Disclaimer and memorandum of alteration of John Chisholm : treating sewage and other matters, &c.;

A.D. 1858, 3rd JULY. N° 1499*.

DISCLAIMER AND MEMORANDUM OF ALTERATION

OF

JOHN CHISHOLM.

TREATING SEWAGE AND OTHER MATTERS, &c.

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A.D. 1858, 3rd JULY. N° 1499*.

Treating Sewage and other Matters, &c.

CHISHOLM'S DISCLAIMER AND MEMORANDUM OF ALTERATION.

Filed 31st March 1859.

In the Matter of a Patent granted to JOHN CHISHOLM, of Bermondsey, in the County of Surrey, Manufacturing Chemist, for "A METHOD OF DISINFECTING AND DEODORIZING OR TREATING SEWAGE AND OTHER MATTERS, AND STRUCTURES AND PLACES," No. 1499, dated 3rd July 1858, and of the Specification thereof filed 3rd January 1859.

DISCLAIMER AND MEMORANDUM OF ALTERATION.

WHEREAS I, the aforesaid John Chisholm, have petitioned for leave to enter and file a Disclaimer and Memorandum of Alteration, to be certified by Her Majesty's Attorney-General's fiat and signature, according to the Statute in that case made and provided, in order to alter and amend the said Specification by striking out the words erased by a line or lines drawn through them, and inserting the words which are underlined and between inverted commas, so that the said Specification may be altered, amended, and read in the following manner, that is to say :—

TO ALL TO WHOM THESE PRESENTS SHALL COME I, JOHN CHISHOLM, of Bermondsey, in the County of Surrey, Manufacturing Chemist, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Third day of July, in the year of our Lord One

thousand eight hundred and fifty-eight, in the twenty-second year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said John Chisholm, Her special license that I, the said John Chisholm, my executors, administrators, and assigns, or such others as I, the said John Chisholm, 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 "A Method of Disinfecting and Deodorizing or Treating Sewage and other Matters, and Structures and Places," upon the condition (amongst others) that I, the said John Chisholm, 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 John Chisholm, 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:—

This Invention consists in the application of electric or galvanic agency to the sewage or other matters or to the locality to be disinfected or deodorized, whereby foul gases are decomposed, noxious air or matters purified, and in certain cases the resulting products may be turned to useful account.

Having thus set forth the nature of my Invention, I now proceed to describe how the Invention may be practically carried into effect; but in so doing I do not restrict myself to any particular method of or means for obtaining and applying the electric or galvanic agency which I employ, as various modes and apparatus or contrivances may be adopted for the purpose.

The application of electricity or galvanism, as proposed by me, to the vitiated and noxious gases contained in confined places, produces effects analogous to those of ozone acting naturally on matters exposed to its influence, in situations where the atmospheric air has free access and circulation; but as this natural action is neutralized or destroyed in localities where free access of atmospheric air is prevented, as in crowded towns and structures, drains, sewers, and other confined places, I propose, according to my Invention, to apply electric or galvanic agency to them and their contents, and thereby

produce or disengage ozone; and this agent, which is absorbed almost as rapidly as produced, destroys with it a quantity of deliterious and vitiated gases, and the electric or galvanic action being exerted continuously, ozone is reformed "or produced" as rapidly as it becomes absorbed, or electricity or galvanism may be so applied as to burn "or destroy, decompose, and disinfect" the vitiated gases, ~~and thereby decompose, disinfect, and destroy them~~.

I first proceed, by way of illustration to exemplify certain means of performing the Invention. Supposing, for instance, a sewer to be the place acted on; the vitiated atmosphere of confined places containing fecal and foul matters, such as a sewer, is charged with various gases, such as sulphuretted, phosphoretted, and carburretted hydrogen, nitrogen, carbonic oxides, &c., arising from the decomposition of organic matter. The action of electricity on such an atmosphere produces ozone, which destroys the noxious gaseous compounds, or rather transforms them into healthy and innocuous gases, and these gravitate, owing to their superior specific gravity, and are absorbed into and combined with the fecal matters which they disinfect and also form by their combination therewith inert and inoffensive compounds, such as nitrates, sulphates, carbonates, phosphates, &c. Thus, supposing a sewer to contain sulphuretted, phosphoretted, carburetted hydrogen, &c., the application of electricity will remove the hydrogen and replace it by oxygen, thereby substituting healthy for deleterious compounds. For example, the passage of an electric current through sulphuretted gaseous compounds will form sulphurous acid, the specific gravity whereof being greater than that of the other gases, it will fall to the lower part of the sewer, and combining with the fecal matters therein will produce sulphites, or, if the matters disengage a large amount of oxygen, sulphuric acid will be formed producing sulphates; in like manner carburetted, phosphoretted, &c. gases will form carbonic acid phosphates, phosphites, &c.

