

UNITED STATES PATENT OFFICE.

JOHN M. BOYER, OF CINCINNATI, OHIO.

PROCESS OF CLEANING BOILERS.

SPECIFICATION forming part of Letters Patent No. 444,481, dated January 13, 1891.

Application filed July 13, 1889. Serial No. 317,462. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN M. BOYER, a citizen of the United States of America, and a resident of the city of Cincinnati, in the
5 county of Hamilton and State of Ohio, have invented certain new and useful Improvements in the Process of Cleaning Boilers and the Compounds Therefor, of which the following is a specification.

10 The several features of my invention and the various advantages resulting therefrom will be apparent from the following description.

The purpose of my invention is to prevent
15 the formation of what is known as "scale" or similar deposits on the interior surface of boilers. To accomplish this purpose I employ the following compound: One of the ingredients is zinc in a reduced pulverized condition. This condition of the zinc is obtained
20 by placing it in a crucible or equivalent vessel and subjecting it to a continued heating until by this treatment it becomes so that it can be easily and quickly pulverized. The
25 zinc in this condition is an oxide of zinc, and is technically distinguished as the monoxide of zinc. The zinc is then pulverized. It is next thoroughly mixed with a residuum from the pine tree, such as rosin or turpentine,
30 pitch, or hard tar. I find that three and one-

half pounds of rosin to one pound of pulverized zinc, or when a liquid residuum is used then one-half gallon, say, of turpentine to one pound of this zinc, is very efficacious. I
find that any one of these residuums will answer the purpose. The rosin is melted and
35 mixed with the pulverized zinc.

The above compound cleans a boiler very expeditiously. I have found that this compound will in ten days clean a boiler so thoroughly that it will be cleaner than when new.
40 Under the operation of this compound scale which has been formed on the interior surface of the boiler rapidly comes off therefrom and resembles mud. In this condition it can
45 be readily blown out or otherwise removed from the boiler. My improved compound, when present within the boiler, prevents any scale being deposited on the boiler.

What I claim as new and of my invention, 50 and desire to secure by Letters Patent, is—

The process of removing and preventing scale by treating the water in the boiler with a composition of oxide of zinc and hydrocarbon or resinous products derived from the
55 pine tree, substantially as described.

JOHN M. BOYER.

Attest:

A. L. HERSLINGER,
G. A. W. PAVER.