

# UNITED STATES PATENT OFFICE.

EDWARD PIERCE, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN ENAMELING IRON PIPES AND HOLLOW WARE.

Specification forming part of Letters Patent No. **17,635**, dated June 23, 1857.

*To all whom it may concern:*

Be it known that I, EDWARD PIERCE, of Philadelphia, in the county of Philadelphia, in the State of Pennsylvania, have invented a principle and mode of enameling the inside of iron pipes and other hollow castings by applying a certain composition to the core used in the manufacture of the pipe or casting; and I do hereby declare that the following is a full and exact description of the manner in which the same is done.

It has long been deemed important to enamel or vitrify the interior of cast-iron pipes and certain other hollow castings. Various kinds of hollow iron-ware have been enameled heretofore by applying some enameling or vitrifiable compounds to the interior of the ware after it has been cast, and then applying heat thereto; but this mode of enameling has not been deemed applicable to cast-iron pipes and similar hollow ware.

My improvement has for its object the enameling of the interior of iron tubing and other hollow ware; and it consists in applying a vitrifiable composition to the exterior surface of the core before it is placed in the mold, and then the molten metal being poured around it, the heat evolved causes the vitrifiable material to unite with the interior surface of the pipe or casting, and forms a complete enamel or vitrifiable lining to the pipe or casting.

The composition is applied to the core after the same becomes dry. The core is then placed in a heated oven used for that purpose, where it remains for some hours, or until it becomes perfectly dry. It is then placed in the mold and the iron pipe cast or molded. The fused metal during the molding melts the composi-

tion thus applied to the core and unites the composition to the iron on the inside of the pipe or casting, forming a complete inside coating.

Various vitrifiable or enameling compositions may be employed; but the composition used by me, in preference to any other in the above process, consists of the following materials: one ounce of flint-stone, to be burned for twelve hours in a hard-coal fire, which is then to be ground to a fine powder. Then take ten ounces of glass of any kind, which is to be separately ground or pulverized. Then mix the two together. Then take half an ounce of borax and boil it in a pint of water until the borax dissolves. Then add to this one gill of alcohol of the best quality. Then mix the powder with this fluid to the consistency desired by the application of as much of this liquid as may be wanted for that purpose.

My improvement, although especially applicable to iron pipes, can be used advantageously with nearly every kind of hollow iron-ware.

Having thus described my improved process, what I claim as my invention, and desire to secure by Letters Patent, is—

The enameling of the interior surfaces of pipes or cast-iron ware by placing a vitrifiable compound on the core before the core is inserted into the mold, in the manner and substantially as above described.

EDWARD <sup>his</sup> × PIERCE.  
mark

Witnesses:

W. F. BOONE,  
B. BROWNING,  
JNO. B. KENNEY.