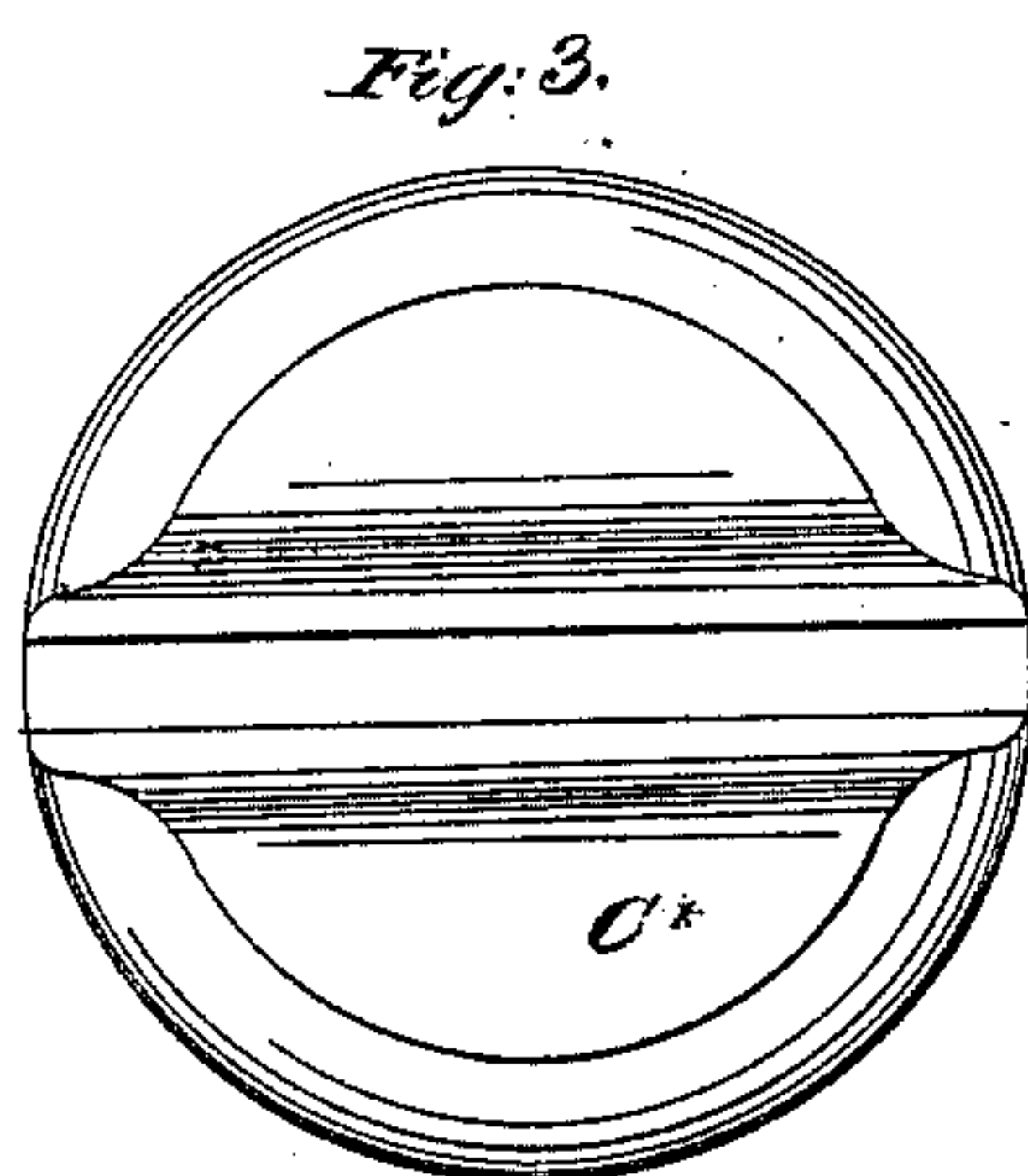
