No. 632,951. Patented Sept. 12, 1899.

A. TAGGART, JR.

FLUE FOR TUBULAR BOILERS.

(Application filed Mar. 11, 1899.)

(No Model.)

Fig. 1.

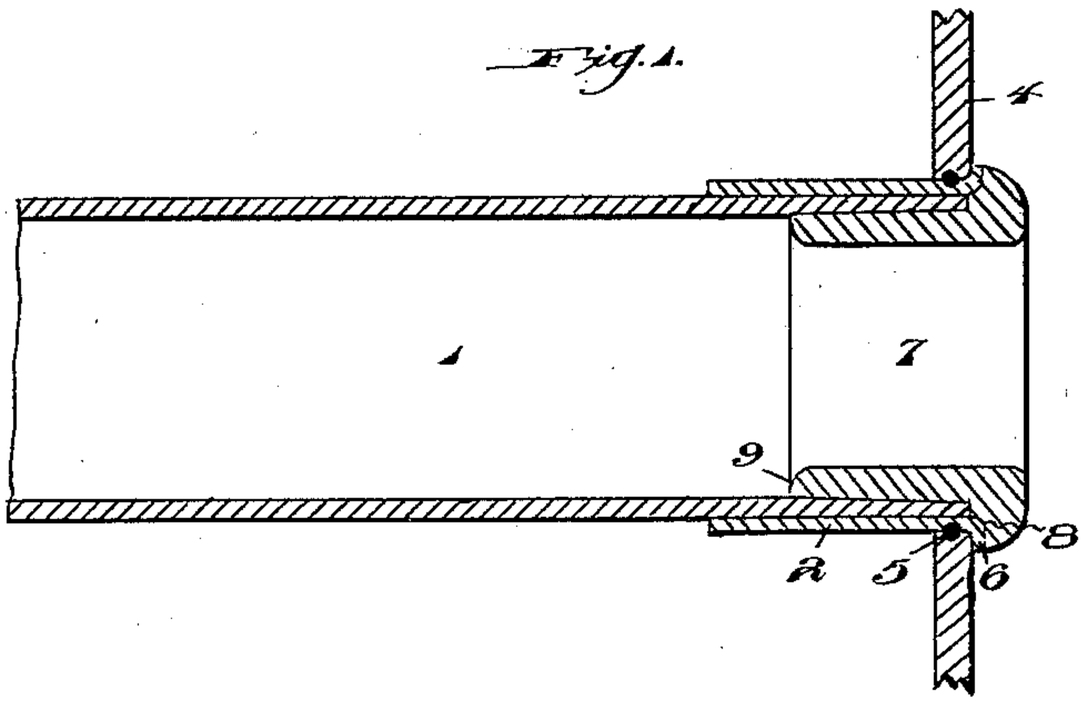

Fig. 2.

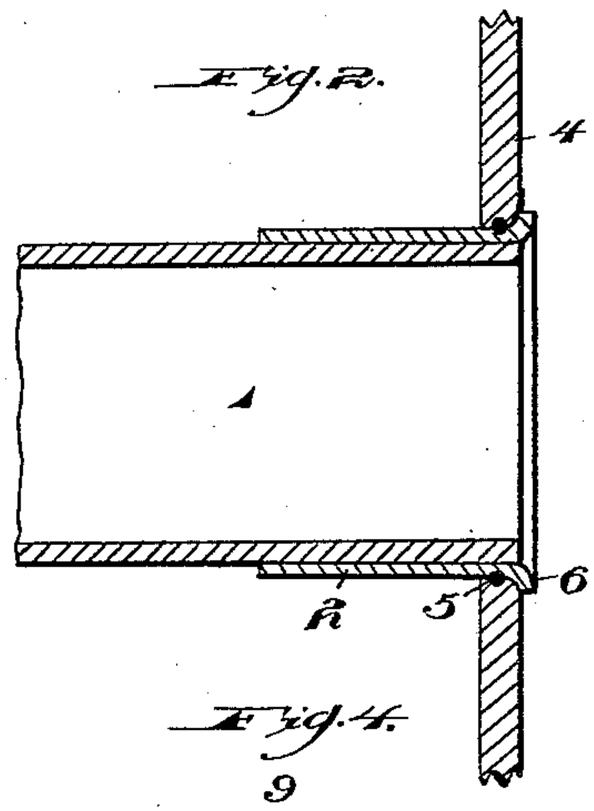

Fig. 3.

