

Specification of John James Lundy : purifying sewage water.

Contributors

Lundy, John James.

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A.D. 1870, 10th MARCH. N^o 713.

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

OF

JOHN JAMES LUNDY.

PURIFYING SEWAGE WATER.

LONDON:

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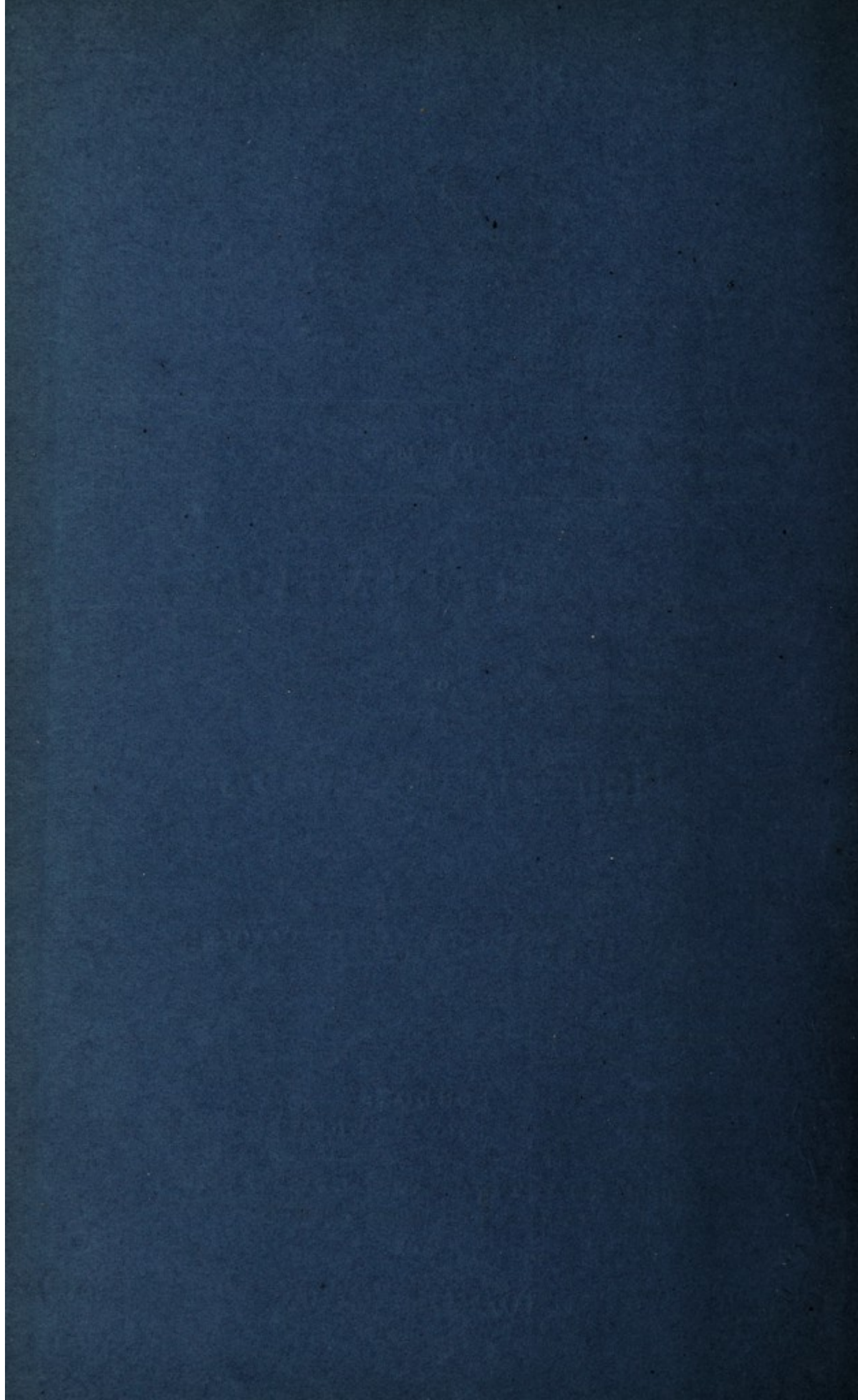
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A.D. 1870, 10th *MARCH*. N° 713.

Purifying Sewage Water.

