

# UNITED STATES PATENT OFFICE.

S. D. ANTHONY AND D. BARNUM, OF NEW YORK, N. Y.

## IMPROVEMENT IN PREVENTING INCRUSTATION OF STEAM-BOILERS.

Specification forming part of Letters Patent No. 4,903, dated December 22, 1846.

*To all whom it may concern:*

Be it known that we, SAMUEL D. ANTHONY and DANIEL BARNUM, both of the city, county, and State of New York, engineers, have by experiment and research discovered and applied to practical use a new and useful mode of preventing saline, calcareous, or other earthy matters from depositing themselves and incrusting on the furnaces and flues of steam-boilers, thereby preventing or very materially lessening the deleterious consequences of such incrustations both on the parts within the boiler and on the parts exposed to the action of the fires, thus adding to the safety and duration of the flues and lessening the consumption of fuel, for which discovery and its application to use we seek Letters Patent of the United States; and we do hereby declare that the said invention or discovery is fully and substantially set forth as follows:

Into a forty-horse boiler put about two gallons, by measure, of the clean sawdust made in converting mahogany timber, and in larger or smaller boilers a corresponding or proportionate quantity when about to refill the boilers, and use them with sea-water, and by any proper means introduce a similar quantity or proportion about every twelve hours while working sea-water. For sea-water commixed with the earthy impurities of a neighboring shore more than this proportion will be required, in some ratio to be determined by practice; but it will be safer to err in the excess than in the deficiency of the supply of sawdust. The boilers are then to be blown off in any usual manner. While in work it is, however, found in practice that this operation may be reduced both in the frequency and the quantity blown off at any one opera-

tion; and though we cannot as yet determine or state fully what are the operations that go on within the boiler, we can state that the practical results of these proceedings are that any scale already incrustated inside or burned on the fire-surface is soon removed, and the further formation of a new scale on either side of the metal is so extensively prevented that a saving of the fuel immediately takes place, and the wear and tear of the flues are diminished and their safety increased in the corresponding proportion.

We do not limit the use of this application to sea-water, as it will be equally useful with other water that holds foreign matters in solution or combination.

We are aware that many vegetable substances have been tried for similar purposes with varying results, and therefore we do not herein claim any general application of vegetable matters to produce these results; but

We do claim as new and as our own discovery by practical research and experiment and desire to secure by Letters Patent of the United States—

The application and use of mahogany sawdust for the purpose of preventing or lessening the formation of any injurious scale on the metal of which boiler-flues are formed, substantially as above described.

In witness whereof we have hereunto set our hands and seals this 13th day of August, 1846.

SAMUEL D. ANTHONY. [L. S.]  
DANIEL BARNUM. [L. S.]

Witnesses:

W. SERRELL,  
LEMUEL W. SERRELL.