According to one arrangement, which I term my sewage battery, I submerge in the fecal matters, and at certain distances from one another, two plates of electrically opposite metals or materials, as for example, a copper and a zinc plate, which I connect by conducting wires, one proceeding from each, and meeting at a point where they are soldered together. These wires are insulated by a coating of gutta percha or other insulating material up to their points of ~~mutual~~ junction "with the plates," ~~where the insulating coating ceases so as to set free the electric current which will be generated by the action of the fecal fluids on the positive and negative plates, and allow it to act on the fecal matters in order to deodorize and disinfect them~~. Here the fecal fluid matters

act on the plates as the exciting fluid, and the greater the amount of noxious matter they contain, the greater will be their electrical activity on the plates, "and the more rapidly the noxious matter will be acted on and decomposed " by the electric current passing between the plates, fresh sewage matter " continually taking the place of that acted on." " Where desirable " I also submerge other such electrically opposite plates in the fecal matters, and connect them by a wire from each, which I carry up through the atmosphere of the sewer to near the top of the arch or crown, and there unite the wires ~~by soldering~~ " by a medium offering considerable resistance to the passage of the current, so that heat or sparks are produced which " ~~suspending them at their junction by a hook or proper instrument from the top, and I insulate them to near or at their junction; there the insulation ceases, so as to allow the electric current to pass into and~~ act on the vitiated atmosphere of the sewer, and produce the decomposing and disinfecting effects referred to. To obtain ~~intensity~~ " quantity," a number of similar plates may be employed with a wire proceeding from each, the wires of each pole being united into clusters or bundles, so that each cluster may as it were form a single wire, the wires of the positive and negative plates being respectively connected " as before mentioned," ~~by soldering, and insulated up to near the p oint of junction~~; or an earth battery may be substituted for a sewage battery, that is to say, I bury positive and negative plates in the earth outside the sewer at a depth of not less than four feet, and carry their wires into the sewers, where they are brought into the fecal matters or through the atmosphere of the sewer.

Another arrangement by which the impure liquid from sewage, &c., collected in a reservoir may be deodorized and disinfected, and also raised in a purified condition from a lower to a higher level, consists in fitting in the reservoir a number of cones or cylinders of clay or other porous material having wires leading from their upper part to the fluid matters at their base, and these being charged with electricity the liquids will percolate the cones or cylinders and ascend through them, and through a spout or conduit at top to the higher level. Or I suspend a series of horizontal rods in the sewer at certain distances apart, so as to form an interrupted line, through which I pass electric or galvanic currents, and circuit being broken between each rod, a spark or flame will be produced, which by using certain instruments, such as Ruhmkorff's induction coil, may be obtained of considerable length, forming jets or lines of flame, so to speak, which burn " or decompose," deodorize, and disinfect the impure gases. Or I employ an electric light, suspending the

electrodes at a short distance from the crown of the sewer, and pass a current through them from a battery, so as to burn and decompose the offensive gases, destroying the hydrogen, transforming sulphuretted hydrogen into sulphurous acid, hydrocarbons into carbonic acid, and so on. Both specific gravity and volume of the gases being affected by combustion, the atmosphere of the sewer will undergo considerable disturbance, causing a continuous current to set in towards the point of ignition, and consequently allowing a large mass of sewage to be disinfected by a single light or rod, or a number of vertical rods let down at right angles from a series of horizontal carrier rods suspended in a sewer may be employed, each vertical rod terminating in a platinum wire similar to electrical firing contrivances in mining operations, and the platinum wires being charged by a strong battery (as, for example, Grove's piles) are made red hot, and so burn, decompose, deodorize, and disinfect the noxious gases. A battery arrangement similar to what I call my sewage battery may be applied to waterclosets, the plates being embedded in the area, cellar, drain, or sufficiently damp situation, and the wires brought therefrom one to each side of the closet pan, "and there united by the interposition of a resisting medium or a Ruhmkorpff coil."

