Shaw & Willard

Manufacture of Tin Lined Pipe

No. 41401 Patented Jan. 26, 1864

Fig: 1.

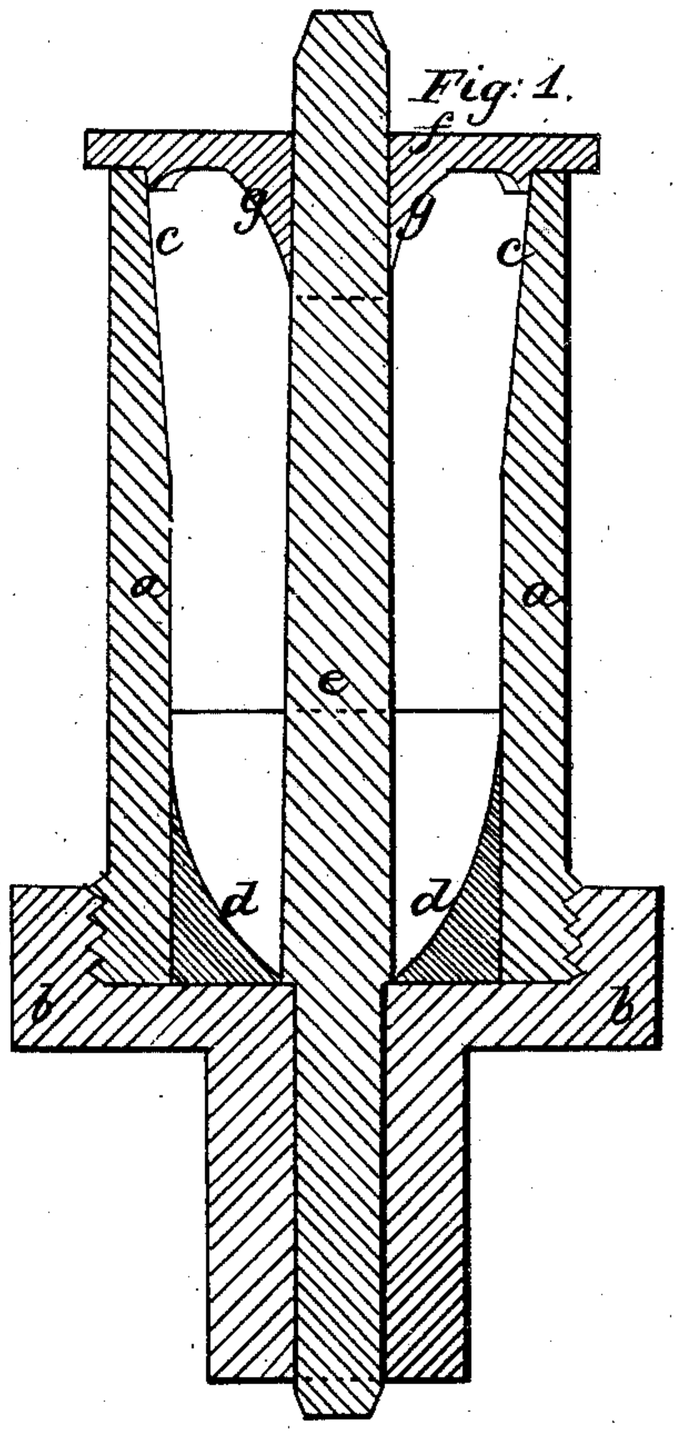


Fig: 3.

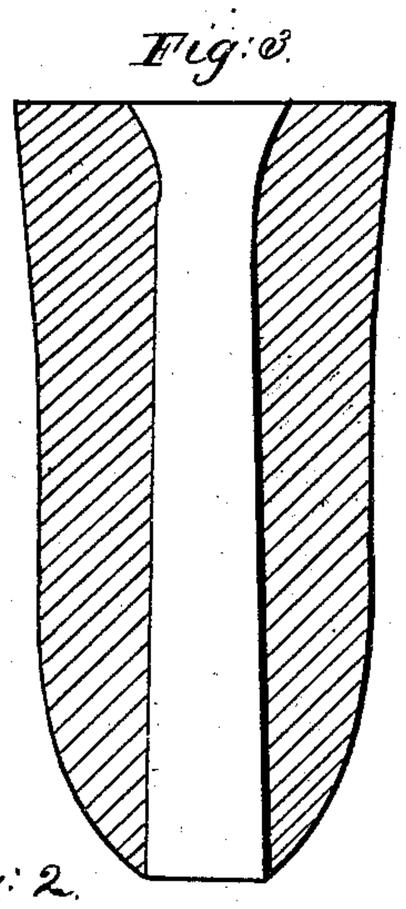
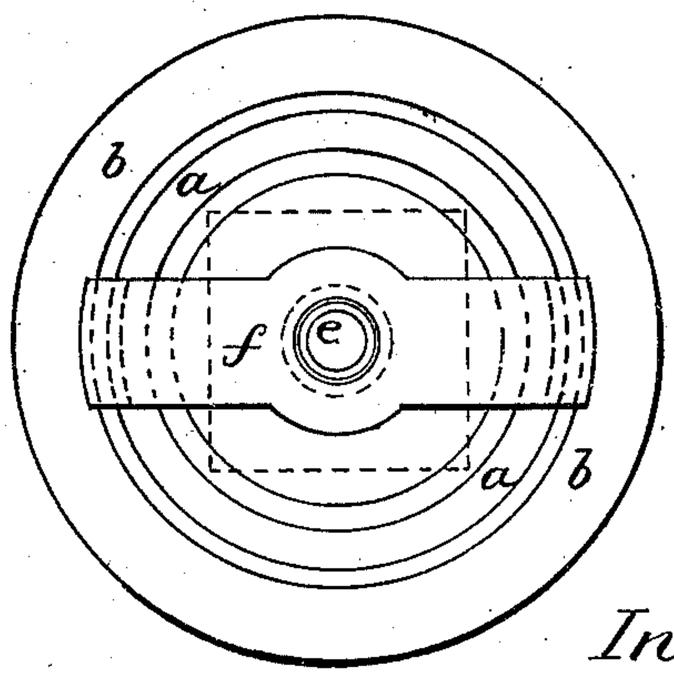


