

Specification of Joseph Townsend : treating sewage.

Contributors

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A.D. 1873, 31st MAY. N^o 1967.

S P E C I F I C A T I O N

OF

JOSEPH TOWNSEND.

TREATING SEWAGE.

LONDON:

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1873.





A.D. 1873, 31st MAY. N° 1967.

Treating Sewage.

LETTERS PATENT to Joseph Townsend, of Glasgow, in the County of Lanark, North Britain, Manufacturing Chemist, for the Invention of "IMPROVEMENTS IN TREATING SEWAGE OR OTHER LIQUIDS OR SUBSTANCES CONTAINING NITROGEN, PHOSPHORUS, OR THEIR COMPOUNDS IN ORDER TO DEODORISE OR PRECIPITATE THE SAME AND OBTAIN USEFUL PRODUCTS THEREFROM."

Sealed the 25th November 1873, and dated the 31st May 1873.

PROVISIONAL SPECIFICATION left by the said Joseph Townsend at the Office of the Commissioners of Patents, with his Petition, on the 31st May 1873.

I, JOSEPH TOWNSEND, of Glasgow, in the County of Lanark, North Britain, Manufacturing Chemist, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN TREATING SEWAGE OR OTHER LIQUIDS OR SUBSTANCES CONTAINING NITROGEN, PHOSPHORUS, OR THEIR COMPOUNDS IN ORDER TO DEODORISE OR PRECIPITATE THE SAME AND OBTAIN USEFUL PRODUCTS THEREFROM," to be as follows, that is to say:—

10 This Invention has for its object the deodorising and purifying or partial purifying of sewage or other liquids or substances containing

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nitrogenous matter or phosphorous compounds, and consists in certain modes of using alumina, lime, magnesia, phosphoric acid, or combinations or compounds thereof.

A precipitant or deodoriser is formed according to one modification by taking 100 pounds of a phosphate containing, for example, 40 per 5 centum of phosphoric acid and 20 per centum of alumina, and mixing therewith 58 pounds of lime, whereby there are formed phosphate and aluminate of lime, or 36 pounds magnesia may be substituted for the lime, yielding phosphate and aluminate of magnesia, or 47 pounds lime and 8 pounds magnesia may be used instead of either the lime or 10 magnesia alone. If the phosphate employed contains proportions of phosphoric acid and alumina different from those mentioned the quantities of the lime or magnesia must be correspondingly modified.

By a second modification the precipitant or deodoriser is made to consist of a mixture of alumina with lime or magnesia, or with both 15 lime and magnesia.

By a third modification a substance containing alumina associated with silica is used instead of one containing alumina alone or principally, and is mixed with the lime or magnesia, or both.

The precipitant or deodoriser obtained in any of the modes herein- 20 before described is to be mixed with the sewage or other liquids or substances in proportions corresponding to the nitrogen and phosphorus found by trial to be present, and effects the desired results, the precipitate formed fixing or holding the nitrogenous and phosphorised constituents and forming with them a compound useful and valuable as a fertiliser or 25 manure.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Joseph Townsend in the Great Seal Patent Office on the 28th November 1873.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOSEPH 30 TOWNSEND, of Glasgow, in the County of Lanark, North Britain, Manufacturing Chemist, send greeting.

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WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirty-first day of May, in the year of our Lord One thousand eight hundred and seventy-three, in the thirty-sixth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Joseph Townsend, Her special licence that I, the said Joseph Townsend, my executors, administrators, and assigns, or such others as I, the said Joseph Townsend, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time, and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN TREATING SEWAGE OR OTHER LIQUIDS OR SUBSTANCES CONTAINING NITROGEN, PHOSPHORUS, OR THEIR COMPOUNDS IN ORDER TO DEODORISE OR PRECIPITATE THE SAME AND OBTAIN USEFUL PRODUCTS THEREFROM," upon the condition (amongst others) that I, the said Joseph Townsend, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Joseph Townsend, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement in writing, that is to say:—

My said Invention has for its object the deodorising and purifying or partial purifying of sewage or other liquids or substances containing nitrogenous matter or phosphorus compounds, and consists in certain modes of using alumina, lime, magnesia, phosphoric acid, or combinations or compounds thereof.

In practically carrying out my said Invention according to one modification I form a precipitant or deodoriser by taking 100 pounds of a phosphate containing, for example, 40 per centum of phosphoric acid and 20 per centum of alumina, and mixing therewith 58 pounds of lime. I also find it desirable for the purpose of promoting or facilitating the intended reaction to add from 2 to 5 per centum of soda or potash, or

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an equivalent proportion of carbonate, or sulphate, or sulphite of soda or potash with sufficient additional lime to set free the alkali. The products of the reaction are principally phosphate and aluminate of lime. For the lime there may be substituted 36 pounds of magnesia, yielding principally phosphate and aluminate of magnesia, or both lime 5 and magnesia may be used by preference in the proportion of 47 pounds lime and 8 pounds magnesia. If the phosphate employed contains proportions of phosphoric acid and alumina different from those herein-before mentioned the quantities of the lime or magnesia must be correspondingly modified. 10

By a second modification I make the precipitant or deodoriser to consist of a mixture of alumina with lime or magnesia, or with both lime and magnesia.

By a third modification I use a substance containing alumina associated with silica, instead of one containing alumina alone or 15 principally, and I mix it with the lime or magnesia or both, adding the alkali or substances yielding alkali as herein-before described in the first modification.

The precipitant or deodoriser obtained in any of the modes herein-before described is to be mixed with the sewage or other liquids or 20 substances in proportions corresponding to the nitrogen and phosphorus found by trial to be present, and effects the desired results, the precipitate formed fixing or holding the nitrogenous and phosphorised constituents and forming with them a compound useful and valuable as a fertiliser and manure. 25

Having thus particularly described my said Invention, and the manner of performing the same, I have to state that I do not restrict myself to the precise details herein-before referred to, but that what I believe to be novel and original, and claim as the Invention secured to me by the herein-before in part recited Letters Patent is,— 30

1. The treating of sewage or other liquids or substances containing nitrogen, phosphorus, or their compounds with precipitants or deodorisers containing phosphate and aluminate of lime or of magnesia or of both, and prepared substantially as herein-before described.

2. The obtaining of fertilisers or manures by precipitating or deo- 35 dourising liquids or substances with compounds comprising phosphate

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and aluminate of lime or of magnesia or of both, substantially as herein-before described.

5 In witness whereof, I, the said Joseph Townsend, have hereunto set my hand and seal, this Twenty-sixth day of November, in the year of our Lord One thousand eight hundred and seventy-three.

JOSEPH TOWNSEND. (L.S.)

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and aluminate of lime or of magnesia or of both, substantially as herein before described, and to which I claim as my invention the following improvements:—
In witness whereof, I, the said Joseph Townsend, have hereunto set my hand and seal, this Twenty-sixth day of November, in the year of our Lord One thousand eight hundred and seventy-three.

JOSEPH TOWNSEND. (A.S.)

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