**Specification of Thomas Isaac Dimsdale : disinfecting sewage or other fetid matters, and abosrbing noxious gaseous exhalations.**


### Contributors

Dimsdale, Thomas Isaac.

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A.D. 1853. . . . . N° 1252.

# SPECIFICATION

OF

# THOMAS ISAAC DIMSDALE.

## DISINFECTING SEWAGE OR OTHER FETID MATTERS, AND ABSORBING NOXIOUS GASEOUS EXHALATIONS.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:
PUBLISHED AT THE QUEEN'S PRINTING OFFICE, EAST HARDING STREET,
NEAR FLEET STREET.

*Price* 3½*d.*

1853.


# A.D. 1853 . . . . . N° 1252.

## Disinfecting Sewage or other Fetid Matters, and Absorbing Noxious Gaseous Exhalations.

**LETTERS PATENT** to Thomas Isaac Dimsdale, of Kingstown, near Dublin, in the Kingdom of Ireland, Esquire, for the Invention of "IMPROVEMENTS IN DISINFECTING SEWAGE OR OTHER FETID MATTERS, AND IN ABSORBING NOXIOUS GASEOUS EXHALATIONS."

Sealed the 19th November 1853, and dated the 20th May 1853.

**PROVISIONAL SPECIFICATION** left by the said Thomas Isaac Dimsdale at the Office of the Commissioners of Patents, with his Petition, on the 20th May 1853.

I, THOMAS ISAAC DIMSDALE, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN DISINFECTING SEWAGE OR OTHER FETID MATTERS, AND IN ABSORBING NOXIOUS GASEOUS EXHALATIONS," to be as follows:—

My improvements consist in the employment of a peculiar kind of peat or peat earth containing a salt or salts of iron or oxide of iron. This material is used either alone or mixed with hydrate of lime or other alkaline or earthy matter. This mixture, or the peat alone, is reduced to a granular powder before it is used. When impure gases

inhaled from sewers, grave yards, burial grounds, or putrifying animal or vegetable substances pass through the prepared peat, all the ammonia and sulphuretted hydrogen will be absorbed and removed. Or for deodorizing sewage, or other fetid, solid, or liquid matters, I mix the powdered peat alone or in combination with the other matters, as above mentioned, with the fetid matters, and the noxious or unpleasant odours will be absorbed thereby; or, in places where gaseous exhalations arising from sewage or putrifying animal or vegetable substances, these noxious gases may be absorbed by merely spreading out a layer of the disinfecting material.

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**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said Thomas Isaac Dimsdale in the Great Seal Patent Office, on the 19th November 1853.

**TO ALL TO WHOM THESE PRESENTS SHALL COME**, I, THOMAS ISAAC DIMSDALE, of Kingstown, near Dublin, in the Kingdom of Ireland, Esquire, send greeting.

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twentieth day of May, in the year of our Lord One thousand eight hundred and fifty-three, in the sixteenth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Thomas Isaac Dimsdale, Her special license that I, the said Thomas Isaac Dimsdale, my executors, administrators, and assigns, or such others as I, the said Thomas Isaac Dimsdale, 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 DISINFECTING SEWAGE OR OTHER FETID MATTERS, AND IN ABSORBING NOXIOUS GASEOUS EXHALATIONS," upon the condition (amongst others) that I, the said Thomas Isaac Dimsdale, 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 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 Thomas Isaac Dimsdale, 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 of "Improvements in Disinfecting Sewage or other Fetid Matters, and in Absorbing Noxious Exhalations," consists in the employment of a peculiar kind of peat or peat earth containing a salt or salts of iron or oxide of iron. This material is used either alone or mixed with hydrate of lime or other alkaline or earthy matter. This mixture or the peat alone is reduced to a granular powder before it is used. When impure gases exhaled from sewers, grave yards, burial grounds, or putrefying animal or vegetable substances pass through the prepared peat, all the ammonia and sulphuretted hydrogen will be absorbed by the peat and decomposed. For deodorizing sewage, or other fetid, solid, or liquid matters, I mix the powdered peat alone or in combination with the other matters, as above mentioned, with the fetid matters, and the noxious or unpleasant odours will be absorbed thereby. Or in places where gaseous exhalations, arising from sewage or putrefying animal or vegetable substances, exist, these noxious gases may be absorbed by merely spreading out a layer of the disinfecting material.