LETTERS PATENT to John James Lundy, of Leith, near Edinburgh, in the County of Mid Lothian, North Britain, Colour, Paint, Varnish, and Chemical Manufacturer, for the Invention of "**IMPROVEMENTS IN EFFECTING THE DECOLORIZATION, DEODORIZATION, AND PURIFICATION OF FOUL AND WASTE WATERS OF SEWAGE AND OF SUPERNATANT SEWAGE WATER.**"

Sealed the 30th August 1870, and dated the 10th March 1870.

PROVISIONAL SPECIFICATION left by the said John James Lundy at the Office of the Commissioners of Patents, with his Petition, on the 10th March 1870.

I, JOHN JAMES LUNDY, of Leith, near Edinburgh, in the County of
5 Mid Lothian, North Britain, Colour, Paint, Varnish, and Chemical
Manufacturer, do hereby declare the nature of the said Invention for
"**IMPROVEMENTS IN EFFECTING THE DECOLORIZATION, DEODORIZATION, AND PURI-
FICATION OF FOUL AND WASTE WATERS OF SEWAGE AND OF SUPERNATANT SEWAGE
WATER,**" to be as follows :—

10 This Invention relates to improvements in effecting the decolorization,
deodorization, and purification of foul water and waste waters, such, for

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example, as those waters which foul the streams and run to waste from distilleries, dye works, paper works, and other manufactories, of sewage, and of sewage supernatant water, and consists in submitting them to what is known as the carbonaceous residuum or animal charcoal, which is produced and obtained in the manufacture of prussiate of 5 potash.

In carrying out the first part of my Invention I filter the foul water, waste waters, or the sewage supernatant water obtained after the separation of the more solid portions of the sewage by mechanical means, or by allowing the same to subside in settling ponds by filtering the 10 same through the animal charcoal before described by any of the well known methods of filtration, the said animal charcoal being either mixed or not mixed with or placed in alternate layers or otherwise with cinders, coke, gravel, sand, stones, or any other suitable substance or substances singly are combined, whereby the filtering beds or tanks may be kept 15 more open according to the rapidity of the filtration required, or to the density or specific gravity of the water requiring to be decolorized, deodorized, or purified.

In carrying out the second part of my Invention I cause the foul water, waste waters, supernatant sewage water, or sewage to be mixed 20 up with the before-mentioned animal charcoal by being stirred up therein, whereby after the animal charcoal has been allowed to subside or precipitate the supernatant water will be found to be decolorized and deodorized.

In carrying out this part of my Invention the amount of animal 25 charcoal to be employed will be dependent on the degree of impurity of the waters or sewage to be treated, but I prefer to use such a proportion as that the desired degree of decolorization and deodorization may be effected, which proportion can easily be ascertained by previous experimental trial on a small scale. Some waters from paper works will 30 be found to require as little or even less than 3 ounces per gallon, and it will further be found that the precipitated charcoal can be used over again until its powers of decolorization and deodorization are exhausted, when it will be found suitable for agricultural purposes, or it may be dessicated and reburnt for use again for the decolorization and 35 deodorization of waters and sewage.

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It will be found that after either of these processes, namely, of filtration or of mixing and precipitation many waters that now froth and foam will not do so when allowed to run into a stream, river, or watercourse.

5 **SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said John James Lundy in the Great Seal Patent Office on the 10th September 1870.

10 **TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOHN JAMES LUNDY**, of Leith, near Edinburgh, in the County of Mid Lothian, North Britain, Color, Paint, Varnish, and Chemical Manufacturer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Tenth day of March, in the year of our Lord One thousand eight hundred and seventy, in the thirty-
15 third year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said John James Lundy, Her special license that I, the said John James Lundy, my executors, administrators, and assigns, or such others as I, the said John James Lundy, my executors,
20 administrators, or 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 EFFECTING THE DECOLORISATION, DEODORISATION, AND PURIFICATION OF FOUL AND WASTE**
25 **WATERS OF SEWAGE AND OF SUPERNATANT SEWAGE WATER,**" upon the condition (amongst others) that I, the said John James Lundy, my executors or administrators, by an instrument in writing under my hand and seal, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the
30 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 John James Lundy, do hereby declare the nature of my said Invention, and in what manner the same is to be

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performed, to be particularly described and ascertained in and by the following statement, that is to say:—

This Invention relates to improvements in effecting the decolorisation, deodorisation, and purification of foul water and waste waters, such, for example, as those waters which foul the streams and run to waste from 5 distilleries, dye works, paper works, and other manufactories, also of sewage and of sewage supernatant water, and consists in submitting them to what is known as the carbonaceous residuum or animal charcoal, which is produced and obtained in the manufactories of prussiate of potash. 10

In carrying out the first part of my Invention I filter the foul waste waters, or the sewage, or the sewage supernatant water obtained after the separation of the more solid portions of the sewage by mechanical means, or by allowing the same to subside in settling ponds by filtering the same through the animal charcoal before described by any of the well known 15 methods of filtration, the said animal charcoal being either mixed or not mixed with or placed in alternate layers or otherwise with cinders, coke, gravel, sand, stones, or any other suitable substance or substances singly or combined, whereby the filtering beds or tanks may be kept more open according to the rapidity of the filtration required, or to the density or 20 specific gravity of the water requiring to be decolorised, deodorised, or purified.