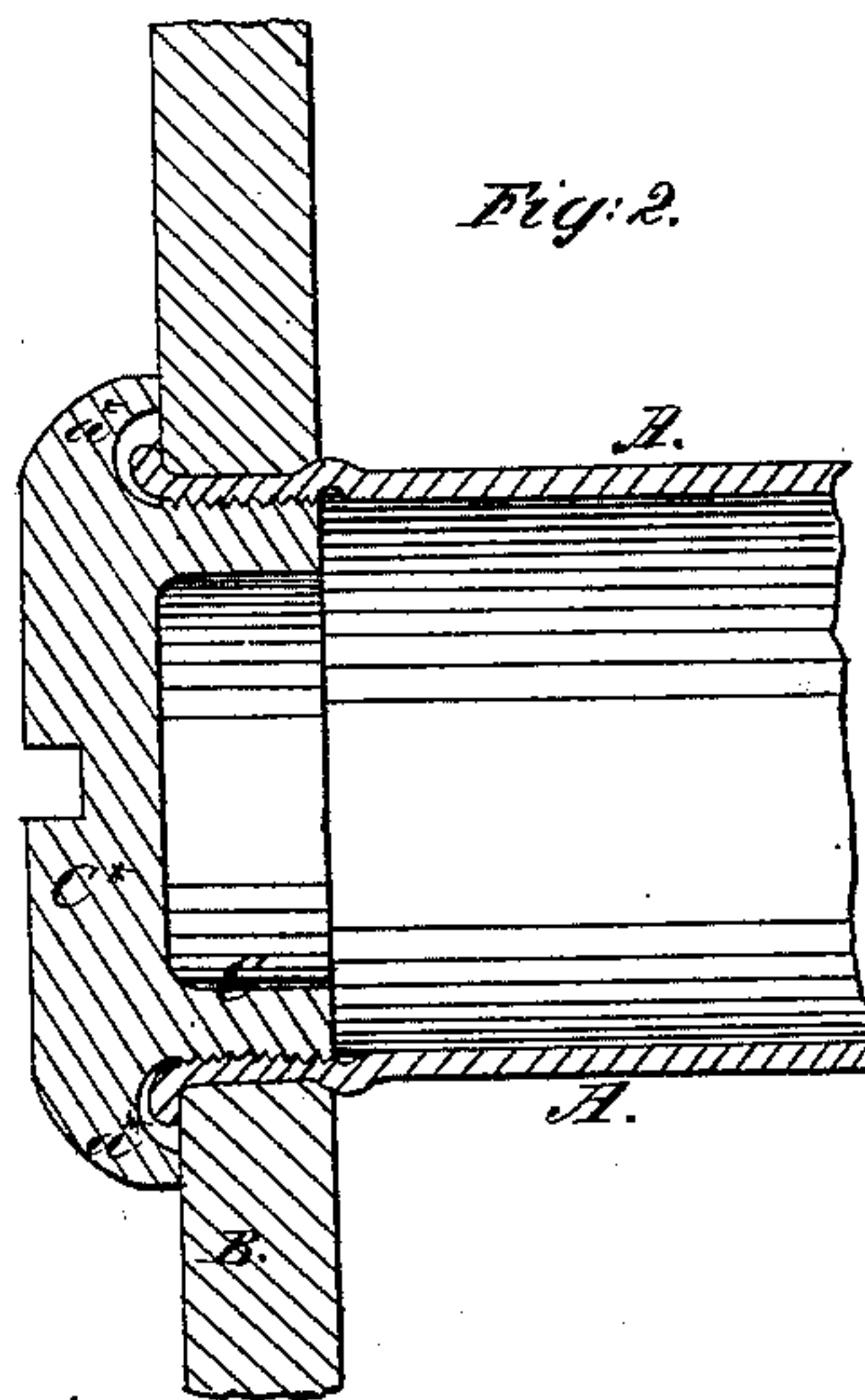
