March 17, 1936. H. S. BAKER 2,034,222

VALVE

Filed Jan. 30, 1930

Fig. 1.

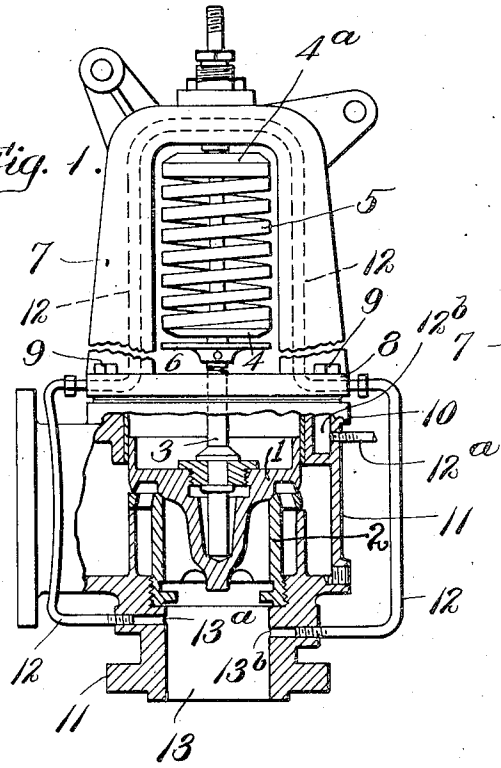


Fig. 2.

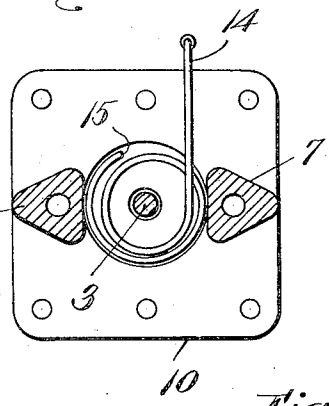


Fig. 3.

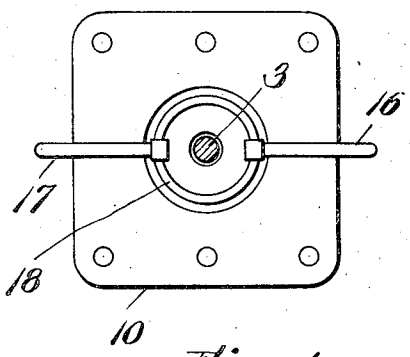


Fig. 5.

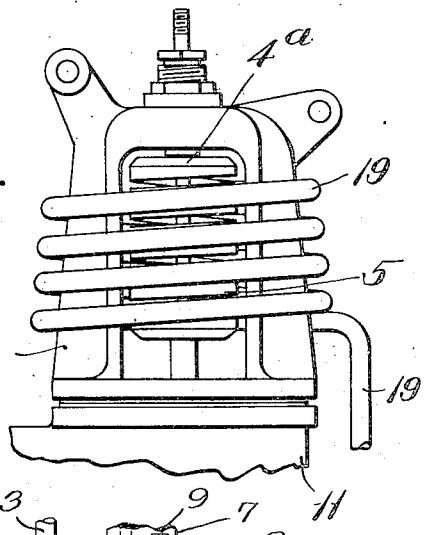


Fig. 4.

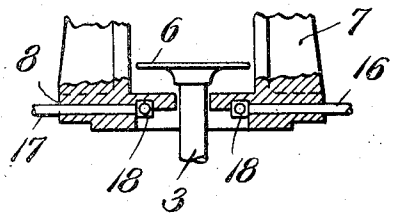
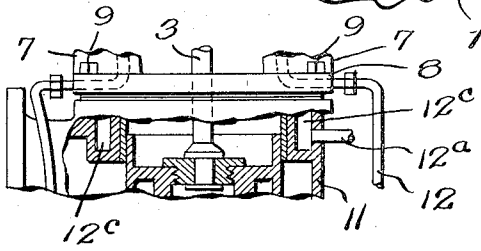


Fig. 6.



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UNITED STATES PATENT OFFICE

2,034,222

VALVE

Harry S. Baker, Arlington, Mass., assignor to The Ashton Valve Company, Cambridge, Mass., a corporation of Massachusetts

Application January 30, 1930, Serial No. 424,464

4 Claims. (Cl. 137—53)

The principal object of my invention is to keep the base, lower head and the spring of a valve, especially a safety valve, at a substantially constant temperature whether the valve is open or closed.

