

Horatio W. Doe's,

## Improvement in Bending tubes for Spouts, Nozzles, &amp;c.

No. 118,847.

Patented Sep. 12, 1871.

Fig. 1.

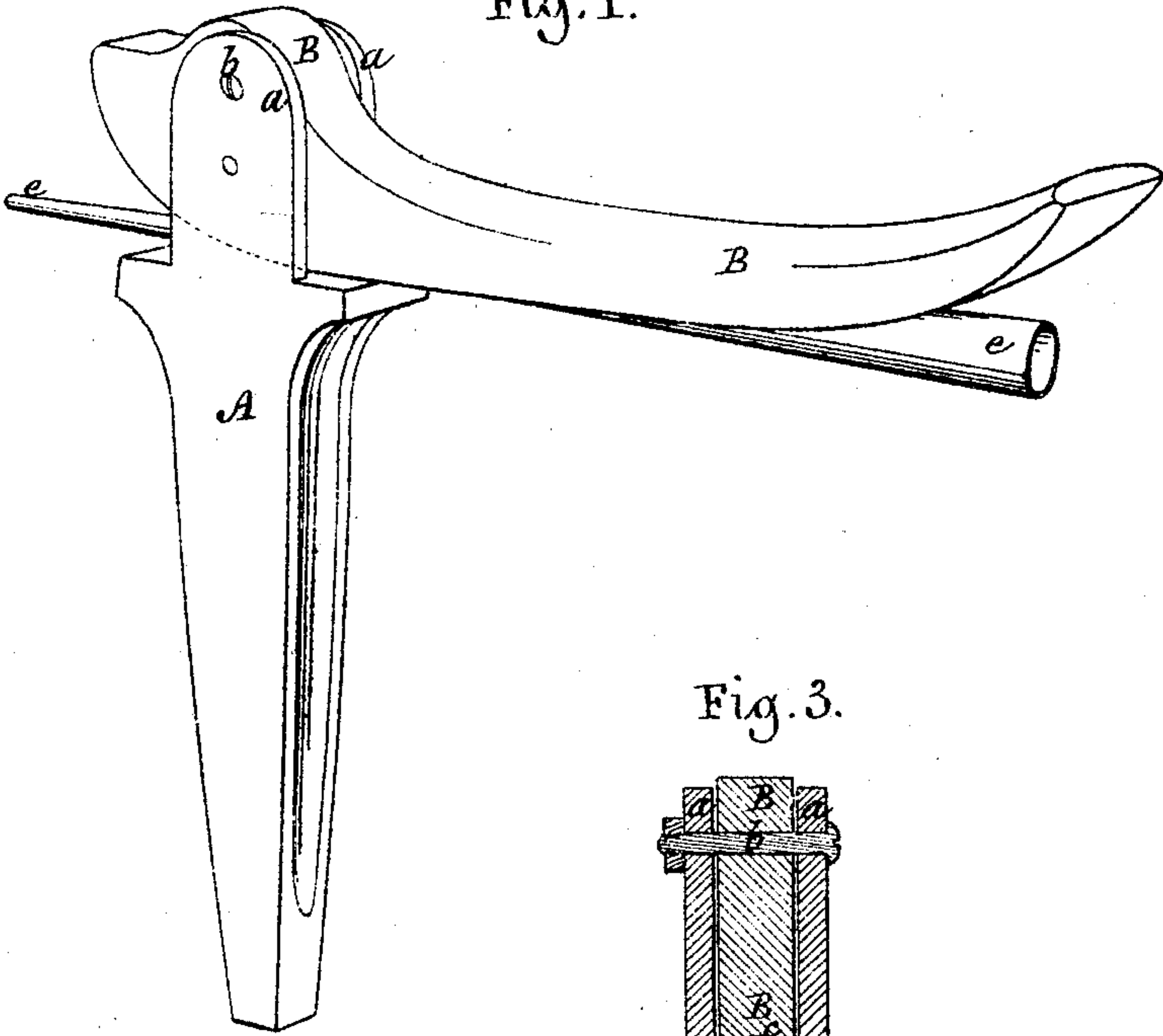


Fig. 2.