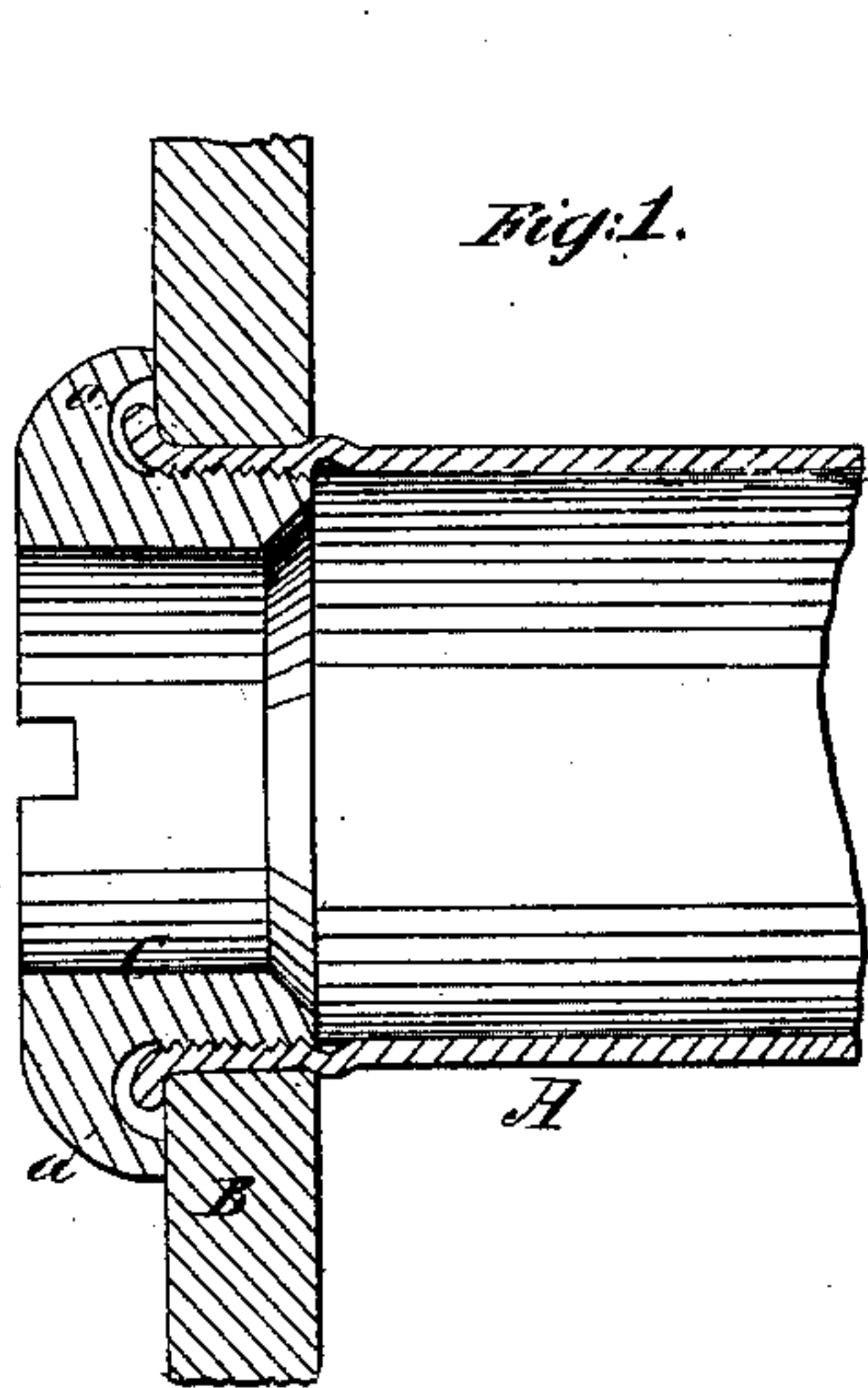


