

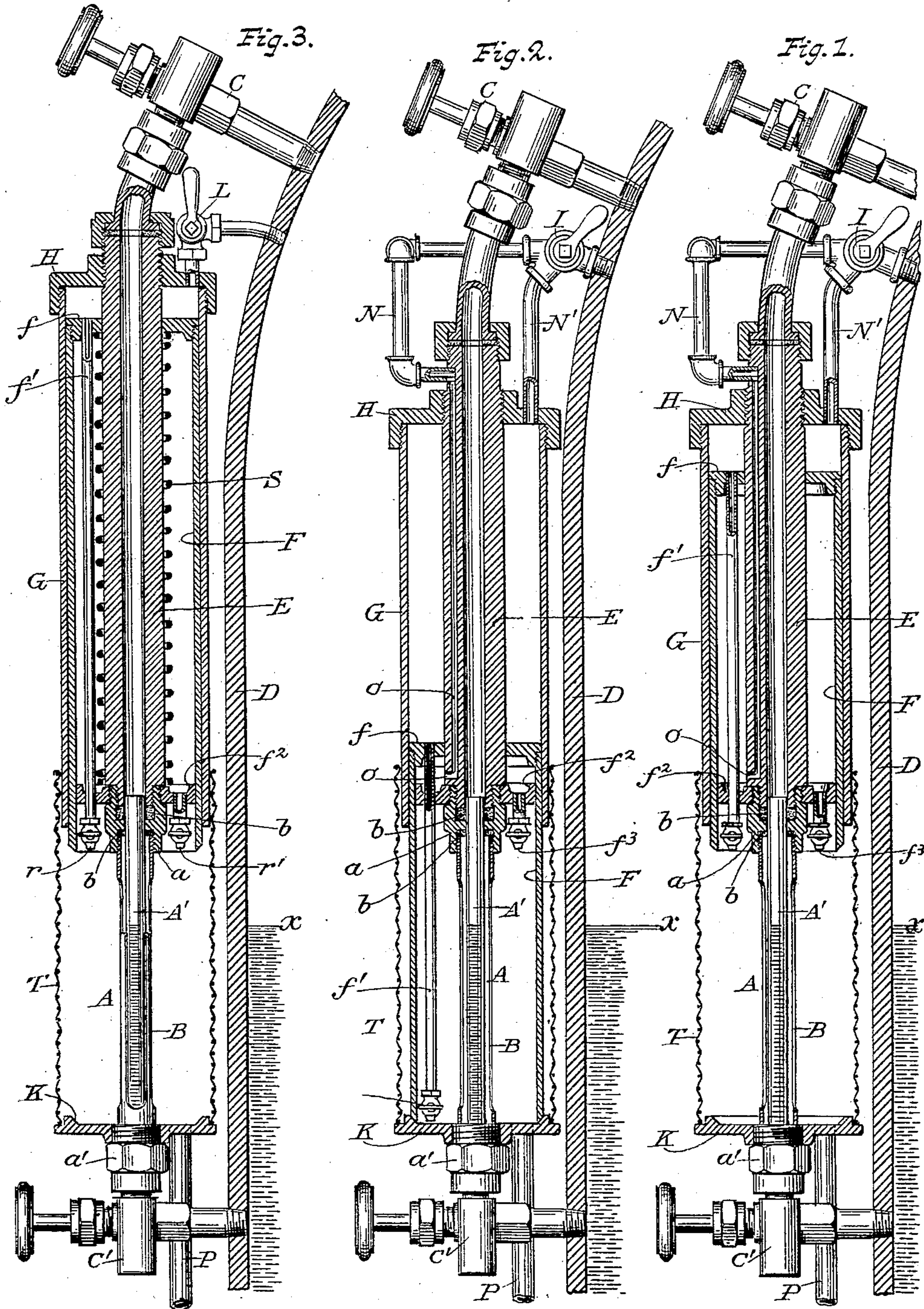
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PATENTED AUG. 13, 1907.

