No. 879,508. PATENTED FEB. 18, 1908.

G. YEATES.

LOW WATER ALARM.

APPLICATION FILED APR. 16, 1906.

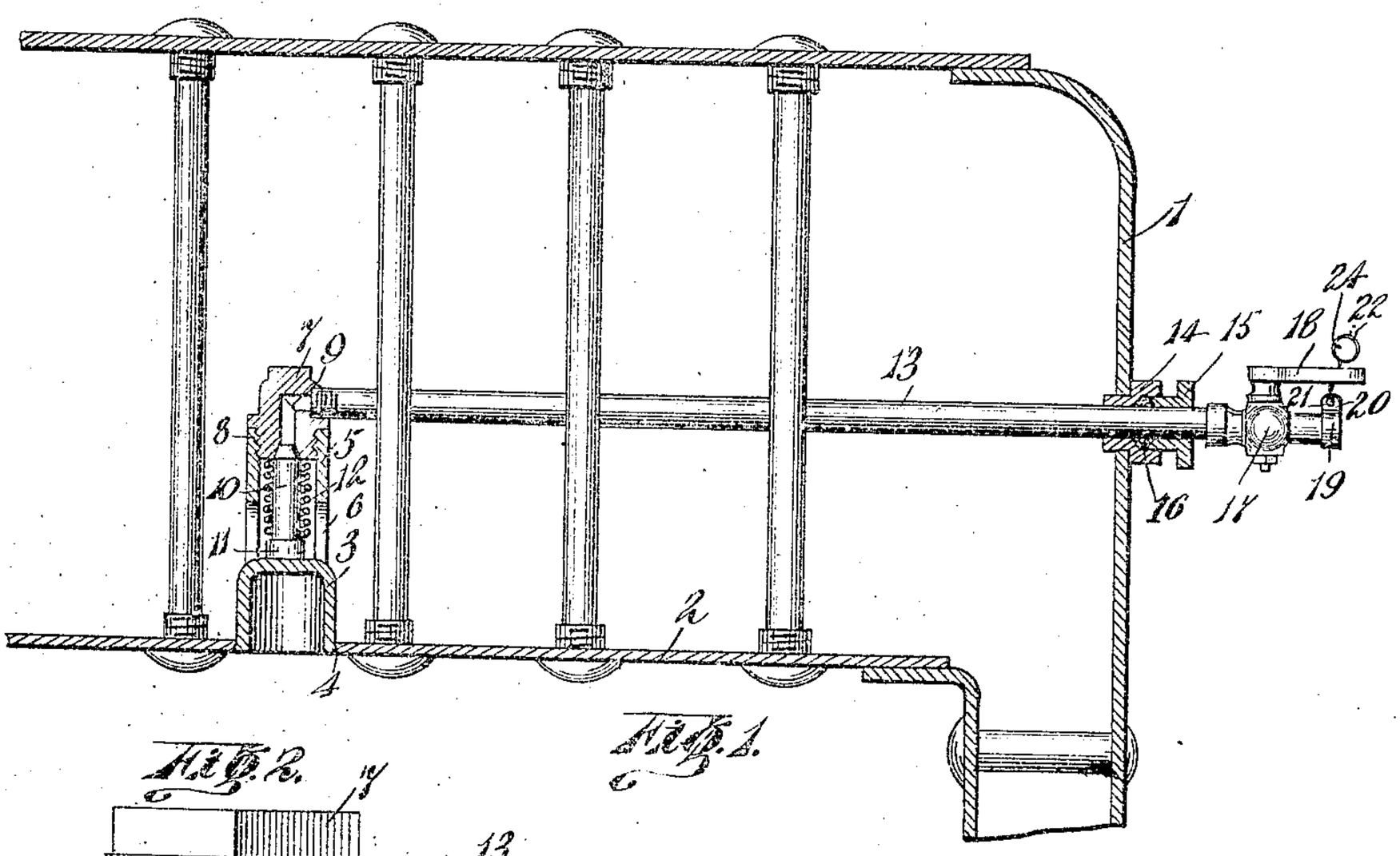

Fig. 1.

