

UNITED STATES PATENT OFFICE.

JACOB BLOCH, OF BERLIN, GERMANY.

STERILIZATION OF GRAIN BY FUMIGATION.

No. 906,098.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JACOB BLOCH, merchant, a subject of the German Emperor, and a resident of Berlin, Germany, have invented certain new and useful Improvements in the Sterilization of Grain by Fumigation, of which the following is a specification.

My invention has reference to an improved process of treating grain, more especially wheat, barley and oats, for the purpose of destroying the blight and other parasitic fungi adhering to it.

According to most prior processes the grain is treated with liquids, more particularly with a solution of copper vitriol, which is, for instance, sprayed over the grain. Such processes, however, possess numerous disadvantages; for the liquid acts very irregularly, many of the individual grains being inadequately acted upon, so that the spores are not completely annihilated. Furthermore, the after-drying of the treated material is attended with much trouble and expense; and the workmen, moreover, are exposed to the injurious action of the vitriol or other solution used. Again, mixtures of sulfur, saltpeter and carbonaceous substances have been burned for the purpose of bleaching the grain, in order to impart to old grain a fresher appearance. There has, however, been no intention here of destroying pathogenic spores, nor could this be accomplished, since by combination of the said substances the only gaseous products that result are carbon oxid, carbon dioxid and nitrogen, *i. e.* gases hardly exerting a sterilizing effect. According to the present invention, on the contrary, the grain is placed in a chamber inclosed on all sides, and is there under a temperature of about 60° centigrade subjected to the action of previously in a suitably manner developed fumes of a powder substantially consisting of 18 parts sulfur, 15 parts saltpeter, 15 parts sal-ammoniac, 15 parts colophony and 15 parts copper vitriol.

In this manner the parasitic spores on the grain will be annihilated, without, however, the germinating power of the grain being injuriously affected.

In the well-known fumigating process the temperature is only inconsiderably elevated, the apparatus is not thoroughly closed, and the grains themselves are not heated to any great extent. In my process, on the other hand, it is of the utmost importance that the temperature be sufficiently raised to about 60° centigrade, so as to completely vaporize the less volatile ingredients of the mixture.

The higher temperature is of essential influence upon the efficiency of the whole process. The grains sweat and thus the active agent adheres the better; but at the same time the degree of humidity is not such as would call for special drying after the fumigation. The high temperature in itself, moreover, greatly aids in the annihilation of the spores.

Uniform action is promoted by the walls, joints etc., of the apparatus being made with a closer fit than has been customary or necessary in prior apparatuses. In this manner, too, the escape from the apparatus of fumes injurious to the health of the workmen is prevented, even after long use of the contrivance.

Having thus described my invention, I declare that what I claim as new is:—

The process of fumigating grain, consisting in submitting the latter to fumes generated from a mixture containing substantially 18 parts sulfur, 15 parts saltpeter, 15 parts colophony, 15 parts sal-ammoniac and 15 parts copper sulfate, substantially as described.

Signed at Berlin, Germany, this 25th day of January 1908.

JACOB BLOCH.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.