

Specification of James Burrow : treating sewage, &c.;

Contributors

Burrow, James.

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A.D. 1871, 7th OCTOBER. N° 2659.

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

OF

JAMES BURROW.

—
TREATING SEWAGE, &c.
—

LONDON:

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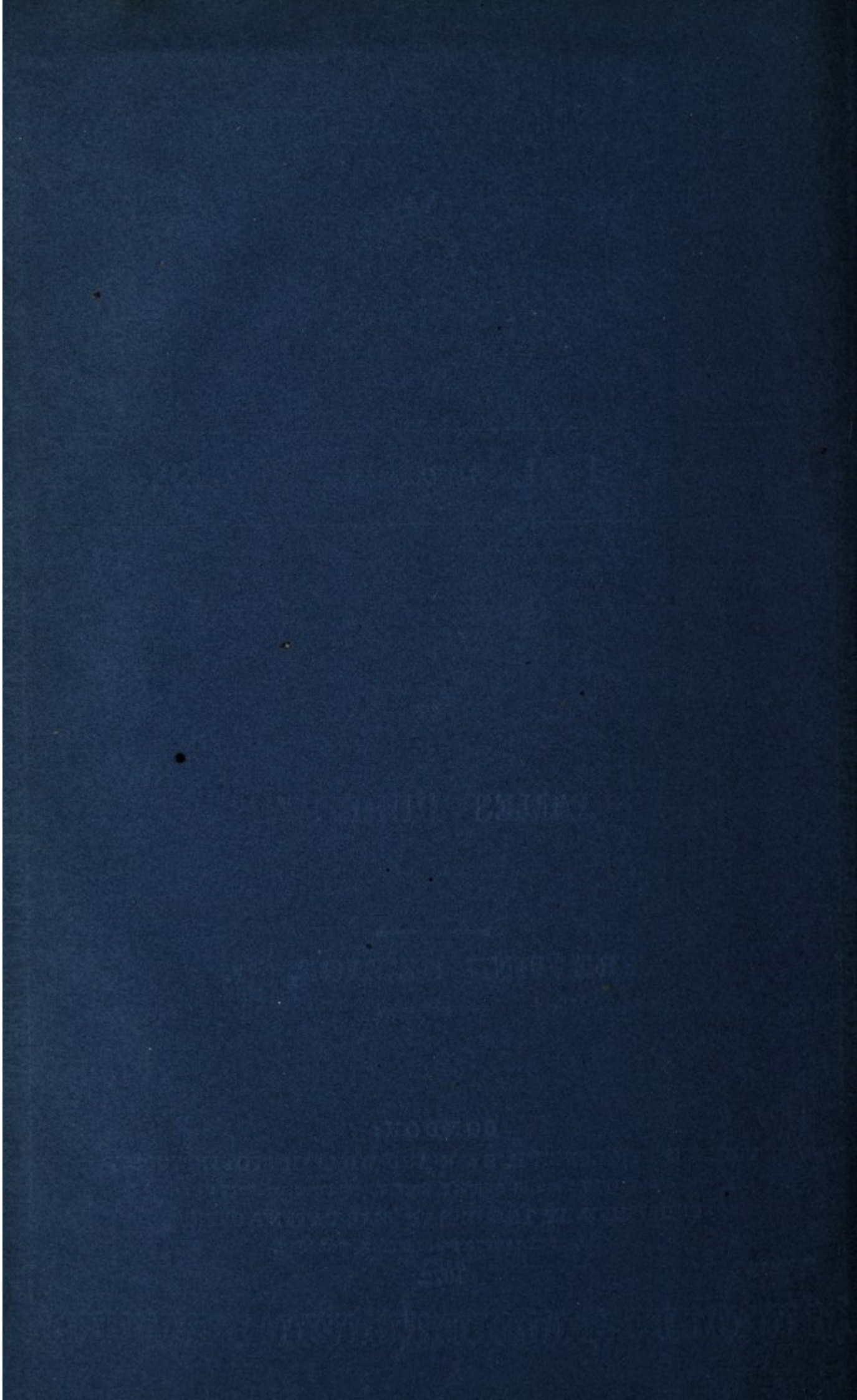
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A.D. 1871, 7th OCTOBER. N° 2659.

Treating Sewage, &c.

LETTERS PATENT to James Burrow, of the Hampton Vicarage, in the County of Middlesex, Master of Arts, for the Invention of "**IMPROVEMENTS IN TREATING SEWAGE AND OTHER MATTERS.**"

Sealed the 26th March 1872, and dated the 7th October 1871.

PROVISIONAL SPECIFICATION left by the said James Burrow at the Office of the Commissioners of Patents, with his Petition, on the 7th October 1871.