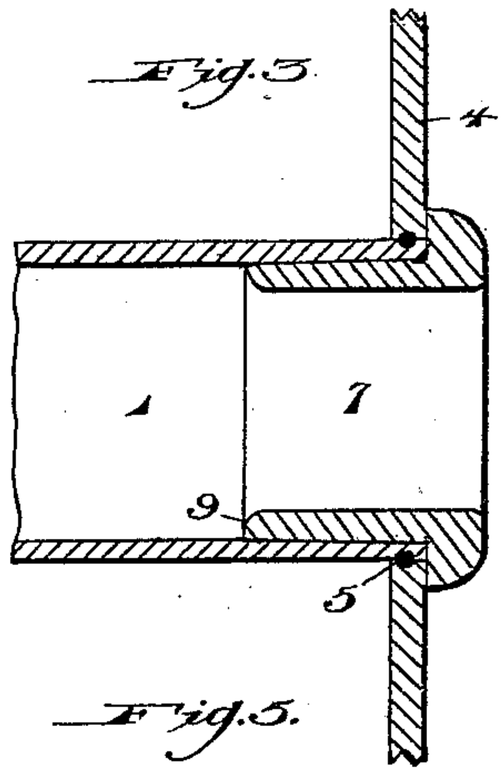

Fig. 4.

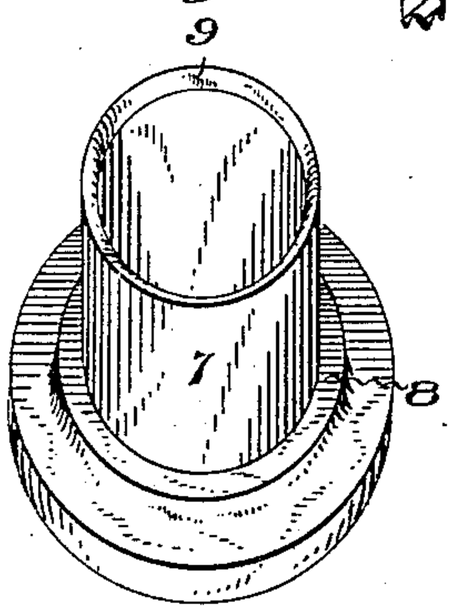

Fig. 5.

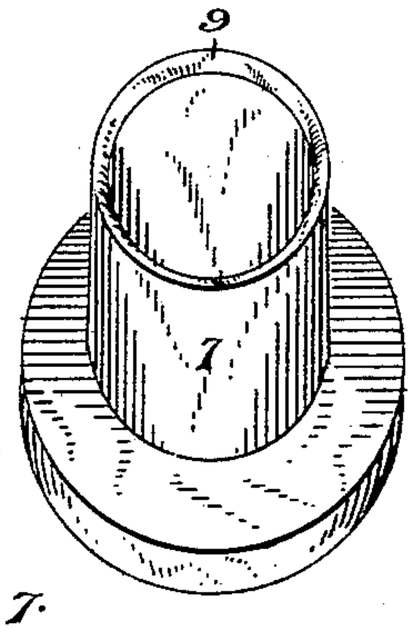

Fig. 6.

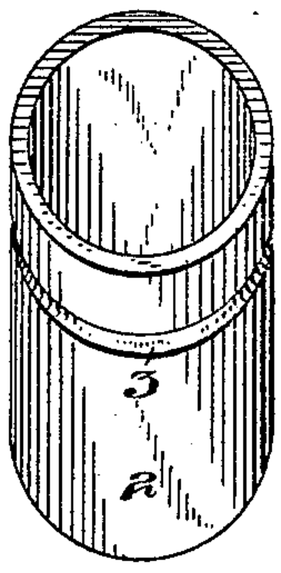

Fig. 7.

