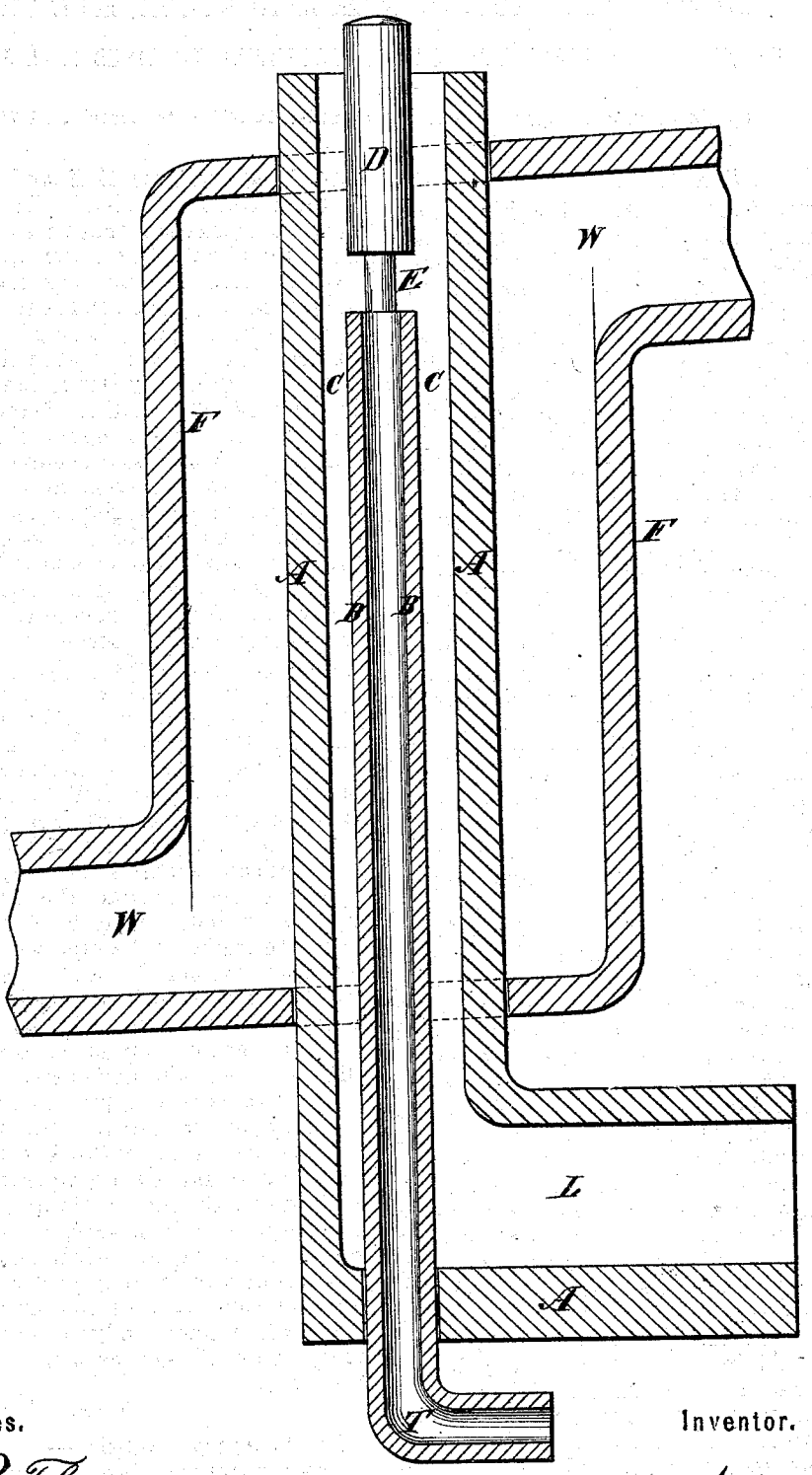
E. W. NEWTON.

Improvement in Apparatus for Manufacturing Tin Lined Lead Pipe.

No. 124,911. Patented March 26, 1872.



Witnesses.

A. P. Thayer.
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124,911

UNITED STATES PATENT OFFICE.

