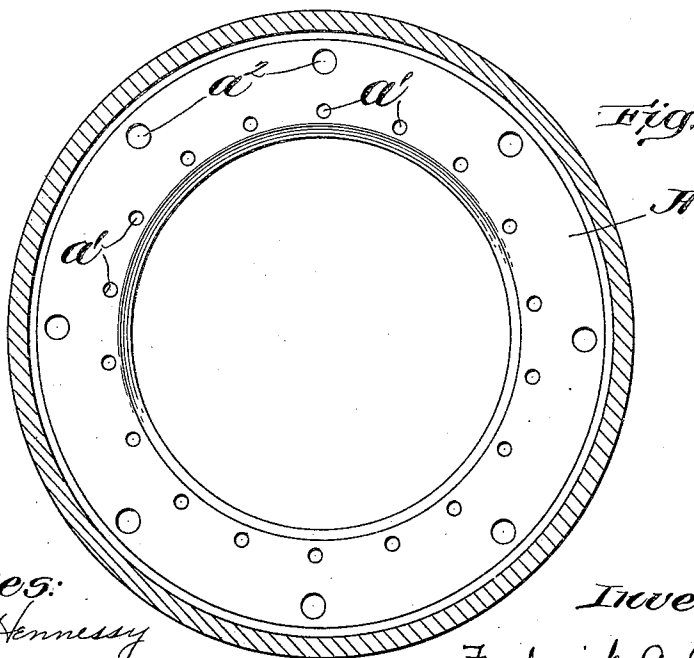


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

FREDERICK A. CASEY, OF BILLERICA, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO THE ASHTON VALVE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF CONNECTICUT.

SAFETY-VALVE.

No. 921,360.

Specification of Letters Patent.

Patented May 11, 1909.

Application filed May 5, 1906. Serial No. 315,286.

To all whom it may concern:

Be it known that I, FREDERICK A. CASEY, of Billerica, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Safety-Valves, of which the following is a specification.

My invention relates to that class of safety valves which have a pop chamber, an expression which is well-known to all skilled in this art, and the object of my invention is to provide means for regulating the pop, that is, to regulate the pressure in the pop chamber, and my invention consists in a valve which has a pop chamber and a supplemental outlet or exhaust which comprises a multiplicity of ports in combination with a single member for controlling those ports.

Other features are hereinafter described. In the drawings Figure 1 is a vertical central section through one of my valves, some parts being shown in elevation; Fig. 2 is a plan of the ring valve; Fig. 3 is a plan of the base showing the passages forming the supplemental outlet.

Base A has a peripheral groove a and the partition a^3 above this groove is perforated by one set of passages a^1 , a^1 sloping downwardly outward, and by another set a^2 , a^2 preferably of larger diameter and farther apart. Casing B is mounted on the base and has an annular lip b extending downward to encircle the upper part of the valve. Mounted on the casing are collars b^1 , b^1 with perforated flanges b^2 , b^2 . Muffler C is mounted on the casing and screwed to the casing above the muffler is washer D and above that is screwed ring E upon which is mounted circular cross-head E^3 held against vertical movement with relation to the cross-head by ring E^1 screwed to the ring E but the cross-head is free to move vertically with ring E. Cap E^2 is screwed to the casing above ring E. Valve H fits within the base and bears against abutment H^1 attached to spring H^2 which is attached at its other end to abutment H^3 which bears against plug H^4 screwed to the casing. Valve H has circular pop lip h to form the usual pop chamber. Closing passages a^2 , a^2 which with passages a^1 , a^1 form a supplemental outlet or exhaust from the pop chamber is ring valve K which controls all the passages a^2 , a^2 and therefore controls and regulates the pressure in the pop chamber.

Rods K^1 are connected to the ring valve and pass through the cross-head E^3 to which they are connected by nuts k , k . The usual steam escapes through the casing, muffler and cap are shown but are not described in detail.

With my valve I regulate the pressure in the pop chamber by a supplemental outlet from the pop chamber. The turning of the screw ring E will raise or lower cross-head E^3 and thereby raise or lower the ring valve.

Movement of the ring valve toward or from the partition a^3 will increase or decrease as desired the pressure in the pop chamber and I thus regulate that pressure and therefore regulate the slow or rapid closing of the valve and this without changing the normal compression of the spring and this is a great advantage of my valve as I can provide a comparatively large outlet and a control for that outlet without increasing the interference with the steam escape, and this is an important matter as it has been long desired to give a greater outlet from the pop chamber, but heretofore this has been impractical by reason of the resulting interference with the steam escape. Furthermore, my valve provides a much greater range of pressure in the pop chamber than heretofore as I provide a comparatively large outlet for a comparatively small valve, and the importance of this is that in cases where it is necessary to limit the size of the valve by reason of the location of the valve yet I may get the large outlet desired. For example, with my present valve having a diameter of three inches and a casing diameter of five inches I get 100% more regulation than with the ordinary valve having a diameter of three inches and a casing of six inches. In other words, I provide a perfect working valve in small compass.

Other advantages are that all the supplemental outlets, and I may have any suitable number, can be controlled by one member, which in the form shown is the ring valve, and furthermore this member is accessible without removing the casing of the valve.

What I claim is:

1. In a safety valve having a pop chamber the combination of a main outlet from the pop chamber; a supplemental outlet or exhaust from the pop chamber comprising a plurality of ports through the valve seat; and a single member adjustable uniformly toward

or from all the ports so that the exhaust is distributed uniformly throughout the supplemental ports.

2. In a safety valve having a pop chamber
5 the combination of a main outlet from the pop chamber; a supplemental outlet or exhaust from the pop chamber comprising a plurality of ports through the valve seat; and
10 a ring valve adjustable uniformly toward or from all the ports so that the exhaust is distributed uniformly throughout the supplemental ports.

3. In a safety valve having a pop chamber the combination of a main outlet from the
15 pop chamber; a supplemental outlet or exhaust from the pop chamber comprising a plurality of ports through the valve seat leading to the interior of the casing; and a ring valve within the casing and adjustable
20 uniformly toward or from all the ports so that the exhaust is distributed uniformly throughout the supplemental ports.

4. In a safety valve the combination with the main valve having a pop chamber and

lip of a valve seat surrounding the main
25 valve seat; a ring valve surrounding the main valve and cooperating with the first mentioned valve seat; a plurality of ports surrounding the main valve seat and leading
30 from the pop chamber through the valve seat to the interior of the casing with the discharge ends of said ports controlled by the ring valve; and means to fix the ring valve in
35 adjusted position with relation to said discharge ends.

5. In a safety valve the combination of
valve H having a lip and a pop chamber; a
valve seat with the annular chamber a ;
ports a' connecting said chamber with the
40 pop chamber of the valve; ports a'' connecting said chamber with the interior of the
valve; and the ring valve K for controlling
the discharge from the ports a'' .

FREDERICK A. CASEY.

Witnesses:

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