June 17, 1924. 1,498,416

A. H. WILLETT

BOILER PLUG

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Fig. 5.

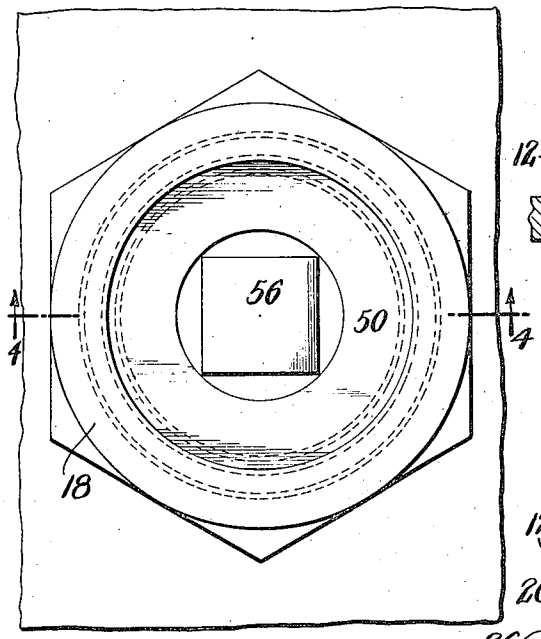


Fig. 1.

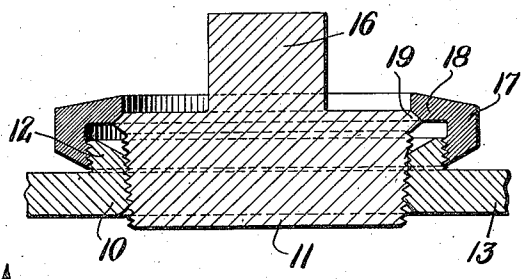


Fig. 2.

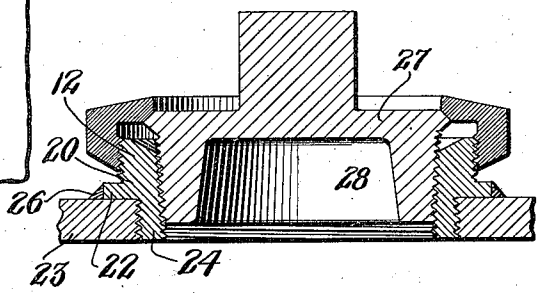


Fig. 4.

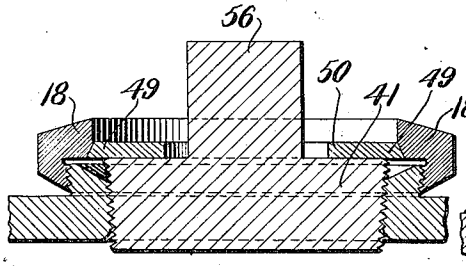
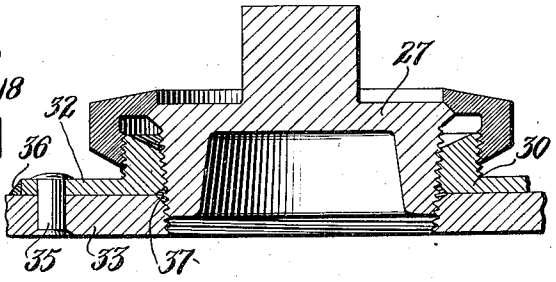


Fig. 3.



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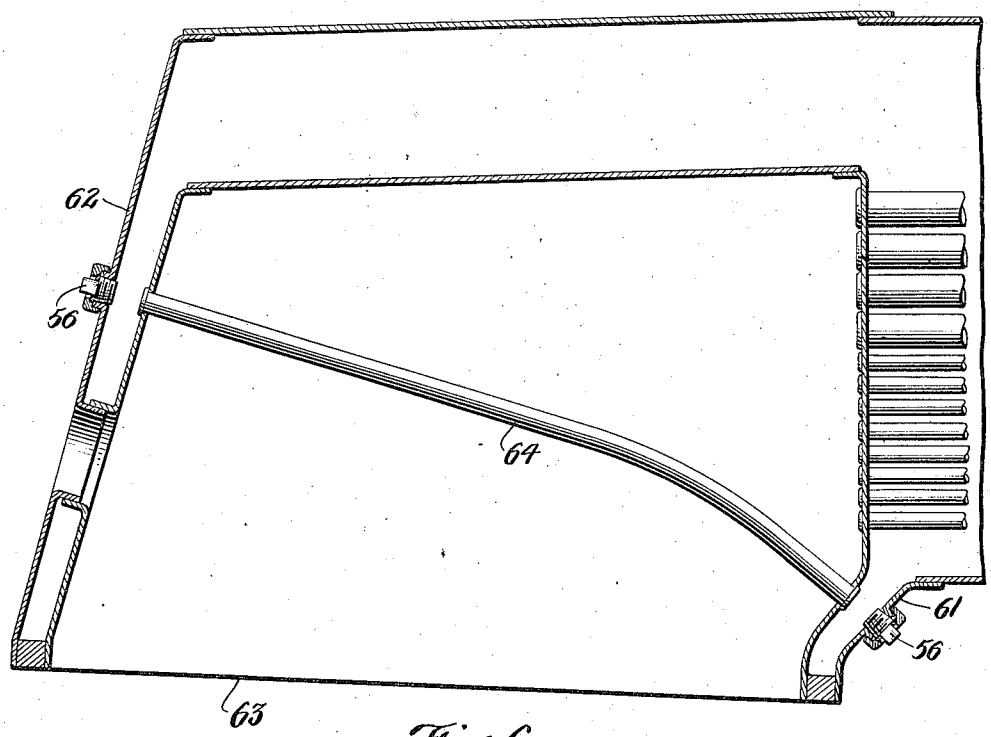


