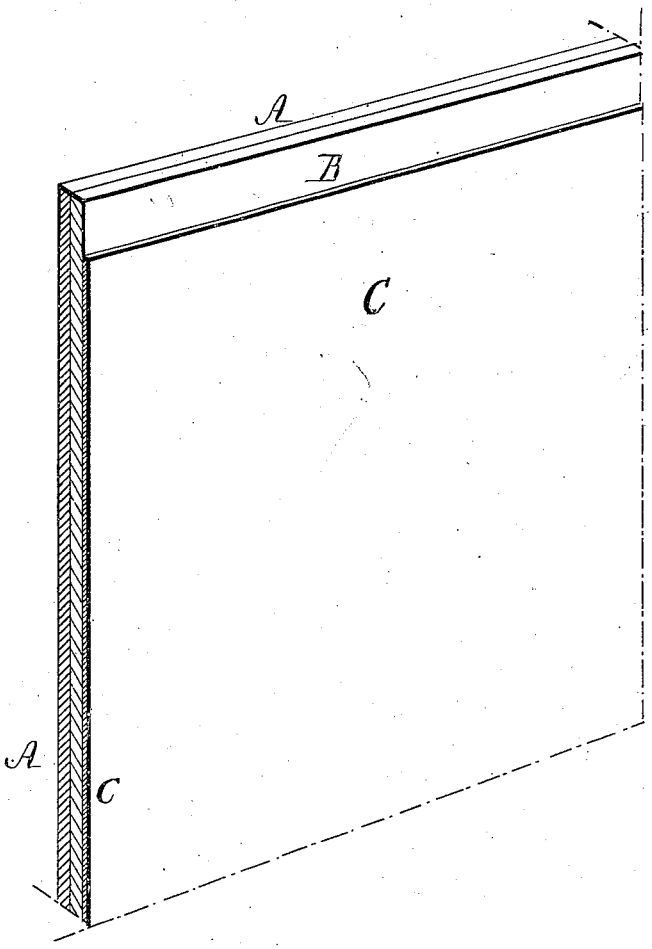
B. L. THOMSON & T. CONNOLLY.
Sheathing-Vessels.

No. 207,997. Patented Sept. 10, 1878.



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UNITED STATES PATENT OFFICE.

BENJAMIN L. THOMSON, OF LONDON, AND THOMAS CONNOLLY, OF KINGSLAND, ENGLAND.

IMPROVEMENT IN SHEATHING VESSELS.

Specification forming part of Letters Patent No. **207,997**, dated September 10, 1878; application filed March 7, 1878.

To all whom it may concern:

Be it known that we, BENJAMIN LUMSDEN THOMSON, of Ingram Court, Fenchurch street, in the city of London, England, merchant, and THOMAS CONNOLLY, of Downham Road, Kingsland, in the county of Middlesex, England, engineer, have invented Improvements in Protecting Ships or Vessels and other Submerged or Partially Submerged Surfaces, of which the following is a specification:

Our said invention has for its object protecting iron or other ships or vessels, or other submerged or partially submerged surfaces, from fouling, corrosion, deterioration, and decay; and this object is attained by the application to the sides of the vessel or other surfaces suitably-prepared sheets of copper, zinc, yellow metal, or other similar metals or alloys, with the interposition between such sheets and the sides of the vessels or other surfaces to be protected of a layer or layers of insulating adhesive compounds, as hereinafter described.

The insulating adhesive compounds may be applied either only to the inner surface of the metal sheets before they are placed upon the vessel or other surfaces to be protected, or to the exterior of the vessel or other surfaces, or both to the inner surface of the metal sheets and to the exterior of the vessel or other surfaces to be protected, as found desirable.

In carrying out our invention, we proceed in the following manner, reference being had to the accompanying drawing, which represents a perspective view, partly in section, of our invention applied to a portion of the metal side of a vessel.

