United States Patent Office.

CARL KUEHN, OF VIENNA, AUSTRIA, ASSIGNOR TO JOSEPH R. VON WESSELY, OF NEW YORK CITY.

Letters Patent No. 77,987, *dated May* 19, 1868.

IMPROVED MODE OF UTILIZING TIN-SCRAP OR WASTE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CARL KUEHN, of the city of Vienna, in the Empire of Austria, have invented or discovered a new and improved Method of Utilizing Tinned-Iron Waste, of which the following is a full, clear, and exact description.

It is the object of my invention to obtain from the scraps of tinned iron which accumulate around tin-shops, and are usually thrown away, both tin and iron, in such forms of respectively segregated purity that they may be used for their ordinary purposes. And to this end my invention consists—

First, in a novel method, hereinafter described, of separating the tin from the iron, by digesting the scraps in hot water, mixed with muriatic acid and nitric acid.

Second, in a novel method, hereinafter described, of reducing the tin thus retrieved to a metallic form, by immersing zinc plates in the solution, so as to excite galvanic action.

Third, in a novel method, hereinafter described, of segregating the tin from the iron by the employment of heat, water, muriatic and nitric acids, evaporation, crystallization, and galvanic action.

In order to carry out the objects of my invention, I place the scraps of tinned iron in a copper cauldron, set in proper masonry over a furnace, and cover them with water. When the water boils, about twenty-five per cent of muriatic acid, and two and a half per cent. of nitric acid to each hundred pounds of waste, is poured into the cauldron. This separates the tin from the iron. When no particles of tin are seen to cling to the iron, the latter is taken out, and is at once fit for producing weldable iron, by simply heating and working it under a hammer, or passing it through suitable rolls.

The liquid is left in the cauldron, more scraps are thrown in, together with the same proportions of the acids above mentioned, and the operation above described repeated. This process is continued until the liquid in the cauldron has become saturated with tin, or chloride of tin, the water is then evaporated, leaving in the cauldron a residuum, and a portion of the tin held in solution is deposited in the form of crystals of chloride of tin and chloride of iron, which the liquid holds in solution.

The chloride of tin thus obtained by crystallization is fit for the market; but in order to produce metallic tin from the solution, the saturated cold liquid (chloride of tin and chloride of iron) above mentioned, is placed in a wooden vessel, in which zinc plates are suspended. Galvanic action is thus excited, and the tin held in solution in the liquid is deposited on the plates, whence it is removed at intervals and the plates replaced. This operation is continued until tin ceases to be deposited on the plates.

The tin thus saved is pressed into cakes, melted with pitch in cast-iron cauldrons, and cast into suitable forms in proper moulds.

Besides the tin, there are some other products utilized by this process, such as muriate of ammonia, in a solid as well as a liquid condition, to be manipulated in the usual way.

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

1. The method herein described of utilizing tinned-iron waste by digesting the waste in hot water, in combination with muriatic and nitric acids, substantially as set forth.

2. The method, herein described, of collecting the metallic tin from the solution herein described, by means of zinc plates immersed therein, and exciting galvanic action, to cause the tin to be deposited on the plates, as set forth.

3. The method, herein described, of segregating the tin and the iron by means of heat, water, muriatic and nitric acids, evaporation, crystallization, and galvanic action.

CARL KUEHN.

Witnesses:

GUSTAVE BOLESLARVSKI,

FRANCIS EDES.