In carrying out the second part of my Invention I cause the foul water, waste waters, supernatant sewage water, or sewage to be mixed up with the before-mentioned animal charcoal by being stirred up 25 therein, whereby after the animal charcoal has been allowed to subside or precipitate the supernatant water will be found to be decolorised and deodorised.

In carrying out this part of my Invention the amount of animal charcoal to be employed will be dependent on the degree of impurity of 30 the waters or sewage to be treated. As nearly every foul water requiring purification will vary according to the manufacture it has been previously used for in the various ingredients it contains or in its specific gravity; and as the animal charcoal can be re-employed, I prefer to add to the first foul water operated upon an excess of the aforesaid animal charcoal 35 over and above what is actually necessary to attain the desired degree of decolorisation or deodorisation. I also prefer to wet the charcoal with a

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smaller quantity of the foul water itself or with clean water in a tub, cask, or other vessel, stirring the same until it is well incorporated with the water, and then pour the same into the cistern, pond, tank, or other vessel or apparatus containing the bulk of the foul water to be operated
5 upon through a sieve, so that it is the more easily diffused therein without leaving froth or scum upon the top of the first batch of water purified. When the animal charcoal is mixed with the water to be purified, all that is necessary is to agitate or stir it well therein, for which in most cases a few minutes will suffice. The requisite quantity
10 of the animal charcoal to be employed and the time requisite for agitation being easily ascertained by observing the subsidence of the sediment in a glass or other vessel of the water operated upon, which may be drawn from time to time from the cistern, pond, or tank used, or upon ceasing to agitate or stir it, observing the precipitation in the
15 cistern, pond, or tank itself. When the precipitation has taken place sufficiently the clear water can be drawn from the surface by means of syphons, taps, or other apparatus, more foul water can then be added to the same animal charcoal, and the operation repeated by agitating and stirring the two together time after time until the power of decolorization
20 and deodorization is exhausted from the animal charcoal. It will be found that where the specific gravity of the waste water to be operated upon is heavier than that of the animal charcoal it will be requisite to reduce the specific gravity of the water below that of the animal charcoal to permit precipitation, which may be done by the addition of foul water
25 of less specific gravity or with clean water. It will be found useful and economical in some manufactures to allow the waste water or waters to remain in a settling tank a few hours before treatment, and only to treat the supernatant liquor with the animal charcoal in the manner before described. The rapidity of precipitation will vary with the specific
30 gravity and the impurity of the water operated upon. Strong caustic ley from paper works will require a longer time than the cooling and washing waters, and it will be found preferable in some cases to mix these waters together to facilitate their purification. The various colored waste waters of dye works will be found to be almost invariably much
35 more rapidly decolorized than those from paper works. It will be found that after either of these processes, namely, of filtration or precipitation, impure water which previously would froth and foam will not do so when allowed to run into a stream, river, or watercourse. After the

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exhaustion of the animal charcoal it may be employed for agricultural purposes, as it has been heretofore employed for that purpose, or it may be desiccated and reburnt for re-employment, for decolorization, deodorization, or for agricultural purposes.

Having now described and particularly ascertained the nature of my 5 said Invention, and the manner in which the same is or may be used or carried into effect, I would observe in conclusion that what I consider to be novel and original and therefore claim as the Invention secured to me by the herein-before in part recited Letters Patent is, the application and utilization in the manner before described of the aforesaid animal 10 charcoal for the purpose of effecting the decolorization, the deodorization, and the purification of foul water, waste waters, supernatant sewage water, and sewage, substantially as herein-before described.

In witness whereof, I, the said John James Lundy, have to this my Specification set my hand and seal, the Third day of September, 15 One thousand eight hundred and seventy.

JOHN J. LUNDY. (L.S.)

LONDON:

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Printers to the Queen's most Excellent Majesty. 1870.