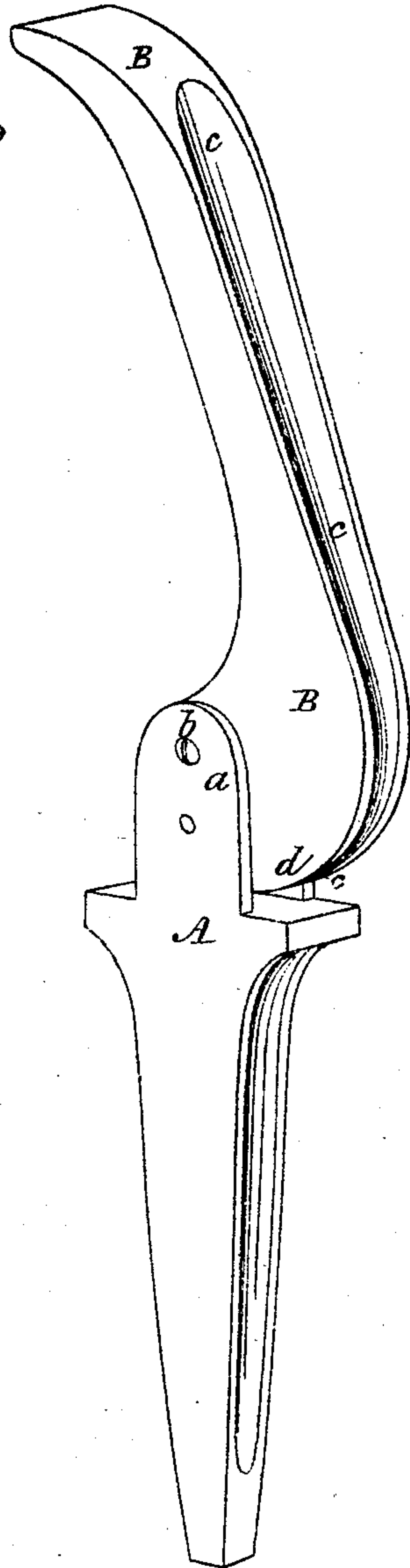


Fig. 3.

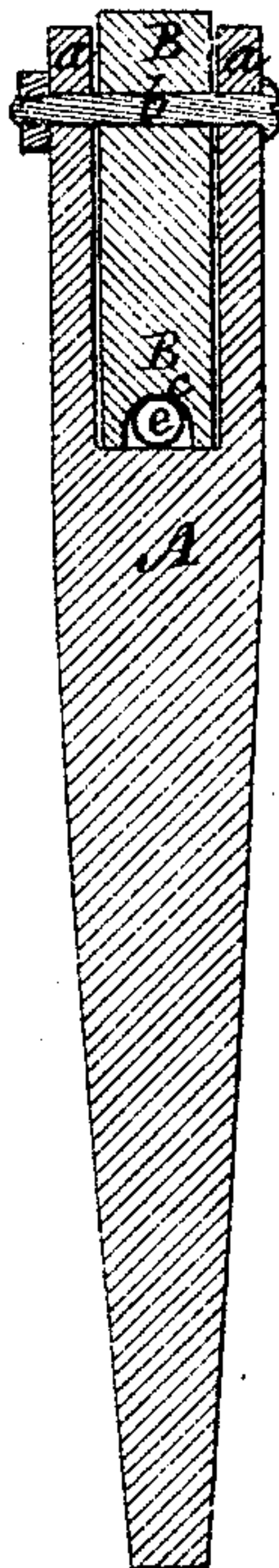
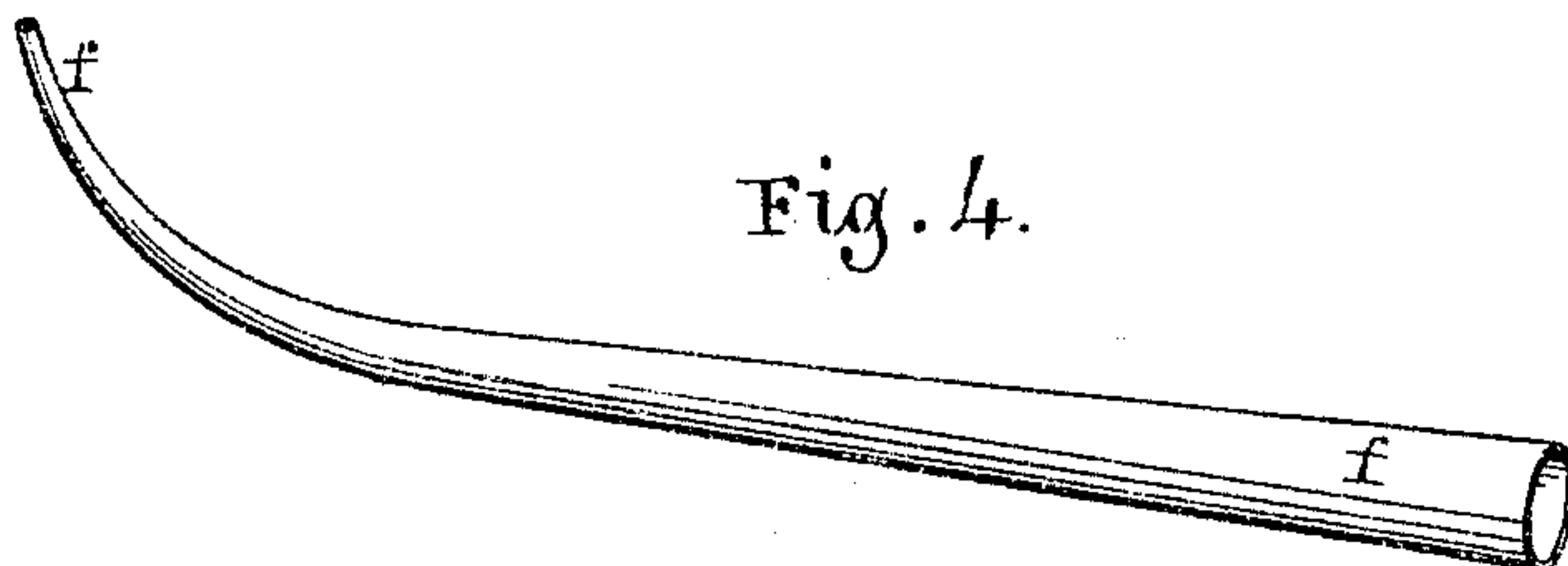


