UNITED STATES PATENT OFFICE.

WILLIAM ANTHONY SHAW, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, GARDNER WILLARD, LEWIS COLWELL, AND JOSEPH COLWELL, OF SAME PLACE.

IMPROVEMENT IN THE MANUFACTURE OF TIN-LINED LEAD PIPE.

Specification forming part of Letters Patent No. **49,040**, dated July 25, 1865.

To all whom it may concern:

Be it known that I, WILLIAM ANTHONY SHAW, of the city and State of New York, have invented, made, and applied to use a certain new and useful Improvement in the Manufacture of Tin-Lined Lead and other Pipe; and I do hereby declare the following to be a full, clear, and exact description of the nature and object of my said invention and the mode of applying the same to use.

Tin-lined lead pipe has heretofore been manufactured by hydraulic pressure, an ingot of tin being placed around a mandrel in the lead cylinder, and then the melted lead being poured around the same, and both being forced out of the die in the ram or end of the cylinder. A mode of manufacturing this kind of pipe is set forth in Letters Patent granted to me March 10, 1863, and to Willard and Shaw January 26, 1864, to which a reference is hereby specially made.

In the use of an ingot of tin or other metal within the hydraulic cylinder, and casting around it the lead or other metal melting at a higher temperature, difficulty sometimes arises from the tin melting and forming an alloy with the lead. It is important, however, that the surface of the tin should fuse, otherwise the union of the lead and tin will not be perfect in the pipe. Besides this, the charge of melted metal poured into the cylinder retains its heat so long that considerable time is lost in waiting for the metal to consolidate sufficiently to be worked.

The nature of my said invention consists in refrigerating the core immediately before introducing it into the cylinder, in order to prevent the melted lead poured around it from melting the tin or other core too much, and at the same time producing a chill to the charge, so that it may be pressed into pipe much more quickly, thus effecting a great saving of time. After the tin or other ingot is cast and cooled I introduce the same into any refrigerative mixture—such as ice and salt—and then place it directly in the cylinder of the pipe-press and over the mandrel thereof, and cast around it the lead or other metal, the effect of the cold core being to set the lead quickly and prevent the core itself being melted.

This improvement may be used, in the manufacture of pipe entirely from lead, as a means for chilling the charge introduced into the cylinder; or the hollow ingot forming the core may be of any other metal or alloy that can be worked in this character of pipe-press.

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

The method herein specified of chilling the cast metal in the cylinder of a hydraulic pipe-press by a core cooled, as set forth, immediately before it is employed in said cylinder, as specified.

In witness whereof I have hereunto set my signature this 17th day of June, A. D. 1865.

W. ANTHONY SHAW.

Witnesses:

LEMUEL W. SERRELL,

THOS. GEO. HAROLD.