No. 786,847. PATENTED APR. 11, 1905.

P. H. SEERY.

STEAM BOILER FIRE TUBE.

APPLICATION FILED APR. 11, 1904.

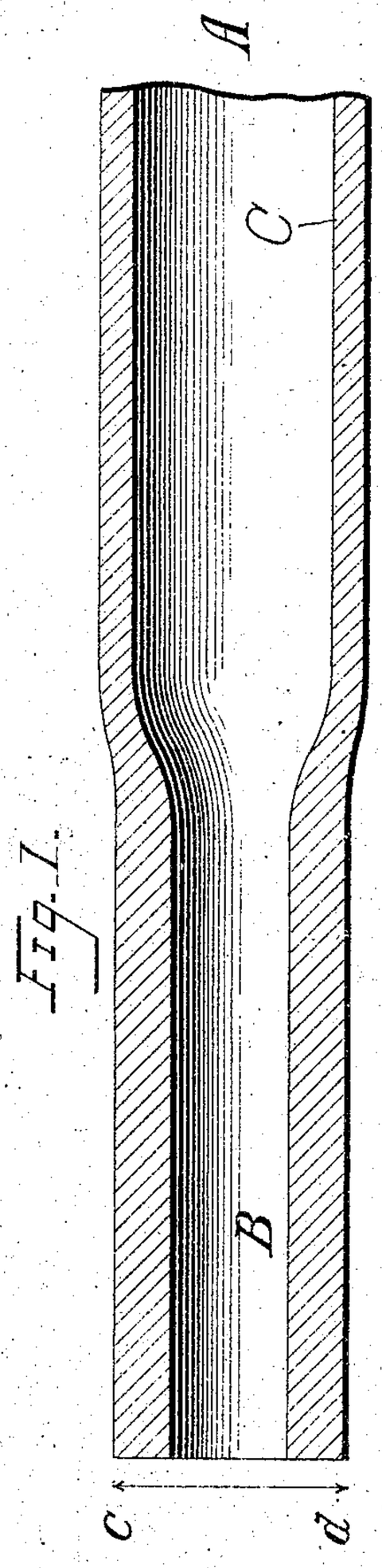

Fig. 1.