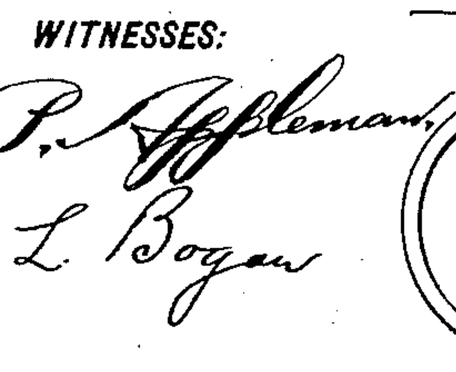

Fig. 8.

WITNESSES:

J. P. Appleman,

A. L. Bogan

INVENTOR

Andrew Taggart, Jr.

BY

McEvoy & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ANDREW TAGGART, JR., OF ALLEGHENY, PENNSYLVANIA.

FLUE FOR TUBULAR BOILERS.

SPECIFICATION forming part of Letters Patent No. 632,951, dated September 12, 1899.

Application filed March 11, 1899. Serial No. 708,670. (No model.)

To all whom it may concern:

Be it known that I, ANDREW TAGGART, Jr., a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Flues for Tubular Boilers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in boiler-flues.

The object of my invention is to construct a flue of this character which will be non-leakable.

A further object of my invention is to construct a flue of this character which will not come into contact with the fire-box, thereby giving longevity to the same.

A further object of my invention is to construct a flue of this character whereby the ends will be protected and secured in such a manner to the flue-sheet as to prevent leakage.

A further object of my invention is to construct a flue of this character which by the arrangement of parts at the end thereof will form a combustion-chamber, obtaining thereby a greater heating-surface and at the same time a greater intensity of heat.

A further object of my invention is to construct a flue of this character which by the arrangement of the several parts at the end thereof will cause equal expansion and contraction at both ends.

A further object of my invention is to construct a flue of this character with means for securing the same to the flue sheet or head and which will prevent leakage.

A further object of my invention is to construct a flue of this character which will be easily adapted to be placed in the desired position and the parts when assembled form a combustion-chamber within the flue, and, further, making the flue non-leakable.

A further object of my invention is to construct a flue of this character which will not become loosened by the exhaust, which is usually the case in the ordinary flues now in use.

Briefly described, my invention consists of a hollow tube which is secured in the flue-sheet by means of a ferrule which is connected thereto, having an annular groove on its periphery which receives a suitable piece of wire formed of any metallic material, as well as arranged in the groove formed in the opening of the flue-sheet, and a hollow plug forced or pressed into the flue which is formed with a shoulder at the outer end thereof, securely holding the parts in position to prevent leakage and form a combustion-chamber.

My invention finally consists in the novel combination and arrangement of parts hereinafter more fully described and particularly pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views thereof, and in which—

Figure 1 is a longitudinal sectional view of my improved boiler-flue and a portion of the flue-sheet. Fig. 2 is a longitudinal sectional view of my improved boiler-tube with the hollow plug removed. Fig. 3 is a longitudinal sectional view of a modified form of flue. Fig. 4 is a perspective view of my improved boiler-flue of the construction shown in Fig. 1. Fig. 5 is a perspective view of the modified form of the construction shown in Fig. 3. Fig. 6 is a perspective view of the ferrule. Fig. 7 is a perspective view of the locking means. Fig. 8 is a perspective view of the locking means when extended.

Referring to the drawings by reference-numerals, 1 indicates a flue which is formed of a hollow cylindrical tube of the ordinary construction used in steam-boilers. This flue is adapted to receive on its ends the hollow sleeve or ferrule 2. This sleeve or ferrule 2 may be secured to the tube in any desirable manner and is provided on its periphery at one end thereof with an annular groove 3.

