

UNITED STATES PATENT OFFICE.

GEORGE DOWNIE, OF SALINAS, CALIFORNIA.

INCRUSTATION-PREVENTIVE.

SPECIFICATION forming part of Letters Patent No. 277,122, dated May 8, 1883.

Application filed October 9, 1882. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE DOWNIE, of Salinas, county of Monterey, State of California, have invented an Improvement in the Prevention and Removal of Scale in Boilers; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in the prevention or removal of scale in steam-boilers.

It consists in introducing into the boiler an infusion, decoction, or other preparation of eucalyptus, either the wood, bark, leaves, blossoms, and capsules, or any portion which will produce the desired effect, said infusion either made separately and afterward introduced into the boiler, prepared in the feed-water before its introduction into the boiler, or prepared within the boiler itself, so as to remove any scale which may have been already formed, or to so affect the water as to prevent the incrustation of the boiler by any substance which may be held in solution or suspension in the water which is used in the boiler, and at the same time avoid any injurious effects to the shell of the boiler.

There are many modes of applying the eucalyptus, such as boiling the leaves or other parts, making a cold infusion, or in other ways extracting the desired substance, which may afterward be introduced to the boiler, as required; either with the feed-water or by a cup or chamber, into which it may be placed, and by suitable cocks admitted to the boiler; or the leaves or other parts may be placed in a perforated tube, basket, or chamber, which can be introduced into the boiler through a hand-hole or other opening, so that the water will act directly upon the material and extract the valuable portion.

In some cases where there is a heater connected with the boiler I put the eucalyptus into the hot water which accumulates within the tank, and the infusion thus made is sent to the boiler by the feed-pump or other apparatus. By this means the heated water intended for use within the boiler is impregnated with the properties of the eucalyptus, and is

thus caused to part with the scale-forming substances, which are deposited in a harmless form and prevented from settling as scale.

In case no heater is employed the eucalyptus may be placed directly into the boiler, or an infusion may be made separately and then supplied to the boiler when needed, as before described.

If the eucalyptus, in the form of leaves or fine twigs, be placed directly in the boiler, it will be preferable to inclose it in a basket or net-work of some convenient description to prevent its becoming scattered, and so that it may be easily removed when it becomes spent.

The charge to be used and the frequency of its renewal will depend upon the size of the boiler and the character of the water used, this being easily determined by inspection.

I am aware that there is tannin or tannic acid inherent in the eucalyptus, and I am also aware that tannic acid in various forms has been used to remove scale from boilers. I am also aware that it is a well-recognized fact that tannic acid, when used for any such purpose, materially injures the boiler in the absence of any other element to counteract the effect of the tannic acid on the metal after it has performed its work on the incrustation. I do not pretend to set up in this specification any theory regarding the chemical action of the eucalyptus; but I have demonstrated by long continuous and exhaustive experiments that the eucalyptus will remove scale from boilers and keep boilers free from scale without injuring the shell of the boiler.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The improved method herein described for preventing and removing scale from steam-boilers, consisting, essentially, in subjecting the interior of the boiler to the action of an infusion or decoction of eucalyptus, substantially as described.

GEORGE DOWNIE.

Witnesses:

ELLIS TOMER,
A. E. LACEY.