It may be necessary here to state, that peat or bog earth, both in its natural state or simply dried in the open air, as it is prepared for fuel, or when reduced to charcoal by burning, is well known to possess the power of absorbing certain effluvia which are generated during the decomposition of animal or vegetable matters. This knowledge that peat or bog earth possessed these properties has led to this substance being very generally and extensively employed, particularly in Ireland, where it is a common practice to use peat in its raw state, or air-dried peat combined with ashes and peat charcoal, to mix with manures, for the purpose of fixing the ammonia and other volatile gases which are evolved from them.

The result of some elaborate experiments made and published in the year One thousand eight hundred and fifty, by Professor Davy and his

son, in Dublin, goes to prove that the disinfecting power of peat and peat charcoal is partly attributable to the presence of creosote in both these substances. Common peat has also been employed at Limerick, in the works of the Hibernian Gas Company, for the purification of coal gas manufactured for illuminating purposes, and it was found to answer the purpose. It is likewise well known that the power of absorbing certain gases exists to a greater or less degree in some earthy matters, especially in those of alkaline character when calcined or torrefied, also in ashes and in every kind of charcoal, whether animal, vegetable, or mineral. But charcoal made from peat or from any other substance, as well as simple peat or other earthy matter, raw or calcined or torrefied, parts again freely with the ammonia taken up upon being slightly heated.

The first part of this Invention consists in the employment of peat containing a salt or oxide of iron, either naturally combined or mixed artificially therewith, by saturating it with a solution of a salt of iron or any other metallic salt, or mixing it with any metallic oxide, either alone or in combination with alkaline, phosphated, or other earths, or coal-ashes or charcoal of any description. The effect of these materials will be the absorption of the ammoniacal and hydrosulphuric acid gas found in or evolved from the matter contained in sewage, in cesspools, and in all excrementitious and putrescent substances, and the deodorizing and disinfecting the same.

The same materials may also be employed for filtering and purifying water contaminated with fetid substances and gases, and for taking up the noxious gases exhaled from burial grounds and vaults, as before mentioned.

The salt of iron found naturally in peat is the sulphate, and by the agency of this substance ammonia is converted into sulphate of ammonia, a non-volatile salt. The oxide of iron, separated by the ammonia from the sulphuric acid of the sulphate of iron, combines with and arrests the sulphur in the hydrosulphuric acid gas (sulphuretted hydrogen). When the material containing the salt or oxide of iron employed as the purifying material is charged with sulphur, the material may be renovated by simply exposing it to the action of the air, and thereby rendered

capable of being again employed as at first. The sulphuret of iron is decomposed by this exposure to air, and the iron passes into the state of peroxide of iron, which is capable of acting upon a further quantity of sulphuretted hydrogen gas.

The sulphur separated from the sulphuretted hydrogen by means of the salt or oxide of iron, as described above, is inodorous and insoluble, and is entirely removed from the solid fluid or gaseous compound submitted to the purifying process. Sewage and other matters to be operated upon vary in their character and components, and in the degree of strength in the latter; and if the quantity of ammonia present be not enough to properly decompose the salt of iron, the addition of an alkaline earth (lime or chalk is preferred) will effect the decomposition necessary, in order to enable the oxide of iron to act upon the hydro-sulphuric acid gas, and decompose it into its elements, as before stated. In artificially preparing peat, or the other substances mentioned, for the purposes of my Invention, I prefer to use the sulphate or muriate of iron as the best, the most easily obtained, and cheapest material for the purpose, or common salt may be used in combination with a solution of the sulphate of iron, but the hydrated oxide of iron alone will take up sulphuretted hydrogen.