I now proceed to describe an arrangement for disinfecting the vitiated atmosphere of theatres and other crowded and heated structures and places. In a hole "not less than four feet deep," at the side of the building, a zinc plate is sunk and surrounded with bone ash, an insulated wire is led from this plate, carried into the building, and ~~soldered~~ "connected by the interposition of a resisting medium (as described in reference to the atmosphere of sewers)" to the end of an insulated wire proceeding from a copper plate sunk in another aperture "about eight feet from the other, and" at ~~the~~ this junction of the ~~wires~~ "conductors" where there must be no insulating coating, "sparks or "heating effects are produced, the electricity being thus" ~~they are~~ brought into contact with and ~~disinfect~~ "disinfecting" the currents of air within the structure. In hospitals, or where fever, cholera, &c. is raging, a temporary arrangement may be adopted, consisting of a vessel containing water, in which a stick of phosphorus is immersed, but so as to have a part out of the water, which being exposed to the air rapidly absorbs oxygen, and forms phosphoric acid, which is received into the water, so that ozone will be rapidly disengaged. After this contrivance has been used for about an hour, its action should be arrested by wholly submerging the phosphorus in water held in another vessel, so as to check the progress of combustion. I lay no special claim to

this contrivance, believing it may have been employed, though for experimental purposes entirely different and distinct from the purposes of my Invention.

Sewage and such like fecal matter treated by electric or galvanic agency according to my Invention, and especial where my sewage battery is employed, may, when suitably collected, be turned to advantageous account as manures, or in the manufacture thereof. The nitrates, phosphates, sulphates, and other salts formed in the fecal matters by the disinfection thereof by electric or galvanic agency, or by the combination therewith of the gravitating phosphorous, nitrous, sulphurous acids, &c. produced by the passage of electric or galvanic currents through the vitiated atmosphere of sewers, &c., all as herein-before described, may be applied commercially, especially as manures, on account of the presence of the phosphates and nitrates.

Although I have herein referred more particularly to sewers, closets, theatres, &c., I wish it to be understood that I do not confine myself to such localities, but that my Invention may be applied to the disinfection and deodorization of fecal, noxious, and infected matters, whether in a liquid, fluid, semifluid, aeriform or solid state, and whether contained in sewers, cesspools, ships, houses, or other structures or places. I further wish it to be distinctly understood that I do not confine myself to the particular means described for carrying my Invention into effect, as any suitable means of, or apparatus for obtaining electricity or galvanism and applying it to the purposes of my Invention may be employed, the main object of the Invention being the so arranging, adapting, combining, or applying means, instruments, and appliances, as to enable electric or galvanic agency to be applied to the matters or places, &c., to be treated according to my method. Of course in the term electric or galvanic, I include the various designations of electricity and galvenism, such for example as magnetic, voltaic, &c.

And having now described the nature of my said Invention, and exemplified in what manner the same may be performed, I wish it to be understood that I do not claim any particular apparatus or means for generating, disengaging, and obtaining electricity or galvanism, whether herein referred to or not, apart from the combination, arrangement, adaptation, or application thereof for the purposes of my Invention, but I declare that I claim,—

First, treating sewage and other noxious or infected matters in a fluid, semifluid, aeriform, or solid state, by electric or galvanic agency, in order to deodorize and disinfect them, and obtain innoxious and useful products therefrom.

Second, I claim the combination, adaptation, arrangement, and application

of means with, in, and to structures and places containing noxious and infected gases and other matters in such manner as and in order to effect the application of electric or galvanic agency to their contents, for the purpose of disinfecting and deodorizing them.

In witness whereof, I, the said John Chisholm, have hereunto set my hand and seal, this First day of January, in the year of our Lord One thousand eight hundred and fifty-nine.

JNO. CHISHOLM. (L.S.)

Witness,

M. HENRY,
84, Fleet Street, London.

In witness whereof, I, the said John Chisholm, have hereunto set my hand and seal, this Third day of February, in the year of our Lord One thousand eight hundred and fifty-nine.

JNO. CHISHOLM. (L.S.)

Witness,

M. HENRY,
84, Fleet Street, London.

To the Commissioners of Patents for England.

I hereby grant my fiat, giving leave to the above-named John Chisholm to file in the Great Seal Patent Office, with the Specification to which same relates, the above-written Disclaimer and Memorandum of Alteration.

Temple, March 29, 1859. FITZROY KELLY.

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