73 MEASURING AND TESTING
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No. 869,093. PATENTED OCT. 22, 1907.

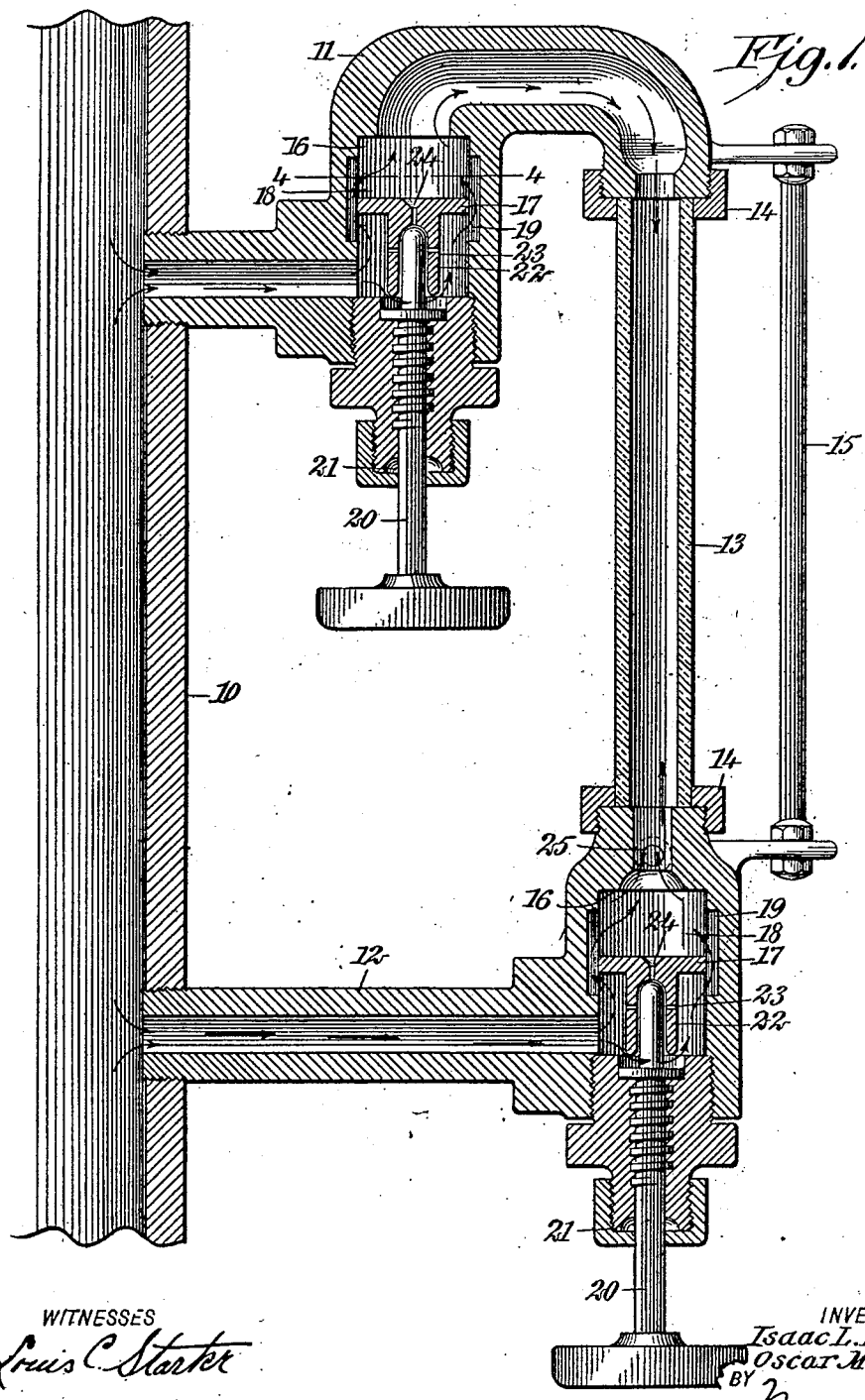
I. L. KISER & O. M. PRINCE.

SAFETY DEVICE FOR INDICATORS.

APPLICATION FILED JAN. 30, 1907.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES
Louis C. Starker
C. W. Fairbanks

INVENTORS
Isaac L. Kiser
Oscar M. Prince
BY Munn & Co
ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 2.