The salts and oxides of other metals will likewise accomplish the object I have in view, but not being capable of being re-oxidized with equal facility are not so eligible for use.

In order to impregnate the peat or bog earth, and other earthy matters combined therewith as aforesaid, with iron or a salt of iron, I sometimes take any convenient quantity of peat earth, coprolite, or charcoal, or ashes of any description, either alone or mixed with lime or chalk, marl, or fullers earth, and boil these matters in the water found in coal and other mines, provided such water is found to contain oxide of iron or any salt of iron, as is generally the case. The water of these mines so found charged with iron or other metallic matter I sometimes use, simply saturating the materials above described with such water when evaporated by boiling to an adequate strength, when they will become impregnated sufficiently with a metallic salt or oxide, and will accomplish the decompositions specified above.

By this process of boiling or macerating the peat or other materials in such water of mines they become more uniformly and strongly impregnated with the metallic matter than the ferruginous peats found in nature, and the maceration of the peat by dissevering its fibre facilitates its being brought into that state of division best suited for the purposes of the Invention. If naturally ferruginous peat be employed it must be broken or ground into coarse powder, or reduced to a state of mould, to render it fit for application. For the deodorization of solid sewage or other fetid matters the purifying material above described is to be strewn or spread over them or mixed therewith, and the sewage water or other fetid liquid must be filtered through the purifying materials, and in some cases covered therewith; powdered charcoal will float upon water, but when the media employed as the vehicle of the metallic salt or oxide are of a heavier nature than charcoal, they may be suspended over the liquid substance by mechanical means adapted to the place where and circumstances under which the operation of purifying and disinfecting is to be performed. In taking up the fetid gases emanating from burial places it is merely necessary to strew the purifying material on the ground or surfaces whence the noxious gases exhale.

Having now described my Invention, and the best means with which I am acquainted for carrying the same into effect, I claim, in conclusion, the deodorization and disinfecting of solid or fluid sewage matter, and of other fetid substances, and the foul gases emanating from the same or from burial places, by the use of peat or peat earth containing naturally a salt or oxide of iron, and brought into a state of pulverization in the manner herein-before mentioned, whether such peat or peat earth be used alone or mixed with chalk, marl, lime, or fullers earth, or with coprolite or common earths, raw or baked, common salt, breeze, or coal ashes, or peat charcoal, or charcoal made from bituminous shale of any description. I also claim the preparation of common peat or peat charcoal, or charcoal made from bituminous shale, or from any substance whatsoever, breeze or coal ashes, and coprolite, by mixing, boiling, or saturating the same with a solution of a salt of iron or other metal, either artificially prepared or as found naturally in mines, or by mixing

such earthy matters with the oxides of iron or other metals, for the purposes herein-before set forth.

In witness whereof, I, the said Thomas Isaac Dimsdale, have hereunto set my hand and seal, this Nineteenth day of November, in the year of our Lord One thousand eight hundred and fifty-three.

THO$^{S}$ I. DIMSDALE. (L.S.)

Witness,

FRED. WALKDEN,

66, Chancery Lane.

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,

Printers to the Queen's most Excellent Majesty. 1853.

Dimedale's Appts. to Dislodging Stamps or other Fixed Matters, &c.

such earthy matters with the oxides of iron or other metals, for the purposes herein-before set forth.

In witness whereof, I, the said Thomas Isaac Dimedale, have hereunto set my hand and seal, this Nineteenth day of November, in the year of our Lord One thousand eight hundred and fifty-three.

THOS I. DIMEDALE. (L.S.)

Witness,
Hen. WARDEN,
66, Chancery Lane.

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Printers to the Queen's most Excellent Majesty. 1853.