

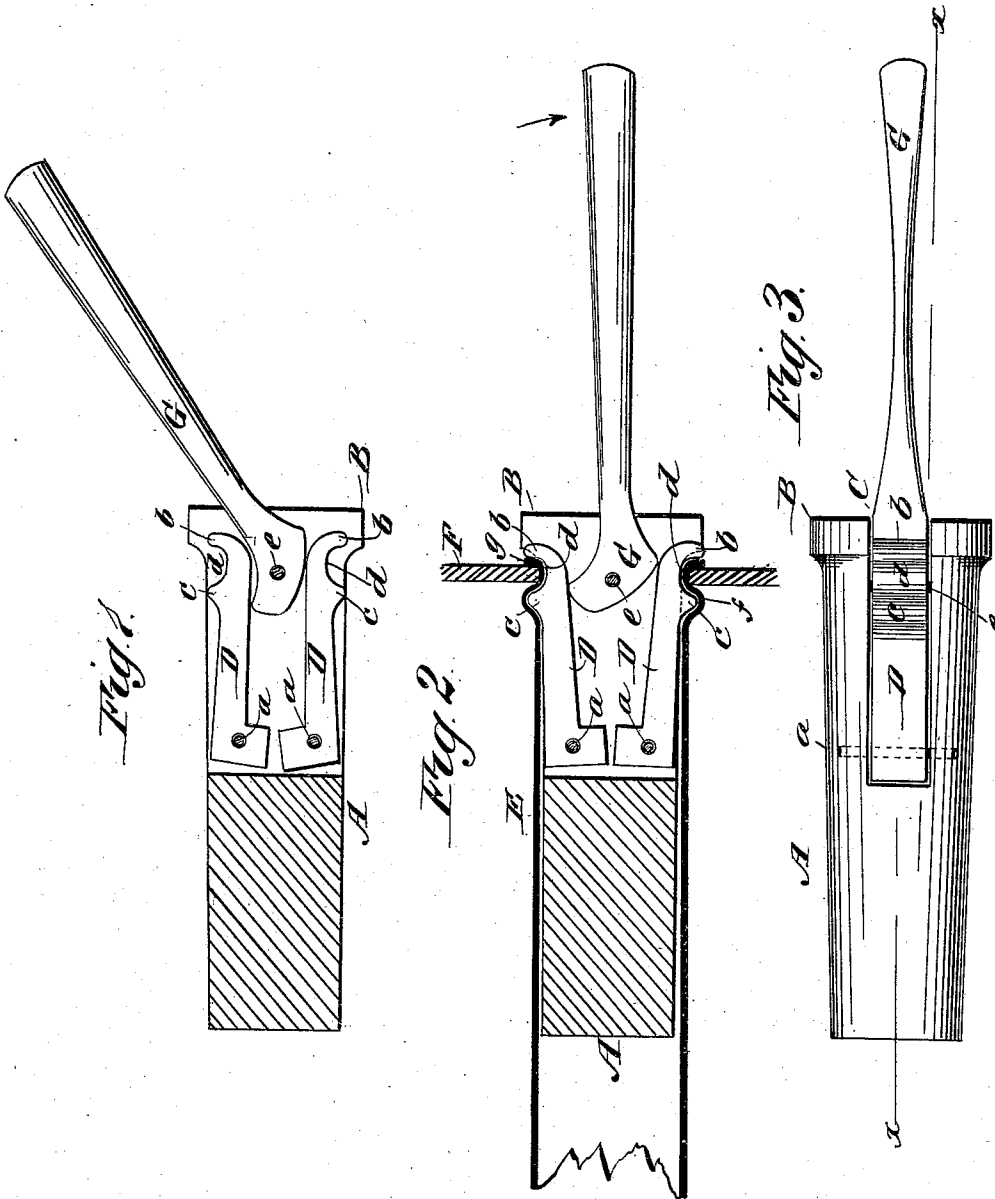
(No Model.)

J. NEBERGALL & C. E. SCHOFIELD.

TUBE EXPANDER.

No. 372,081.

Patented Oct. 25, 1887.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JACOB NEBERGALL AND CHARLES E. SCHOFIELD, OF WALLER, OHIO.

TUBE-EXPANDER.

SPECIFICATION forming part of Letters Patent No. 372,081, dated October 25, 1887.

Application filed August 9, 1887. Serial No. 246,511. (No model.)

To all whom it may concern:

Be it known that we, JACOB NEBERGALL and CHARLES E. SCHOFIELD, both of Waller, in the county of Ross and State of Ohio, have invented a new and Improved Boiler-Tube Expander, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a longitudinal section, taken on line *x x* of Fig. 2, of our improved boiler-tube expander. Fig. 2 is a longitudinal section of the tube-expander and a section of the boiler-tube and tube-sheet, showing the position of the expander in the tube; and Fig. 3 is a plan view of the tube-expander.

Similar letters of reference indicate corresponding parts in all the views.

The object of our invention is to provide a simple and effective tube for expanding the ends of a boiler-tube, causing them to fit the apertures of the tube sheet.

Our invention consists in the combination, with the slotted tapering plug, of two oppositely-arranged jaws having projections for forming a bead in the tube inside of the tube-sheet, and for turning the flange on the end of the tube outside of the tube-sheet, and a cam-lever for simultaneously operating the two jaws.

The tapering plug A is provided with a head or flange, B, and is furnished with a slot, C, which extends from the flanged end to a point near the center of the plug.

In the slot C are pivoted the jaws D D upon the pins *a a*. The jaws D D are each provided with a lateral projection, *b*, at their outer extremities, the similar projections, *c*, a short distance from the extremities forming a notch, *d*, of the width required for bending the material of the tube E over the tube-sheet F, as shown in Fig. 2.

Between the free ends of the jaws D D is pivoted a cam-lever, G, upon a pin, *e*. The cam of the lever G is arranged diagonally upon the lever, so that it will act simultaneously upon the two jaws D D.

The expander is inserted in the tube E, as shown in Fig. 2, when the cam-lever G is moved in the direction indicated by the arrow, thereby spreading the jaws D D and causing them to press the material of the tube E outward within the tube-sheet F, forming a bead, *f*, and to press the end of the tube against the outer surface of the tube-sheet, forming a flange, *g*. After forcing the material of the tube outward in one place in the manner described, the expander is turned a distance equal to the width of the jaws, when the operation is repeated. By one revolution of the expander in the manner described the end of the tube will be brought into close contact with the tube-sheet, thus rendering it perfectly tight.

In case the tube leaks upon one side only it will be unnecessary to apply the expander to all sides of the tube.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. In a tube-expander, the combination, with a slotted plug fitted to the tube, of jaws pivoted in the slot of the plug, oppositely arranged with respect to each other, and adapted to press the material of the tube into engagement with the tube sheet, and a cam-lever pivoted in the slotted plug and adapted to engage the movable jaws, substantially as described.

2. The combination of the plug A, provided with the slot C and flange B, the jaws D D, pivoted in the slot of the plug A and provided with lateral projections *b c*, and the cam-lever G, pivoted in the slot of the plug and adapted to engage both of the jaws simultaneously, substantially as described.

JACOB NEBERGALL.
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Witnesses:

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