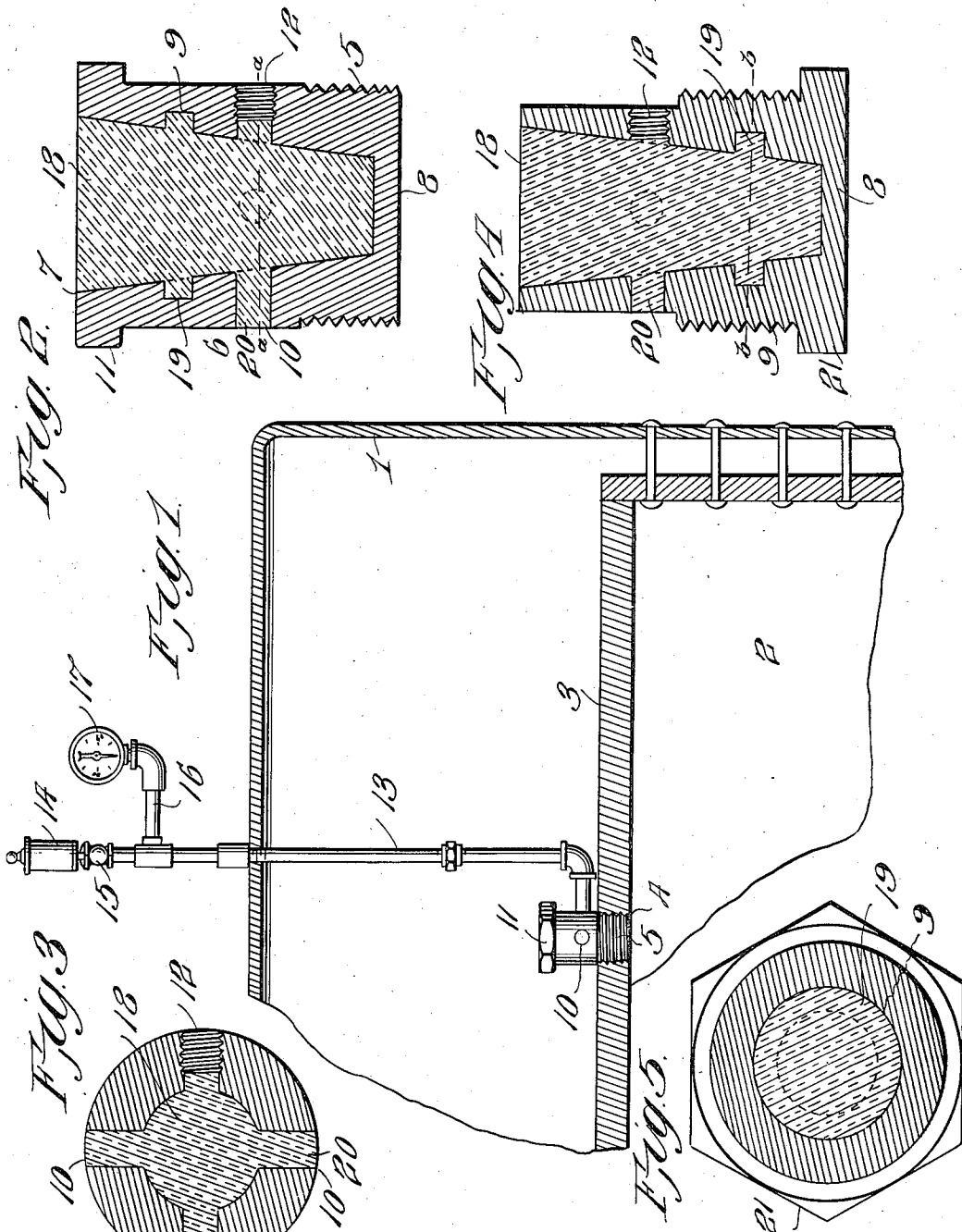


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BOILER PLUG.
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Patented Dec. 21, 1909.



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BOILER-PLUG.

944,205.

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To all whom it may concern:

Be it known that I, CHARLES L. McVOY, a citizen of the United States, residing at Pensacola, in the county of Escambia and State of Florida, have invented new and useful Improvements in Boiler-Plugs, of which the following is a specification.

This invention is an improved fusible plug for steam boilers to protect steam boilers from overheating.

One object of my invention is to effect improvements in the construction of the plug whereby when the fusible core is melted water is prevented from escaping from the boiler.

A further object of the invention is to effect improvements in the construction of the plug whereby the fusible core is prevented from being blown out by pressure.

A further object is to combine with a plug having a fusible core, a whistle or other signaling device which is operated when the core becomes fused in the plug, so as to sound an alarm.

