

UNITED STATES PATENT OFFICE

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PROCESS FOR MANUFACTURING COPPER COMPOUNDS AND PRODUCT

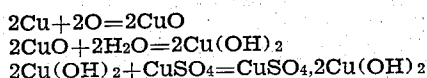
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8 Claims. (Cl. 23—55)

The object of this invention is to produce a copper compound dust suitable for use as an insecticide or fungicide, or the compound may be calcined into cupric oxide for use as a paint pigment, or as a desulphurizing agent in petroleum oils, etc. A further object is to produce such an article in a relatively inexpensive manner as will be noted from the specifications in that we reduce the metallic copper to the insoluble compound by a simple method of oxidation while the metal is immersed in a bath of soluble copper salt capable of forming a basic copper salt.

In practice this process may be carried on in a tank capable of resisting corrosion. The oxygen is preferably supplied by injecting air at the bottom of the tank through a perforated lead pipe or plate, or other suitable piece of equipment, placed near the floor of the tank, the air being supplied by an air compressor or blower. Steam is injected with the air if desired and the reaction conducted at an elevated temperature not over 212 degrees Fahrenheit. Metallic copper, preferably in the form of thin sheets, strips, wire, etc., is placed in the tank in any suitable manner. The oxygen or air passes through the copper salt solution in sufficient quantity to effect the corrosion or oxidation of the metal, thereupon precipitating the basic copper salt or insoluble copper compound.

According to the invention, metallic copper is immersed in an aqueous solution of copper sulphate or other copper salt capable of forming a basic copper salt, heat and oxygen, finely divided, supplied to the solution, whereupon the copper metal is oxidized, the elements of water are taken up resulting in the formation of copper hydroxide, and the latter then reacts with the required quantity of the copper sulphate or other copper salt present, precipitating the basic copper salt or insoluble copper compound. Although we do not positively know what reaction actually takes place, we believe it to be substantially as expressed by the following reactions, using copper sulphate as an example:



The insoluble copper compound or basic copper salt formed during the operation of the process, may remain in the solution until sufficient quantity has precipitated. The operation may then be stopped and the compound filtered out of the solution and handled according to the use required. Sufficient copper salt is then added to

the residual liquor to replace that which has been removed by precipitation in the compound and the operation may be repeated, or the residual liquor may be treated in any other manner desired to utilize the soluble copper salt remaining therein.

While we have described copper sulphate as an example, it is to be understood that this process is applicable to any other water soluble copper salt capable of forming a basic copper salt, as for instance, soluble copper chloride, in which case we obtain basic copper chloride as a precipitate.

While we have described certain reactions as those which presumably take place, we do not wish to be understood as limiting ourselves to such reactions except within the scope of the accompanying claims, it being our intention to claim as our invention, the method whereby the results described herein are accomplished, as well as the product of the method.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A process for manufacturing copper compounds which consists in immersing metallic copper in a neutral solution of a copper salt capable of forming a basic copper salt, heating the solution and forcing oxygen or air through the solution.

2. A process of manufacturing copper compounds which consists in immersing metallic copper in a neutral solution of a soluble copper salt capable of forming a basic copper salt, heating the solution and forcing oxygen or air through the solution, and removing the basic copper salt formed, as a precipitate.

3. A method of manufacturing insoluble copper compounds which consists in immersing metallic copper in a heated solution of a soluble copper salt capable of forming a basic copper salt and forcing oxygen or air, finely divided, through the solution thereby oxidizing the metallic copper while immersed, so as to form insoluble copper compounds.

4. The method of manufacturing insoluble copper compounds which consists in immersing metallic copper in a heated solution of a soluble copper salt capable of forming a basic copper salt, and continuously supplying oxygen or air to the solution thereby oxidizing the metallic copper while immersed so as to form basic copper salt, and removing the insoluble copper compound as a precipitate.

5. The method of manufacturing insoluble copper compounds which comprises oxidizing metallic copper, while immersed in a bath of sol-

- 5 tate.
6. As a new article of manufacture, a voluminous light green insoluble copper compound, containing 50 to 55 per cent metallic copper, the same being a product obtained by immersing metallic copper in a heated solution of copper salt capable of forming a basic copper salt and forcing oxygen or air through the solution, substantially as described in the above specifications.
- 10 7. As a new article of manufacture, a voluminous light green insoluble copper compound, the same being a product such as can be obtained by the herein described process which comprises immersing metallic copper in an aqueous solution of a copper salt capable of forming a basic copper salt, and forcing oxygen or air through the solution.
8. As a new article of manufacture, a voluminous light green insoluble copper compound, the same being a product such as can be obtained by the herein described process which comprises treating metallic copper while immersed in a heated bath of soluble copper salt capable of forming a basic copper salt, by forcing oxygen or air through the solution and removing the insoluble copper compound as a precipitate.
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