A feature of my invention is means for supplying heat in suitable adjacency to the head, the base and the spring and preferably such means takes the form of a conduit extending through or around the valve casing or head and in adjacency to said parts, and such conduit may, for example, be a pipe or a cast port.

Other features will be pointed out below.

In the drawing—

Figure 1 is an elevation, partly in section, of a valve embodying my invention;

Figure 2 is a partial plan, partly in section, showing another form of valve embodying my invention;

Figure 3 is a plan, partly in section, showing still another form of valve embodying my invention;

Figure 4 is a partial detailed central section of the form of Figure 3; and

Figure 5 is an elevation of still another form of valve embodying my invention; and

Figure 6 is a partial section, similar to the sectional portion of Figure 1, and referred to below.

In Figure 1 I illustrate a safety valve, the upper part 1 of the valve proper being adapted to seat on the lower part 2 of the valve proper. The upper valve part 1 has a suitable connection with stem 3 to which is fixed a suitable abutment 4 for coiled spring 5, whose other abutment is member 4a. A member 6, attached to stem 3, acts as a deflector for the steam to keep down the temperature of the spring. The valve part 1 and its stem 3 are suitably mounted for vertical movement so that the valve part 1 may be operatively seated or unseated, the spring tending normally to hold the valve part 1 seated.

The upper or head member 7 may have its flange 8 suitably held, as by bolts 9, to a flanged portion 10 of the valve casing or base 11.

Conduit 12 is in the form of a pipe or cored passage and extends about the casing 11 and up and down through member 7 in adjacency to spring 5, steam or other heating and pressure medium being admitted to said conduit through inlet 13 and port 13a, the pipe 12 being suitably connected to the base 11 by tapping or otherwise, and the heating medium being suitably retained in the conduit at a substantially constant temperature preferably above the temperature of the parts 7 and 11 and below the annealing temperature of the spring. The outlet 13b for conduit 12 is lower than port 13a as an aid to circulation.

In Figure 1 I have shown a conduit 12a leading from a suitable source of heat to a cast port 12b which is shown in Figure 1 as extending part way around the head ring, although the port might extend completely around, as shown at 12c in Figure 6, for preheating around the head ring and this conduit 12a and port 12b may be used with or without conduit 12.

The uniform heating which I provide makes for efficient seating and operation and counteracts unequal contraction and expansion

In Figure 2 I show a conduit 14 which is coiled about the valve stem 3 just below member 6 and has its end sealed at 15.

In Figures 3 and 4 the lower portion of the conduit (not shown) may be the same as the lower portion of the conduit 12 but the upper portions 16 and 17 extend inwardly and have conduit connections with the annular tube 18 which is coiled about the valve stem 3 just below the flange 8.

In Figure 5 the conduit 19 extends upwardly and is coiled outside of head 7 but in suitable adjacency thereto.

It is to be understood that in the forms of Figures 2, 3, 4, 5 and 6 the heating medium is suitably maintained at constant temperature in the several conduits.

It will be clear that my invention provides for heating the spring and the desired portions of the base and head to accomplish the purposes referred to above.

What I claim is:

1. A safety valve comprising a valve operated by a heated pressure medium; a seat for said valve; means tending to keep the valve seated; a base having a portion located above said valve seat; and means to conduct said heated pressure medium into adjacency to said portion to maintain the temperature of said portion of said base above the valve seat at a substantially constant heat, higher than atmospheric temperature, at all times, said means preventing contact of said medium with said portion.

2. A safety valve comprising a valve operated by a heated pressure medium; a seat for said valve; means tending to keep the valve seated; a stationary head above said valve seat; and means to conduct said heated pressure medium into adjacency to said head to maintain the temperature of said head at a substantially constant heat, higher than atmospheric tempera-

ture, at all times, said means preventing contact of said medium with said head.

3. A safety valve comprising a valve operated by a heated pressure medium; a seat for said valve; means tending to keep the valve seated; a stationary head above said seat; a base having a portion above said seat; and means to conduct said heated pressure medium into adjacency to said head and to said portion to maintain the temperature of said head and of said portion at a substantially constant heat, higher than atmospheric temperature, at all times, said means preventing contact of said medium with said head and with said portion.

4. A safety valve comprising a valve operated by a heated pressure medium; a seat for said valve; a head above said seat; a base having a portion above said seat; a spring located above the valve seat and tending to hold said valve to its seat; and means to conduct said heated pressure medium into adjacency to said head, to said portion and to said spring to maintain the temperature of said head, said portion and said spring at a substantially constant heat, higher than atmospheric temperature, at all times, said means preventing contact of said medium with said head, said portion and said spring.

HARRY S. BAKER.