

Specification of William Robert Lake : treating noxious gases.

Contributors

Lake, William Robert.

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A.D. 1875,

3rd JUNE.

N^o 2046.

SPECIFICATION

OF

WILLIAM ROBERT LAKE.

TREATING NOXIOUS GASES.

LONDON:

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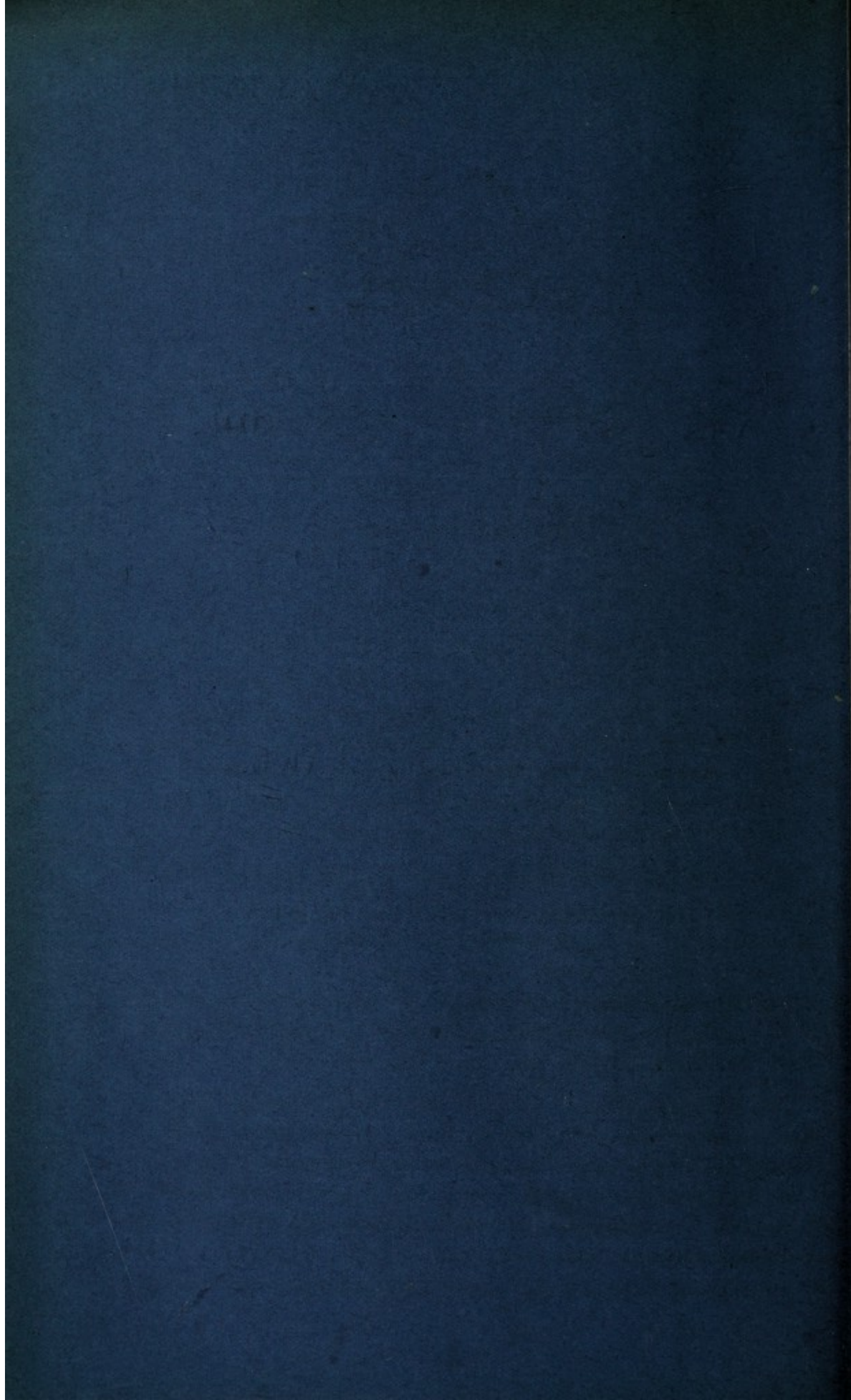
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A.D. 1875, 3rd JUNE. N° 2046.

Treating Noxious Gases.

LETTERS PATENT to William Robert Lake, of the Firm of Haseltine, Lake, & Co., Patent Agents, Southampton Buildings, London, for the Invention of "AN IMPROVED METHOD OF AND APPARATUS FOR TREATING FOUL OR NOXIOUS GASES AND VAPOURS, TO PREVENT THEIR CONTAMINATION OF THE ATMOSPHERE, AND TO UTILIZE THEM FOR VARIOUS PURPOSES."—A communication from abroad by James Turner, of Chicago, Illinois, United States of America, Merchant.

Sealed the 30th November 1875, and dated the 3rd June 1875.

