L. MOORE.

HIGH AND LOW WATER BOILER ALARM.

APPLICATION FILED JULY 21, 1916.

1,264,115. Patented Apr. 23, 1918.

Fig. 1.

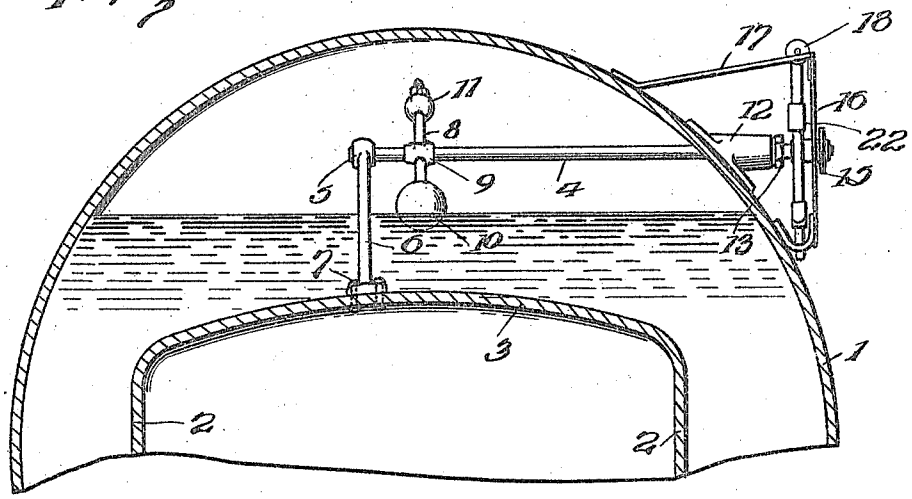


Fig. 2.

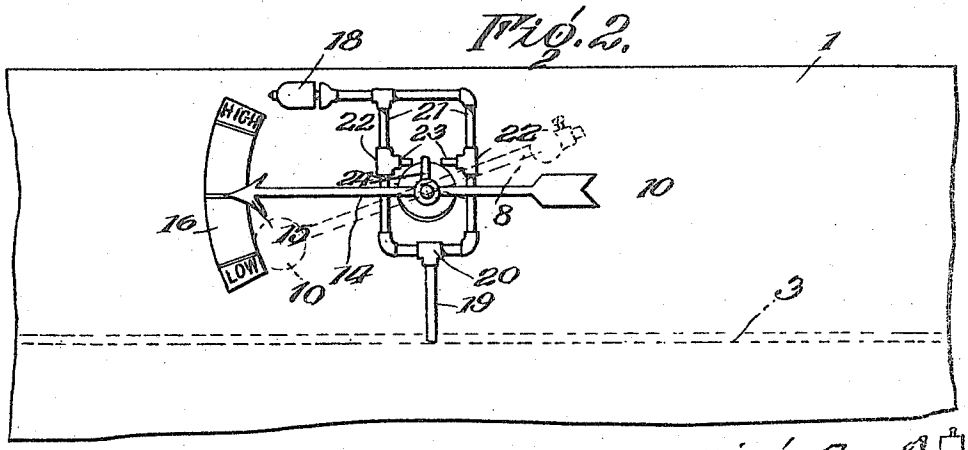


Fig. 3.

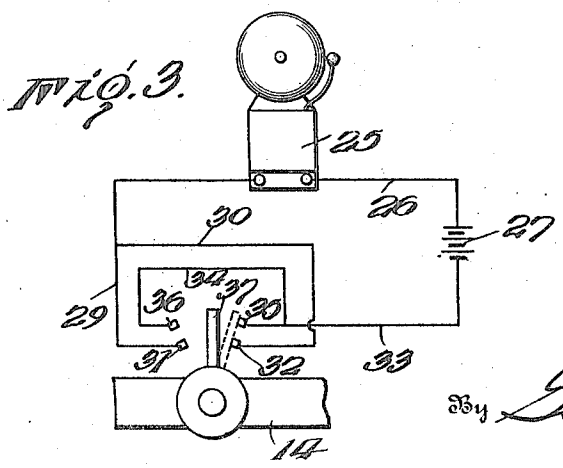
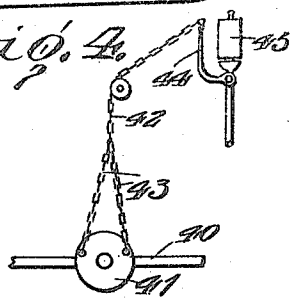


Fig. 4.



Lee Moore

Inventor

By Geo. P. Kimmel.

Attorney

UNITED STATES PATENT OFFICE.

LEE MOORE, OF ROANOKE, VIRGINIA.

HIGH AND LOW WATER BOILER-ALARM.

1,264,115. Specification of Letters Patent. Patented Apr. 23, 1918.

Application filed July 21, 1916. Serial No. 110,559.

To all whom it may concern:

Be it known that I, LEE MOORE, a citizen of the United States, and resident of Roanoke, in the county of Roanoke and State of Virginia, have invented certain new and useful Improvements in High and Low Water Boiler-Alarms, of which the following is a specification.

The present invention relates to steam boilers and the like and has particular reference to new and useful improvements in high and low water alarms therefor.

An object of my invention is to provide an alarm for use in connection with locomotive boilers and the like whereby to apprise the engineer or fireman when the water level becomes dangerously low or unnecessarily high.

Another object of my invention is to provide an alarm of the class described capable of use in connection with boilers of all types regardless of the size of the boiler or the use to which the same may be put.

A further object of my invention is to provide an alarm of the class described which is adapted to both indicate and alarm simultaneously, either a steam or air whistle alarm being employed or an electric circuit and bell, the structure of my invention permitting application of either form of alarm.

