

G. W. Durall,
Boiler-Tube Stopper.
No 54,703. *Patented May 15, 1866.*

Fig 3.

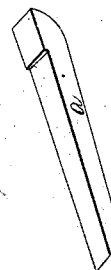
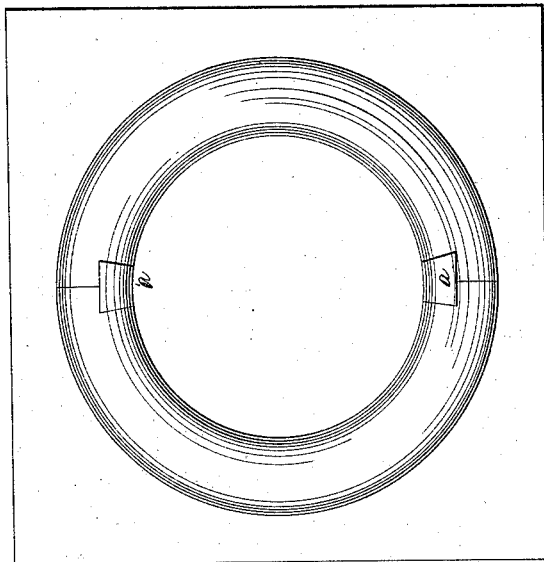
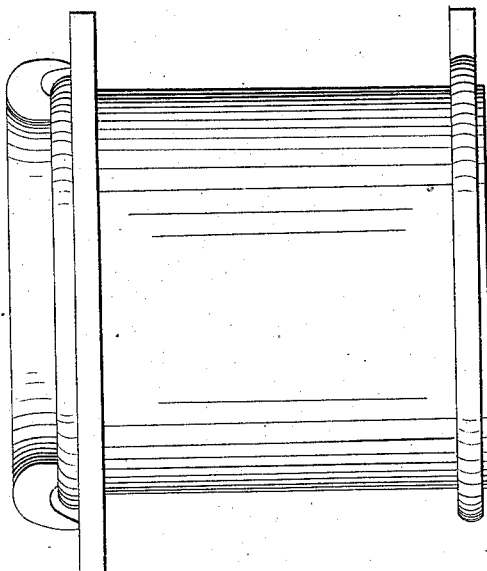


Fig 1.



Witnesses.
J. Clement Smith
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UNITED STATES PATENT OFFICE.

GEORGE W. DUVALL, OF NORFOLK, VIRGINIA.

IMPROVEMENT IN BOILER-THIMBLES.

Specification forming part of Letters Patent No. **54,703**, dated May 15, 1866.

To all whom it may concern:

Be it known that I, GEORGE W. DUVALL, of the city of Norfolk, in the county of Norfolk and State of Virginia, have invented a new and useful Improvement in Means for Stopping Leaks in the Tubes of Steam-Boilers; and I hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The object of my invention is to provide better means than have heretofore been invented for preventing boiler-tubes from leaking and for closing such leaks when made.

To this end I construct a cast-iron cylinder about three inches in length, more or less, and of such diameter as shall allow it to fit snugly inside the tubes. This cylinder is usually made in two pieces or halves, and leaving spaces of about half an inch, more or less, between the two sections thereof, to be filled with wrought-iron wedges made in a dovetailed form and extending from end to end of said cylinder. These wedges are driven into these spaces with such force as may be necessary to close up the same and crowd the cylinder closely against the tube. I may make this cylinder of one piece only and use but one wedge therein, but I prefer to construct it in two pieces and use two wedges, as above described. The front end of this cylinder projects forward of the tube about three-fourths of an inch, more or less, and is made in the form of a ring or scroll, with a groove that fits closely upon the end of the tube and with its outer rim resting upon the boiler outside the tube.

Figure 1 of the drawings represents the front end of a boiler-tube resting in the boiler and the front end of one section of my cylinder in its proper position. Fig. 2 represents the front end of my cylinder in its proper position in the boiler-tube with the wedges driven home.

The method of operating my said invention is as follows, namely: Whenever, by the pro-

cess of heating and cooling, or for any other reason, the boiler-tube shrinks or becomes worn or jarred so as to allow leakage from the boiler, I place the two sections of my cylinder inside the tube, and after placing a sufficient quantity of red lead or othersuitable substance on the front end of the tube and inside the cylinder-groove, I drive the wedges firmly home. The result is the front end of the tube is forced back closely against the boiler side and the leak is closed.

The advantages of my device over all others heretofore known are, I can adjust it in the tube and close the leak while the boiler is hot and without putting out or removing the fire. I avoid all possibility of a shrinkage in the cylinder from the end of the tube so as to allow the leak to break out anew. It is adaptable to tubes of various diameters. It will close leaks in tubes inside the boiler as well as on the outside thereof. It accomplishes the result desired without perceptibly interfering with the fire-draft, and offers no destruction to the rod or broom with which the tube is cleaned. It is fully fifty per cent. less expensive than any other device now in use which is designed to accomplish the same result.

I am aware that an invention has been patented for stopping leaks in boiler-tubes, in which a cylinder and wedge are used. In that invention, however, neither the cylinder or wedge have any direct bearing upon the object sought to be accomplished. They are only intended to be used for holding the heads of bolts, which, in turn, secure an adjustable ring over the end of the tube.

What I claim as my invention, and desire to secure by Letters Patent, is—

A cylinder of iron in two sections with scroll-shaped head and groove, as described, in combination with the wedges A, constructed and operated substantially as described.

G. W. DUVALL.

Witnesses:

J. CLEMENT SMITH,
FRED. B. GINN.