

UNITED STATES PATENT OFFICE.

LEWIS BAIRD, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVED MODE OF PREVENTING INCRUSTATION IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **34,188**, dated January 21, 1862.

To all whom it may concern:

Be it known that I, LEWIS BAIRD, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new Method of Preventing the Incrustation of Steam-Boilers, and of scaling the same after they have become incrustated, of which the following is a full, clear, and exact description.

My invention has for its object to prevent the incrustation of steam-boilers where water holding calcareous or saline matters in solution is used; and it consists in the introduction within the boiler of tobacco, or of a decoction or preparation of the same. This may be done in various ways. For example, tobacco in the leaf, or pressed or otherwise manufactured or prepared, may be introduced directly into the boiler, it being so secured in a bag of canvas, or otherwise, that it shall not get to the machinery or beneath the valves; or a decoction of tobacco may be made and introduced at intervals with the feed-water, or by a separate injecting-pump employed for the purpose.

The form in which I prefer to apply the tobacco is that of a concentrated extract, for which Letters Patent of the United States were granted to George Jacques on the 27th day of December, 1859. This preparation is concentrated and transportable, and its use dispenses with the necessity of making the decoction or of introducing the tobacco into the boiler. For a first application one pound of the preparation, which corresponds to about four pounds of the natural tobacco-leaf, is sufficient for about one ton of sea-water. This is sufficient to cover the interior surface of the boiler with a glazing or varnish which effectually prevents the adhesion of any incrustation upon the metal. After this covering or glaze is once produced a considerable reduc-

tion of the quantity of the tobacco may be made as compared with the quantity of water employed, it being simply necessary to preserve the glazed or varnished surface thus produced, and for this purpose a smaller proportion of the tobacco is required. The quantity of future additions thus required to preserve the boiler entirely free and clean will vary somewhat with the extent to which the water is changed by blowing off. No definite rule can therefore be given, but it will never equal the quantity required at first (where sea-water is employed) for the purpose of first preparing the surface of the boiler. It is manifest also that the amount of tobacco required in any case will vary with the density of the water employed, or with the different amounts of saline or calcareous matter which it holds in solution. The above proportion, however, I have found to be entirely sufficient with those waters with which I have experimented, while no injurious results follow where the amount of tobacco employed is very considerably increased.

This introduction of tobacco into steam-boilers in any of the ways above described I have found to be a perfect preventative of incrustation, and where the boiler has previously become incrustated it will effectually scale and cleanse it.

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

The employment of tobacco, or a decoction or extract of the same, for the purpose of preventing the incrustation of steam-boilers or of removing the scale therefrom.

LEWIS BAIRD.

Witnesses:

THOS. R. ROACH,
SAM. COOPER.