Larnton & Jones,
Boiler-Tube Ferrule.
N^o 63,399. Patented Apr. 2, 1867.



Witnesses:

M. Harrington
Wm. Brewin

Inventor:

E. Larnton
J. Jones
Per James C. Adams

United States Patent Office.

ELBRIDGE LAWTON, OF NEW YORK, N. Y., AND THOMAS J. JONES, OF SUMMIT, NEW JERSEY, ASSIGNORS TO C. J. EAMES, OF NEW YORK CITY.

Letters Patent No. 63,399, dated April 2, 1867.

IMPROVEMENT IN FERRULES FOR BOILER TUBES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, ELBRIDGE LAWTON, of the city, county, and State of New York, and THOMAS J. JONES, of Summit, in the county of Union, and State of New Jersey, have invented a new and useful Improvement in Stopping Steam 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 drawing, forming part of this specification, in which—

Figure 1 represents a longitudinal central section of the ferrule.

Figure 2 is similar section of the plug.

Figure 3 is an end view of the same.

Similar letters of reference indicate like parts.

This invention consists in a plug or ferrule provided with a screw-thread and projecting concave lip in such a manner that by cutting a suitable screw-thread into the end of the boiler tube the ferrule or plug can be readily screwed in, the ferrule being used if the tube leaks at the end, and the plug if the tube leaks at some distance from its ends. A suitable grummet placed under the concave lip stops the leak at the end, the draught being free to pass through the ferrule and tube, or if the plug is used the tube is stopped up completely to prevent the escape of water from the interior of the boiler.

A represents a boiler tube which is secured in the tube sheet B in the usual manner. If the tube becomes leaky at the end we introduce the ferrule C, which is provided with a screw-thread so that it can be conveniently and quickly secured in the end of the tube, and from this ferrule projects a lip, *a*, with a concave annular channel in its inner surface, said channel being intended to receive a grummet, so that by screwing the lip up against the tube sheet a steam-tight joint is produced, and the leak is stopped without obstructing the tube. The tubes may be formed perfectly cylindrical in shape, but we prefer giving them a bulge or enlargement just within the tube sheets, as shown in the drawings. By this means the tube sheets may each be held more firmly than would otherwise be the case, and the aperture through the tube sheet will be more completely fitted and made steam and water-tight independently of the external contrivances for that purpose. We are aware that contrivances similar in purpose to that invented by us have previously been known. The patent of Leon Pierre Barre, dated March 26, 1861, furnishes an example. But in all these cases the ferrule which is used for this purpose is made to slide into the end of the tube. It does not answer the purpose of a brace or stay to hold the tube sheet in place, and accordingly in boilers of any considerable dimensions special contrivances have to be resorted to for the purpose of preventing the bulging out of the tube sheets when the pressure of steam comes to be applied from within. This is especially the case in Barre's patent just referred to. But by using a screw, as contemplated by us, the tubes themselves are made to serve the purpose of stays for the tube sheets, and by their number they hold these tube sheets firmly in position, thus avoiding the necessity of additional stays or braces. These ferrules may be placed on the outer side of the ends of the tubes, but we prefer placing them within, as shown in the drawings.

We do not claim the use of ferrules for stopping boiler tubes, as they have previously been in use, when made to slide into the end of the tubes, but what we do claim as new, and of our own invention, is—

In stopping boiler tubes we claim the use of a ferrule, *c*, with projecting lips, *a a*, when attached to the tubes by means of a screw cut upon its surface, so that the tubes themselves shall be made to answer the purpose of stays or braces for the tube sheet, substantially as above represented and set forth.

The above specification of our invention signed by us this nineteenth day of May, 1866.

ELBRIDGE LAWTON,
THOS. J. JONES.

Witnesses:

WM. F. McNAMARA,
ALEX. F. ROBERTS.