

UNITED STATES PATENT OFFICE.

FREDERIC CHASE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN PIPES AND TUBES FOR WATER, GAS, &c.

Specification forming part of Letters Patent No. 118,106, dated August 15, 1871.

To all whom it may concern:

Be it known that I, FREDERIC CHASE, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improved Pipe and Process of producing the same, of which the following is a specification:

My invention consists of a pipe enameled on the inside, and, if necessary, coated exteriorly with a non-corrosive metal, so that it will effectually resist the action of agents which impair or destroy the usual unprotected pipes.

In carrying out my invention the first and most important operation is to thoroughly cleanse the interior of the pipe, so that the surface will be in a proper condition for receiving the enamel. I have found that the most efficient mode of accomplishing this duty is to permit steam at a high pressure to pass through the pipe, this steam carrying with it sand, pulverized emery, flint, or other like material, which, through the medium of the steam, is so forcibly impelled through the pipe and brought into such violent contact with the inner surface of the same as to reduce it to the proper cleanly and smooth condition for receiving the enamel.

The materials used for enameling the interior of the pipe are similar to those heretofore employed for enameling cooking-utensils and other objects.

Those familiar with the art of enameling will not require a minute description of the materials or of the mode of applying the same in order to enable them to carry out my invention. It will suffice to observe that the usual first preparation is applied to the interior of the pipe by permit-

ting it to flow through the same and then drying the coating which adheres to the inner surface; after which the second coating is applied in a similar manner and the pipe is then placed in a furnace until the lining becomes vitrified and the inner surface is perfectly and permanently enameled.

I have succeeded in enameling by the process above described the interior of ordinary three-quarter-inch butt-welded tubes, such as are used for gas and water.

To render the pipes still more perfect I subject them to the well-known galvanizing process after the interior has been enameled.

So perfect and permanent is the enamel applied in the manner described that it can be subjected, without danger of deterioration, to the heat required in galvanizing the exterior. Hence I am enabled to produce a pipe possessing the important properties of an exterior free from the ravages of rust, and an interior lining of the most cleanly and anti-corrosive character.

I claim—

1. As a new article of manufacture, a metal pipe having an enameled inner surface.

2. A pipe having an enameled inner surface and coated exteriorly with zinc or its equivalent.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERIC CHASE.

Witnesses:

WM. A. STEEL,
JOHN K. RUPERTUS.