

T. C. FORD.
FLUE PROTECTING PLUG.
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1,031,992.

Patented July 9, 1912.

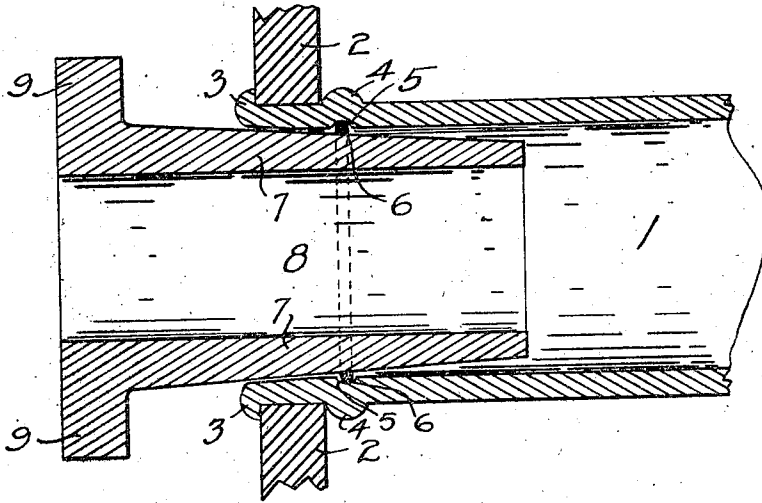


Fig. 1.

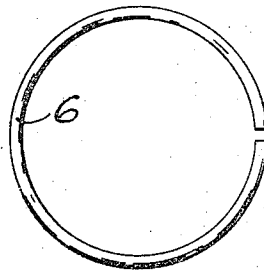


Fig. 2.

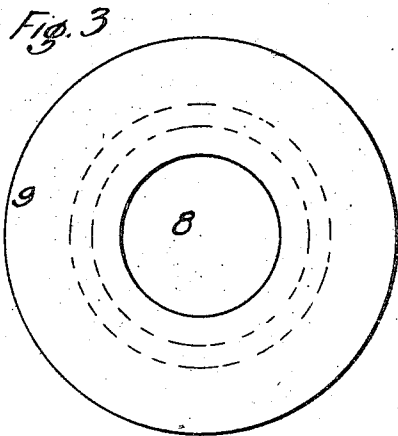


Fig. 3.

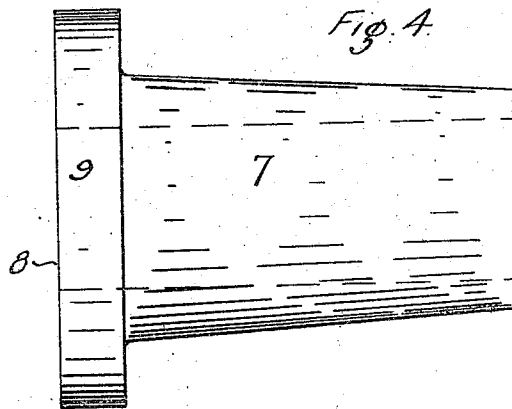


Fig. 4.

WITNESSES:

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FLUE-PROTECTING PLUG.

1,031,992.

Specification of Letters Patent.

Patented July 9, 1912.

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To all whom it may concern:

Be it known that I, THOMAS C. FORD, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented a new and useful Flue-Protecting Plug, of which the following is a specification.

This invention relates to flues in boilers and has for its objects to provide a device whereby the tubes are protected from burning; whereby the life of the tube is lengthened; whereby the boiler plate is prevented from cracking; and whereby the joints between the tubes and the plate are kept water-tight. I attain these and other objects by the devices and arrangements illustrated in the accompanying drawing, in which—

Figure 1 is a vertical section through a portion of a flue and plate and through my plug applied thereto; Fig. 2 is a side view of the ring; and Figs. 3 and 4 are end and side elevations, respectively, of my improved flue plug.

Similar numerals of reference refer to similar parts throughout the several views.

Boiler flues, as at present made, are very likely to leak at the joint between them and the end plate of the boiler, through which they pass, because as they become heated and lengthen they slip through the hole in the plate so that gradually the joint therebetween is no longer able to hold the water at the pressure of the boiler. Further, the ends of the flues become burned away, and if plugs are inserted therein, as is sometimes done, the expansion of the heavy metal thereof cracks the plate. In order to overcome these objections I have devised the hereinafter described plug which is inserted in the flue in such manner that its expansion will not crack the plate and which acts on the flue so as to bind it to the plate on the inner side thereof so that as the flue expands it carries the plate with it, and which can be readily removed and renewed without damaging the flue.

Referring now to the drawings, the flue 1 passes through the plate 2 and is beaded at 3 on the outer side thereof in the usual manner. At a point immediately adjacent to the inner side of the plate 2, the flue 1 is pressed outward to form a bead 4 and a complementary inner groove 5 therearound. A circular ring 6 is inserted within the groove 5 and is of sufficient size to extend

into the flue. This ring 6 is preferably made split so that it can be easily inserted into the groove 5 through the end of the flue 1. The plug consists of a tapered shank 7, having a hole 8 therethrough, and is provided with a flange 9 on its outer thicker end. The hole 8 forms a passage for the flame and hot gases to pass into the flue 1 through the plug. The plug is inserted into the flue 1 and engages the ring 6, in the groove 5, but does not touch the flue 1 directly. The outer end of the plug stands away from the plate 2.

This device acts in the following manner:—Since its outer end is removed from the plate 2, and since the flange 9 extends around the said end, the flames are drawn away from the beaded end 3 of the flue 1 and the flue has therefore a longer life than it would otherwise have, but since the plug is not in contact with the water of the boiler it will, itself, be burned away and will have to be renewed from time to time. Since the plug is tapered and engages the ring 6 only on a line around it, it can therefore be easily removed and if the ring needs renewal it can then be taken out and a new ring and plug inserted into place in the flue, without in anyway injuring the flue itself. Since the plug engages the flue only through the intermediation of the ring which bears thereon at a point inside of the plate, it is evident that the expansion of the plug will not materially strain the plate but will tend to increase the bead 4 and thus tighten the joint between the flue 1 and the plate 2 and this bead 4 prevents any slipping between the said parts.

Having described my invention, what I claim is:

1. In a device of the class described, the combination with a boiler plate; a flue passing therethrough and having an outward bead therearound adjacent the inner side of said plate, and a complementary groove within the flue; a removable ring of greater depth than said groove and lying within said groove and extending into the inside of the flue at a point adjacent the inner side of said plate; and a removable hollow plug engaging said ring only and pressing outward thereon and extending outside of the flue to protect the end of the flue.

2. In a device of the class described, the combination with a boiler plate; a flue passing therethrough and having an outward

bead therearound adjacent the inner side of
said plate, and a complementary groove
within the flue; a removable ring of greater
depth than said groove and lying within
5 said groove and extending into the inside of
the flue at a point adjacent the inner side of
said plate; a hollow plug, having its outside
surface tapering and engaging with said
tapering surface inside said ring only and
pressing outward thereon and extending out- 10
side of the flue; and a flange extending
around its outer end to protect the end of
the flue.

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Witnesses:

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