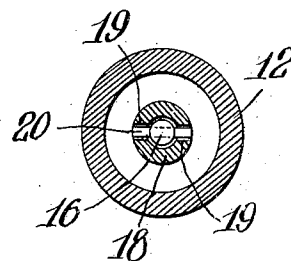
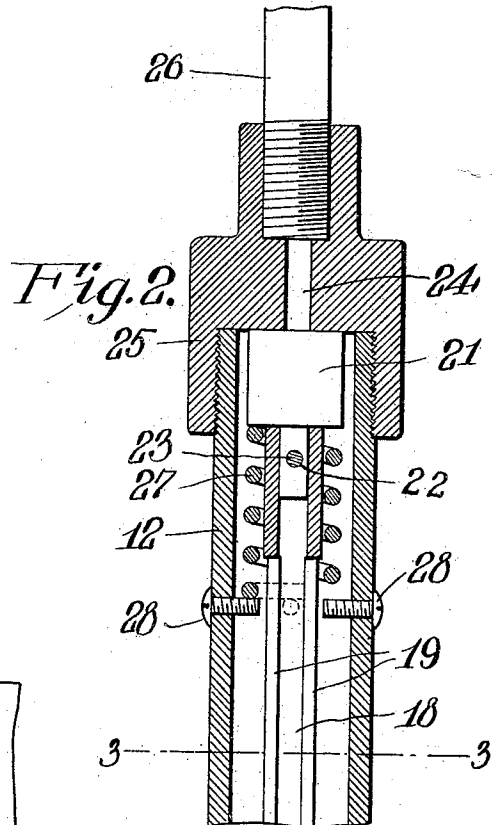
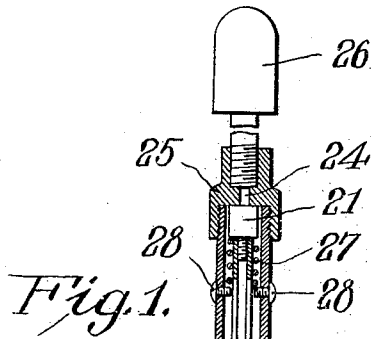


J. L. SETZER.
 LOW WATER SIGNAL FOR BOILERS.
 APPLICATION FILED DEC. 14, 1908.

940,202.

Patented Nov. 16, 1909.



Witnesses

C. E. Smith,
C. H. Griesbauer,

Inventor
John Leslie Setzer,
A. B. Wilson & Co.
 Attorneys

UNITED STATES PATENT OFFICE.

JOHN LESLIE SETZER, OF STANBERRY, MISSOURI.

LOW-WATER SIGNAL FOR BOILERS.

940,202.

Specification of Letters Patent. Patented Nov. 16, 1909.

Application filed December 14, 1908. Serial No. 467,430.

To all whom it may concern:

Be it known that I, JOHN LESLIE SETZER, a citizen of the United States, residing at Stanberry, in the county of Gentry and State of Missouri, have invented certain new and useful Improvements in Low-Water Signals for Steam-Boilers; and I do declare the following to be 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.

The object of the invention is to provide a device which may be constructed cheaply, which will operate efficiently, and which can at all times be relied upon to indicate the height of water in the boiler.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claim.

In the drawing, Figure 1 is a vertical section of the device shown as it is attached to the boiler; Fig. 2 is an enlarged detail sectional view of the whistle valve mechanism; and Fig. 3 is a horizontal section on line 3—3 of Fig. 2.

Referring more especially to the drawing, 1 represents an ordinary hot water boiler which it is desired to protect by the improved alarm mechanism described herein. This mechanism constitutes a cylinder 2 which is provided with closing caps 3 and 4 located at the ends of the cylinder. A suitable valve connection 5 is made between the lower portion of the boiler and the lower portion of the cylinder and a similar connection is made between the upper steam holding portion of the boiler and the channel 7 formed in the upper cap 3. A suitable pin valve 8 controls the water to the cylinder 2 through the channel 9 in the cap 4 and a pet-cock 10 is provided for draining the cylinder when necessary. The upper end of the cap 3 is provided with an interiorly threaded collar 11 into which a pipe section 12 is threaded so as to convey steam from the channel 7 to the whistle valve mechanism which is mounted in the upper end of the tube and which will be described herein-after.

Forming separate chambers 13 and 14 in the cylinder 2 for the water and steam, respectively, is a piston 15 whose piston rod 16

passes through a center opening 17 in the cap 3 and extends vertically into the pipe 12 where it is surrounded by a guiding member 18 having slots 19 formed on either side thereof to permit the passage of the pin 20. In the upper end of this guiding member is a valve plug 21 whose reduced end is apertured at 22 to receive the retaining pin 23 passing therethrough and secured to the member 18. The plug with its guiding member 18 is normally raised so that the former abuts against a valve seat 24 formed on the end of the apertured plug 25 threaded into the end of the tube 12 and thereby closes the exit of the steam to the whistle 26 which is secured in the upper end of the plug 25. The spring 27 which holds the plug upon its seat rests upon removable screws 28 threaded into the tube 12 and has its upper end in engagement with the shoulder formed on the other side of the valve plug 21. The two side members of the guiding member 18, as defined by the slots therein are connected at their lower end by a collar 29 adapted to be engaged by the pin 20.

The steam connection 6 being normally opened and the water connection 5 being also opened the piston is balanced between the water and steam and travels with the water as it increases in height or decreases in height in the boiler. When the pin 20 is traveling between the collar 29 and the plug 21 there is no action whatever of the valve mechanism but immediately upon the water becoming so low in the boiler as to cause the piston to drop sufficiently far for the pin 20 to engage the collar 29, the plug 21 will be pulled off its seat against the tension of the spring 27 and the steam will then have access from the boiler directly to the whistle through the plug 25. As soon as sufficient water has been supplied to the boiler to raise the piston so that the pin 20 releases its engagement with the collar 29, a spring 27 forces the plug 21 back against its seat and cuts off the steam from the whistle 26.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the

principle or sacrificing any of the advantages of this invention as defined in the appended claim.

Having thus described and ascertained the
5 nature of my invention, what I claim as new
and desire to secure by Letters-Patent, is:—

In a device of the class described, the combination with a boiler, of a cylinder having
steam and water connections with said boiler,
10 a piston traveling in the cylinder between
said connections, a piston rod thereon passing
through the cylinder, a supplemental
cylinder mounted on the first named cylinder
and having a steam inlet from said steam
15 connection, said supplemental cylinder being
adapted to receive the piston rod, a whistle
having an inlet port, a valve in said supple-

mental cylinder to control said port, a guiding
extension carried by the valve and surrounding
the piston rod, a spring to normally hold
said valve on its seat, and a pin on the piston
rod traveling in slots in the guiding extension
and adapted to engage and move the guiding
extension to release the valve in the extreme
lower movement of the piston.

In testimony whereof I have hereunto set
my hand in presence of two subscribing witnesses.

JOHN LESLIE SETZER.

Witnesses:

B. F. Ross,
G. W. Burt.