G. E. E. DEGEORGIS.

MEANS FOR PROTECTING WATER GAGE TUBES OF STEAM BOILERS.

APPLICATION FILED MAY 20, 1909.

1,014,456.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

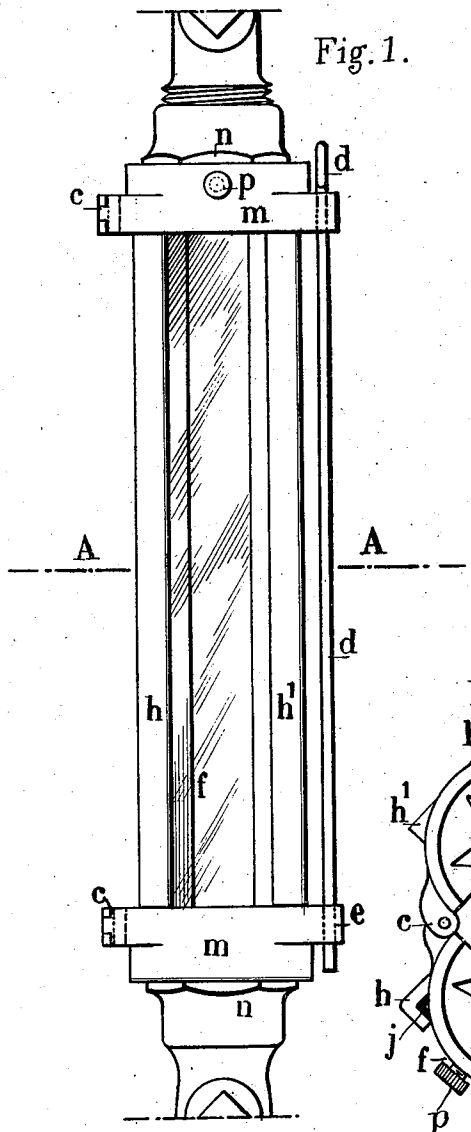


Fig. 2.

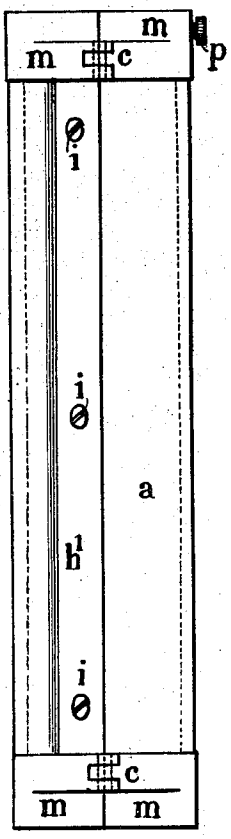


Fig. 4.

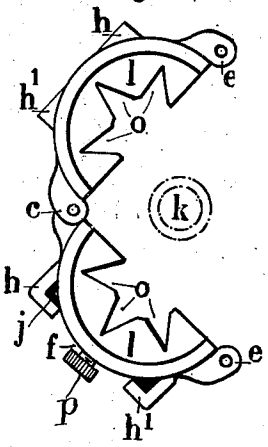


Fig. 3.

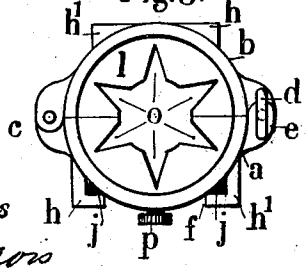
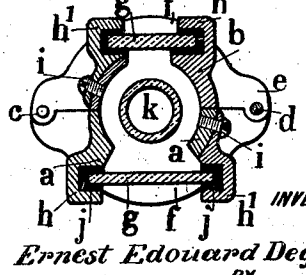


Fig. 5.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 6.

