

UNITED STATES PATENT OFFICE.

EUGÈNE FOURNIER, OF PARIS, FRANCE.

DISINFECTING AND DEODORIZING PROCESS.

No. 860,456.

Specification of Letters Patent.

Patented July 16, 1907.

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To all whom it may concern:

Be it known that I, EUGÈNE FOURNIER, engineer, a citizen of the Republic of France, residing at Paris, Department of the Seine, France, and having post-office address 42 Rue Bargue, in the said city, have invented certain new and useful Improvements in Disinfecting and Deodorizing Processes, of which the following is a specification.

This invention has for its object to effect, in an improved and complete manner, the deodorization of rooms, or other places, or matters, which have been disinfected by means of formaldehyde.

It has been proposed to get rid of the odor of formaldehyde by means of ammoniacal vapor in quantity sufficient to saturate the aldehydic vapors. Damage to objects, fabrics, or colors, usually injuriously affected by ammoniacal vapor is not likely to occur when ammoniacal vapor of about 20 per cent strength is admitted to a space saturated with formaldehyde in quantity only sufficient to as nearly as possible neutralize the odor of formaldehyde. The saturation of formaldehyde vapors, with ammoniacal vapors gives rise however not only to the production of hexamethylenetetramin but also to the formation of secondary products in which amines of a more, or less, complex nature predominate. These amines impregnate materials and objects such as linen, mattresses, fabrics, books, carpets, walls, and the like, and there remains after the saturation of the formaldehyde vapor with ammoniacal

vapor an objectionable odor resembling that of a laundry which odor is not got rid of by the most energetic ventilation. According to my invention, I subject the aforesaid secondary products to treatment which transforms them into stable, odorless, compounds. For this purpose I employ a weak acid, preferably a volatile organic acid, efficient results being especially obtained by the use of acids of the aromatic series and more particularly by the use of acids produced by heating resins, or gums, especially gum-benzoin which when heated, evolves benzoic acid, but on account of the disadvantages arising from the fumes produced by gum-benzoin itself, I prefer to use benzoic acid ap-

plied either by atomizing an aqueous solution thereof, or by volatilizing the acid by heat. For example, the relative quantities by weight of the substances employed are as follows: formaldehyde gas 100, ammonia gas 52, and benzoic acid $4\frac{1}{2}$.

I prefer to carry out my invention as follows, as applied to a room, for example: By ventilation I eliminate the excess of ammoniacal and other vapors resulting from the saturation of the formaldehyde vapors, with ammoniacal vapor and then I close the room and heat the benzoic acid on a fire, or stove, or the like, until vapors cease to be emitted. The heating may be effected either in the room, or in an apparatus outside the room with a connection led into the room the said apparatus being arranged in such a manner that the acid vapors do not condense on its walls, or in the connection with the room, but the said vapors enter the room. In due time the vapors are condensed and their reaction on the aforesaid secondary products is complete, and then after ventilating the room it will be found that all objectionable odor has disappeared. It is possible to obtain the same result not only by using acids of the aromatic series but also by using weak acids of other series having analogous properties, such as acetic acid in a diluted solution.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:

1. A method which consists in disinfecting a room by formaldehyde, neutralizing the aldehyde vapors by ammoniacal vapor, and finally neutralizing the compounds created by the association of such vapors, by introducing into said room a vaporous solution of a weak, volatile acid.

2. A method consisting in disinfecting a room by formaldehyde, neutralizing the aldehyde vapors by ammoniacal vapor, and finally neutralizing the compounds created by the association of such vapors by introducing into said room a vaporous solution of benzoic acid.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EUGÈNE FOURNIER.

Witnesses:

EMILE KLOTZ,
PAUL BLUM.