I, JAMES BURROW, of the Hampton Vicarage, in the County of Middlesex, Master of Arts, do hereby declare the nature of the said Invention for "**IMPROVEMENTS IN TREATING SEWAGE AND OTHER MATTERS,**" to be as follows:—

These improvements relate to the treatment of sewage and to the employment of the effluent water and the deposit for commercial and other purposes.

I take sulphate of iron, say one part, and mix it with lime, say 15 parts, or with caustic soda or some other reagent and place the liquid

Burrow's Improvements in Treating Sewage, &c.

compound in a tank or other receptacle into which sewage is permitted to flow. The action of the sulphate of iron and lime or other reagent is to deposit the solid and other impurities in the sewage or other matter at the bottom of the tank, leaving the liquid clear to be run off as desired. The deposit is to be afterwards removed and treated in any 5 suitable known manner.

In some cases the deposit would be mixed with town or other refuse, in order to serve for fuel.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said James Burrow in the Great Seal Patent Office 10 on the 6th April 1872.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JAMES BURROW, of the Hampton Vicarage, in the County of Middlesex, Master of Arts, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her 15 Letters Patent, bearing date the Seventh day of October, 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 James Burrow, Her special licence that I, the said James Burrow, my executors, administrators, and assigns, 20 or such others as I, the said James Burrow, 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 25 Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN TREATING SEWAGE AND OTHER MATTERS,**" upon the condition (amongst others) that I, the said James Burrow, 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 30 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.

Burrow's Improvements in Treating Sewage, &c.

NOW KNOW YE, that I, the said James Burrow, 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 thereof, that is to say:—

- 5 This Invention relates to the deodorization and defœcation of sewage and other matters and waters contaminated with putrescent or nitrogenous matter in pools, drains, rivers, and other places, and consists in the employment for such purposes of a ferruginous salt, sulphate of iron, for instance, to the sewage or other foul water, and then neutralised and
10 precipitated by lime, caustic soda, or other alkaline reagent.

It is well known that nitrogenous matter contained in sewage or foul water passes rapidly into a state of decomposition and gives rise to those offensive compounds of ammonia, sulphuretted and phosphuretted hydrogen, which cause the nauseous effluvium. When the ferruginous
15 salt is added, the noxious compounds are quickly condensed, the ammonia by acid and the gases by the oxide, and the sewage or foul water becomes deodorised; whilst the putrid matter held in solution is rendered insoluble in consequence of oxidation and is precipitated; by this means the sewage or foul water becomes defœcated. In the
20 application of this salt to the purification of sewage I propose to construct a long trough or passage and divide a portion of it longitudinally, in such a way that one portion has a capacity about two-thirds greater than that of the other from a vessel placed above the larger division. I allow a sufficient quantity of the salt to flow as will
25 acidulate the running stream of sewage and from another vessel placed above the smaller division I allow a sufficient quantity of milk of lime or other reagent to flow as will render alkaline the smallest stream of sewage. When these two parallel streams have run sufficiently long to become impregnated, the one with the salt and the other with the
30 alkali, I allow the liquid compound to flow together in a continuation of the same trough or passage until the mixture has become complete and the confluent stream is ready to fall into the precipitating tank; the proportions of the salt and alkali in their respective streams will vary with the nature of the sewage; but in treating the ordinary
35 London sewage I find that one ton of the former to five cwt. of the latter to every 1,000,000 (one million) gallons of sewage very effective.

To this proportion however I do not confine myself, but am guided by

Burrow's Improvements in Treating Sewage, &c.

the nature of the sewage, which I ascertain by the well known means, and apply the purifying materials accordingly, the object being to produce as nearly as possible a neutralized condition of the treated sewage. By this method I am enabled to keep up a continuous stream through the precipitating tank and to produce an effluent water 5 thoroughly deodorised and defœcated.

I sometimes however use two tanks or receptacles, with the same relative capacities as the divided trough, and allow the liquid compound thoroughly impregnated to flow into the precipitating tank.

When treating foul water in stagnant pools or tanks, where it is not 10 possible to impregnate two separate portions of foul water, I apply first the ferruginous salt and then neutralise it with an alkali.

The deposit may be collected from time to time and dried by natural or artificial means, when it will be found to be rich in ammonia and to possess the properties of a powerful manure. 15

Having now described the nature of my said Invention and the manner in which it is or may be carried into effect I would observe that what I do claim is,—

Firstly. Treating sewage and other similar matters in the manner and for the purposes set forth. 20

Secondly. The employment of a ferruginous salt in a separate stream as and for the purposes described when used in combination with an alkali in another separate stream.

Thirdly. The impregnation of separate portions of sewage in parallel streams before the point of confluence as described. 25

In witness whereof, I, the said James Burrow, have hereunto set my hand and seal, this Second day of April, in the year of our Lord One thousand eight hundred and seventy-two.

JAMES BURROW. (L.S.)

LONDON:

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Printers to the Queen's most Excellent Majesty. 1872.