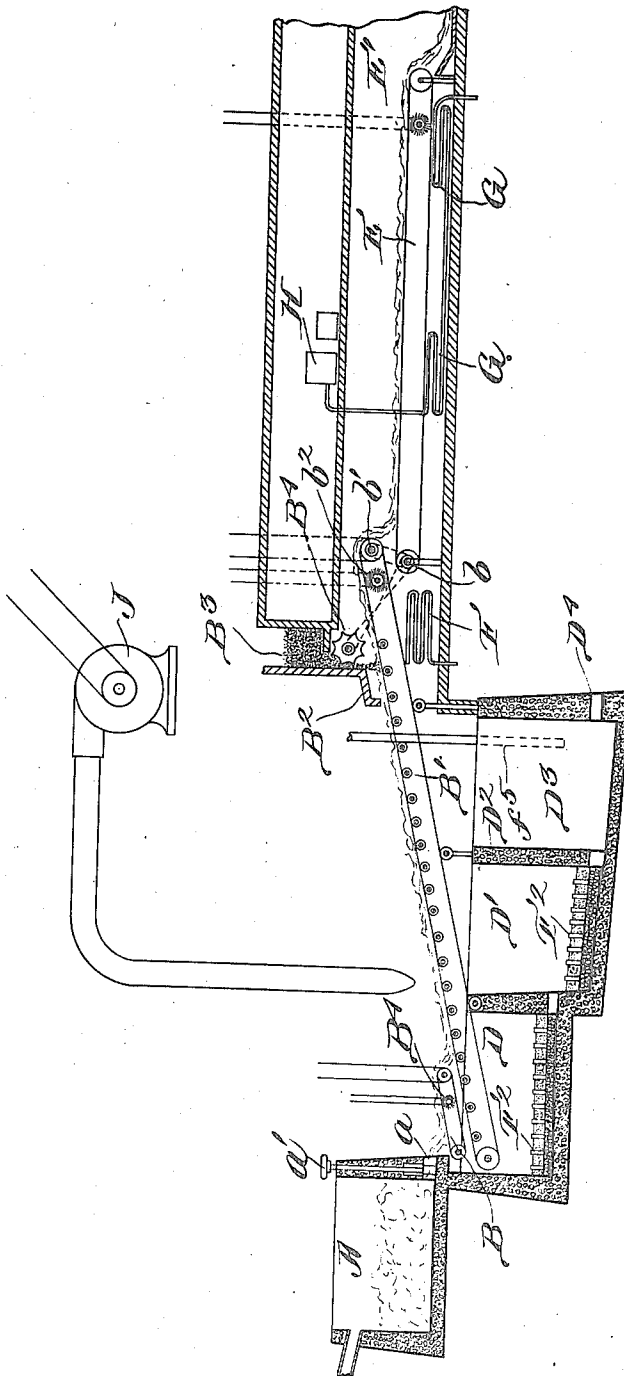


J. J. SMITH.
 PROCESS OF TREATING SEWAGE, GARBAGE, AND THE LIKE.
 APPLICATION FILED APR. 14, 1913.

1,123,414.

Patented Jan. 5, 1915.



Witnesses:
 Oda A. Eichorn,
 Agnes M. Shea.

Inventor:
 John J. Smith
 By George A. Rockwell,
 atty.

UNITED STATES PATENT OFFICE.

JOHN J. SMITH, OF BROOKLINE, MASSACHUSETTS, ASSIGNOR TO WALTER NASH, OF MARBLEHEAD, MASSACHUSETTS.

PROCESS OF TREATING SEWAGE, GARBAGE, AND THE LIKE.

1,123,414.

Specification of Letters Patent.

Patented Jan. 5, 1915.

Application filed April 14, 1913. Serial No. 760,906.

To all whom it may concern:

Be it known that I, JOHN J. SMITH, of Brookline, in the county of Norfolk and State of Massachusetts, have invented a new and useful Process of Treating Sewage, Garbage, and the like, of which the following is a specification.

The object of my invention is to provide a simple and efficient process of treating sewage, garbage or the like not only to retain those parts of said material which have been heretofore wasted but also to render the treatment harmless so far as giving off deleterious gases is concerned.

My invention is based in part on my discovery that a deodorizing solid, preferably in powder form, may be used to withdraw the gases of said material absorbing and neutralizing them.

A feature of my invention consists in applying heat in the neighborhood of the material to make the air take up moisture and then removing the moisture by condensation.

In the drawing the figure is a sectional elevation of a machine for my system.

