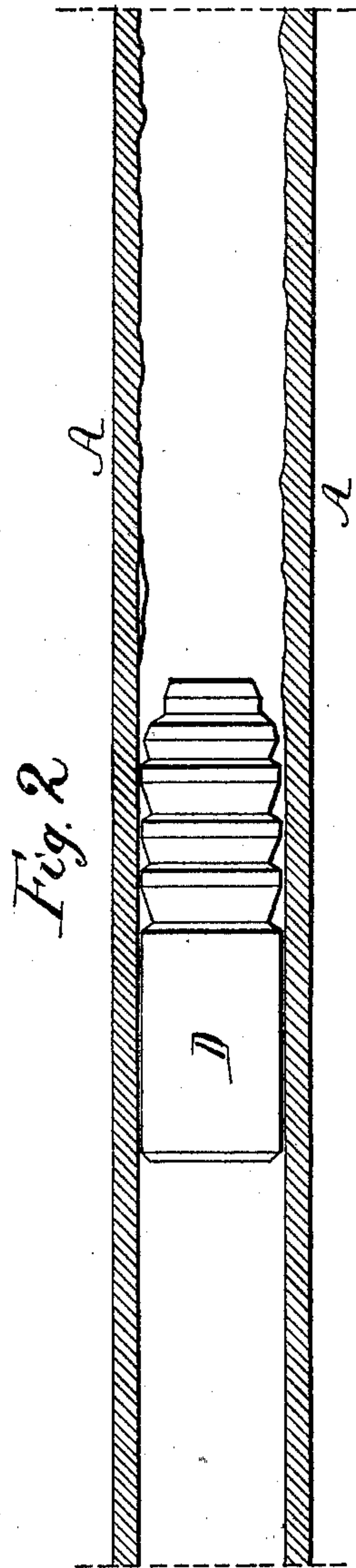
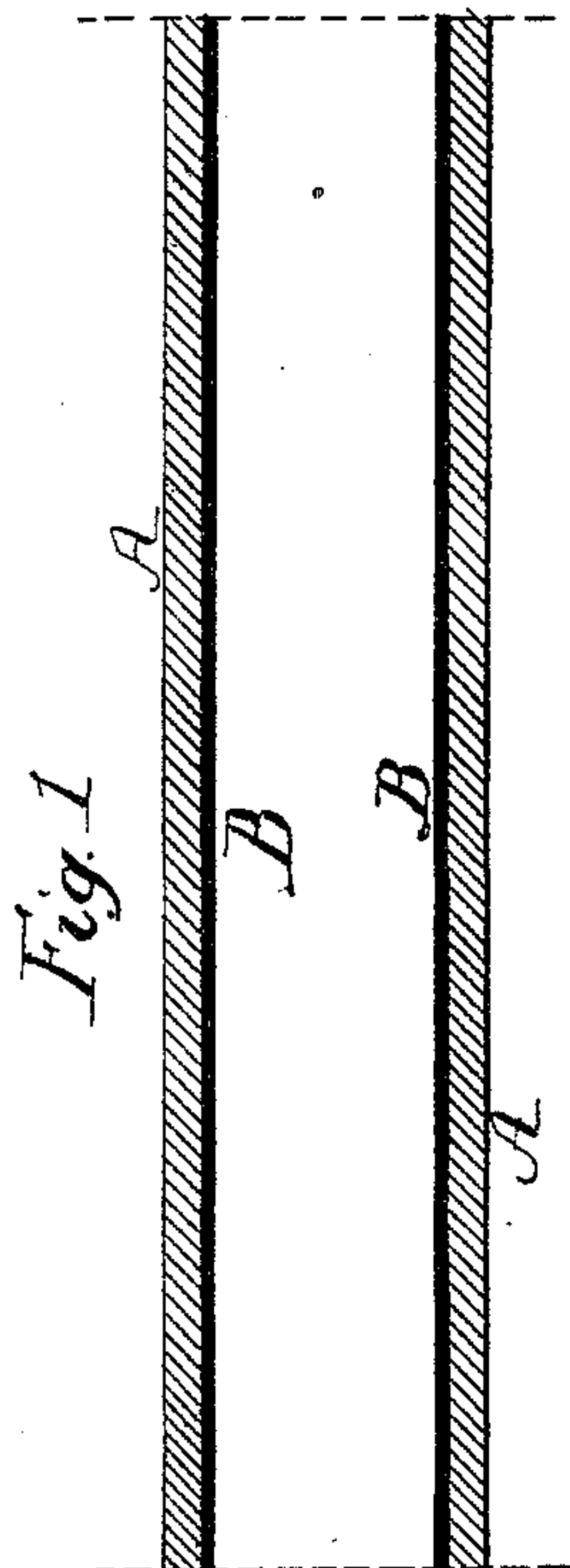


