

Specification of Robert Knott : treating sewage, &c.;

Contributors

Knott, Robert.

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A.D. 1873, 15th JULY. N° 2442.

SPECIFICATION

OF

ROBERT KNOTT.

TREATING SEWAGE, &c.

LONDON:

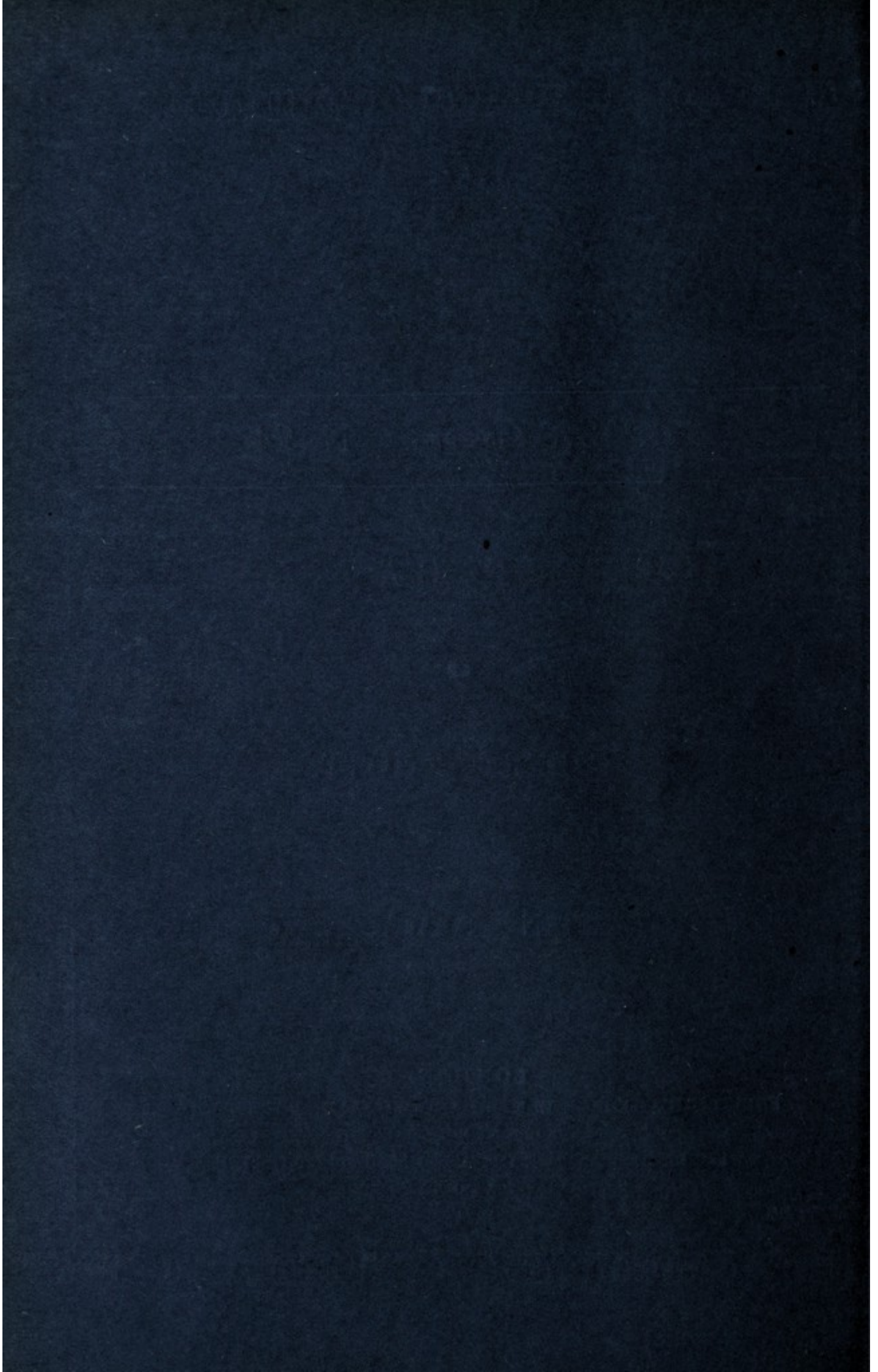
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1874.





A.D. 1873, 15th JULY. N° 2442.

Treating Sewage, &c.

LETTERS PATENT to Robert Knott, of Bolton, in the County of Lancaster, Bleacher, for the Invention of "IMPROVEMENTS IN TREATING SEWAGE AND OTHER FOUL LIQUIDS, ALSO PARTLY APPLICABLE TO BLEACHING AND OTHER CLEANSING OPERATIONS."

Scaled the 28th November 1873, and dated the 15th July 1873.

PROVISIONAL SPECIFICATION left by the said Robert Knott at the Office of the Commissioners of Patents, with his Petition, on the 15th July 1873.