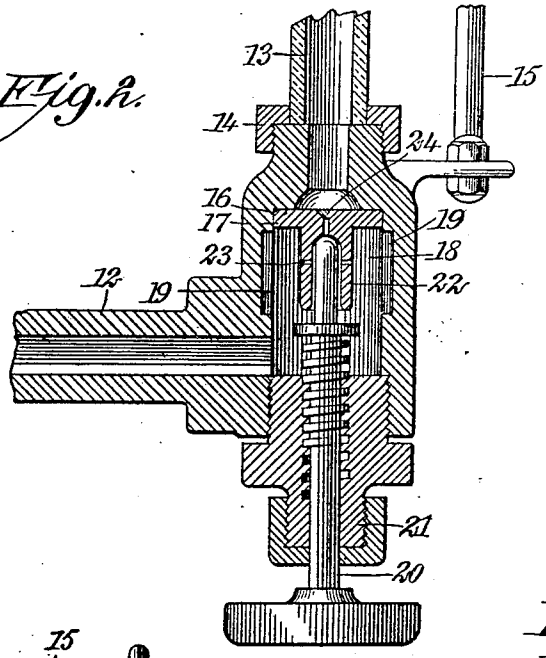


Fig. 3.

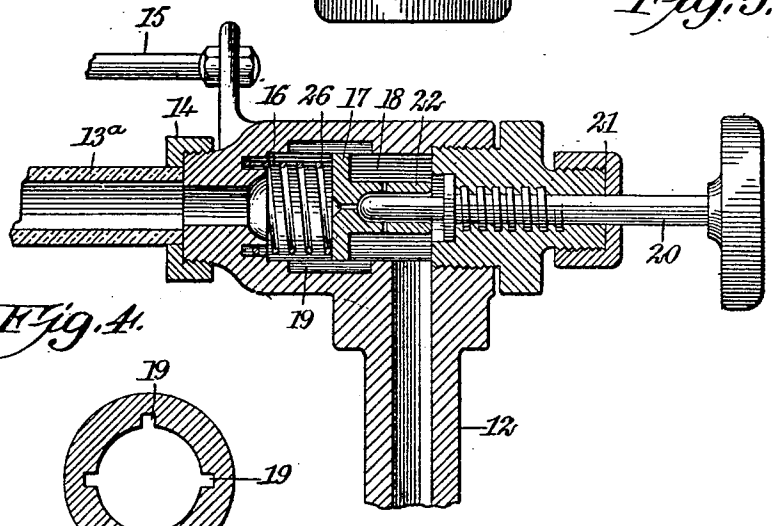
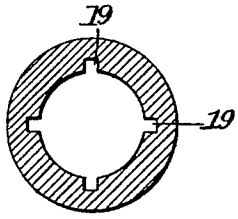


Fig. 4.



WITNESSES
Louis C. Stiehl
C. W. Fairbank

INVENTORS
Isaac L. Kiser
Oscar M. Prince
BY Munn & Co
ATTORNEYS

UNITED STATES PATENT OFFICE.

ISAAC L. KISER AND OSCAR M. PRINCE, OF ST. CHARLES, MISSOURI.

SAFETY DEVICE FOR INDICATORS.

No. 869,093. Specification of Letters Patent. Patented Oct. 22, 1907.

Application filed January 30, 1907. Serial No. 354,861.

To all whom it may concern:

Be it known that we, ISAAC L. KISER and OSCAR M. PRINCE, both citizens of the United States, and residents of St. Charles, in the county of St. Charles and State of Missouri, have invented a new and Improved Safety Device for Indicators, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in means for preventing the escape of steam and water from a boiler in case the glass of the level indicator should be become broken, and, at the same time, serving to indicate the fact that the glass is broken.

The invention consists in certain features of construction and combination of parts, all of which will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, in which

Figure 1 is a vertical section through one form of our improved device; Fig. 2 is a fragmentary section similar to Fig. 1, but showing the valve in its closed position; Fig. 3 is a section similar to Fig. 2, but showing a slightly modified form of construction; and Fig. 4 is a transverse section on the line 4—4 of Fig. 1.

Our improved device is adapted to be used in connection with any level indicating gage, and is particularly adapted for use in connection with steam boilers. In the drawings it is illustrated as being attached to a boiler 10, and comprising two heads 11 and 12 screw-threaded or otherwise secured to the boiler and supporting the glass indicating tube 13. The tube may be secured to the heads in any suitable manner, as, for instance, by couplings 14, and the heads adjacent the ends of the tube may be spaced the required distance apart and held rigid by means of a connecting bar 15.