PROVISIONAL SPECIFICATION left by the said William Robert Lake at the Office of the Commissioners of Patents, with his Petition, on the 3rd June 1875.

I, WILLIAM ROBERT LAKE, of the Firm of Haseltine, Lake, & Co., Patent Agents, Southampton Buildings, London, do hereby declare the nature of the said Invention for "AN IMPROVED METHOD OF AND APPARATUS FOR TREATING FOUL OR NOXIOUS GASES AND VAPOURS, TO PREVENT THEIR CONTAMINATION OF THE ATMOSPHERE, AND TO UTILIZE THEM FOR VARIOUS PURPOSES," a communication, to be as follows :—

10 My said Invention is designed to afford the means for obviating the

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danger and annoyance arising from the production of noxious and foul smelling gases or vapours in the manufacture of tallow, lard, soap, and the like, or from chemical works, or from sewers and other sources, in or near cities, towns, and other inhabited places.

Various attempts have been made from time to time for the suppression of the nuisance produced by such manufactories or works in thickly populated neighborhood, but the result in most cases has been simply the removal of the noxious vapours by means of lofty chimneys from the place of their production, and their distribution over more extended areas. 5 10

According to my Invention I collect the gas or vapor in a receptacle of any suitable kind, and conduct it therefrom by means of apparatus herein-after described to a furnace or fire-place, where it is when practicable utilized for heating purposes, or it may be collected for use as illuminating gas; but where this utilization is not practicable, it is destroyed or deprived of its noxious properties by combustion with other materials. 15

In the application of my Invention in works for rendering lard or tallow and the like, I provide the rendering tank with a pipe leading to a condenser of any suitable construction, but preferably provided with a coil. From this condenser a waste pipe extends to the drains, the said pipe being bent to form a water seal or trap. The said condenser is also provided with a pipe for conveying the gas or vapour to a purifier filled with lime or other suitable purifying agent. From this purifier a pipe extends to a vessel filled, or partially filled, with gasoline or other hydrocarbon liquid, through which the foul gas or vapour is forced by the pressure in the aforesaid tank. This hydrocarbon vessel is constructed with division plates or passages so arranged that the gas must pass in small streams through the hydrocarbon liquid, and will thereby be charged or impregnated with carbon. If this gas is to be used in a steam boiler or other furnace for heating purposes, it is conducted directly from the last-named vessel to the said furnace; but if it is to be used for illuminating purposes it will be conducted into a gas holder. 20 25 30

In many instances it is impracticable to utilize the gases produced in manufacturing or industrial processes for heating or illuminating purposes, for instance in chemical and other works, where the gases to 35

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be removed are entirely or partially the products of combustion. I therefore in these instances confine my Invention to the destruction or annihilation of these gases or of their noxious properties. For this purpose I first collect the foul gas in a vessel or receptacle, to which
5 if steam or other pressure is not available for the purpose, I connect a fan or other blowing or draught producing apparatus. The aforesaid condensing and purifying apparatus will not be required, but in some cases it will be necessary to pass the gas or vapour through a vessel containing hydrocarbon or other inflammable substance to render it
10 combustible. The gas or vapour is finally forced by the said fan or blower into a furnace where it is consumed or rendered innocuous.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said William Robert Lake in the Great Seal Patent Office on the 2nd December 1875.

15 **TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM ROBERT LAKE, of the Firm of Haseltine, Lake, & Co., Patent Agents, Southampton Buildings, London, send greeting.**

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Third day of June, in the year of
20 our Lord One thousand eight hundred and seventy-five, in the thirty-eighth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said William Robert Lake, Her special licence that I, the said William Robert Lake, my executors, administrators, and assigns, or such others as I, the said William Robert Lake,
25 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 "**AN IMPROVED**
30 **METHOD OF AND APPARATUS FOR TREATING FOUL OR NOXIOUS GASES AND VAPOURS, TO PREVENT THEIR CONTAMINATION OF THE ATMOSPHERE, AND TO UTILIZE THEM FOR VARIOUS PURPOSES,**" a communication to me from abroad by James Turner, of Chicago, Illinois, United States of America, Merchant, upon

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the condition (amongst others) that I, the said William Robert Lake, 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. 5

NOW KNOW YE, that I, the said William Robert Lake, 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, reference being had to the accompanying Drawing forming a part of this Specification:— 10

My said Invention is designed to afford the means for obviating the danger and annoyance arising from the production of noxious and foul smelling gases or vapours in the manufacture of tallow, lard, soap, and the like, or from chemical works or from sewers, and other sources in or near cities, towns, and other inhabited places. 15

Various attempts have been made from time to time for the suppression of the nuisance produced by such manufactories or works in thickly populated neighbourhoods, but the result in most cases has been simply the removal of the noxious vapours by means of lofty chimneys from the place of their production, and their distribution over more extended areas. 20

According to my Invention I collect the gas or vapour in a receptacle of any suitable kind, and conduct it therefrom by means of apparatus herein-after described to a furnace or fire-place, where it is when practicable utilized for heating purposes, or it may be collected for use as illuminating gas; but where this utilization is not practicable, it is destroyed or deprived of its noxious properties by combustion with other materials. 25 30