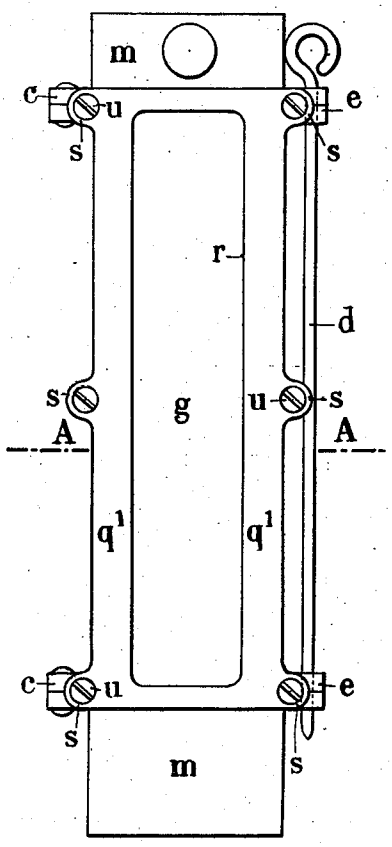


Fig. 7.

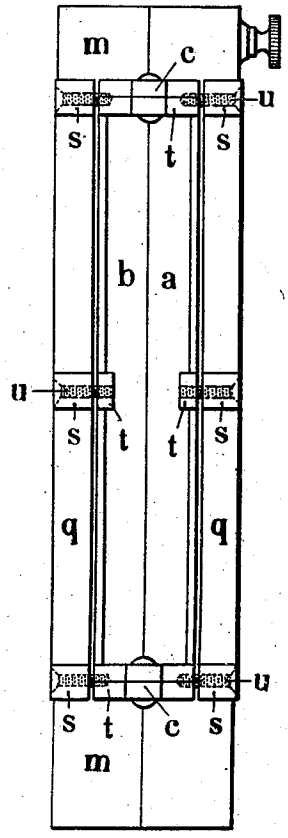


Fig. 8.

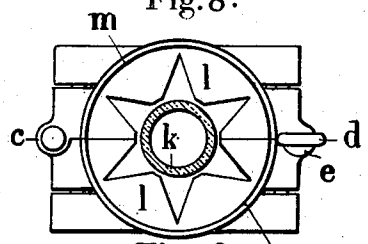


Fig. 10.

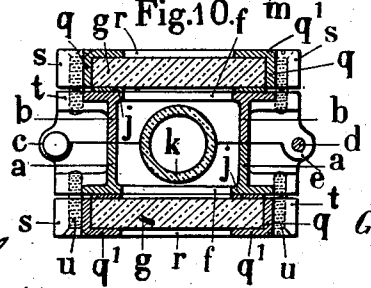
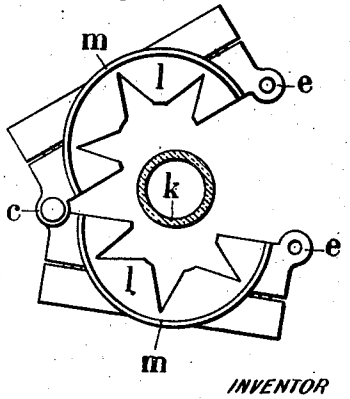


Fig. 9.



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MEANS FOR PROTECTING WATER-GAGE TUBES OF STEAM-BOILERS.

1,014,456. Specification of Letters Patent. Patented Jan. 9, 1912.

Application filed May 20, 1909. Serial No. 497,228.

To all whom it may concern:

Be it known that I, GASTON ERNEST EDOUARD DEGEORGIS, of 11 Rue Pinel, St.-Denis, Seine, Republic of France, engineer, have invented Improved Means for Protecting Water-Gage Tubes of Steam-Boilers, of which the following is a full, clear, and exact description.

Owing to the fact that the water gages of steam boilers consist of a glass tube in communication with the boiler, serious accidents are apt to occur in consequence of the internal pressure bursting the tube and violently projecting the fragments of glass along with the steam and boiling water into the atmosphere. Many attempts have been made to guard against this danger but none have so far proved satisfactory. For example, it has been proposed to inclose the tube in a second tube also made of glass. But the result of this is that the bursting of the inner tube tends to bring about the shattering of the protective tube so that the number of fragments of glass which are scattered in the air is considerably greater than would be the case were the tube unprotected.

The present invention enables this defect to be overcome, and it consists of a gage glass protector adapted to absolutely prevent the projection of the glass debris into the air should the bursting of the water gage tube take place.

