No. 822,475. PATENTED JUNE 5, 1906.

J. H. PRICE.

FLUE FERRULE.

APPLICATION FILED NOV. 25, 1905.

Fig. 1

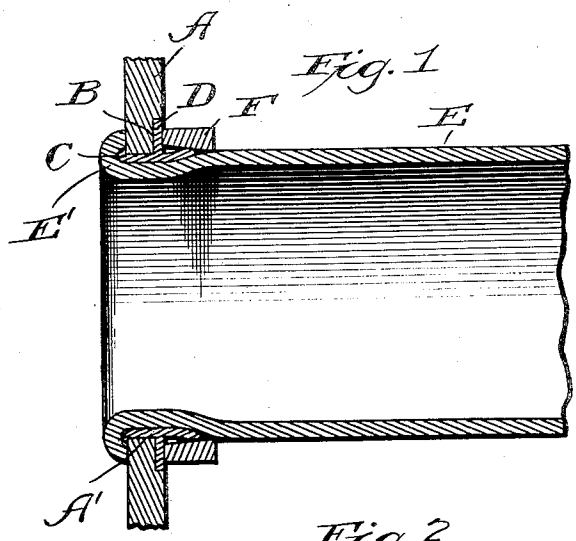



Fig. 2.

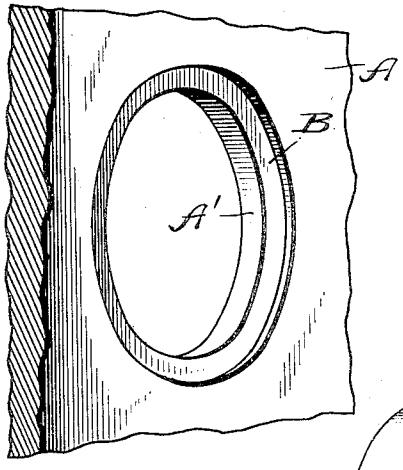



Fig. 3.

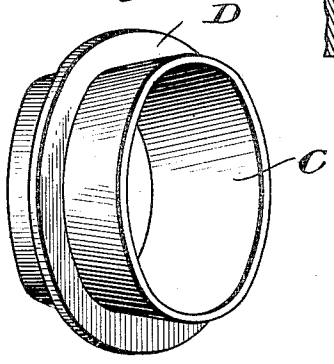
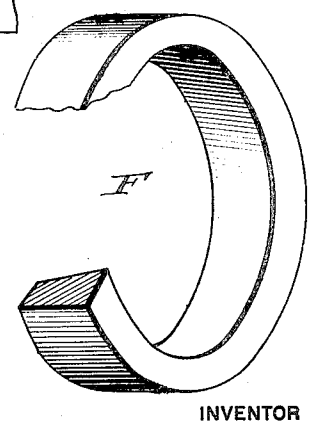



Fig. 4.




WITNESSES

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# UNITED STATES PATENT OFFICE.

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## FLUE-FERRULE.

No. 822,475. Specification of Letters Patent. Patented June 5, 1906.

Application filed November 25, 1905. Serial No. 289,118.

*To all whom it may concern:*

Be it known that I, JAMES H. PRICE, a citizen of the United States, residing at Shenandoah, in the county of Page and State of Virginia, have invented a new and useful Improvement in Antileak Flue-Ferrules, of which the following is a specification.

This invention relates generally to flue-ferrules, and more particularly to an improved construction of ferrule, the object of which is to prevent the leak between the ferrule and head of boiler; and another object is to so construct said ferrule that those portions thereof which prevent the leakage are protected from the action of the fire.

With these and certain other objects in view my invention consists, essentially, in providing the ferrule with an exterior annular collar, which collar is adapted to fit snugly into a countersunk recess produced in the inner face of the head of boiler, said collar to be calked in any suitable manner, the ferrule and the end of the tube projecting therethrough being expanded and beaded in the usual manner.

The invention consists also in the employment of a wedged collar which is adapted to surround the flue and bind tightly upon the inwardly-extending end of the ferrule; and the invention consists also in certain details of construction and novelties of combination, all of which will be fully described hereinafter, and pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a sectional view showing my improved construction of ferrule employed in connection with the flue and head of boiler. Fig. 2 is a detail perspective view showing a portion of the inner face of head of boiler, and Fig. 3 is a detail perspective view of my improved construction of ferrule. Fig. 4 is a detail perspective view of the clamping-ring.

Referring to the drawings, A indicates the head of boiler, having the flue-openings A′, and each flue-opening has a countersink or annular recess B produced in the inner face of the head of boiler. The ferrule C is made the usual length and of any desired material. The essential feature of my ferrule consists of an annular collar D, which is arranged upon the exterior of the ferrule proper and is adapted to fit snugly in the countersunk recess B, said collar being arranged substantially midway the length of the ferrule, and it will of course be understood that this collar is integral with the ferrule proper. After the ferrule has been inserted in the head of boiler, the outer end is expanded and rolled over, if necessary, and the annular collar is securely calked in the recess of the head of boiler and then the flue E is passed through the ferrule and its outer end rolled over and beaded, as shown at E′, it being understood that the end of the flue is tapered in order to bind tightly in the metal ferrule.

While it is not necessary to employ a clamping-ring upon the inner end of ferrule and within the boiler, I prefer to do so, and therefore arrange a clamping-ring F upon the flue before the end of flue is inserted in the ferrule, and after the flue has been firmly fixed in the ferrule the clamping-ring F is forced over the inner end of the ferrule toward the annular collar D, thereby firmly binding the inner portion of the ferrule upon the flue. The inner face of the ring is beveled or inclined, so that the ring acts as a binding-wedge as it is forced upon the ferrule, thereby preventing leakage between the ferrule and flue, and the integral annular collar of the ferrule being seated and packed in the annular recess in the boiler-head all danger of leakage between the ferrule and boiler-head is avoided.

It will be noted that the special features which I employ to prevent leakage are all arranged within the boiler and are therefore protected from the burning action of the fire.

It will thus be seen that I provide an exceedingly cheap, simple, and efficient form of flue-ferrule which will prevent leakage between the flue and ferrule and also between the ferrule and head of boiler.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a flue-ferrule having an exterior collar, of the boiler-head having a recess in the inner face thereof surround

ing the flue-opening, and adapted to receive the exterior collar of the flue-ferrule and the flue fitting in the ferrule as set forth.

2. The combination with the boiler-head having the flue-opening surrounded by an annular countersink or recess, of a flue-ferrule having an annular exterior collar adapted to fit in the annular recess, the flue fitting in the ferrule, and a clamping-ring arranged upon the inner end of the ferrule, for the purpose set forth.

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