A.D. 1871, 15th August. N° 2140.

SPECIFICATION

OF

JAMES IRVINE LUPTON.

TREATING SEWAGE.

LONDON:
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A.D. 1871, 15th August. N° 2140.

Treating Sewage.

LETTERS PATENT to James Irvine Lupton, of Richmond, in the County of Surrey, for the Invention of "**Improvements in the Mode of Deodorising and Utilising Sewage.**"

Sealed the 13th February 1872, and dated the 15th August 1871.

PROVISIONAL SPECIFICATION left by the said James Irvine Lupton at the Office of the Commissioners of Patents, with his Petition, on the 15th August 1871.

I, James Irvine Lupton, of Richmond, in the County of Surrey, do hereby declare the nature of the said Invention for "**Improvements in the Mode of Deodorising and Utilising Sewage,**" to be as follows:—

The improvements consist in adding to and intimately blending with the sewage of large or other towns a certain proportion preferably about 20°/₀ to 40°/₀ of carbon, in most cases the common ashes of the town mixed, in some cases, with a small proportion of phosphate of lime; the fluid (the noxious portions of the sewage or part of them being held in a state of suspension in the carbon) being filtered off, and

afterwards passed through other filters in order to purify it and remove the organic matter therein contained.

The improvements also comprise the use of the residuum left after the process of filtration as a fertiliser.

The improvements are to be carried into effect by allowing or causing the sewage to collect in a tank or reservoir furnished with one or more filters; to the sewage thus collected is added about 20 to 40 per cent. of carbon, preferably the ashes of the town; that is to say, that after all the liquid is filtered off the residuum is found to contain about one-third carbon to two-thirds of sewage proper. In some cases a small proportion of phosphate of lime in the proportion of about 3 lbs. of phosphate to every ton of the entire mass is added; the intimate, and as near as possible immediate, blending of this mass is effected by means preferably of a rotary fan worked by hand when the improvements are carried out on a small scale, and when on a large scale by steam. The effect of this intimate blending of the carbon with the sewage is that the noxious portions of the sewage, or as much as possible of them, are held in a state of suspension in or absorbed by the ashes or other carbon. During this operation (viz., the intimate blending of the sewage and carbon,) the liquid part of the sewage is passing through the filters with which the receiving tank is furnished, and thus through other approved filters, or otherwise treated until it becomes fit for use. The residuum in the first tank, consisting of the ashes with the noxious portions of the sewage (or as much as possible of them) held in a state of suspension, can and is intended to be used as a fertiliser.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said James Irvine Lupton in the Great Seal Patent Office on the 15th February 1872.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, James Irvine Lupton, of Richmond, in the County of Surrey, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Fifteenth day of August, in the year of our Lord One thousand eight hundred and seventy-one, in the thirty-fourth year of Her reign, did, for Herself, Her heirs and successors, give

and grant unto me, the said James Irvine Lupton, Her special licence that I, the said James Irvine Lupton, my executors, administrators, and assigns, or such others as I, the said James Irvine Lupton, 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 THE MODE OF DEODORISING AND UTILISING SEWAGE," upon the condition (amongst others) that I, the said James Irvine Lupton, 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 James Irvine Lupton, 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 :—

The improvements consist in adding to and intimately blending with the sewage of large or other towns a certain proportion preferably about 20°/₀ to 40°/₀ of carbon, in most cases the common ashes of the town mixed, in some cases, with a small proportion of phosphate of lime; the fluid (the noxious portions of the sewage or part of them being held in a state of suspension in the carbon) being filtered off, and afterwards passed through other filters in order to purify it and remove, or almost entirely remove, the organic matter therein contained.

The improvements also comprise the use of the residuum left after the process of filtration as a fertiliser.

The improvements are to be carried into effect by allowing or causing the sewage to collect in a tank or reservoir furnished with a perforated bottom; to the sewage thus collected is added about 20 to 40 per cent. of carbon, the most convenient proportions being proved to be two-thirds of solid sewage to one-third of carbon, and in some cases a small proportion of phosphate of lime, in the proportion of 3 lbs. of phosphate to every ton of the entire mass, is added. This tank or reservoir is

furnished with a rotary fan or agitator, worked by hand when the improvements are carried out on a small scale, and when on a large scale by steam power. The rotary fan or agitator during its action keeps the sewage, both liquid and solid, in a state of agitation, whereby the intimate blending of the carbon with the sewage is effected, the carbon during this period absorbing the noxious gases and effluvia and sinking together with the solid portions of the sewage to the bottom of the tank, the liquid portion of the sewage having (during the continuance of the said process) filtered through the perforated bottom of the tank, leaving a residuum of solid sewage and ashes, which is immediately thrown upon a bed of ashes or earth until it becomes dry enough to be placed in sacks, the process of drying seldom taking more than 12 hours, after which it constitutes a very valuable manure. Below the tank above alluded to, and which I call tank No. 1, is placed tank No. 2, with a perforated bottom filled to the depth of about 1 foot with ashes, acting as a filter; and below this is a 3rd tank, similarly constructed, partially filled with sand, also acting as a filter; and lastly, the effluent liquid is caused to pass through a filter or filters containing animal charcoal. This last process of filtration is intended to reduce the organic matter in the effluent liquid to the required standard.

Having now described my Invention, and the way in which it is to be carried into effect, I would remark that, as I claim nothing new in the construction of the agitator or fan, or in the different tanks or receptacles, I have not thought it necessary to append Drawings hereto; but what I claim is, the intimate blending of carbon with the sewage by means of agitation.

In witness whereof, I, the said James Irvine Lupton, have hereunto set my hand and seal, this Fourteenth day of February, in the year of our Lord Eighteen hundred and seventy-two.

JAMES IRVINE LUPTON. (L.S.)

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