The protector of this invention consists of a metal envelop made in two parts hinged together and capable of being secured in the closed position by means of a pin, and provided with two windows in front of which are placed strips of glass each secured either by laterally grooved members or by a metal plate suitably cut out and provided with ledges; the tightness between the strips of glass and the metal envelop is insured by an elastic seating. The said envelop carries at each of its extremities a clamping collar, one of which collars is provided with notches or indentations arranged in the form of a star to permit of the escape of steam in a determined direction should the gage glass burst.

The invention is illustrated in the accompanying drawings wherein—

Figure 1 is a front view of the protector applied to a gage glass, and Fig. 2 is a side view thereof. Figs. 3 and 4 show in plan the protector in its closed and open conditions respectively. Fig. 5 is a cross section on line A—A of Fig. 1. Figs. 6 to 10 show a modification of the protector.

As will be seen from the drawings, Figs. 1 to 5, the protector consists of an envelop of metal (preferably bronze) divided vertically into two similar members *a* and *b* secured together by hinges *c* so that the protector may be opened and placed in position on the water gage tube. The two members *a* and *b* of this metal envelop are held closed by a pin *d* which passes through lugs *e* suitably arranged on the edges of the two members *a* and *b*. Each of these members is provided with an aperture *f* exposing the tube to view. These two apertures, as will be seen, are closed by strips of glass *g*, the edges of which engage in grooved portions *h* and h^1 in the members at each side of the openings. In order that the strips of glass *g* may be easily placed in position the grooved portions h^1 are removable and are attached to the respective fixed portions *a* and *b* of the metal envelop by screws *i*. A seating of indiarubber *j* is introduced into each groove and serves to fix the strips of glass *g* in place and cushion any shock of the strips against the metal surfaces which otherwise, in the event of rupture of the glass tube *k*, might bring about the fracture of the glass strips. The metal protector thus arranged carries at each of its extremities a collar *l* which surrounds the tube *k*. Each collar is furnished exteriorly with a shoulder *m* having a recess in which is in part lodged one of the nuts *n* which hold the tube *k*. One of the collars *l* around its inner surface is furnished with indentations *o*. When the protector is in place the extremities of the indentations *o* extend beyond the edge of the nut *n* so as to permit the escape of steam in a determined direction in the event of the tube *k* being broken. By this means the pressure which the steam exerts upon the strips *g* of glass is diminished, and the fracture of the strips is prevented. A set screw *p* on one of the shoulders *m* permits of the device being fixed in the desired position.

Figs. 6 to 10 of the drawings show a modification of the apparatus. In this modification, the glass plates *g* instead of being held laterally by the grooved members *h* and h^1 are each inserted between the ledges *g* of a metal plate g^1 cut out so as to present

an opening r adapted to come opposite one of the apertures f of the metal envelop of the protector. The metal plate g^1 thus arranged is provided laterally with six lugs s which can come above lugs t formed on the parts a and b of the metal envelop. These lugs s and t are provided with tapped openings in which can be inserted screws u. It will be clear that if a seating of indiarubber is placed between the strip of glass g and the metal envelop, the said seating will form an absolutely tight-joint by reason of the clamping of the plate g^1 by the screws u.

It will be seen from the foregoing that the protector of my invention prevents the projection of the fragments of the glass tube into the atmosphere should the tube burst, the protector being almost entirely made of metal while the thickness of the glass strips g is such as to afford the necessary resistance to the boiler pressure. Furthermore, the construction of the protector enables it to be adjusted in place with the greatest ease so that the glass strips g and the tube k may be maintained in proper relative position, this being necessary in order to allow of the level of the water in the tube k being seen.

Claims:

1. A protector for water gages of steam boilers, comprising a metal envelop formed of two members hinged together and each provided with an opening, means for holding the members closed, a frame detachably secured to each member over the opening thereof, and a glass carried by each frame.

2. A protector for water gages of steam boilers comprising a metal envelop divided vertically into two equal parts hinged together, a pin for holding the parts closed, a window provided in each of the parts of the envelop, a thick plate of glass placed opposite each window, an apertured metal plate placed over the glass, screws for securing the apertured plate on the metal envelop, and a seating of indiarubber placed between this envelop and the plate of glass.

The foregoing specification of my improved means for protecting water gage tubes of steam boilers signed by me this eleventh day of May 1909.

GASTON ERNEST EDOUARD DEGEORGIS.

Witnesses:
H. C. Coxe,
R. Ehiriot.