V. HANSEN.

BOILER SAFETY TUBE.

APPLICATION FILED DEC. 3, 1918.

1,301,692.

Patented Apr. 22, 1919.

Fig. 1.

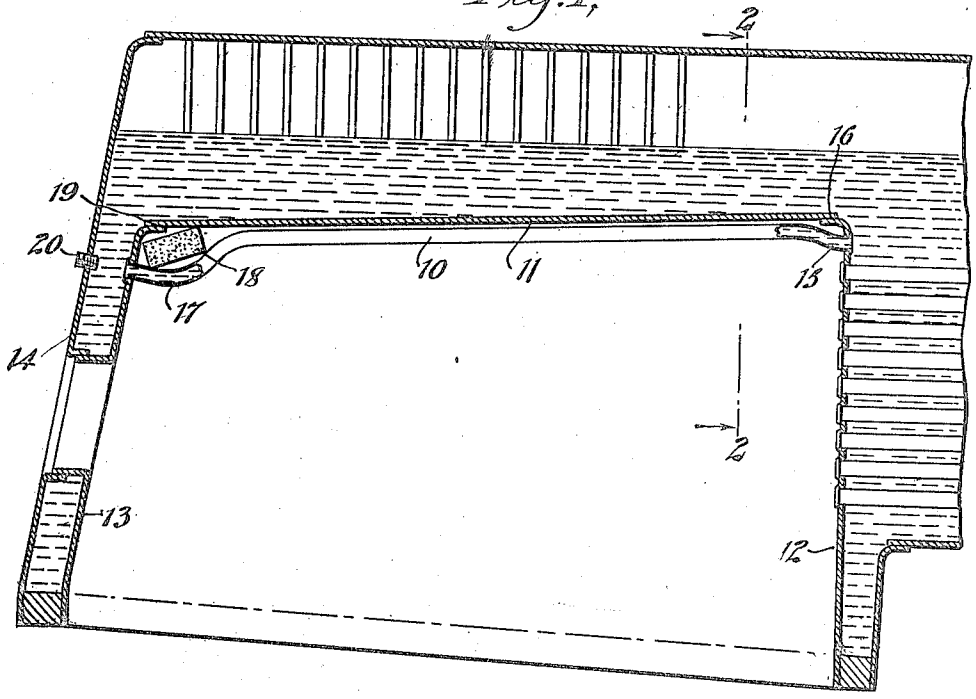
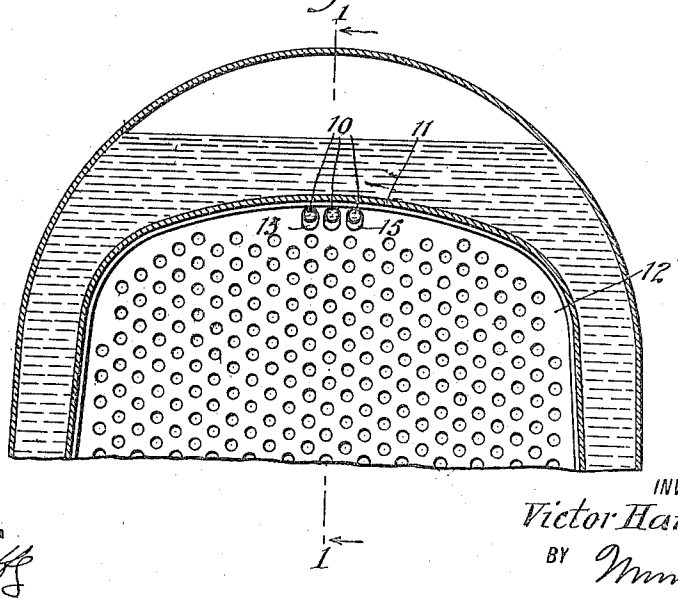



Fig. 2.




WITNESSES

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# UNITED STATES PATENT OFFICE.

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## BOILER SAFETY-TUBE.