T. M. WARNER.

SAFETY DEVICE AND GUARD FOR WATER GLASSES AND SIGHT LUBRICATORS.

APPLICATION FILED DEC. 13, 1906.



Witnesses.

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UNITED STATES PATENT OFFICE.

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SAFETY DEVICE AND GUARD FOR WATER-GLASSES AND SIGHT-LUBRICATORS.

No. 863,010.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed December 13, 1906. Serial No. 347,599.

To all whom it may concern:

Be it known that THEODORE M. WARNER, a citizen of the United States, residing at the city of Albany, in the county of Albany and State of New York, has
5 invented certain new and useful Improvements in Safety Devices and Guards for Water-Glasses and Sight-Lubricators, of which the following is a specification.

My invention relates to safety devices and guards
10 for water glasses and sight lubricators, on steam boilers, and the objects of my invention are to protect the glasses from being broken and when broken from any cause to prevent the hot water or steam from escaping until the pressure can be removed, and new
15 glasses substituted for the broken ones.

I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which:

Figure 1 is a longitudinal section of a water gage applied to a steam boiler, together with my improvements shown in their normal position. Fig. 2 is a longitudinal section of the same, showing the parts of my invention in position to protect the glass or prevent the escape of hot water or steam in case the glass tube is broken. Fig. 3 is a longitudinal section
20 of a water gage having attached to it a modified form of my invention.

Similar letters refer to similar parts throughout the several views.

It is well known that the water in the water-glass
30 or gage of a steam boiler is subjected to the pressure of the steam in the boilers, there being a direct connection between the two. When a water-glass is broken from any cause, the steam in the boiler forces hot water and steam through the pipe connecting the
35 water-glass with the interior of the boiler, and the hot water and steam rushing out through the opening renders it difficult and dangerous to close the valve in the connecting pipe to shut off the steam or hot water. The same is true to a more or less degree as to
40 the sight lubricator. One object of my invention is to overcome these difficulties.

In the drawings A is the usual water gage consisting of a glass tube, A', held in position at top and bottom by coupling nuts, a, a', and surrounded by the slitted
45 tube, B, and made steam tight by rubber packing rings, b, b, in the usual way, and provided with stop valves, C, C', communicating with the boiler, D.

X represents the water line in boiler and gage.

E is a tubular sleeve, its upper end coupled with
50 a stop valve, C, communicating with the boiler, and its lower end connected with the upper end of the water gage by coupling nut a; thus forming through stop valve C' an opening throughout with equalized boiler pressure where normal conditions prevail.

55 F is a sliding tubular jacket working smoothly on the tubular sleeve E, and is provided in its head, f,

with a drip pipe and cock, f'. A guiding flange, f², is secured to the upper end of coupling nut, a, and is of same diameter as the inside diameter of jacket F. This is also provided with drip cock, f³. 60

An outside cylindrical jacket, G, in which works the sliding jacket, F, is rigidly secured to the upper end of sleeve E by the head, H. A port, O, is provided in sleeve, E. The pipes, N and N', and the three-way cock, I, having an opening to the atmosphere, are attached to the sleeve E and head H respectively as shown. 65

My invention is operated as follows:—When a break occurs in the gage glass, A', the operator opens the three-way cock, I, into pipe N' and the boiler pressure
70 is exerted on the head, f, of sliding jacket, F, driving it down to the seat on flange, K, at lower end of water gage, as shown in Fig. 2, completely surrounding the fracture and preventing the escaping steam or hot water injuring persons or damaging property. While
75 the jacket, F, is held in its seat, the operator will close stop valves, C and C'. This will remove the boiler pressure from the water gage. The operator will then open the three-way cock, I, into pipe N when boiler pressure will be exerted through port, O, in sleeve E
80 under the head, f, of sliding sleeve F, and drive it back to its normal position, shown in Fig. 1. Then the broken glass may be removed and a new tube substituted in the usual manner.

The sliding jacket, F, is usually held in position by
85 friction, but when used on locomotives or where it is subjected to a jarring motion a coiled spring, as S in Fig. 3, may be used to keep it in position.