I, ROBERT KNOTT, of Bolton, in the County of Lancaster, Bleacher,
5 do hereby declare the nature of the said Invention for "IMPROVEMENTS
IN TREATING SEWAGE AND OTHER FOUL LIQUIDS, ALSO PARTLY APPLICABLE TO
BLEACHING AND OTHER CLEANSING OPERATIONS," to be as follows:—

In treating sewage and other foul liquids for the removal of the
suspended and soluble impurities contained therein I take a mixture of
10 quicklime and soda, in the proportions of 15 lbs. to 40 lbs. by weight or

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thereabouts, and boil the same in 70 quarts of water for five hours, more or less, and introduce a sufficient quantity of this mixture in a boiling state into the sewage or other foul liquid to flocculate the suspended and soluble impurities, which may then be allowed to settle in tanks and the effluent water employed for irrigation purposes, or be allowed to flow 5 away ; but when a higher standard of purity is required, and in order to expedite the precipitating action, I prefer to add a suitable quantity of a liquid made by mixing together lime and Epsom salts, in the proportion of about two to one by weight in 40 quarts of water, boiled for three 10 hours, more or less. This flocculating and precipitating action serves to deodorise the sewage or other liquid being treated, so that the effluent water may be allowed to flow away without nuisance or be used for irrigation or other purposes, whilst the solid matter which is also deodorised is useful for manure.

The first-mentioned mixture is also suitable for rendering sea water 15 useful for manufacturing purposes and for various cleansing operations, such as cleaning barrels used for containing malt liquors and for use in bleachers' keirs, being a substitute for the soda ash hitherto used for bleaching purposes.

SPECIFICATION in pursuance of the conditions of the Letters Patent, 20
filed by the said Robert Knott in the Great Seal Patent Office on
the 15th January 1874.

**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ROBERT
KNOTT, of Bolton, in the County of Lancaster, send greeting.**

WHEREAS Her most Excellent Majesty Queen Victoria, by Her 25
Letters Patent, bearing date the Fifteenth day of July, in the year of
our Lord One thousand eight hundred and seventy-three, in the thirty-
seventh year of Her reign, did, for Herself, Her heirs and successors,
give and grant unto me, the said Robert Knott, Her special licence that
I, the said Robert Knott, my executors, administrators, and assigns, or 30
such others as I, the said Robert Knott, my executors, administrators, or
assigns, should at any time agree with, and no others, from time to

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time and at all times hereafter 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 AND OTHER FOUL LIQUIDS, ALSO PARTLY APPLICABLE TO BLEACHING AND OTHER CLEANSING OPERATIONS," upon the condition (amongst others) that I, the said Robert Knott, 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 Robert Knott, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say:—

In treating sewage and other foul liquids for the removal of the suspended and soluble impurities contained therein I take a mixture of quicklime of commerce and soda or black ash and boil the same in water and introduce a sufficient quantity of this mixture in a boiling state into the sewage or other foul liquid to flocculate the suspended and soluble impurities, which may then be allowed to settle in tanks and the effluent water employed for irrigation purposes or be allowed to flow away.

The mixture is also suitable for various cleansing operations, such as cleaning barrels used for containing malt liquors, and for use in bleachers' keirs, being a substitute for the soda ash hitherto used for bleaching purposes.

The following is the method which I adopt in manufacturing the clarifying compound:—I take about equal proportions of soda and quicklime, say eighty pounds of each, and one hundred and thirty gallons of water, I heat the water in a boiler to the temperature of 180°, then (by preference) put in the soda, and after it has dissolved I introduce the lime, and boil the mixture for an hour, more or less; I then sieve or run the mixture through a fine riddle into a cistern, where it is constantly agitated until every particle of the mixture is of the same whitish

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colour, when it is ready whilst in its heated state to be introduced to the sewage or other foul liquid.

As an alternative process I find that 10 lbs. of black ash may be substituted for the soda, and the mixture treated in precisely the same manner as when soda is used. 5

Although I have stated certain proportions of the ingredients and water I wish it to be understood that such proportions may be varied according to the quality of the sewage or other foul liquid being treated.

In carrying my Invention into practical effect I prefer to admit the sewage water into a tank and guage basin, from whence it flows into a 10 receptacle into which the chemical compound is admitted (in proper proportion, say, about 40 gallons compound to 10,000 gallons sewage or other foul liquid) from the cistern herein-before mentioned, previous to its flowing over a water wheel, which has the effect of agitating and mixing the sewage water and chemical compound, and thus thoroughly 15 incorporates them together, after which, and previous to arriving at the settling tank, the treated sewage water runs through a long channel in order to still further mix the sewage and chemical compound, which is finally admitted into settling tanks, which I prefer to have in duplicate and of a size and number in proportion to the quantity of sewage water 20 requiring to be treated. The supernatant liquid from these tanks may be employed for irrigation purposes, or be allowed to flow into rivers, or be used for manufacturing purposes, whilst the solid matter or sludge is useful for manure.

The water wheel may in convenient situations be geared to and thus 25 actuate the stirrer or agitator in the cistern herein-before mentioned; or instead of a water wheel the mixing or incorporating may be performed by a steam engine or other motive power.

Having thus described my Invention of "Improvements in Treating Sewage and other Foul Liquids, also Partly applicable to Bleaching and 30 other Cleansing Operations," and having explained the manner of carrying the same into effect, I claim,—

Firstly. As my Invention the preparation of a compound and the application of the same in a heated state to the sewage or other foul water, as and for the purposes described. 35

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Secondly. The use of the same compound for cleansing operations, as herein-before described.

In witness whereof, I, the said Robert Knott, have hereunto set my hand and seal, this Thirteenth day of January One thousand
5 eight hundred and seventy-four.

ROBERT KNOTT. (L.S.)

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Knott's Experiments in Writing Systems.

Secondly: The use of the same compound for thousand operations as
hundred-before described.

In answer thereto, I, the said Robert Knott, here declare that
my hand and seal, this Thirtieth day of January One thousand
eight hundred and seventy-four.

ROBERT KNOTT. (Sd.)

LONDON:

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