F. WISTAR.

MODE OF SMOOTHING THE INTERIOR SURFACES OF IRON PIPES.

No. 175,807.

Patented April 4, 1876.



WITNESSES:

C. A. Nottingham.
J. L. Skidmore.

F. Wistar

By his Attorneys
Howson and Son

UNITED STATES PATENT OFFICE.

FRANK WISTAR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JAMES TATHAM, OF SAME PLACE.

IMPROVEMENT IN MODES OF SMOOTHING THE INTERIOR SURFACES OF IRON PIPES.

Specification forming part of Letters Patent No. **175,807**, dated April 4, 1876; application filed November 6, 1875.

To all whom it may concern:

Be it known that I, FRANK WISTAR, of Philadelphia, Pennsylvania, have invented certain Improvements in Preparing Iron Pipes for the Reception of Linings, of which the following is a specification:

The object of my invention is to expeditiously and economically prepare iron pipes for the reception of linings of tin, or other metal or alloy which is softer than the iron; and this object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical section of a tin-lined iron pipe; and Fig. 2, a vertical section of a piece of iron tubing, illustrating my mode of preparing the same for the reception of the lining.

The lined pipe, to the manufacture of which my invention relates, consists of an ordinary rolled tube, A, of iron, to the interior of which the lining is applied by first inserting a tube, B, of tin or other equivalent metal or alloy, and of slightly less diameter than the interior of the outer tube, and then distending the lining-tube by hydraulic pressure or otherwise. The rolled tube A, of iron in the crude condition in which it leaves the rolls, has on the inside numerous blisters, excrescences, and sharp ridges, which must be removed or flattened down prior to the application of the lining, in order that the latter may not be cut or otherwise wounded. This has heretofore been effected by boring out the interior of the iron tube—an operation which is both tedious and expensive, and at the same time tends to wound the said tube—objections which

I obviate by the employment of a plug, D, of steel or of iron case-hardened, this tool being somewhat less in diameter than the interior of the iron tube A, and being driven through the same by percussion, or forced through the tube by hydraulic or other mechanical appliances.

The tool may be smooth, or it may be grooved, as shown in the drawing, and I make it rounded or tapered at the front end, so that its tendency will be to flatten down the projections in the tube, instead of cutting or tearing the same. After the passage of the tool through the iron tube, the interior of the latter will be comparatively smooth, and of uniform or nearly uniform diameter throughout, and in a proper condition for receiving the lining, the strength of the tube being in no way impaired by the action of the tool.

I do not desire to restrict myself to any specific mode or appliances for driving or forcing the tool through the iron tube; but

I claim as my invention—

The within-described mode of preparing iron tubes for metallic linings—that is to say, by driving or forcing through the same a plug slightly less in diameter than the interior of the tube, and having a rounded or tapered front end, thus flattening down the internal projections, all as set forth.

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

FRANK WISTAR.

Witnesses:

HARRY HOWSON, Jr.,
HARRY SMITH.