No. 775,066. Patented November 15, 1904.

UNITED STATES PATENT OFFICE.

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METHOD OF PRESERVING AND DISINFECTING.

SPECIFICATION forming part of Letters Patent No. 775,066, dated November 15, 1904.

Application filed July 21, 1902. Serial No. 116,387. (No specimens.)

To all whom it may concern:

Be it known that I, ARMAND MÜLLER-JACOBS, a citizen of the United States, residing in the borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Methods of Preserving and Disinfecting, of which the following is a specification.

This invention relates to a process for preserving alimentary substances, such as meat, fat, vegetables, milk, beer, &c.

It is known that certain chemical compounds can be used for accomplishing the above-mentioned purpose. Many of the same are of a highly-poisonous character and injurious to health, and therefore cannot be used in a sufficient strength to properly carry out the desired effect. Such compounds so used are, for instance, bichlorid of mercury, salicylic acid, boracic acid, &c., many of which have also been utilized for treating articles infected by contact with persons suffering from contagious diseases for the purpose of intercepting the spreading of the disease.

One of the objects of the present invention is the provision of an absolutely non-poisonous preservative and disinfectant of high efficiency and which is nearly colorless and odorless and simple in application and inexpensive.

It has been discovered during the experiments and trials made in connection with the present invention that the presence of agents capable of setting up in space undulatory motion similar in form to actinic rays of light is fatal and detrimental to animalcular life. The group of chemicals hereinafter referred to is a part of this general class, and the action of the members of this group as preservatives and disinfectants is caused primarily by the molecular motion set up by the same. For the purpose of the present invention some of the compounds used are of the metals of the tin group—such as zirconium, thorium, titanium, &c.—and of the yttrium group, such as lanthanum, cerium, didymium, &c. One of the preferable salts of the metals of the groups above mentioned which after a series of careful experiments and a number of thorough trials gave exceptionally satisfactory results is the nitrate of zirconium.

In preserving solid articles—such as meat, fruit, vegetables, eggs, &c.—they may be dipped into or wrapped with material—such as packing-cloth, paper, &c.—saturated with a solution of, for instance, one part of nitrate of zirconium in one thousand to ten thousand parts of water and then dried, whereby a sufficient quantity of the new preservative adheres intimately to the article or substance so as to cause absolute destruction of bacteria, cocci, ferments, &c., which in most cases are the originators of decomposition, fermentation, decay, and putrefaction.

Liquids—such as milk, fermented liquors, &c.—desired to be preserved are treated by adding thereto a sufficient quantity of a solution of nitrate of zirconium so as to have contained in the bulk of the liquid not more than one part of the nitrate of zirconium to ten thousand or more of the liquid.

Substances not intended for alimentary purposes—such as adhesive pastes, starches, glues, &c.—may be treated with a stronger solution of the compound, and a solution of similar or greater strength may be used for disinfecting containing vessels for solids or liquids of all kinds or for cleaning and disinfecting articles or matter which came in contact with or were used by persons suffering from contagious or similar diseases.

The present invention is also not limited to the use of the nitrates of the groups of metals mentioned hereinabove; but the acetates, chlorids, &c., or the compounds of the metals of these groups with the metals of the alkalies may be used with the same great success—for instance, zirconate of sodium. Instead of using only one of the chemicals in solution two or more of the same may be used, and in some cases it may be desirable to dispense partly or entirely with water as a vehicle for the chemicals and substitute therefor any other convenient liquid—as, for instance, alcohol—or even use the chemicals in the dry state.

As new and useful is claimed—

1. The art of preserving and disinfecting which consists of subjecting decomposable matter to the action of one or more compounds of zirconium, such matter being immersed in a suitable concentrated solution of such zirconium compound.

2. The art of preserving and disinfecting which consists in subjecting decomposable matter to the action of zirconium salts which have the properties of emanating radial active rays and obtaining such effect by immersing the matter in a suitable solution of such zirconium salts.

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Witnesses:

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