Fig. 6.

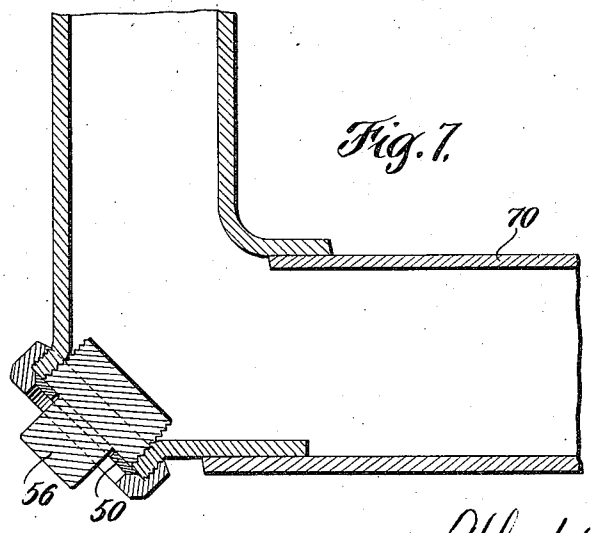


Fig. 7.

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UNITED STATES PATENT OFFICE.

ALFRED H. WILLETT, OF WEST NEW YORK, NEW JERSEY, ASSIGNOR TO AMERICAN ARCH COMPANY, A CORPORATION OF DELAWARE.

BOILER PLUG.

Application filed June 15, 1921. Serial No. 477,625.

To all whom it may concern:

Be it known that I, ALFRED H. WILLETT, a citizen of the United States, residing at West New York, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Boiler Plugs, of which the following is a specification.

My invention relates to boiler plugs and the like, and my principal object is to make such plugs secure against accidental blow-outs. Such blow-outs sometimes occur when leaky plugs of locomotive boilers are tightened up while the boiler is under quite low steam pressure, and are often fatal to the workmen engaged in tightening the plugs. My invention prevents accidents of this nature,—even when boiler plugs are screwed so tight as to strip their threads.

How this and other advantages may be obtained through my invention will appear from my description hereinafter of the accompanying drawings, wherein,

Fig. 1 shows an axial cross-section through a boiler plug and the associated parts by which it is secured in accordance with my invention.

Fig. 2 is a similar view, showing a modification.

Fig. 3 is a similar view, showing another modification.

Fig. 4 is a similar view showing a further modification, the section being taken as indicated by the line 4—4 of Fig. 5.

Fig. 5 is a plan view of the construction illustrated in Fig. 4.

Fig. 6 shows a vertical longitudinal section through a locomotive fire box, showing the application of my invention to the throat sheet and the back head of the boiler, opposite the ends of a water circulation tube.

Fig. 7 is a cross-section illustrating my invention as employed in connection with a washout plug.

In the device or construction shown in Fig. 1, the apertured element 10 in which the plug is secured comprises a lip 12 formed integral with the boiler plate 13 or the like. This construction is, in general, stronger and more reliable than if the element 10 were formed as a separate and distinct part, so that I prefer it for new boilers or boiler plates, where it is practicable to form such a lip 12 integral with the plate. The lip 12 is screw threaded both internally and externally, and the internal threads extend all the way through the hole in the element 10. The plug means 11 shown in the aperture is an externally threaded plug and is shown as of the general form usual for boiler plugs, and as having the usual polygonal (squared) stub 16 for engagement by a wrench to turn the plug. On the exterior of the lip 12 is screwed an internally threaded reinforcement member 17, in the form of a collar with an internal shoulder or flange 18. The lower corner of this shoulder 18 is conically bevelled, in conformity with the bevel of a triangular shoulder or flange 19 on the plug 11.