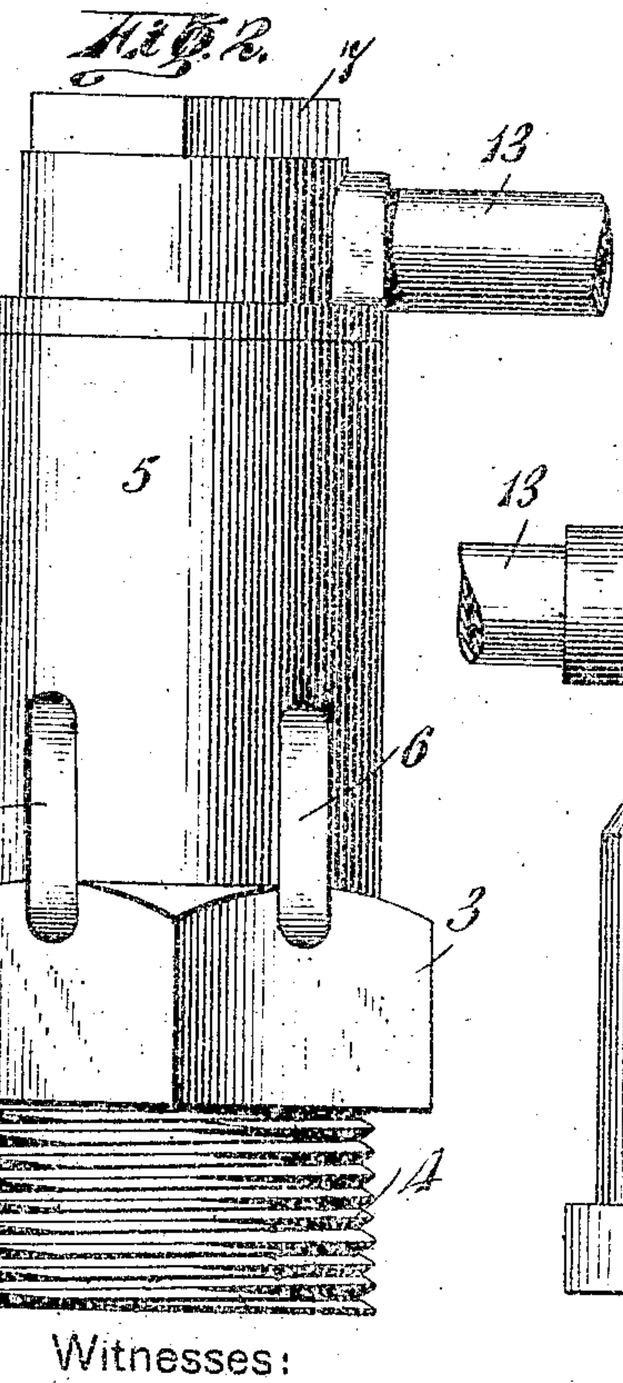

Fig. 2.

