UNITED STATES PATENT OFFICE.

EDWARD HORROCKS MAN, OF NEW ORLEANS, LOUISIANA.

PROCESS OF CLEANING SUGAR-MAKING APPARATUS.

1,326,280. Specification of Letters Patent. Patented Dec. 30, 1919.

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To all whom it may concern:

Be it known that I, EDWARD HORROCKS MAN, a citizen of the United States, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in Processes of Cleaning Sugar-Making Apparatus, of which the following is a specification.

My invention relates to improvements in processes for cleaning sugar making apparatus, such as evaporators, vacuum pans, juice heaters, etc., and it consists in the compound hereinafter described, and in the steps employed in using the compound.

The cleaning of sugar making apparatus of the type mentioned is a source of considerable expense, especially at the present time, due to the fact that the ordinary chemicals used in the cleaning process have advanced considerably in price. Furthermore, the ordinary process of cleaning these devices necessitates the use of steam or boiling water which in itself is no small source of expense.

An object of my invention is to provide a process employing a comparatively cheap cleaning agent which is more effective than such cleaning agents as caustic soda or muriatic acid, and which can be had at a fraction of the expense of the last-named cleaning agents.

A further object of my invention is to provide a process by means of which the various sugar making devices may be cleaned with a minimum amount of labor and a minimum expense.

A further object of my invention is to provide a cleaning agent which does not necessarily depend for its effectiveness on being of any particular strength, which does not require the water with which it is used to be of any particular temperature, and which does not require the services of a skilled laborer, but which on the other hand, may be effectively used by any one.

The composition of matter or compound which forms the main cleaning agent is a water solution of sulfur-dioxid gas. This may be made by passing sulfur-dioxid gas into water until the latter takes up a sufficient quantity of the gas to form an effective cleaning agent. The production of the sulfur-dioxid gas forms no part of the present invention. It may be produced in one of many ways. For the purposes of this invention it is preferably produced by burning raw sulfur or roasting a sulfur bearing material such as iron pyrites, in a sulfur burning stove or other suitable device.

The gas, after being generated, is passed into water, and this may be done by any suitable apparatus, such apparatus forming no part of the present invention. It may be done by an ordinary air compressor of any suitable type. I have found that the temperature of the water need not be high, in fact, cold water may be used effectively. Neither does the water have to be saturated with the gas. Of course, the water which has gas in it up to the saturation point, will act in a little quicker time, but it is not necessary for the purposes of this invention, that any specified degree of solution be maintained.

The sulfur dioxid solution is run into the vessel to be cleaned, such as an evaporator, for instance, and is left to stand a few hours. I prefer to let the sulfureted water stand in the vessel over night. In the morning it will be found that the scale which accumulates and which adheres to the walls of the vessel, will have so softened that it may be easily removed by scraping or flushing, or in any other suitable way.

In practice, I prefer to inject the gas into the water as it is passed from the mills to the defecators. I have found in practice that any excess of sulfur-dioxid will escape from the defecators, so that when the solution is subsequently run to the evaporators, vacuum pans, etc., the absence of free sulfur-dioxid permits the use of the solution without having an injurious effect on the vessel.

It will be noted that in this process of cleaning sugar making apparatus, I dispense with the usual custom of using hot water or steam. I have found that the sulfur-dioxid solution will bring the scale into a softer condition, in which it can be more readily removed than if caustic soda or muriatic acid were used.

The sulfur-dioxid may be economically produced, as stated. In a sugar factory having a daily capacity or output of 500 tons of sugar, I have found that eight (8) pounds of raw sulfur is sufficient to produce enough sulfur-dioxid for effectively cleaning all of the apparatus of the scale which clings to the walls.

I claim:

1. The herein described process of clean-

ing sugar making apparatus, which consists in subjecting such apparatus to the action of a water solution of sulfur-dioxid gas, whereby the scale is softened, and subsequently removing the scale.

2. The herein described process of cleaning sugar making vessels, which consists in filling said vessels with a water solution of sulfur-dioxid gas, permitting the solution to remain therein until the scale in the vessels has been softened, and subsequently removing the scale.

3. The herein described process of cleaning sugar making vessels, which consists in filling said vessels with a water solution of sulfur-dioxid gas, permitting the solution to stand in the vessels for a few hours, until the scale has softened, and subsequently removing the scale thus softened.

4. The herein described process of cleaning sugar making vessels, which consists in filling said vessels with a water solution of sulfur-dioxid gas, permitting the solution to remain therein until the scale in the vessels has been softened, withdrawing the solution from the vessels, and then removing the scale mechanically.

EDWARD HORROCKS MAN.