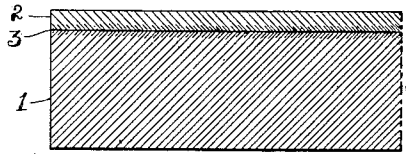
No. 851,069. PATENTED APR. 23, 1907.

J. CRAIG.

SHIP'S PLATE.

APPLICATION FILED JUNE 22, 1905.



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SHIP'S PLATE.

No. 851,069. Specification of Letters Patent. Patented April 23, 1907.

Application filed June 22, 1905. Serial No. 266,401.

To all whom it may concern:

Be it known that I, JOHN CRAIG, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Ships' Plates, of which the following is a specification.

This invention relates to improvements in ship's plates, the object of the invention being to provide an improved form of plate which will be cheaper and more durable than those heretofore used.

It is at present the practice in coppering an iron vessel to first cover the whole of the ship with wood and then tack the copper sheathing on to the wood.

It is the object of the present invention to provide a plate which will avoid the necessity of this operation. For this purpose I employ the following process. The plate is taken as it comes from the furnace and placed immediately in a mold so that it is of substantially the same temperature as in the furnace. The copper, having been previously melted, is then poured upon the surface of the steel in the mold. The plate is then allowed to cool. The temperature of the steel must always be of a welding heat and this it will be on coming from the furnace. However, in certain cases it may be necessary to bring the steel to this temperature from a cold condition, and this I consider to be within the scope of my invention. The term "welding heat" is used in its general acceptation, namely, that at which the steel is in a soft condition, not so soft as to lose its shape, but ready to run if raised to any greater temperature. In other words it must be raised to as high a temperature as possible and yet be self-supporting. The temperature of the steel being above the melting point of copper the latter lies upon the steel plate in a molten sheet and solidifies slowly in contact therewith as the plate cools. The coating of cast copper so produced is not only homogeneous and dense, but it adheres to the steel in a more perfect manner than can be secured by any other means of which I am aware. This perfect adhesion is due to the fact that when the metals are brought into contact the steel is in a soft but not a fluid condition, whereas the copper is molten; this relation permits only such interpenetration of the respective metals as is necessary to secure a perfect union of the plates, and without obliterating the surface of demarcation between the metals. If the temperature of the steel were below its softening point there could be no such interpenetration and hence no such perfect attachment; and if both metals were molten the interpenetration would be such as to completely obliterate the surface of demarcation and to form alloys of low tensile strength, thereby weakening the entire plate. The copper plate so applied may be made of any desired thickness.

The accompanying drawing illustrates in transverse section a ship's plate constructed in accordance with my invention. 1 represents the steel plate and 2 the copper plate, the surface of demarcation between the plates being indicated by 3.

I claim—

A ship's plate consisting on one side of a steel plate and on the other side of a dense and homogeneous plate of cast copper, the surface of demarcation between said plates being sharply defined, but the respective metals interpenetrating to such extent as to secure perfect union of the plates, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN CRAIG.

Witnesses:

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