Specification of Adolphe Pierre Vassard : treating liquid sewage, &c.;

Contributors

Vassard, Adolphe Pierre.

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A.D. 1871, 1st NOVEMBER. N° 2926.

SPECIFICATION

OF

ADOLPHE PIERRE VASSARD.

TREATING LIQUID SEWAGE, &c.

LONDON:
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A.D. 1871, 1st NOVEMBER. N° 2926.

Treating Liquid Sewage, &c.

LETTERS PATENT to Adolphe Pierre Vassard, of New Cross, in the County of Kent, Chemist, for the Invention of "IMPROVEMENTS IN TREATING LIQUID SEWAGE AND OTHER AMMONIACAL LIQUORS."

Sealed the 26th April 1872, and dated the 1st November 1871.

PROVISIONAL SPECIFICATION left by the said Adolphe Pierre Vassard at the Office of the Commissioners of Patents, with his Petition, on the 1st November 1871.

I, ADOLPHE PIERRE VASSARD, of New Cross, in the County of Kent, Chemist, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN TREATING LIQUID SEWAGE AND OTHER AMMONIACAL LIQUORS," to be as follows, that is to say :—

My Invention has for its object the treatment of liquid sewage and other ammoniacal liquors in order to obtain therefrom precipitates which may be used as manure or for other purposes.

In treating sewage I prefer to first separate the liquid from the solid portions thereof by what is known as "the lime process," but my treatment of the liquid portion as herein-after described is applicable thereto without such separation.

According to my Invention I treat the liquid portion of sewage or other ammoniacal liquors by submitting it or them to the action of two chemical compounds which I introduce separately and consecutively. The first of such compounds is a mixture of oxide of barium and biphosphate of lime. The second of such compounds is a mixture of chloride of magnesium and aluminate of soda. I employ these compounds by preference in about the following proportions, videlicet:—In the first compound of oxide of barium I use twenty parts, and of biphosphate of lime one hundred and twenty parts. In the second compound of chloride of magnesium I use one hundred parts, and of aluminate of soda fifty parts. I can however replace in the first compound the oxide of barium by the sulphide of barium, and the biphosphate of lime by the common superphosphate of lime, or any other soluble phosphate. In like manner I can replace in the second compound the chloride of magnesium by the sulphate or any other soluble salt of magnesia, and the aluminate of soda by lime or by any other alkali or alkaline earth, or by the silicate of soda.

In replacing any or all of the agents preferably used in the formation of my compounds by others as herein-before stated, equivalent quantities of such substitutes must be employed.

In carrying out my Invention I prefer that the liquid sewage should flow through a channel of appropriate length and size into a second and larger channel or reservoir which may be open at the end or otherwise. While thus flowing I introduce near the head of the first-named channel my first compound, which I mix up well with the liquid sewage, and towards the outlet of the said channel I introduce my second compound, mixing that also well up with the liquid sewage, which then flows into the second channel or reservoir in which the insoluble particles thus formed are precipitated and collected, the supernatant liquid being run or drawn off and purified by any ordinary process.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Adolphe Pierre Vassard in the Great Seal Patent Office on the 29th April 1872.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ADOLPHE PIERRE VASSARD, of New Cross, in the County of Kent, Chemist, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the First day of November, in the year of our Lord One thousand eight hundred and seventy-one, in the thirty-fifth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Adolphe Pierre Vassard, Her special licence that I, the said Adolphe Pierre Vassard, my executors, administrators, and assigns, or such others as I, the said Adolphe Pierre Vassard, 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 LIQUID SEWAGE AND OTHER AMMONIACAL LIQUORS," upon the condition (amongst others) that I, the said Adolphe Pierre Vassard, my executors or administrators, by an instrument in writing under , 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 Adolphe Pierre Vassard, 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, that is to say:—

My Invention has for its object the treatment of liquid sewage and other ammoniacal liquors in order to obtain precipitates therefrom,

which may be used as manure and for other purposes, such precipitates being, firstly, the salts contained in solution therein, and known as carbonate, sulphate, lactate, and phosphate of lime, as well as the carbonic, sulphuric, lactic, and phosphoric acids, either free or in combination with alkalies or alkaline earths; secondly, the ammonia contained in liquid sewage and other ammoniacal liquors, either free or in combination with acids, which is deposited to such an extent as to leave the supernatant water pure enough to be allowed to run or flow into any stream of water.