The invention consists in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is a cross sectional view of a portion of a steam boiler provided with a fusible plug and an alarm whistle arranged and constructed in accordance with my invention. Fig. 2 is a detail vertical central sectional view of the plug. Fig. 3 is a detail horizontal sectional view of the same on the plane indicated by the line *a—*a** of Fig. 2. Fig. 4 is a detail sectional view illustrating a modified construction of the plug. Fig. 5 is a horizontal sectional view of the same on the plane indicated by the line *b—*b** of Fig. 4.

In the boiler here shown which is of the usual type employed on steam ships, the shell is indicated at 1, the fire box at 2 and the crown or table sheet at 3. The crown or table sheet is provided with a screw threaded opening 4 which extends entirely therethrough to receive the screw threaded portion 5 of the shell 6 of my improved plug. The said shell is preferably made of brass, but may be made of any other suitable comparatively refractory metal, fusible only at a comparatively high temperature. The said plug shell is provided with a centrally-disposed, downwardly-tapering bore 7 which terminates short of the bottom of the plug

shell so that the bottom of the plug shell or that portion thereof which is exposed to the fire is entirely closed under all conditions as at 8. An annular channel 9 is formed in the plug shell extending around and communicating with the downwardly-tapering bore thereof, and at a suitable distance from the bottom of the said plug shell are a suitable number of radially disposed spill openings 10 of which three are here shown. It will be observed that the said spill openings are disposed slightly above that portion of the plug which is screwed in the opening 4 in the crown or table sheet of the boiler so that the said spill openings are entirely above said crown or table sheet. Moreover it will be observed that the upper portion of the plug shell extends considerably above the crown or table sheet and into the water space of the boiler so that it is removed from the greater heat of the crown sheet and subject to comparatively uniform temperature.

In the form of the plug shown in Figs. 2 and 3 the upper end of the plug shell has a polygonal head 11 adapted to be engaged by a wrench for the purpose of applying or removing the plug shell. The plug shell is also provided with a threaded opening 12 which communicates with the downwardly-tapering bore 7 and is disposed above the crown or table sheet and in the water space of the boiler and a pipe 13 of suitable size has its lower end screwed into the said opening 12, the said pipe extending vertically up through the top of the boiler and being provided above the boiler with a whistle or other suitable alarm-sounding device 14, a ball valve 15 below the whistle and an unvalved arm 16 which carries a gage 17.

The bore of the plug shell is filled with a fusible core 18 which extends into the channel 9 to form an annular flange or shoulder 19 which firmly secures the core in the plug shell so that the said core cannot be blown out by pressure. The fusible core when cast in the plug shell also forms arms in the spill openings 10 and said arms also serve to secure the fusible core so securely in the plug shell that said core cannot be blown out from the bore of the shell.

Since the bottom of the plug shell is entirely closed the fusible core is protected from the direct heat of the fire box and of the crown or table sheet and since the plug extends considerably into the water space

of the boiler above the crown sheet there is no danger of premature or unnecessary fusing of the fusible core. In the event however that a dangerous temperature is attained the fusible core fuses and runs out through the spill openings 10 into the water space of the boiler above the crown or table sheet thus exposing and opening the lower inner end of the pipe 13 with the result that steam in escaping through said pipe will sound the alarm whistle and will also cause the gage 17 to indicate the internal temperature of the boiler at and immediately above the crown or table sheet.

It will be understood that since the bottom of the plug shell is entirely closed no opening is formed through the shell between the water space of the boiler and the fire box when the core is fused and hence the water is prevented from escaping or being forced from the boiler through the plug shell when the core is fused. Moreover it will be understood that my improved fusible plug owing to its construction and arrangement with reference to the crown or table sheet is comparatively accessible and it is comparatively easy to replace the fusible core.

In the form of my invention shown in Fig. 4 the polygonal head 21 of the plug

shell is at the lower end thereof where it will extend into the fire box.

While my improved fusible plug is here shown applied to a marine boiler it will be understood that it may be used also in boilers of other types.

Having thus described the invention what is claimed as new is:—

A plug shell to be fitted in an opening of the crown sheet of a steam boiler with the upper portion of said plug shell extending into the water space of the boiler, said plug shell having a bore extending downwardly from its upper end and terminating short of its lower end and provided with a spill opening extending from said bore to one side of the plug shell at a point above the crown sheet, a fluid pressure operated signaling device, a pipe connected to the plug shell at a point on one side of the latter and also connected to said signaling device and a fusible core in the bore of the plug shell normally closing the inlet end of said pipe.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES L. McVOY.

Witnesses:

H. G. WHITE,
S. J. GOURDLER.