1,301,692. Specification of Letters Patent. Patented Apr. 22, 1919.

Application filed December 3, 1918. Serial No. 265,130.

*To all whom it may concern:*

Be it known that I, VICTOR HANSEN, a citizen of the United States, and a resident of Wallace, in the county of Shoshone and State of Idaho, have invented a new and Improved Boiler Safety-Tube, of which the following is a description.

My invention is more particularly intended for use in steam boilers of the fire-box type, and has for its general object to provide a simple and effective means to prevent collapsing of the crown sheet with the resulting explosion of the boiler in case of low water in the latter.

The stated object is attained by a tube extending longitudinally in the fire box adjacent to the crown sheet and having comparatively thin walls so that in the case of low water in the boiler, said tube will be the first to become overheated and collapse, thereby permitting water and steam to escape and extinguish the fire in the fire box.

Reference is to be had to the accompanying drawing, forming part of this specification, it being understood that the drawing is merely illustrative of one example of the invention.

Figure 1 is a longitudinal vertical section of a portion of a steam boiler equipped with one embodiment of my invention;

Fig. 2 is a transverse vertical section on the line 2—2, Fig. 1.

In carrying out my invention in accordance with the illustrated example, I provide a tube or tubes 10 disposed longitudinally in the fire box of the boiler directly beneath the crown sheet 11, said tube being formed generally similarly to an ordinary boiler flue and applied at one end to the flue sheet 12 after the manner of securing a boiler flue, the tubes 10 at the opposite end being passed through and secured to the door sheet 13, there being a plug 20 in the back head 14 of the boiler in line with the adjacent end of the tube 10 to afford access to the latter.

A band 15 is formed in the tube 10 to clear the joint 16 between the crown sheet and the flue sheet and similarly at the opposite end a larger bend 17 is formed in each tube 10 to provide flexibility in the tube and to aid the water circulation, the bend 17 particularly in the case of several tubes being employed affording ample support for a brick or bricks indicated at 18 for protecting the seam 19 between the crown sheet and the door sheet 13, this arrangement being particularly desirable in the fire boxes of oil-burning locomotives where excessive heat strikes the rivet joint between the crown sheet and door sheet. The use of one or more tubes will be determined largely by the type of boiler; for example, in the radial stayed type, one tube will suffice, whereas in other types with flat crown sheets two or more tubes may be advantageously used.

The exposed position of the safety tube 10, its elongated form, and the lesser strength of its walls as compared with the boiler sheets 11, 12 and 13 will cause the collapse of said tube should the water level fall below the tube, whereby water and steam from the boiler will escape through the collapsed tube and extinguish the fire.

I would state in conclusion that while the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the mechanical details herein illustrated, since manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

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

1. In a steam boiler having a fire box, a safety tube disposed longitudinally in the fire box of the boiler adjacent to the crown sheet, and extending at its ends through the flue sheet and door sheet of the boiler to communicate at both its ends with the water space of the boiler, said tube being formed with downwardly disposed offset ends adjacent to the seams joining the crown sheet respectively with the said flue sheet and door sheet.

2. In a steam boiler having a fire box, a safety tube disposed longitudinally in the fire box of the boiler adjacent to the crown sheet, and extending at its ends through the flue sheet and door sheet of the boiler to communicate at both its ends with the water space of the boiler, that end of said safety tube adjacent to the flue sheet being offset to clear the seam between said flue sheet and the crown sheet, and the opposite and having a downward bend of greater extent than at the first-mentioned end and adapted to accommodate a protecting brick between said safety tube and the seam formed by the crown sheet and door sheet.

3. In a steam boiler having a fire box, a safety tube disposed longitudinally in the fire box of the boiler adjacent to the crown sheet, and extending at its ends through the flue sheet and door sheet of the boiler to communicate at both its ends with the water space of the boiler, said tube having a strength inferior to that of the sheets and walls of the boiler to have a greater tendency to be disrupted upon the water level falling below said tube.

VICTOR HANSEN.

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**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**