I reserve the right to file a separate application for a patent on the form of my invention shown in Fig.
90 3 in which the sliding sleeve F is shown to be returned and held in normal position by the spiral spring S. In operating this form, the cock, L, when properly turned will introduce steam pressure on the head f of jacket F, and seating it same as in Fig. 2.
95 Then the upper and lower stop valves are closed and boiler pressure removed from the fractured gage-glass. The cock L is now closed, and the partial vacuum created by the condensing steam inside the outer jacket G will partly raise the sliding jacket, F; and
100 opening the pet cocks, r, r', will furnish vent to the interiors of both cylinders, and the spiral spring S will move the jacket F up to its normal position, when the gage glass may be renewed in the usual manner. An exhaust pipe, P, is attached to and leads from the
105 seating flange, K, secured to the upper end of coupling nut, a', and carries away the steam from the chamber, produced by the seating of the sliding jacket, F, to any convenient place. In the case of a locomotive it would lead down through the floor of the cab. This
110 vent pipe prevents danger from scalding, or other danger, before stop valves, C, C', are closed.

The pipes may be so arranged that the cocks I and L will be in such part of the boiler room or so located on the boiler that it may be readily reached and turned without exposing the operator to danger from the steam or hot water in case the glass is broken.

T is a wire gage sleeve, surrounding the water-glass and resting upon the seating flange, K. The wire gage sleeve, T, is thin, so the height of the water in the glass can be easily read and operates somewhat as a guard to protect the water-glass and also to prevent flying glass from doing damage in case of accident. In renewing the glass the guard, T, is pushed up on the outer cylinder and is frictionally held after which it is again pushed down to place.

In case the boiler is about to be exposed to unusual treatment, endangering the glasses, the sliding sleeves, F, may be temporarily let down over the glass and raised again when the danger is passed.

What I claim as my invention and desire to secure by Letters Patent is:

1. A safety device and guard for a water-glass upon a steam boiler, consisting of a tubular sliding jacket adapted to slide over and completely surround the water-glass; in combination with means for utilizing the steam pressure from the boiler for forcing said sliding jacket over and from the water-glass by pressure from the steam in the boiler, substantially as described.

2. A guard for the water-glass of a steam boiler, consisting of a water-glass, pipes connecting each end of the same with the interior of the boiler; in combination with a stationary jacket surrounding the pipe connecting one end of the water-glass with the boiler; a sliding jacket adapted to slide from within said stationary jacket, over and com-

pletely surround the water glass; said jackets forming two chambers one within the walls of the stationary jacket between the outside of the head of the sliding jacket and the inside of the head of the stationary jacket and the other chamber formed by the walls of the sliding jacket between the inside of the head of the sliding jacket and the inside of the opposite head of the stationary jacket; said chambers being each adapted to receive pressure from the steam of said boiler, whereby said sliding jacket may be forced over and from the water-glass, substantially as described and for the purposes set forth.

3. A guard to a water-glass for a steam boiler, consisting of a cylindrical glass tube in the usual form; pipes connecting both ends of said water glass with the interior of the boiler; an outside stationary jacket having a head in each end surrounding the pipe at one end of the glass; a sliding jacket having a head in each end adapted to slide from within the said outside jacket over the glass; said outside jacket having a chamber between the exterior of the head of the sliding jacket and the interior of the head of the outside jacket; a pipe leading from said chamber to the interior of the boiler, whereby steam may be admitted from said boiler into said chamber, thereby forcing the sliding jacket over said glass; means for allowing the steam to escape from said chamber; said sliding jacket having a second chamber between the interior of its head and the interior of the opposite head of the outside jacket; a pipe leading from said chamber to the interior of the boiler, whereby steam may be admitted from said boiler into said chamber, thereby forcing the sliding jacket back into place from over said glass, substantially as described and for the purposes set forth.

In testimony whereof he has affixed his signature in presence of two witnesses.

THEODORE M. WARNER.

Witnesses:

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