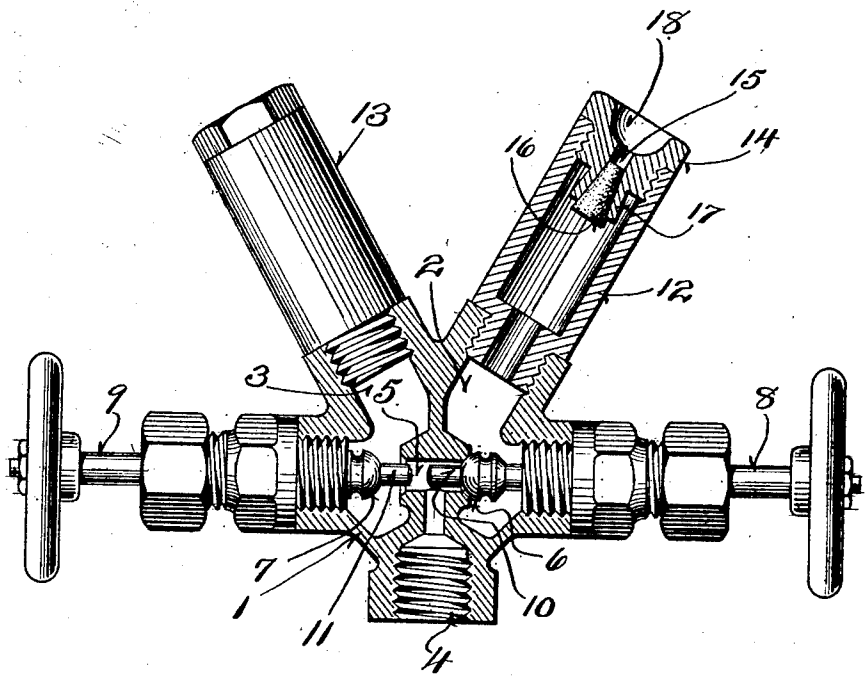
Feb. 16, 1926. 1,573,488

W. C. HACKMAN

SAFETY APPLIANCE FOR STEAM BOILERS

Filed July 13, 1925



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UNITED STATES PATENT OFFICE.

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SAFETY APPLIANCE FOR STEAM BOILERS.

Application filed July 13, 1925. Serial No. 43,258.

To all whom it may concern:

Be it known that I, WILLIAM C. HACKMAN, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Safety Appliances for Steam Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to safety appliances for steam boilers.

This invention is an improvement over that disclosed in United States Patent No. 1,293,730, issued February 11, 1919, to F. L. Dornbrook for safety appliance for steam boilers, and has the same general objects as those set forth in such patent.

In practice, steam boilers are commonly equipped with a fusible plug which normally seals an opening communicating with a pipe extending into the boiler and projecting below the lowest safe water level. When the water falls below such level the water in the pipe drains out and is replaced by steam. Further, these devices had the defect of requiring the temporary closing of the pipe while a new plug was inserted. Frequently the operator forgot to open the pipe after the plug was inserted.

To overcome these defects it has been proposed to provide a pair of plugs with interlocking control means for insuring the correct opening of the pipe to a new plug. This construction, as disclosed in the above noted patent, was found, however, to have the defect of a relatively slow fusing of the plug and a transfer of heat from adjacent the used plug to the unused plug. This transfer of heat was frequently so great as to fuse the unused plug.

This invention is designed to overcome the above noted defects, and an object of such invention is to provide a safety appliance for steam boilers which, while utilizing the multiple plug construction, nevertheless prevents the fusing of the unused plug even when the plug in use fuses.

It has been found in the usual constructions of safety appliances, that several minutes elapse before the plug fuses even when exposed to the steam.

A further object is to provide a novel construction in which a quicker transfer of heat from the steam to the plug is attained, than has heretofore been possible, with the consequent quick fusing of the plug.

A further object is to provide a safety device in which a distinct whistling sound is produced when a plug fuses, thus insuring the notice of the operator.

Other objects and purposes of this invention will become apparent as the description proceeds.

