

R. S. KITCHEN.
 PROTECTOR FOR THE BEADS OF BOILER FLUES.
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1,000,017.

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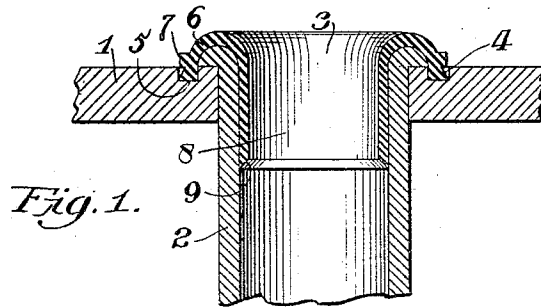


Fig. 1.

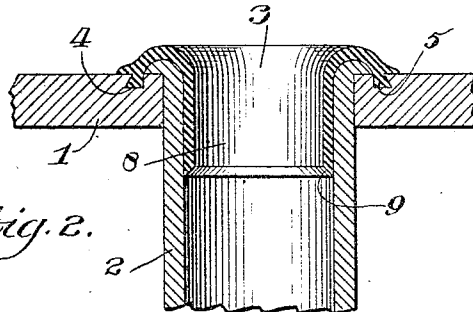


Fig. 2.

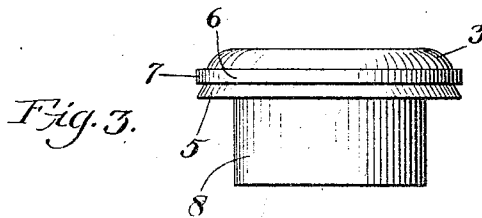


Fig. 3.

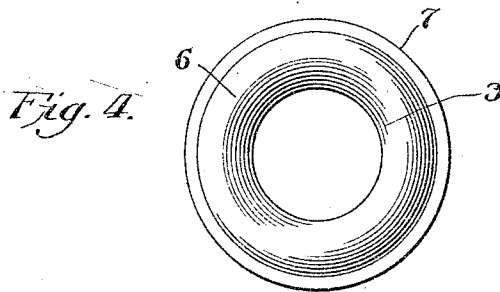


Fig. 4.

WITNESSES

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RICHARD S. KITCHEN, OF STEELTON, PENNSYLVANIA.

PROTECTOR FOR THE BEADS OF BOILER-FLUES.

1,000,017.

Specification of Letters Patent.

Patented Aug. 8, 1911.

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To all whom it may concern:

Be it known that I, RICHARD S. KITCHEN, a citizen of the United States, and a resident of Steelton, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Protectors for the Beads of Boiler-Flues, of which the following is a specification.

My invention relates to an improved means for protecting the ends of the flues in steam boilers and more particularly the ends adjacent to the fire box, and the objects of my invention are to furnish a means for protecting that part of the flue which is beaded over the flue sheet from the direct and destructive action of the fire, which will reinforce the rolled and beaded joint between the flue and flue plate, which will prevent access of air or gases to the end of the flue, and which will thicken and thereby cause the end of the flue to contract and expand substantially at the same rate as the flue sheet and thus prevent the loosening of these parts.

In the accompanying drawings forming part of this specification and in which similar letters of reference indicate similar parts throughout the several views; Figure 1, is a central sectional elevation through one end of a flue, flue sheet and my protector before the latter is secured to the flue sheet; Fig. 2, a similar view the protector being fastened to the flue sheet. Fig. 3, a side elevation of the protector, and, Fig. 4, a top view of Fig. 3.

1 is the flue sheet of a boiler. 2 a flue. 3 my protector. The flue sheet is drilled in the usual manner for the flues and upon its outer side is, concentrically with the drilled holes, grooved, as at 4, to receive an annular shoulder 5, formed upon the under side of the flange 6 of the protector. The shoulder 5 is wedge shaped, that is to say it is thicker at its bottom than at its top. Directly above the shoulder 5 is an annular rim 7 the outside diameter of which is approximately equal to or a trifle greater than the outside diameter of the groove 4.

The flue plate 4 having been drilled and grooved and the flues having been beaded over in the usual manner, my protector is put in place, the shoulder 5 resting in the groove 4 and the body 8 of the protector, the outside diameter of which is equal to the inside di-

ameter of the flue, resting in the flue, and the rim 7 is driven, or calked, down, as shown in Fig. 2, bearing upon the flue sheet outside the groove 4 until this part of the sheet is bent inward and engages the wedge shaped shoulder 5 securely locking this shoulder to the flue sheet as shown in Fig. 2. At the same time the rim 7 is driven down and makes a tight joint with the flue plate completely covering the outer part of the groove 4. If the calking be properly done a liquid, air, and gas tight joint will be formed and the protector will be securely locked to the flue plate, will reinforce the beaded end of the flue and will form a perfect protection of this part of the flue from the action of the heat and gases of the fire—at the same time the beaded end of the flue is thickened and will contract and expand in substantially the same degree as does the flue plate.

It will be observed that the inner end of the body 8 is beveled, as at 9, to permit the free passage of a cleaning means through the flues.

The protector may be made of any suitable metal having proper ductility, wrought iron, copper, or soft steel may be used, and while the protector is particularly adapted for use at the fire box end of the flues it may, if desired, be used at both ends.

I am aware that protections for the ends of boiler flues are not new and therefore I do not claim such a device broadly, but

What I do claim is:

1. The combination with a flue and the flue sheet of a steam boiler the latter of which is furnished with a groove surrounding the perforation to receive the flue, of a protector consisting of a cylindrical body, a head carrying a depending flange adapted to enter the groove in the flue sheet, and a rim above said flange adapted to be calked down against said flue sheet.

2. The combination with a flue and the flue sheet of a steam boiler said flue sheet being furnished upon its outer face with a groove concentric with the perforation to receive the flue, of a protector consisting of a cylindrical tubular body, a head, a depending wedge shaped flange carried by said head, and a rim, the outer wall of said groove being adapted to be driven in against said wedge shaped flange and said rim be-

ing adapted to be driven down against said flue plate.

3. A protector for the purposes set forth consisting of a cylindrical tubular body the inner lower edge of which is beveled and the upper end of which carries a head or flange having at its under side an annular

wedge shaped shoulder and directly above said shoulder an annular rim.

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Witnesses:

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