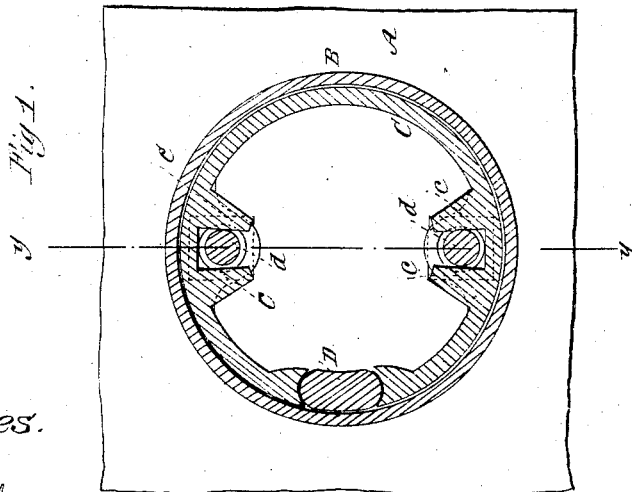
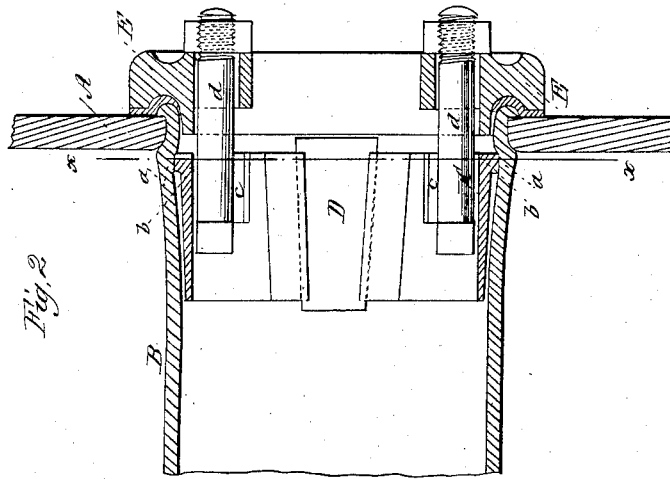


No. 45,618.

PATENTED DEC. 27, 1864.

R. LAVERY & S. STUART.
DEVICE FOR STOPPING LEAKS IN BOILER TUBES.



Witnesses.

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RICHARD LAVERY AND SINCLAIR STUART, OF SOUTH BOSTON, MASS.

IMPROVEMENT IN DEVICES FOR STOPPING LEAKS IN BOILER-TUBES.

Specification forming part of Letters Patent No. 45,618, dated December 27, 1864.

To all whom it may concern:

Be it known that we, R. LAVERY and S. STUART, of South Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Device for Stopping Leaks in Boiler-Tubes; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a transverse vertical section of this invention, the line *x x*, Fig. 2, indicating the plane of section. Fig. 2 is a longitudinal central section of the same, the plane of section being indicated by the line *y y*, Fig. 1.

Similar letters of reference indicate like parts.

This invention consists in a split ring, provided with ears, and with a bead fitting to the cavity of a boiler-tube close behind the tube-sheet, and fastened therein by means of a wedge driven in its gap, in combination with an open cap fitting over the end of the tube, and fastened to its place by bolts extending from the ears of the ring through holes in the cap, in such a manner that by securing the ring in the end of the tube the cap can be readily secured without drilling holes in the tube-sheet, and by the combined action of the ring and cap a leak in the joint between the tube and the tube-sheet can be effectually stopped without closing up the tube.

A represents a portion of the tube-sheet of a steam-boiler, in which the tubes B are fastened in the usual manner.

The tool generally used in securing boiler-tubes to the tube-sheets produces a cavity, *a*, close behind the tube-sheet, as clearly shown in Fig. 2, and the end of the tube is turned over the outer edge of the hole in the sheet, thus securing the tube in its place and pressing it up tight all round against the circumference of the hole.

If a leak occurs in the joint between the tube and tube-sheet, we introduce a split

ring, C, which is provided with a bead, *b*, to fit into the cavity *a* of the tube close behind the tube-sheet. A wedge, D, driven into the gap of the ring, after the same has been adjusted in its place, spreads the same and forces it out against the inner circumference of the tube, and by these means the tube is pressed up tight against the hole in the tube-sheet. The ring C is provided with ears *c*, projecting inward, and from these ears extend bolts *d* through holes in the open cap E, which fits over the end of the tube, as clearly shown in Fig. 2. Said bolts may either pass through the ears or they may be hinged thereto, or the ears may be slotted, as shown in the drawings, so that the bolts can be slipped in between them, or they may be made and connected to the bolts in any other convenient manner, and by the action of the bolts the cap is pressed up tight against the outer surface of the tube-sheet, and by placing suitable packing between it and the tube-sheet any leak occurring round the end of the tube can be effectually stopped. The caps can thus be secured to the tube-sheet without drilling holes in the same, and they can be applied with little loss of time, and, by the combined action of the ring and open cap, leaks occurring in the ends of tubes can be stopped more effectually than by either alone.

The caps and rings do not obstruct the draft, and they can be made of cast-iron, and kept on hand so that they can be applied at a moment's notice.

Having thus described our invention, the following is what we claim as new and desire to secure by Letters Patent:

The combination of the open cap E with the split ring C, provided with ears *c*, and secured in the end of a boiler-tube, substantially in the manner and for the purpose herein set forth.

RICHARD LAVERY.
SINCLAIR STUART.

Witnesses:

W. HAUFF,
WM. DEAN OVERELL.