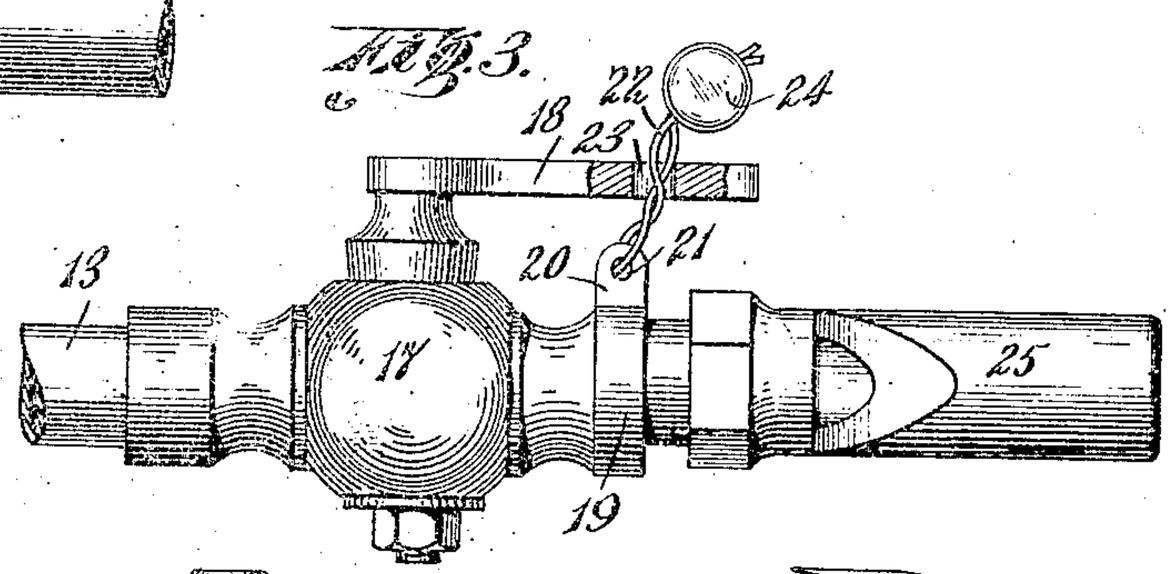

Fig. 3.

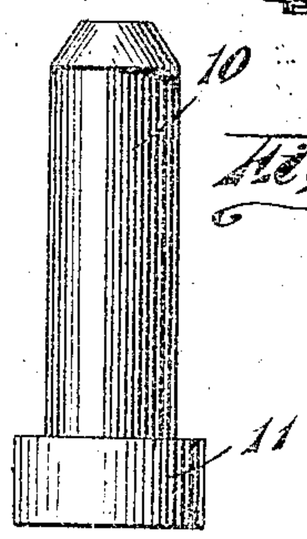

Fig. 4.

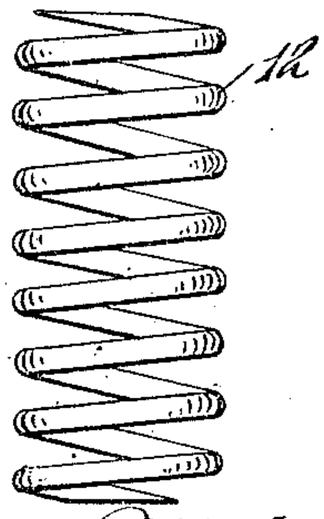

Fig. 5.

Witnesses:

Eugene M. Sinsey

C. L. Caruso

George Yeates,
Inventor

By Marion & Marion

Attorneys

UNITED STATES PATENT OFFICE.

GEORGE YEATES, OF MONTREAL, QUEBEC, CANADA.

LOW-WATER ALARM.

No. 879,508. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed April 16, 1906. Serial No. 312,051.

To all whom it may concern:

Be it known that I, GEORGE YEATES, a subject of the King of Great Britain, residing at the city and district of Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Low-Water Alarms and Detectors; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to low water alarms for steam boilers, particularly locomotive boilers; the object of my invention is to provide a device for giving an alarm when the water in a boiler is so low as to endanger the burning out of the crown sheet, and also for indicating to an inspector that the water has been dangerously low even after the water has been replenished; a further object is to provide an easily attached device, so constructed that when the water has become low, it may be replenished without dumping the fire; and my invention consists of the construction, combination and arrangement of parts, as herein illustrated, described, and claimed.

In the accompanying drawings, forming part of this application, I have illustrated one form of embodiment of my invention, in which drawings similar reference characters designate corresponding parts, and in which:

Figure 1 is a transverse vertical section through a portion of a boiler; Fig. 2 is a side elevation of a casing and stirrup forming part of my invention; Fig. 3 is a side elevation of an audible alarm mechanism, and a device for indicating that the alarm has been turned off; Fig. 4 is a side elevation of a fusible valve; and, Fig. 5 is a side elevation of a spring adapted to actuate the valve.

Referring to the drawings, 1 designates a boiler having a crown sheet 2. The crown sheet 2 is provided with a suitable opening, in which is disposed a fixed casing 3, having screw-threads 4 adapted to engage the wall of the opening in the crown sheet.

