

# UNITED STATES PATENT OFFICE.

JOHN LE FERRE, OF CHARLESTOWN, MASSACHUSETTS.

## IMPROVED METAL FOR SHEATHING SHIPS.

Specification forming part of Letters Patent No. 34,435, dated February 18, 1862.

*To all whom it may concern:*

Be it known that I, JOHN LE FERRE, of Charlestown, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Sheathing for the Bottoms of Vessels, of which the following is a full, clear, and exact description, specifying the distinguishing features of my invention.

Sheet-copper, as well as "yellow-metal" or "composition" sheathing, which is used for covering the bottoms of wooden vessels to protect them from being cut by worms, and also to give the bottom a smooth surface on which barnacles and grass will not so readily collect, is liable to the objection that the action of the salt-water corrodes it, and it is soon worn away and has to be replaced. This resheathing, besides being an expensive operation, often causes great loss by delay to the ship-owner.

To obviate this delay and expense and to produce a more durable sheathing is the object of my present invention, which consists in coating with tin the sheathing metal before it is applied to the vessel-bottom. Pure tin being but little affected or corroded by salt-water, this coating of it will protect the stronger metal on which it is laid, and of which the body of the sheathing will be composed, from wearing away so rapidly as it is now found to do. This will permit in many cases the use of a lighter and less expensive sheathing, while its much greater durability will save much of the delay and expense caused by the frequent resheathing of the vessel now required; and

even where as heavy a sheathing as usual is employed and a greater first cost is incurred the ship-owner can better afford the outlay where the sheathing will last a number of years than he can to have his vessel delayed and his voyages interrupted every few years by the resheathing which is now found to be necessary.

The process of tinning copper and its alloys, being well known in the arts, need not be particularly described by me in this place. I will, however, state that in practice I have found the following to answer very well:

The sheet of copper or of copper alloy to be coated is washed clean. It is then dipped into or washed with a weak solution of sal-ammoniac, and is also sprinkled or dusted over with powdered sal-ammoniac. The sheet is then dipped into a bath of melted tin, or the tin is melted and poured onto the sheet, the surplus after the sheet has retained its coating being brushed off to leave a smooth surface; or the sheet of metal may be cleaned by scouring, then be dusted with powdered rosin, and the melted tin be applied as before.

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

As a new sheathing for the bottoms of vessels, a sheet of copper or of copper alloy coated with tin, substantially as set forth.

his  
JOHN X LE FERRE.  
mark.

Witnesses:

THOS. R. ROACH,  
THOS. L. GLOVER.