The sewage or garbage is admitted to receptacle A and from there passes through opening *a* controlled by gate valve *a'*. As the material passes through said opening it falls upon carrier B made of wire or otherwise perforated to allow for drainage. A portion of the water in the material will drain through the carrier B and carrier B' and into chamber D and the rest of the material will be dropped upon the larger carrier B' which is perforated and as it advances water will be drained through the perforations of this carrier and fall into chambers D, D' and D³. The material will be advanced by carrier B' and then after it passes wall B² a finely powdered mixture of ground bone charcoal and powdered peat loam soil will be applied from bin B³, the feeding of the mixture being controlled by corrugated roller B⁴ which is operated by a belt running to shaft *b* which operates carrier E at one end. Shaft *b* is connected by a belt with shaft *b'* which may be operated in any suitable manner, there being also a belt to operate brush *b'* for the purpose of cleaning the carrier B' as it moves. Shaft *b* operates carrier E upon which carrier the material falls after leaving carrier B' and

carrier E conveys the material to a suitable outlet at E'. A heating device in the form of steam coils F is provided and condensing coils G operated by a suitable ammonia or other cooling plant H.

J represents a suitable blower for blowing on to the material a finely powdered deodorizing compound such, for example, as charcoal or earth or both as it is advanced by carrier B' in order that it may absorb and neutralize disagreeable gases in the material and thus prevent their arising from the moving mass. A brush cleaner B⁵ is used to clean carrier B and is operated by a suitable belt.

The filter at the bottom of chamber D consists of a base of coarse gravel upon which are placed a plurality of tiles F² the spaces between the tiles being filled with any suitable filler, preferably cement.

In using my system the material will be partially drained by member B and partially by B' the water dropping into chamber D, passing through the filters F² and thence from beneath chamber D into chamber D' and is then filtered through the filters F² which are like those of chamber D and form the floor of chamber D', wall D² being waterproof and the clear water falling into chamber D³ and thence out to the ocean or elsewhere through outlet D⁴, the water in D³ being available in case outlet D⁴ is not used, for use in the condensing coils through pipe *f*⁵ or for other uses. The blower applies deodorizing compound to absorb and neutralize the gases and prevent the waste of valuable fertilizing matter and to prevent the escape of harmful gases which might be injurious to attendants or to others. Before reaching the steam coils, and preferably just before reaching them, deodorizing compound is applied to quiet the gases by absorbing and neutralizing them so that they will not be driven off when the material comes into adjacency with the steam coils, the heat of which makes the air in the neighborhood of the material to be dried more readily take up what moisture remains in the material and renders that moisture in condition to be condensed when the material advances on carrier E into adjacency to the condensing coils at which time the moisture will be condensed on the condensing coils because of

the coldness of the latter and the material free from moisture will pass to outlet E in readiness for use as a fertilizer.

My system is very simple but at the same time very highly efficient as it preserves a very high percentage of the material available for fertilizing purposes and at the same time is not in any way harmful to attendants or a nuisance to the neighborhood.

In its broadest aspect my invention covers the use of a deodorizing solid preferably in powder form and this deodorizer may be charcoal or earth or both, my discovery being that the gases will be fully absorbed and neutralized by the application to the material of such deodorizing material.

I do not claim the above described apparatus in this application as I intend to make it the subject of another application.

What I claim is:

1. The method of treating drained sewage, garbage or the like consisting in applying deodorizer to the material, then heating the material to make the air in the neighborhood of the material to be dried more readily take up the moisture and then removing the moisture by condensation.

2. The method of treating drained sewage, garbage or the like consisting in applying to the material a deodorizer consisting of charcoal and earth, then heating the material to make the air in the neighborhood of the material to be dried more readily take up the moisture and then removing the moisture by condensation.

3. The method of treating solids of sewage, garbage or the like consisting in applying a deodorizing powder to the material and allowing it to absorb the gases of said material.

4. The method of treating solids of sewage, garbage or the like consisting in applying deodorizer to the material, then heating the material to make the air in the neighborhood of the material to be dried more readily take up the moisture and then removing the moisture by condensation.

5. The method of treating solids of sewage, garbage or the like consisting in applying deodorizing material to quiet the gases by absorbing and neutralizing them, then heating to such an extent as to make the air in the neighborhood of the material to be dried more readily take up the moisture but not sufficiently to volatilize said gases and then removing the moisture by condensation.

6. The method of treating solids of sewage, garbage or the like consisting in applying charcoal and peat loam soil to quiet the gases by absorbing and neutralizing them, then heating to such an extent as to make the air in the neighborhood of the material to be dried more readily take up the moisture but not sufficiently to volatilize said gases and then removing the moisture by condensation.

7. The method of treating sewage, garbage or the like containing liquid and solid material consisting in separating the liquid from the solid, then applying deodorizing material to quiet the gases by absorbing and neutralizing them, then heating to such an extent as to make the air in the neighborhood of the material to be dried more readily take up the moisture but not sufficiently to volatilize said gases and then removing the moisture by condensation.

8. The method of treating drained sewage, garbage or the like consisting in heating the material to make the air in the neighborhood of the material to be dried more readily take up the moisture and then removing the moisture by condensation.

9. The method of treating drained sewage, garbage or the like consisting in heating the material to such an extent as to make the air in the neighborhood of the material to be dried more readily take up the moisture, but not sufficiently to volatilize the gases, and then removing the moisture by condensation.

JOHN J. SMITH.

Witnesses:

GEORGE A. ROCKWELL,
GEORGE N. GODDARD.