A still further object of my invention is to provide an alarm of the class described which may be easily installed on any of the existing types of locomotive boilers or the like without structurally altering the boiler other than to place the necessary bearings therein.

Other objects and advantages to be derived from the use of my improved boiler alarm will appear from the following detail description and the claims, taken with an inspection of the accompanying drawing, in which:

Figure 1 is a vertical sectional view taken through a locomotive boiler and fire-box, showing my improved alarm applied thereto;

Fig. 2 is a fragmental side elevational view of a boiler showing one form of alarm applied;

Fig. 3 is a diagrammatic view of an electric alarm for use in connection with the indicator; and

Fig. 4 is a fragmentary elevational view of a modified form of signal.

Referring more particularly to the drawing, wherein similar characters of reference designate like and corresponding parts throughout the various views, 1 indicates the barrel of a locomotive boiler or the like, 2 designates the sides of the fire-box and 3 the crown sheet.

The indicating device of my invention is float operated, that is, a float is associated with the indicator and arranged within the boiler for actuation by the water as the same rises or lowers. The float mechanism includes a shaft 4 arranged on the inner ends as at 5 on a bearing 6, said bearing 6 being riveted or otherwise secured as at 7 to the crown sheet 3. An arm 8 fastened at 9 to the shaft 4 carries a float 10 on one free end thereof and an adjustable counter-weight 11 on the opposite free end thereof, said float normally lying upon the surface of the water in the boiler. The object of the counter-weight is to render the float more or less sensitive to slight changes in the water level and yet prevent the float from oscillating up and down as the locomotive rolls when running. The other end of the shaft 4 is mounted in a bearing 12 carried on the barrel of the boiler, a packing gland 13 being arranged around said shaft.

The indicating means of my invention includes an arm 14 mounted on the extreme outer end of the shaft 4, said arm being in the form of an arrow the head 15 of which is adapted to move across a dial section 16 mounted on bracket arms 17 carried by the barrel 1 of the boiler. Indications as to high and low water level are placed upon the top and bottom portion of the dial section 16 as best shown in Fig. 2.

In the form of my invention shown in Figs. 1 and 2 I have provided a whistle alarm, which may be blown by air or steam as desired. The whistle is designated 18 and is supplied with air or steam from a main supply pipe 19. The supply pipe 19 is divided as at 20 to form branch portions 21 in which are mounted spring valves 22 having oppositely arranged extensions 23 between which is arranged a lug 24 carried by the arm 14. As the arm 14 oscillates with the rise and fall of the water level the lug 24 contacts with the extensions 23 to open either of the valves and admit air or steam to the whistle 18.

Referring to the modified form of alarm shown in Fig. 3 I provide an electric bell 25 arranged in a conductor 26, one end of the conductor communicating with a bat-

tery 27 or other source of electric current. The other end of said conductor 26 is divided to form branches 29 and 30 and having terminals 31 and 32. A conductor 33 extends from the other side of the battery 27 and is provided with a branch 34, the conductor 33 having a terminal 35 arranged adjacent the terminal 32 and the branch 34 having a terminal 36 arranged adjacent the terminal 31. An extension 37 is carried by the arm 14 hereinbefore referred to, said extension 37 being adapted to contact with the circuit terminals 31 and 36 or 32 and 35, at times, depending upon the movement of the arm 14 with the rise and fall of the water in the boiler. When the extension 37 engages said paths of contact the bell is caused to ring, a circuit being completed. It will, therefore, be seen that in both of the forms of my improved alarm a distinct and unfailing warning is given to the engineer or fireman of a locomotive as to the exact condition of the water in a boiler. I desire to lay particular stress upon the extreme simplicity of my invention as well as its capability of universal application to various types of boilers. Of course, I do not desire to be limited to the exact location of the indicator, in view of the fact that the same may be placed upon the boiler head instead of on the side of the boiler as shown. The operation of the device in various positions is possible. It will be seen that as the water rises and falls in the boiler an indication is had and should the water rise or fall to a great extent an alarm will be given in either case.

Referring to the modified form of my invention illustrated in Fig. 4, the arrow is designated 40 and is provided with an enlarged plate portion 41. A chain 42 is provided formed with two divergent portions 43 connected at diametrically opposite points to said plate 41. The free end of the chain connects to the lever 44 of a whistle 45 which latter may be an air whistle or the whistle of the locomotive on which the device is installed. When the arrow is deflected to a predetermined point the chain 42 is actuated opening the whistle 45 and giving an alarm.

From the above description taken in connection with the accompanying drawing, it is thought that a clear and comprehensive understanding of the construction, operation and advantages of my invention may be had, and while I have shown and described the device as embodying a specific structure, I desire that it be understood that such changes may be made in said structure as do not depart from the spirit and scope of the invention as claimed.

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

1. An indicator and alarm for boilers including a shaft disposed within the boiler and having a floating arm carried thereon, a float carried by one end of said arm, a counter-weight on the opposite end of the arm, an indicator on the free end of said shaft, a lug carried by said indicator arm, and an alarm operable upon movement of the lug beyond a predetermined distance in either direction.

2. An indicator and alarm for boilers, including a shaft disposed within a tank or the like having a floating arm carried thereon, a float carried by said arm, a counterweight carried by the opposite end of said arm, an indicator arm carried by the free end of said shaft, a lug carried by said indicator arm, circuit terminals disposed adjacent said lug, an electric alarm, said alarm being actuatable upon movement of said indicator arm to bridge the circuit terminals with said lug.

In testimony whereof, I affix my signature hereto.

LEE MOORE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."