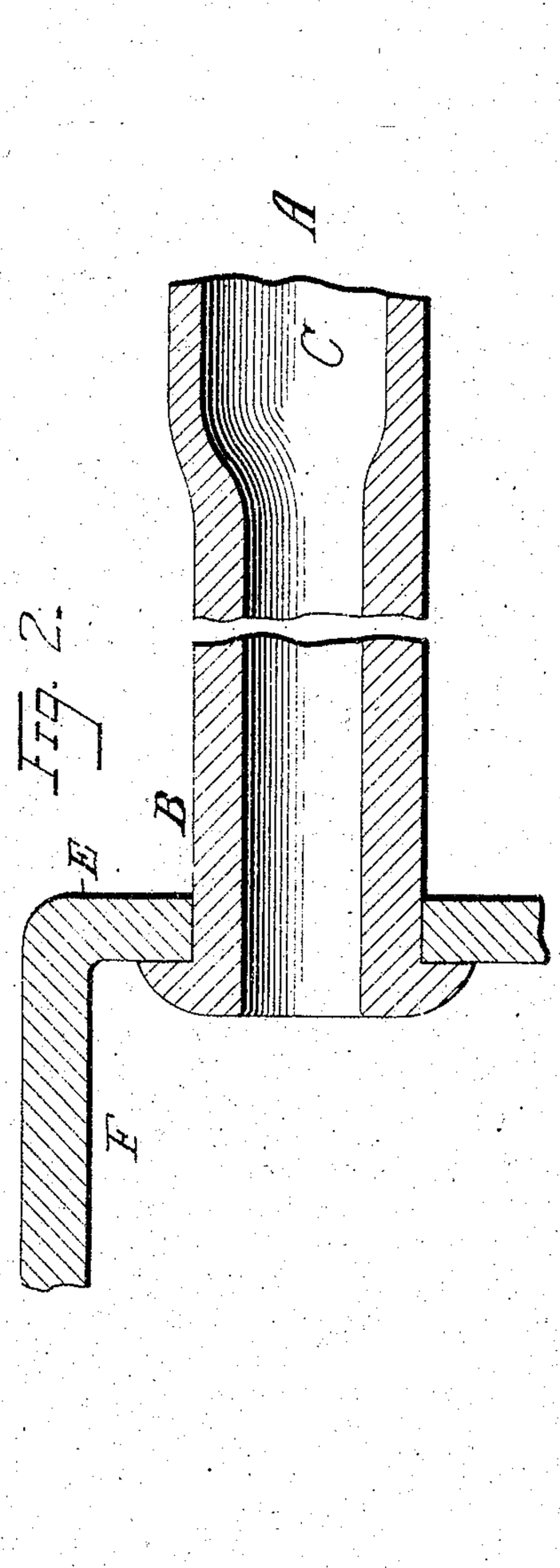

Fig. 2.

WITNESSES:

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No. 786,847. Patented April 11, 1905.

UNITED STATES PATENT OFFICE.

PETER H. SEERY, OF NEWARK, NEW JERSEY.

STEAM-BOILER FIRE-TUBE.

SPECIFICATION forming part of Letters Patent No. 786,847, dated April 11, 1905.

Application filed April 11, 1904. Serial No. 202,655.

To all whom it may concern:

Be it known that I, PETER H. SEERY, of Newark, Essex county, New Jersey, have invented a new and useful Improvement in Steam-Boiler Fire-Tubes, of which the following is a specification.

The invention relates to safe-ended steam-boiler fire-tubes; and it consists in a new article of manufacture—namely, a steam-boiler fire-tube having a body portion and an end portion integrally formed of malleable metal, the wall of said end portion being of greater thickness than the wall of said body portion and the external diameter of said end portion being less than the external diameter of said body portion.

In the accompanying drawings, Figure 1 is a longitudinal section of my improved safe-end tube, and Fig. 2 is a section of a tube-sheet with the end of the tube secured therein.

Similar letters of reference indicate like parts.

A is a boiler-tube formed integrally of malleable metal, the wall of which at its end portion B is thicker than along the body portion C. The exterior diameter of the tube is reduced at the end portion B, as shown at *c d* in Fig. 1.

The different thicknesses of metal at end and body portion of the tube are preferably produced by upsetting the end portion B of the tube by endwise compression of the same. In this way the wall of said end portion is not only increased in thickness, but at the same time is rendered denser than the wall of said body portion.

In Fig. 2 the improved safe-ended tube is shown secured in a tube-sheet E, forming part of a fire-box, (indicated at F.) The flame is resisted by the thickened wall of end portion B, not only where the tube extremity is riveted over, but also by said wall, which extends, as shown, through the tube-sheet and to the body portion C.

The advantages of my improved construction are, first, that the need for welding on an additional safe end having thicker walls is completely obviated at great saving of time and expense; second, there is no joint between the thickened end and the rest of the tube; third, when the thickening of the wall is produced by upsetting, the metal is rendered also denser and more resistant to heat; fourth, the thickening is produced for a distance from the tube extremity, so that not only is the tube rendered stronger and better able to encounter the scaling effects of heat at said extremity when located in a boiler fire-box, but throughout a considerable portion of its length over which the entering flame extends.

I claim—

As a new article of manufacture, a steam-boiler fire-tube having a body portion and an end portion integrally formed of malleable metal, the wall of said end portion being of greater thickness than the wall of said body portion, and the external diameter of said end portion being less than the external diameter of said body portion.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PETER H. SEERY.

Witnesses:
WM. H. SIEGMAN,
I. A. VAN WART.