

UNITED STATES PATENT OFFICE.

WITOLD GAWLIKOWSKI, OF JAROSLAU, AUSTRIA-HUNGARY.

PREVENTION AND REMOVAL OF INCRUSTATION IN STEAM-GENERATORS.

SPECIFICATION forming part of Letters Patent No. 762,897, dated June 21, 1904.

Application filed October 30, 1903. Serial No. 179,179. (No specimens.)

To all whom it may concern:

Be it known that I, WITOLD GAWLIKOWSKI, engine-house foreman, a subject of the Emperor of Austria-Hungary, residing in Jaroslau, Galicia, in the Empire of Austria-Hungary, have invented Improvements in and Relating to the Prevention and Removal of Incrustation in Steam-Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a method of removing incrustations from the walls of steam generators and tubes and also for preventing the formation of such incrustations.

The method is based upon the employment of carbon in the form of powder, and especially coal-dust, which is introduced into the boiler in any convenient manner. Careful experiments have shown that after this method incrustations adhering to the walls of steam-generators are broken away in fragments of varying size until the walls become perfectly clean. The detached fragments circulate in the boiling water and may be removed from the boiler in any suitable manner—for example, by flushing it or spraying it with water. Judging from the appearance of the detached fragments of fur-stone, their separation from the walls of the boiler would appear to be due to mechanical action. The fine coal-dust gradually penetrates the pores and cracks which exist between the incrustation and the boiler-walls and incase the fur on all sides. As the coal-dust is not able to combine with the boiler-walls either chemically or mechanically, the incrustations are removed in pieces of different size, which circulate freely in the water. The coal-dust becomes loosely deposited on the walls of the boiler and tubes, forming a coating thereon, preventing any fresh deposit of fur. The method described therefore serves both to remove deposits already formed in steam-generators and the like and to prevent the formation of fresh deposits.

The quantity of coal-dust to be introduced into the boiler will vary according to the working conditions, the properties of the water,

&c.; but a suitable amount is readily arrived at in practice.

Practical experiments have demonstrated that the introduction of coal-dust into the boiler does not exert any prejudicial effect upon any of the parts of the boiler or engine, such as the water-gage, valves, feed-water apparatus, distributing-gear, piston, stuffing-boxes, or the like. The method is also advantageous, owing to its extreme simplicity and economy.

The coal-dust may be introduced into the boiler in many ways. It may be sprayed or allowed to fall into the boiler directly, or, preferably, it may be added to the feed-water.

The above-described method may be used for any kind of steam-generators.

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

1. The method of removing and preventing incrustations on the walls of steam-generators, which consists in introducing powdered carbon into the generator and in forcing said carbon under pressure upon the incrustated walls to free and precipitate the incrustated matter and thereafter removing the freed incrustated matter from the generator.

2. The method of removing and preventing incrustations on the walls of steam-generators, which consists in introducing powdered carbon or coal-dust with the feed-water into the generator and in forcing the said carbon under pressure upon the incrustated walls to free and precipitate the incrustated matter, and in thereafter flushing the walls of the generator to remove the freed incrustated matter.

3. The method of preventing incrustation of steam-boiler tubes and walls, which consists in forcing powdered carbon under pressure in said tubes and walls with the feed-water to thereby line the tubes and walls with precipitated carbon.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of October, 1903.

WITOLD GAWLIKOWSKI.

Witnesses:

FRANZ REITER,

ALVESTO S. HOGUE.