We prepare the side A of the vessel or other surfaces to be protected by first thoroughly scraping the same, and we then further clean it or them with a solution of naphtha, so as to remove any remains of rust, grease, or foul substance, after which we apply a varnish to the parts so cleaned, consisting of caoutchouc and litharge, or other suitable compounds, reduced by naphtha or other solvent, as is well understood. We then, if necessary, lay on the sides of the vessel or other surfaces, as before mentioned, sheets B of our prepared com pounds, as hereinafter described, of such dimensions as may be found needful. Having so prepared the vessel or other surfaces to be protected, we then prepare sheets C of copper, zinc, yellow metal, or other similar metals or alloys, cut to such dimensions as we find necessary; and, in the case of iron ships or vessels, we cover the inner surface of the sheets of copper or other metals or alloys, as before mentioned, with a metallic film, in order to reduce them to the same electric potential as the iron of the vessel, so as to prevent the possibility of galvanic action arising should any accidental rupture of the sheathing take place. We also turn down or bevel the edges of the copper or other metal sheets, so as to provide additional protection from galvanic action. We then apply over the metallic film on the inner surface of the copper or other metal sheets C a layer of our insulating adhesive compound, made into sheets B of suitable dimensions. This compound consists of caoutchouc combined with any sulphide of antimony or other suitable poisonous compound, so as to secure at the same time both poisonous and vulcanizing properties. These ingredients are employed, by preference, in about the following proportions, which may, however, be varied as found desirable—viz., caoutchouc, say, about twelve pounds, and oxisulphuret of antimony or pentasulphide of antimony according to the quality of the caoutchouc, say about four pounds, to which may be added a variable quantity of silica or French chalk, so as to give the whole a consistency. Over this layer of the before-mentioned compound we apply a second layer of sheets, consisting of caoutchouc combined with litharge, oxide of zinc, silica, and other suitable substances, to act as a strongly adhesive protective and insulating material. These ingredients are employed, by preference, in about the undermentioned proportions, which, however, may be varied as found desirable—viz., caoutchouc, twelve pounds; litharge, one pound; oxide of zinc, one pound; silica, four pounds.

These compounds may be mixed and prepared in the manner well known in the manufacture of articles from caoutchouc.

The approximate total thickness which we have found suitable in practice of the layers of insulating and adhesive compounds varies from, say, about one-sixteenth of an inch to about three-sixteenths of an inch; but this thickness may be increased or diminished, as found desirable.

We further apply heat to the sheets of copper or other metals or alloys after they have been covered with the two layers of adhesive and insulating materials or compounds, whereby the inner layer will become vulcanized, thus adding tenacity, and at the same time increased insulating power. The copper or other metal sheets C thus prepared are then placed on the prepared sides A of the vessel or other surfaces to be protected, and caused to adhere by the application of pressure in any usual or suitable manner. When the sheets of the insulating and adhesive compound are applied to the exterior of the vessel or other surfaces to be protected, in lieu of or as well as to the inner surface of the copper or other metal sheets, the metal sheets are arranged so as to break joint with the sheets of the compound applied to the exterior of the vessel or other surfaces, as before mentioned, so that the surface of the insulating and adhesive compound beneath will be continuous at the parts where the joints of the metal sheets occur. We also, in some cases, employ on the under sides of the plates, at the corners thereof, small pieces of copper, arranged so that each piece extends beneath two adjoining plates, whereby the whole of the plates are rendered mutually dependent for support in the case of an accidental blow. A band, of any required width, of our insulating and adhesive compounds is also left beyond the termination of the copper or other metal sheets at the water-line or other height to which it may be considered necessary to carry them, so as to obviate all liability of any galvanic or other dangerous action setting in.

Our insulating adhesive compound first mentioned possesses anti-fouling properties of great value, from the fact that the mixture consists to a great extent of antimony, which, being an irritant poison, would, in the event of any accidental rupture or displacement of any of the plates, prevent the adhesion of barnacles, mollusca, and the like.

We claim—

The within-described vessel-sheathing, consisting of two layers of adhesive insulating compounds interposed between the outer metal sheathing and the side of the vessel, the outer layer being composed of caoutchouc and sulphide of antimony, while the inner layer consists of caoutchouc, litharge, oxide of zinc, and silica, substantially in the proportions described.

In witness whereof we have signed our names to this specification in the presence of two subscribing witnesses.

BEN. L. THOMSON.
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