4 indicates a flue-sheet which is provided with openings adapted to receive the flue. The wall of these openings is provided with an annular groove which registers with the annular groove 3, arranged on the periphery of the ferrule, and is adapted to receive the fastening-wire 5 when the ferrule and flue are placed within the opening in the flue-

sheet. This fastening-wire 5 is constructed of any desirable material and may surround the ferrule entirely or partly, as may be desired. When the ferrule 2 is secured to the flue, it projects over the same, as shown in Figs. 1 and 2 of the drawings, and this projecting end 6 is hammered or forced against the flue-sheet, as shown.

7 indicates a hollow plug which is adapted to be forced within the flue, as shown, and is provided with an annular flange or shoulder 8, which abuts against the projecting end 6 of the ferrule and secures the same in position. The hollow plug is of slightly-greater diameter than the inner face of the flue, so that when forced or pressed within the flue it will expand the same and thoroughly secure the fastening-wire to the ferrule and flue-sheet to prevent the dislodgement of the flue and to prevent leakage. The inner end of the hollow plug is tapered, as at 9. It will be observed that when in each end of the flue is mounted one of these plugs between the inner ends thereof a combustion-chamber is formed, and owing to the fact that the exhaust of the heat is interrupted by the same ends this gives a greater heating-surface as well as a more intense heat.

In the modified form of construction shown in Figs. 3 and 5 I dispense with the ferrule and form the ends of the flue with an annular groove registering with the annular groove in the flue-sheet, in which is mounted the fastening-wire 5. The plug is then inserted and will securely hold the same in position and prevent leakage owing to its expansion.

If desired, in the openings in the flue-sheet and on the periphery of the ferrule and flue more than one groove may be employed, in which the necessary number of fastening-wires are used.

If desired, the flue-sheet may be interiorly screw-threaded and the ferrule formed with exterior screw-threads for securing the ferrule thereto. The hollow plug may also be exteriorly screw-threaded and the flue provided with interior screw-threads for securing the plug therein. The various parts may be secured together in any manner desired.

It is thought that the many advantages of my improved boiler-flue and the more satisfactory results obtained therefrom can be readily understood from the foregoing description, taken in connection with the accompanying drawings.

It will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

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

1. A boiler-flue comprising a hollow cylindrical tube, a ferrule suitably mounted thereon and projecting outwardly therefrom, said ferrule provided with an annular groove, a flue-sheet provided with an opening adapted to receive the said ferrule and tube, the walls of the said opening in the flue-sheet provided with the annular groove registering with the groove formed in the ferrule, a fastening-wire arranged in the said grooves, and means inserted in the said tube for securing the ferrule and tube to the flue-sheet, substantially as set forth.

2. A boiler-flue comprising a hollow cylindrical tube, a ferrule mounted thereon and projecting outwardly therefrom, said ferrule provided with an annular groove, a flue-sheet provided with an opening adapted to receive the said ferrule and tube, the walls of the said opening in the flue-sheet provided with an annular groove registering with the groove formed in the ferrule, a fastening-wire arranged in the said grooves, a hollow cap provided with an annular flange on its outer end adapted to be inserted within the said tube and have the flange abut against the extending end of the ferrule for securing the tube and the ferrule to the flue-sheet, substantially as set forth.

3. A boiler-flue consisting of a hollow tube, a ferrule having its outer end converging outwardly and an annular groove formed on its periphery near the converging end thereof, a flue-sheet provided with an opening having the walls thereof formed with an annular groove registering with the groove formed on the ferrule, a fastening-wire mounted in the said grooves, and a hollow plug provided with an annular flange on the periphery of its outer end, the said plug being of greater diameter than the interior of the said tube adapted to be inserted therein for extending the end of the tube and securing the same and the ferrule to the flue-sheet, substantially as set forth.

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

ANDREW TAGGART, JR.

Witnesses:
JOHN NOLAND,
E. W. ARTHUR.