

United States Patent Office.

DAUPHIN S. HINES OF BROOKLYN, NEW YORK, ASSIGNOR TO JOHN J. CROOKE, OF NEW YORK CITY.

Letters Patent No. 63,249, dated March 26, 1867.

IMPROVEMENT IN THE MANUFACTURE OF LEAD FOIL COATED WITH TIN.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DAUPHIN S. HINES, of Brooklyn, Kings county, and State of New York, have invented a new and useful Improvement in the Process of Making Foil of Lead, Coated with Tin; and I do hereby declare that the following is a full, clear, and exact description thereof.

Various processes have been invented for making foil of lead, coated on the outer surfaces with tin. One of these processes which is practised consists in taking an ingot of lead, of the length, width, and thickness required, placing it between two laminae of tin, and, by successive rollings, weld the two metals, and reduce the whole to the required thickness. This process is attended with serious difficulties.

Another process consists in taking an ingot of lead of the required size and form and coating it with tin to the required thickness by successive dippings in molten tin, and then subjecting this ingot so coated to successive rollings; but this is objectionable, because of the liability of getting the tin of unequal thickness.

Another process, invented by myself, consists in taking tin pipe, of the required length, diameter, and thickness of metal, with one end of it closed, placing it in a cooling medium, and filling it with molten lead, the cooling medium preventing the tin from being melted by the lead, and, after the lead filling has set, rolling the ingot in the usual manner to the required thickness for foil.

The objections to all these methods are avoided by my present invention, which consists in taking tin pipe of the required length, diameter, and thickness of metal, and an ingot of lead of the diameter of the inside of the pipe, and inserting the ingot of lead within the tin pipe, and then rolling the compound ingot in the usual manner to the thickness of foil required. I have discovered that a compound ingot so prepared will produce foil with the inside of lead, and entirely coated with tin, as perfectly as by any other known process, and that it can be produced at less cost.

The mode of working my said process which I prefer, is to make the tin pipe of the required dimensions by any of the known processes for making tin or lead pipe, such, for instance, as forcing the tin from a cylinder through a die of the required diameter for the exterior of the pipe, and around a central core, which determines the calibre, and then making the ingot of lead by a like mode of procedure, but without a central core. The diameter of the ingot of lead should be slightly less than the calibre of the tin pipe, so that the one can be readily inserted in the other; and after the lead has been inserted in the pipe I subject them to pressure, either applied endwise, so as to increase the diameter of the lead, or by pressure applied to the circumference, or otherwise, to bring the surfaces into contact. If desired, a disk of tin can be soldered on to each end, and then, with or without having the ends enclosed, the ingot is to be rolled in the usual manner, and to the required thickness. I have also, and with success, worked my said improved process by making a tube of tin slightly tapering, and a plug or ingot of lead of a corresponding taper, and the two of such a diameter that when the lead is forced into the tin pipe the surfaces of the two will be brought into close contact, and then the ingot thus prepared can be rolled as before stated. If desired, the ends of the compound ingot, before rolling, can be covered with tin, as before stated.

What I claim as my invention, and desire to secure by Letters Patent, is—

The process, substantially as described, for making foil of lead, coated with tin on both sides, by inserting a plug of lead within a pipe made of tin, and then rolling the compound ingot thus formed, as set forth.

D. S. HINES.

Witnesses:

WM. H. BISHOP,
ANDREW DE LACY.