In treating sewage I prefer first to separate the liquid from the solid portions thereof by what is known as the "lime process," but the reason of such a separation being only a commercial one, my treatment of the liquid portion as herein-after described is applicable thereto without such separation.

According to my Invention I treat the liquid portion of sewage or other ammoniacal liquors by submitting it or them to the action of two chemical compounds which I introduce separately and consecutively. The first of such compounds is a mixture of oxide of barium and biphosphate of lime. The second of such compounds is a mixture of chloride of magnesium and aluminate of soda. I employ these compounds by preference in about the following proportions, viz^{t}. :—In the first compound twenty parts of oxide of barium to one hundred and twenty parts of biphosphate of lime. In the second compound one hundred parts of chloride of magnesium to fifty parts of aluminate of soda. I find that by using the two chemical agents which form the first of the said compounds separately, that is to say, first the oxide of barium, and then the biphosphate of lime, I obtain a more certain result.

The exact proportions of chemical agents to be used relatively to the quantity of sewage or other ammoniacal liquors to be treated depend on the quantity of carbonates, sulphates, lactates, phosphates, or on the quantity of ammonia it or they may contain, and can only be ascertained by experiment, but they may be stated approximately to be about one part and seven-tenths of a part of the said chemical agents to one thousand parts of liquid sewage. I can replace in the first compound

the oxide of barium by the sulphide or other soluble salt of barium and the biphosphate of lime, by the common superphosphate of lime or any other soluble phosphate. In like manner I can replace in the second compound the chloride of magnesium by the hypochloride or sulphate or any other soluble salt of magnesia, and the aluminate of soda by lime or hypochloride of lime, carbonate of magnesia, or by any other alkaline earth by an alkali, or by silicate of soda.

In replacing any or all of the agents preferably used in the formation of my improved compounds by others as herein-before stated, equivalent quantities of such substitutes must be used.

In carrying out my Invention I prefer, when using the two compounds herein-before stated in the manner first herein described, that the liquid sewage or other ammoniacal liquors should flow through a channel of appropriate length and size into a second and larger channel or reservoir which may be open at the end or otherwise. While thus flowing I introduce near the head of the first-named channel my first compound, which I mix up well with the liquid sewage, and towards the outlet of the said channel I introduce my second compound, mixing that also well up with the liquid sewage, which then flows into the second channel or reservoir in which the insoluble particles thus formed are precipitated and collected, the supernatant liquid being run or drawn off and deodorized by any ordinary process.

I have herein-before stated that I can use the chemicals forming my first compound at two different times or separately, by which I obtain a more certain result. In this case I prefer employing instead of the first channel a series of small tanks or reservoirs, three or four in number, which tanks are connected together by means of a small channel or overflow in which the required chemical agents are introduced and thoroughly mixed with the sewage, and when the liquid sewage has been thus treated it is allowed to flow into the second channel or reservoir, as herein-before described.

Having thus described the nature of my said Invention, and the best means I am acquainted with of performing the same, what I claim is, the use of oxide or sulphide of barium or other soluble salts of barium in combination or in conjunction with biphosphate or superphosphate of

lime, together with a compound formed with the chloride of magnesium or hypochloride of magnesia and aluminate of soda, for the treatment of liquid sewage and other ammoniacal liquors, to obtain therefrom precipitates as herein-before described.

In witness whereof, I, the said Adolphe Pierre Vassard, have hereunto set my hand and seal, this Twenty-seventh day of April, in the year of our Lord One thousand eight hundred and seventy-two.

A. P. VASSARD. (L.S.)

Witness,

W. A. GILBEE,
4, South St.,
Finsbury.

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