

# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN BOILER-COVERINGS.

Specification forming part of Letters Patent No. **170,099**, dated November 16, 1875; application filed September 9, 1875.

*To all whom it may concern:*

Be it known that I, ISAAC L. MERRELL, of San Francisco city and county, State of California, have invented Improvements in Boiler-Covering; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

For covering boilers and steam-pipes I employ two or more coats or coverings, one upon the other. I prefer to use three coats or thicknesses. The first coat or thickness next to the boiler or pipe is composed of materials which make a fire-proof covering. The second coat or thickness is composed of materials which form a non-conducting coat, while the third or last coat or covering is composed of materials which harden, so as to form a shell or casing around the former thicknesses, and protect them from being injured by accident or otherwise.

In case, however, a single non-conducting and fire-resisting covering is used I invariably cover it with my outside shell or casing compound.

My improvement therefore consists, first, in surrounding the felt or covering, which is used to prevent radiation of heat from the boiler or steam-pipes, with a shell or casing, which will harden so as to form an artificial-stone shell, which will protect the covering from damage; secondly, in the improved felting compound which I use.

In covering boilers and steam-pipes I first apply a fire-resisting compound, which is composed of the following ingredients, to wit: Equal parts of pulverized steatite and fire-clay mixed to a paste with water, to which is added a sufficient quantity of hair, rice-hulls, or other fiber, to make it adhere strongly together. This compound I spread evenly over the boiler or steam-pipe with a trowel to the desired thickness. Upon or over this coating I then spread another coating, which is composed of the same materials as the first coat-

ing, to which a large proportion of sawdust has been added, so as to render this second coating a non-conductor of heat. Outside of this second coating I then spread a third coating, which is composed of the following ingredients, to wit: Steatite, pulverized, one hundred pounds; charcoal, pulverized, twenty pounds; magnesia, two and one-half pounds; bittern-water, eight quarts; plaster-of-paris, five pounds, and a sufficient quantity of clay to form the mixture into a proper consistency for use.

This latter compound forms a hard impervious shell or stone casing around the former coats, which protects them from injury, and will not crack or scale, thus rendering the covering permanent and very effective.

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

1. The improvement in covering boilers and and steam-pipes, the same consisting in first applying a fire-proof coating composed of the materials above mentioned; secondly, applying a second coating which is a non-conductor of heat; and, third, surrounding the whole with a material composed of the ingredients mentioned, viz., steatite, charcoal, magnesia, bittern-water, plaster-of-paris, and clay in the proportions named, which will form a hard impervious shell or casing, substantially as and for the purpose described.

2. The improvement in covering boilers and steam-pipes to prevent radiation of heat, the same consisting in surrounding the boiler covering or felt with a coating of materials consisting of steatite, charcoal, magnesia, bittern-water, plaster-of-paris, and clay in the proportions named, which will form an artificial-stone or hard shell, substantially as and for the purpose described.

3. Steatite, charcoal, magnesia, bittern-water, plaster-of-paris, and clay, as ingredients for boiler and steam-pipe coverings.

ISAAC L. MERRELL.

Witnesses:

JNO. L. BOONE,  
C. M. RICHARDSON.