An embodiment of the invention is shown in the accompanying drawing in which the single figure is a partial sectional view through the device.

The device comprises a casing 1 which has a pair of compartments 2 and 3 formed therein, and which is provided with an inlet 4 adapted to receive the usual tube which projects into the boiler below the lowest safe water level.

The inlet 4 is provided with discharge passages 5 which open into the two compartments and are provided at their ends with the valve seats. These valve seats cooperate with the valves 6 and 7 mounted within the two compartments and controlled by valve stems 8 and 9, respectively. These valves may be of substantially the same construction as that disclosed in the above noted patent, and are provided accordingly with inwardly projecting shanks 10 and 11 which prevent the closing of but one valve at a time.

The casing 1 is provided with a pair of hollow extensions 12 and 13 of duplicate construction which are threaded into outwardly diverging portions of the casing, as shown. These extensions are in reality small cylinders of elongated formation and are provided with removable caps 14 at their ends. These caps are provided with apertures 15 therethrough within each of which a fusible plug 16 is positioned. It is to be noted that the caps 14 are extended inwardly to provide sleeves 17 of relatively small thickness which surround the fusible plug. It is to be noted further that a recess 18 is formed in the end of the caps and cooperates with the aperture 15 to produce a whistling sound when the plug is fused and the steam is thus permitted to rush outwardly.

The construction detailed above exposes the plug freely to the steam when the low level of water has been reached as the water

will drain from the apparatus and be replaced by the high temperature steam.

Particular emphasis is laid upon the construction whereby a very extensive transfer of heat from the steam to the plug is permitted by means of the exposed sleeve 17 which permits the heating not only of the exposed end of the plug, but also of the body portion thereof.

In the form disclosed in the above noted patent, several minutes elapsed before the plug would fuse when the steam had reached the apparatus. With this form, however, the plug substantially instantly fuses as there is a very rapid transfer of heat from the steam to the plug due to the construction disclosed. Further, with the type of construction disclosed in the above noted patent, it has been found that frequently heat is conducted from the active portion of the apparatus to the inactive portion in sufficient quantity to fuse the inactive plug although the steam had not reached it. This conduction of heat, therefore, was found to be highly objectionable and has been overcome by the present construction. It is to be noted that the extensions 12 and 13 have sufficient radiating surface to prevent fusing of the plug, when inactive, by conducted heat. The plugs have been found to fuse only when the steam actually strikes them and their surrounding sleeve 17.

Thus, it will be seen that a safety appliance for steam boilers has been provided in which a pair of fusible plugs are so associated that it is impossible to inadvertently fuse the inactive plug when the active plug is fused. Further, it will be noted that the active plug will substantially instantly fuse due to the large surface exposed to the direct action of the high temperature steam.

This invention, therefore, has all of the advantages of the invention disclosed in the above noted patent and in addition thereto has very distinct advantages over such invention, as detailed above.

Although the invention has been described in considerable detail, it is to be understood that the invention may be variously embodied and is, therefore, to be limited only as claimed.

I claim:

1. A fusible plug appliance for steam boilers comprising a casing having an inlet, and a pair of elongated compartments having distinct and separate walls, each of said compartments having an outwardly opening aperture communicating therewith, a fusible plug mounted in each of said apertures, and means for alternately connecting said compartments with said inlet.

2. A fusible plug appliance for steam boilers comprising a casing having an inlet and a pair of elongated compartments having distinct and separate walls, each of said compartments having an outwardly opening aperture communicating therewith, a fusible plug mounted in each of said apertures, and interlocking means for connecting only one compartment at a time with said inlet.

3. A fusible plug appliance for steam boilers comprising a casing having an inlet, a pair of hollow elongated extensions carried by said casing and projecting outwardly therefrom and having outwardly opening apertures, said extensions being spaced apart a fusible plug mounted in each of said apertures, and means for selectively connecting said extensions with said inlet, whereby when one plug fuses the heat from the corresponding extension is not transmitted to the other extension.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wisconsin.

WILLIAM C. HACKMAN.