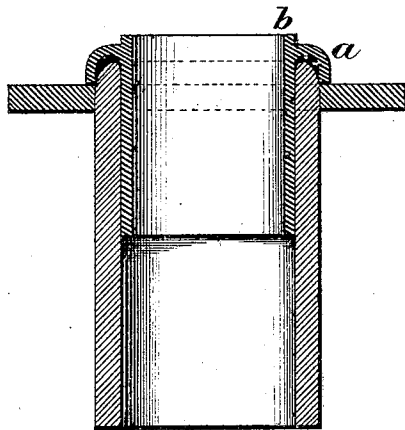


J. C. FARMER.

Thimbles for Protecting Boiler Flues.

No. 138,998.

Patented May 20, 1873.



Witnesses.

William Aspinwall.
William Standish.

Inventor.

James C. Farmer.

UNITED STATES PATENT OFFICE.

JAMES C. FARMER, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN THIMBLES FOR PROTECTING BOILER-FLUES.

Specification forming part of Letters Patent No. **138,998**, dated May 20, 1873; application filed February 3, 1873.

To all whom it may concern:

Be it known that I, JAMES C. FARMER, of the city of Providence, in the county of Providence and State of Rhode Island, have invented an Improved Thimble for Protecting the Ends of Boiler Flues or Tubes from the direct action of the fire and from abrasion, of which the following is a specification:

The object of my invention is to furnish a thimble for boiler-tubes that shall be cheap, that can be driven into the tube by a few blows of a hammer, and that will stay in place, and so formed that the flange shall not be liable to fracture in driving.

Hitherto thimbles have been made in two sections and fastened into the tube with keys. They have also been made in a single piece by welding, both of wrought-iron and cast-steel, and screwed into the end of the tube or driven into place. But they have proved too expensive for general use, or, if driven in, have got broken from the blows falling on the flange, and after a short time have invariably got loose and failed to protect the tube. Indeed, no cheap and practical thimble has hitherto come into use.

My improved thimble is molded in one piece, preferably from cast-iron or malleable iron, and the flange, which is so formed as to fit and cover the edge of the tube where it projects through the flue-sheet, and to fit closely against the latter when the thimble is driven home, is set around the exterior of the cylinder of the thimble at a distance of about one-sixteenth of an inch below its front edge, which edge thus projects that distance in front of the flange, as shown in Fig. 1 of the accompanying drawing, in which *a* is the flange and *b* the projecting edge of the cylinder of the thimble. The thimble is made

slightly tapering from the flange to the entering end, but still so large as to fit the tube or flue tightly and to require to be driven in with force. In driving it the blows of the hammer fall upon the edge of the cylinder of the thimble *b*, and not upon the flange, and thus the latter is protected from fracture. I consider it preferable that the thickness of the projecting edge *b* should be a little less than that of the body of the cylinder below the flange; so constructed, the flange is still less liable to fracture when the thimble is driven. I regard the projecting edge *b* as a principal feature in my invention, obviating, as it does, an objection, insurmountable hitherto, to the introduction into use of cast thimbles with flanges; and the thimble, unlike thimbles made from wrought-iron or cast-steel by welding, remains tight in place, as a general thing, until so worn that it has to be replaced with a new one, or, if it gets loose from any cause, it is at once made tight by a single blow of a hammer.

I claim as my invention—

1. A thimble for the protection of the ends of boiler-tubes molded in one piece from cast or malleable iron, or other suitable metal, and formed with flange *a*, set below the projecting edge *b*, for the purpose set forth, as a new article of manufacture.

2. In a thimble for the protection of the ends of boiler-tubes, the projecting edge *b*, for the purpose of receiving blows of the hammer, and as a means of avoiding the fracture of the flange in driving, substantially as described.

JAMES C. FARMER.

Witnesses:

WILLIAM STANDISH,
JON. F. BARRETT.