Fig: 2.



Witnesses;
Thos. Geo Harvey
Chas. H. Smith

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UNITED STATES PATENT OFFICE.

WILLIAM A. SHAW AND GARDNER WILLARD, OF NEW YORK, N. Y.

IMPROVEMENT IN THE MANUFACTURE OF TINNED LEAD PIPE.

Specification forming part of Letters Patent No. **41,401**, dated January 26, 1864.

To all whom it may concern:

Be it known that we, WILLIAM ANTHONY SHAW and GARDNER WILLARD, of the city and State of New York, have invented, made, and applied to use a certain new and useful Mode of Casting Ingots of Tin or other Metal for Lining Lead Pipe; and we do hereby declare the following to be a full, clear, and exact description of our said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical section of our mold. Fig 2 is a plan of the same, and Fig. 3 is a vertical section of the ingot of tin or its alloy.

Similar marks of reference denote the same parts.

An ingot of tin has been cast and introduced in a cylinder within an ingot of lead, and the two forced out through a die by a ram actuated by hydraulic power, as in the patent of Wm. A. Shaw, dated March 10, 1863.

The nature of our said invention consists in casting the ingot of tin or other metal with a taper at one end, and an enlargement at the other end, said ingot being introduced into the pipe-press with an ingot of lead surrounding it, the two being forced out of the cylinder through a die by hydraulic pressure to produce tinned lead pipe.

The object of this invention is to obviate a difficulty that has been found to exist in the production of this character of pipe with an ingot of tin having parallel sides within the ingot of lead, for in that case the tin formed too thick a coating in the first portion of pipe forced out in consequence of the size of the end of the tin ingot, and in the last portion of the pipe the tin coating was too thin, or entirely absent from being drawn out with the pipe faster than the lead, in consequence of the greater hardness of the tin than the lead. These difficulties are overcome by our improvement, and the lining of tin rendered uniform in consequence of the taper at one end of the ingot preventing two great thickness in the tin coating, and the enlargement of the ingot at the other end preventing the thinning or absence of such coating.

We have shown the mold adapted to casting this ingot, in which *a* is the mold itself secured to the base *b* by a screw or otherwise. *c* is the flaring or enlarged part of this mold near the top, and *d* is the contracted or tapering portion near the bottom, which may be formed as a separate piece, in order that it may be changed to suit a different-sized core or mandrel, *e*. This mandrel *e* passes into the step or base *b* and tapers slightly, and is sustained at the upper end by the bridge *f*, and in cases where the mandrel or core, made use of in the pipe-press, is larger at the point of attachment to the ram, as is generally the case, said bridge is to be formed with a conical pendant, *g*, to form an enlargement to the hole of the ingot of a corresponding shape, so that the ingot will fit the mandrel of the pipe-press. After this ingot of tin or its alloy has been introduced in the pipe-press, the lead may be cast around it; or the tin ingot may be introduced into a correspondingly-shaped hole in the previously-cast lead ingot.

This form of ingot may be cast in zinc or similar metal that may be suitable for a non-corrosive lining to lead pipe. In this case the temperature of the pipe-press must be regulated so that the zinc shall be sufficiently warm to be ductile.

What we claim, and desire to secure by Letters Patent, is—

Forming an ingot of metal for lining lead pipe with a taper at one end or an enlargement at the other, or both, for the purposes and as specified.

In witness whereof we have hereunto set our signatures this 18th day of December, 1863.

W. ANTHONY SHAW.
GARDNER WILLARD.

Witnesses:
THOS. GEO. HAROLD,
CHAS. H. SMITH.