

## UNITED STATES PATENT OFFICE.

JAMES GAMAGE TARR AND AUGUSTUS HENRY WONSON, OF GLOUCESTER,  
MASSACHUSETTS.

## IMPROVED PAINT FOR THE BOTTOMS OF SHIPS.

Specification forming part of Letters Patent No. **48,323**, dated June 20, 1865.

*To all whom it may concern:*

Be it known that we, JAMES GAMAGE TARR and AUGUSTUS HENRY WONSON, of Gloucester, in the county of Essex and State of Massachusetts, have invented and made Improvements in Paints for Ships' Bottoms and Wood-Work Exposed in Sea-Water; and we do hereby declare that the following is a full and exact description thereof, and method for making the same.

The object of our improvement is to protect surfaces of wood from the depredations of marine animals and insects and to prevent the growth or adhesion of any shell-fish or vegetable growth whatever, so as to preserve a smooth surface. We effect complete protection in this way by our improved composition of paint, which is to be applied to all the surface exposed to water by means of a brush in the usual way.

We use in the manufacture of this paint tar from wood or coal, naphtha from coal or petroleum, oxide of copper, oxide of alloys of copper, ocher, or iron ore, and oxide of arsenic, and we mix these substances in a manner to insure thorough diffusion of the heavy oxides uniformly in the paint.

Referring to a patent granted to us on the 3d day of November, 1863, it will be seen that we then mixed our paint from materials in the following proportions, viz: Into a vat or tank of suitable size we pour forty gallons of Stockholm tar, and mix with this thirty gallons of benzine or naphtha, which must be added gradually, a few gallons at a time, and rapidly stirred. When the naphtha or benzine is all put in, the mixture should be stirred for about half an hour, or until the ingredients are well incorporated. The vat must then be closed with a tight-fitting cover and allowed to stand for about twenty-four hours. During this time a deposit takes place, the residuum consisting principally of heavy matters that are not soluble in benzine or naphtha, the quantity thus deposited being equal to about one gallon to each ten gallons of the mixture. The part remaining liquid is now drawn off into another vat, and thirty gallons of dry oxide of copper, finely pulverized, is added to it, and after being well stirred the paint is ready for

use. We prefer to employ the pyritous friable ores, which are easily reduced to fine powder.

Now, as the result of our experience, it is an improvement to use with the above-described medium a portion of dry ocher of a heavy kind, which forms, with the tar left by the evaporation of the benzine or naphtha, a firm yet slightly-elastic covering for wood or metal. We have also found that oxide of arsenic, (or white arsenic,) by forming poisonous compounds, prevents the growth of vegetation better than salts or compounds of copper do; and we use oxide of arsenic with great advantage as an addition to the oxide of copper.

Our improved paint is prepared in the following manner: We mix forty gallons of best tar from wood with thirty gallons of naphtha from coal-tar, wood-tar, or petroleum thoroughly, and allow the undissolved parts to subside. The clear part is the medium for mixing with the oxides; but we can use resinous or even oily mediums in some cases.

To form a barrel or forty-two and one-half gallons of improved paint, we take one hundred and seventy quarts of this medium and add sixty-three pounds of dry ocher or burnt iron ore, and mix carefully by stirring or by mill. To this mixture we add one hundred and seventy pounds of native or artificial oxide of copper and sixty-three pounds of oxide of arsenic, (called "white arsenic,") and thoroughly mix the whole, when it is ready for use as a paint.

We use the suboxide of copper in mixture with the protoxide of copper as oxide of copper, and we find the mixed oxides formed from brass, which contains zinc, to be useful in small proportions, as it aids the solution of the oxide of copper in sea-water. We vary the proportions to adapt them to river and brackish waters.

The essential feature of our improvement is the production of a close covering for wood immersed in sea-water, which covering shall slowly dissolve, so as to form a poisonous film on its surface repulsive to animal or vegetable life, and this object we attain by mixtures of oxides of iron, copper, arsenic and zinc, attached to the wood by means of a tarry, resinous, or oily medium.

Our improved paint differs from that of our first invention in containing oxides of arsenic, iron, and zinc so mixed as to durability and protection from organic life, and yet producing a surface on which sea-water has a chemical action of slow solution.

What we claim, and desire to secure by Letters Patent, is—

An improved composition formed essentially as set forth, and for the purpose specified.

JAMES GAMAGE TARR.  
AUGUSTUS HENRY WONSON.

Witnesses:

CYRUS STORY,  
WM. A. KING.