EDWIN W. NEWTON, OF FRANKLIN GROVE, ILLINOIS.

IMPROVEMENT IN APPARATUS FOR MANUFACTURING TIN-LINED LEAD PIPES.

Specification forming part of Letters Patent No. 124,911, dated March 26, 1872.

SPECIFICATION.

I, EDWIN W. NEWTON, of Franklin Grove, in the county of Lee and State of Illinois, have invented an Apparatus for the Manufacture of Tin-Lined Lead Pipe, of which the following is a specification:

The object of my invention is to provide an apparatus for the manufacture of tin-lined lead pipe, by the use of which the lead pipe can be made directly and continuously from the melted lead and at the same time have its inner surface coated with a lining of block-tin of any thickness that may be desired.

The figure is a vertical section of the apparatus.

A A is a tube of iron, which determines the outside diameter of the lead pipe. Its lower right-hand port leads from the furnace in which the lead is melted. The melted lead enters at L and flows upward through the channel C C, around the tube B B, which passes through the bottom of A A, as shown, and stands upright in its center, being the core which determines the inside diameter of the pipe. The lead should be kept at such a level in the furnace that it would, if allowed to flow freely, rise about to the top of A A. As it passes up around B B it becomes cooled into a solid pipe by a current of water, which flows through the chamber F F and surrounds the pipe A A. W W show the inlet and outlet of the chamber through which the water passes. The tube B B, which forms the core of the lead pipe, conveys the melted tin from a furnace upward inside of the lead pipe to E, where the melted tin flows over the top of B B and comes in contact with the clean hot surface of the lead pipe which has been cooled enough to render the lead solid. The lead being hot, and its surface perfectly clean and untarnished, the melted tin will perfectly wash or coat the inside of the lead pipe as it is drawn upward out of A A. D is a solid plug of iron, fastened to the top of B B so that its center exactly coincides with the axis of B B. It is designed to regulate the thickness of the tin lining. The diameter of D will be any degree less than the outside diameter of B B, so as to allow the melted tin to flow up by the side of it, between it and the lead pipe. D is to have any necessary length, and the tin should be kept at such a level in its furnace that it will rise nearly to the top of D. The plug D is fastened by little bars or wires E to the top of B B in such a way as to allow the tin to pass freely out from B B and touch all parts of the surface of the lead. The whole process is based on the fact that tin solidifies at a temperature about 178° lower than lead. The two crucibles in which the tin and lead are melted can be placed on the same fire, the lead over the hotter part. The metals should both be kept near a given level in the crucibles, in order that they may rise to the proper height in the tubes, and neither metal should attain a temperature much higher than its melting point, which may be prevented by keeping in the crucibles a portion of unmelted metal. While passing through the lower part of the vertical tubes the tin will abstract heat from the lead, assisting to cool that, and raising its own temperature, so that it will remain perfectly fluid till it has passed above E, and will then become solid, because the heat of the lead has been reduced by the water below the melting point of the tin. The solid finished pipe is to be drawn steadily up out of A A, but at a slower rate than that at which the metals would flow up through the tubes, so that the melted part shall be kept constantly in contact with the part already cooled. The tubes and the part D will be made of iron, with polished surfaces, and will taper slightly upward to accommodate the shrinkage of the pipe as it cools. If it be desired merely to wash the inside of the pipe with tin in a very thin coat, the part D can be removed, allowing the fluid tin to fill the lead pipe for a short distance above the top of B B.

The apparatus can, of course, be varied in all of its dimensions and parts, according to the size and thickness of pipe to be made. The essential part or feature of this process is that it takes advantage of the fact that tin melts and solidifies at a lower temperature than lead; to introduce the melted tin into the inside of the lead pipe while its surface is perfectly clean and untarnished, and it is hot enough to allow the two metals to alloy perfectly where they come in contact, thus insuring that the tin lining will adhere firmly to the lead and cover every part of its surface with a uniform thickness of tin.

Claim.

I claim as my invention—

The apparatus as described, and for the purpose set forth, in the above specification.

Witnesses: EDWIN W. NEWTON.
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