Disposed on or formed integral with the casing 3 is a stirrup 5, provided with openings 6, the object of which openings is to provide for the free movement of the water through the stirrup, so that scales will not be formed therein and retard the movement of the hereinafter described valve.

Carried by the upper end of the stirrup 5 is a plug 7, provided with screw-threads 8 adapted to engage the inner wall of the stirrup. The plug 7 is provided with a passage 9 therethrough, the lower end of which passage is normally closed by a valve 10, formed of any suitable fusible metal. The valve 10 is made of a length such that when it rests on the casing 3 the upper end thereof will completely close the passage 9, and the lower end of the valve is provided with an enlargement 11. Disposed around the valve is a spring 12, the upper end of which thrusts against the lower face of the plug 7, and the lower end of which thrusts against the enlargement 11.

The casing 3 and the stirrup 5 are so arranged at a distance from the crown sheet 2 that when the water in the boiler is so low as to endanger the crown sheet, the valve 10 will melt, and under the action of the spring 12 will be forced away from the opening 9 to permit the escape of steam through said passage.

Connected with the passage 9 is a pipe 13, which extends through the wall of the boiler 1, a suitable stuffing box 14, collar 15, and packing 16 being used to make a perfect joint.

The outer end of the pipe 13 is provided with a valve 17, normally open, adapted to be actuated by a handle 18. Disposed around the extreme outer end of the pipe 13 is a collar 19, provided with a projecting lug 20. Formed in the lug 20 is an opening 21, adapted to receive the flexible members 22 of wire, which flexible members are disposed through an opening 23 in the handle 18, and have affixed on their ends a seal 24 of compressible metal adapted to receive the imprint of an inspector's seal.

In connection with the pipe 13 beyond the valve 17 is a whistle 25, or other device adapted to give an audible alarm when steam escapes through the pipe 13.

The valve 10 having been withdrawn from the passage 9, as described, steam will escape through the pipe 13, and give an alarm by means of the member 25, until the handle 18 of the valve 17 is turned, thereby breaking the seal 24. This cuts off the escape of steam from the boiler, and the water therein may be replenished without renewing the valve 10. But the seal 24 having been broken, the inspector can readily see that the fireman in charge of the boiler has permitted the water to become dangerously low at some time.

In making the casing 3 and the plug 7

faced, I provide a construction which is readily attachable to an ordinary form of boiler.

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

1. In combination with a boiler, a stirrup, a screw-threaded opening in the crown sheet of said boiler, an extension on said stirrup provided with screw-threads adapted to engage the screw-threads of the aforesaid opening in the crown sheet and hold the stirrup in operative position, an interior screw-threaded portion in said stirrup, a plug, a screw-threaded extension on said plug adapted to engage the interior screw-threaded portion of the stirrup, a passage through said plug, a spring-pressed fusible valve removably mounted within said stirrup and adapted to normally close the passage in the plug and to establish communication between the interior of the boiler and the passage by being fused when the water in the boiler falls below the danger level, an alarm and a passage connecting the aforesaid passage in the plug and said alarm.

2. In combination with a boiler, a stirrup, a screw-threaded opening in the crown sheet of said boiler, an extension on said stirrup provided with screw-threads adapted to engage the screw-threads of the aforesaid opening in the crown sheet and hold the stirrup in operative position, an interior screw-threaded portion in said stirrup, a plug, a screw-threaded extension on said plug adapted to engage the interior screw-threaded portion of the stirrup, a passage through said plug, a spring-pressed fusible valve removably mounted within said stirrup and adapted to normally close the passage in the plug and to establish communication between the interior of the boiler and the passage by being fused when the water in the boiler falls below the danger level, an alarm, a passage connecting the aforesaid passage in the plug and said alarm and normally open, a valve controlling said connecting passage and normally inoperative and a seal on said valve to hold the same in inoperative position and to indicate when said valve has been turned to operative position.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

GEORGE YEATES.

Witnesses:
C. C. Cousins,
E. M. Sliney.