Within each head there is provided a downwardly facing valve seat 16 adapted to be closed by a vertically movable valve 17. To permit the steam and water to pass said valve, the inner wall of the chamber may be provided with grooves 19 as more clearly indicated in Fig. 4. The valve is normally supported upon a valve stem 20 extending out through any suitable form of packing 21 and having screw-threaded connection with the packing box, whereby the valve may be raised to its closed position. The valve is entirely separate from the valve stem and preferably carries a sleeve 22 inclosing the end of the valve stem and slidable in relation thereto. This sleeve 22 is provided with perforations 23 communicating with the chamber within the sleeve, and this chamber communicates with the steam or water passage above the valve by a small perforation 24.

In the normal operation of the device, the parts rest in the position illustrated in Fig. 1, and as there is no great fluctuation in the level of the liquid within the tube, the flow of liquid or gas past the valves 17 is very slow. The grooves 19 readily permit of this passage, and so long as the indicating tube 13 and its connection to the heads 11 and 12 remain intact, there is no movement of the valve. Should the tube 13 become broken the high pressure within the boiler would cause a rush of steam and water through the heads 11 and 12 and out into the atmosphere through the broken tube. The great increase in the flow past the valves 17 and 18 will raise these valves against their seats and immediately shut off the main portion of the escaping fluids.

In order that the presence of the broken tube may be indicated at once to the engineer, we have provided the openings 23 and 24, whereby the steam may slowly escape through the valves until the engineer raises the valve stem 20 so that their inner ends close the openings 24 as indicated in Fig. 2. Further escape of the fluids within the boiler is now effectively prevented, and the broken tube may be removed and a new one inserted in place thereof. As soon as the new tube is ready for operation, the engineer screws the valve stem downward until the small leak ports 23 and 24 are uncovered, and the steam slowly escapes through these ports until the pressure within the tube is raised to substantially that within the boiler, and the valves drop to the positions indicated in Fig. 1.

In order to prevent the collection of sediment around the valves and to insure the free movement thereof, we preferably provide a small drain or pet-cock 25 in one or both of the heads between the valves and the indicating gage. Upon opening this valve occasionally the efficiency of the valves may be tested and all sediment blown off.

In case it is desired to employ our improved steam trap in connection with a horizontal tube 13ª as indicated in Fig. 3, or in case it is not convenient to so arrange the valve 18 that it may drop by gravity when the pressures on the opposite sides thereof are equal, we may provide a small coil spring 26 of a strength barely sufficient to move the valve away from its seat when there is no difference in pressure upon the opposite sides thereof.

Our improved device may be used not only with steam boilers to accomplish the results above set forth, but may be used in connection with any receptacle or container employing an indicating gage and in which the fluids contained within said vessel or receptacle are held at a pressure greater than that of the atmosphere.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. In a device of the class described, a valve casing having a valve seat, a valve having a body portion, a guiding sleeve carried thereby, said body portion having a perfora-

tion therethrough communicating with the interior of the sleeve, and a valve stem unattached to said valve and extending into said sleeve and adapted to prevent the passage of fluid through said perforation.

2. A device of the class described, comprising a valve casing having a valve seat, a valve supported adjacent thereto and having a perforation therethrough and a perforated guiding sleeve, and a valve stem extending within said sleeve and adapted to prevent the passage of a fluid through the first mentioned perforation.

3. A device of the class described, comprising a valve casing, a valve located therein, said valve having a perforation therethrough and a depending perforated guiding sleeve having the interior thereof communicating with said first mentioned perforation, and a valve stem unattached to said valve but extending into said sleeve, whereby the movements of the valve may be guided and the passage of fluid through the first mentioned perforation controlled.

4. A device of the class described, comprising a receptacle for fluids under pressure, an indicating tube, heads supporting said tube and connecting the interior thereof to said receptacle, a valve seat and a valve chamber within each head, a valve vertically movable within said valve chamber and having a perforation therein and a perforated guiding sleeve surrounding the first mentioned perforation, and a vertically movable valve stem extending within said sleeve and adapted to control the flow of fluid through the first mentioned perforation.

5. A device of the class described, comprising a valve casing having a cylindrical valve chamber and grooves in the inner wall of said chamber, a cylindrical valve movable within said chamber, and a valve stem normally supporting said valve but unattached thereto, whereby fluids may normally pass said valve through said grooves, but whereby the valve is closed against its seat when an excessive difference in pressure occurs upon opposite sides of said valve.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ISAAC L. KISER.
OSCAR M. PRINCE.

Witnesses:
J. H. HETTINGER,
A. H. MEIER.