The plug 11 is secured to the apertured element 10 even more strongly than boiler plugs are usually secured, by virtue of the extra extent of threaded engagement afforded by the upstanding lip 12. The reinforcement member 17 is quite strongly secured to the element 10 around the plug 11, by virtue of the threaded engagement of said member 17 with the lip 12. When, therefore, the collar member 17 is screwed home till its shoulder 18 engages the plug at 19, the plug is doubly secured.

On the other hand, the collar 17 is also a means of additionally securing the plug 11 when the latter is tightened up in service for the purpose of stopping a leak. In such a case, if the plug threads (or the threads inside the plug hole) should start to strip after the plug shoulder 19 is lifted off the reinforcement shoulder 18, before the collar 17 is correspondingly screwed home, the shoulder 18 will at once receive and re-engage the shoulder 19 and so keep the plug from blowing out,—the metal of the plug threads affording a measure of resistance during stripping that will prevent any violent shock on the collar threads.

In the device or construction shown in Fig. 2, the apertured element 20 is a separate part, and the lip 12 is integral with said element 20. At the root or base of the lip 12, the element 20 has an external flange 22. The portion 24 of the element 20 below the flange 22 is externally threaded and screwed into the hole in the plate 23. As an additional means of securing the element

20 to the plate 23, the flange 22 may be fused down or otherwise welded to the plate at 26, as shown.

Except as thus indicated, this construction differs from that of Fig. 1 only in that the main body of the plug 27 is hollowed out at 28 instead of being solid.

In the construction shown in Fig. 3, the apertured element 30 has a flange 32 much wider than the flange 22, but has nothing corresponding to the externally threaded portion 24. The element 30 is secured to the plate 33 by rivets 35 through the flange 32, as well as by welding 36 at the outer edge of the latter (as in Fig. 2) and also at the inner edge or lower corner 37 at the base of the lip portion. The internal threads for engaging the plug 27 extend from the top of the lip clear down through the weld 37 and the plate 33. In all other respects, this construction is like that shown in Fig. 2.

The construction shown in Figs. 4 and 5 closely resembles that of Fig. 1, but embodies a solid form of plug 41. This plug 41 is provided with a shoulder 49 for engaging the collar shoulder 18 by the addition thereto of a locking member 50 of greater diameter than its own, in the form of a flat disc. This disc member 50 has a circular opening to receive the plug stub 56. The plug means, therefore, is in this case composite, since the disc member 50 in effect forms part of the plug 41, and its outer portion 49 engages the collar shoulder 18 and secures the plug in the same way as does the triangular shoulder 19 of Fig. 1.

In Fig. 6, the device of Figs. 4 and 5 is shown on the throat sheet 61 and the back head 62 of a locomotive fire box 63, opposite the ends of the circulation tubes 64 in the fire box.

In Fig. 7, the same device is shown applied as a washout plug, at the angle of the structure 70, just as washout plugs of ordinary construction are commonly applied.

I claim:

1. A plug device comprising, in combination, an apertured element; plug means in the aperture secured to said element and a ring-like reinforcement member detachably secured to said apertured element around said plug means and engaging the plug means to secure it therein, but leaving the plug accessible for adjustment.

2. A plug device comprising, in combination, an apertured element; a plug in the aperture in screw threaded engagement with said element; and a ring-like reinforcement member for additionally securing the plug, in screw threaded engagement with said apertured element, said reinforcement permitting adjustment of the plug.

3. A plug device comprising, in combination, an internally and externally screw threaded lip; externally threaded plug means screwed into said lip; and an internally threaded ring-like reinforcement member screwed upon said lip, for additionally securing the plug means therein, said reinforcement permitting adjustment of the plug.

4. A plug device comprising, in combination, an internally and externally screw threaded lip; externally threaded plug means screwed into said lip; and an internally threaded reinforcement member screwed upon said lip having a central opening leaving the plug accessible and an internal shoulder for engaging the plug means and additionally securing it.

5. A plug device comprising, in combination, an internally and externally screw threaded lip; an externally threaded plug member screwed into said lip with a locking member associated therewith, said plug members having wrench engagement means and an internally threaded reinforcement member screwed upon said lip and engaging said locking member to secure the plug member but leaving the plug accessible for adjustment.

6. A plug device comprising, in combination, an internally and externally screw threaded lip; an externally threaded plug member screwed into said lip, with a locking disc of greater diameter than the plug member superposed thereon in anti-turning engagement therewith; and an internally threaded reinforcement collar screwed upon said lip, for additionally securing the plug therein.

In testimony whereof, I have hereunto signed my name.

ALFRED H. WILLETT.