Fig. 4.



Witnesses.

Edmund Masson.

Horatio W. Doe.

By atty. A. B. Stoughton.

# UNITED STATES PATENT OFFICE.

HORATIO W. DOE, OF SPRINGFIELD, OHIO, ASSIGNOR TO HIMSELF AND WILLIAM F. MATTHEWS, OF SAME PLACE.

## IMPROVEMENT IN DEVICES FOR BENDING TUBES OF SHEET METAL.

Specification forming part of Letters Patent No. 118,847, dated September 12, 1871.

*To all whom it may concern:*

Be it known that I, HORATIO W. DOE, of Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in the Manner of Bending Tapering Tubes for Nozzles, Coffee-pots, Spouts, &c.; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 represents, in perspective, a pair of bending-levers pivoted to each other, and with a tapering tube inserted therein in position to be bent into a nozzle or spout, as will be explained. Fig. 2 represents the same bending-levers, but in a different position, so as to show the form of that part of one of them into or against which the tube is laid and held while its point or end is being bent. Fig. 3 represents a vertical transverse section through the levers at their pivoted point, and showing the groove in the bending-lever and the tube therein in section. Fig. 4 represents, in perspective, one of the nozzles or coffee-pot spouts as bent and ready for use.

Similar letters of reference, where they occur in the separate figures, denote like parts in the drawing.

The ordinary way of bending coffee-pot spouts, oil-can nozzles, and similar articles, is to first fill the tube, out of which they are to be formed, with melted resin, lead, or solder, and when cooled to bend the end of the tube over a former of some kind, and then dip the spout or nozzle in a molten bath of the same material of which it was filled and melt it out. This is tedious and expensive. I am aware also that attempts have been made to use spring, laminated, and jointed mandrels, which are introduced into the tube, the tube and mandrel bent together, and then the mandrel be withdrawn. This plan is not very practicable and by no means economical, as these mandrels are apt to stick, part, or wear out.

The nature of my invention and discovery consists in this, viz., that I bend these spouts, nozzles, and other similar articles, in bending-

levers, without any filling of any kind, either of molten material or mandrel whatever, by which means I not only expedite and cheapen the manufacture but make a perfect bend without bruising, battering, or marring the surface of the metal where the bend is made.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawing.

A represents a vise or anvil-lever, which may be set or clamped in any holder, and to the lugs *a a* on this lever A, and between them, is pivoted, as at *b*, a hand or swinging lever, B, which is grooved out on its under side with a tapering groove, *c*, for tapering tubes, spouts, or nozzles, and comparatively straight throughout its main length but abruptly curved near its end, and the groove running out or nearly so on said curved portion, (marked *d*.)

The tube *e* to be bent is inserted between the levers as seen in Fig. 1. Then, by grasping both the lever B and the tube *e* by one hand and vibrating them upon the pivot or center of motion *b*, gently at first, and then increasing the swing of both, the end of the tube is bent around into the groove in the curved end *d* of the lever B. When the lever B is swung up into the position in Fig. 2 the bent spout or nozzle, as shown at *f*, can be removed.

I have mentioned the lever A as being fastened or clamped and the lever B as a movable one. It is obvious that these duties of each may be reversed, or that both may be taken in the hands and both of them worked at the same time.

What I claim herein as new, and desire to secure by Letters Patent, is—

The process herein described of bending tubes to form nozzles, coffee-pot spouts, and other similarly-bent articles, viz., between bending-levers without the use of any interior filling or support of any kind, substantially as described.

HORATIO W. DOE.

Witnesses:

JOHN P. ALLEN,  
W. E. BANTA,  
WM. F. MATTHEWS.