In the application of my Invention in works for rendering lard or tallow and the like, I provide the rendering tank with a pipe leading to a condenser of any suitable construction, but preferably with a coil. From this condenser a waste pipe extends to the drains, the said pipe being bent to form a water seal or trap. The said condenser is also provided with a pipe for conveying the gas or vapour to a purifier filled 35

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with lime or other suitable purifying agent. From this purifier a pipe extends to a vessel filled, or partially filled, with gasoline or other hydrocarbon liquid, through which the foul gas or vapour is forced by the pressure in the aforesaid tank. This hydrocarbon vessel is constructed with division plates or passages, so arranged that the gas must pass in small streams through the hydrocarbon liquid, and will thereby be charged or impregnated with carbon. If this gas is to be used in a steam boiler or other furnace for heating purposes it is conducted directly from the last named vessel to the said furnace; but if it is to be used for illuminating purposes it will be conducted into a gas holder.

I do not limit myself to any particular form or arrangement of apparatus, but that shown in the Drawing illustrates the manner in which my said Invention is carried into practice.

A is a steam rendering tank or other suitable receptacle for the substance to be treated, constructed in the usual manner; B is a condenser containing water; C is a purifier; D is a gasometer which is to be of any suitable size depending on the quantity of gas to be stored therein.

From the top of the tank A a tube *a* passes through the condenser B, being coiled therein. After leaving the condenser this tube *a* may be carried down to a sewer and provided with a trap *c*, which has sufficient capacity to prevent any material portion of the gas from escaping with the water of condensation as it might do, as the offal is treated under pressure, in which event this pressure is as liable to force the gas through the pipe *a* as the pipe *d* were it not for the column of water held in the trap *c*.

The moisture, gases, and other volatile matters which are formed while the substances in A are being rendered or treated, pass into the tube *a* and through or into the coil in the condenser, and there the moisture is condensed and passes off through the tube *a'*; but the gas, the moisture having been separated therefrom, will pass into the tube *d*, and be conducted into the purifier C, and from this purifier through the pipe or tube *e* it will be conveyed into the gasometer, in which should be constantly stored a quantity of gasoline or other suitable carbureting material; and the gas passing up through the gasoline becomes carbureted and suitable for illuminating purposes, and if not wanted for this purpose it can be conveyed to the furnace and consumed.

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Lime or other suitable material is to be used in the purifier for absorbing or extracting the carbonic acid gas. For the purpose of preventing the forcing of moisture into and through the tube *d*, I use a small close chamber *b*, into which the gas first passes from *a*, the tube *d* entering at the top of *b*; if the tube *d* is large this chamber will not 5 be necessary. The condenser may be open at the top.

For illuminating purposes the gas should be thoroughly distributed through the gasoline, and for this purpose it may be introduced through a number of small perforations.

When the moisture has been separated from these gases they can be 10 burned in a fire without being carbureted; but in this condition they are valueless for illuminating purposes and have but little value for heating purposes, hence it is better to complete the process as described and utilize the gases more perfectly.

The water of condensation is nearly odorless, and having been cooled 15 will not be offensive. Nearly all of the odors are stored up in the gases, and when these escape into the air they are carried great distances and the odors are very offensive.

By my process these odors are suppressed and destroyed, no odor arising from the combustion; at the same time the gases which have 20 heretofore been wasted and are large in quantity can be rendered valuable.

In many instances it is impracticable to utilize the gases produced in manufacturing or industrial processes for heating or illuminating purposes, for instance in chemical and other works, where the gases to 25 be removed are entirely or partially the products of combustion, I therefore in these instances confine my Invention to the destruction or annihilation of these gases or of their noxious properties. For this purpose I first collect the foul gas in a vessel or receptacle, to which, if steam or other pressure is not available for the purpose, I connect a fan 30 or other blowing or draught producing apparatus. The aforesaid condensing and purifying apparatus will not be required, but in some cases it will be necessary to pass the gas or vapour through a vessel containing hydrocarbon or other inflammable substance to render it combustible. The gas or vapour is finally forced by the said fan or blower into a 35 furnace, where it is consumed or rendered innocuous.

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Having thus fully described the said Invention as communicated to me by my foreign correspondent, and the manner of performing the same, I wish it understood that I claim,—

First. The method of suppressing the offensive odors arising from rendering or treating animal substances, and utilizing the gases therefrom, by separating the said gases from the moisture and carbureting the same, as above specified.

Second. The apparatus consisting of the various parts shewn in the Drawing, combined and arranged in the proper manner for carrying into practice my improved process, as herein set forth.

In witness whereof, I, the said William Robert Lake, have hereunto set my hand and seal, this Second day of December in the year of our Lord One thousand eight hundred and seventy-five.

15

W^M. ROB^T. LAKE. (L.S.)

Witness,

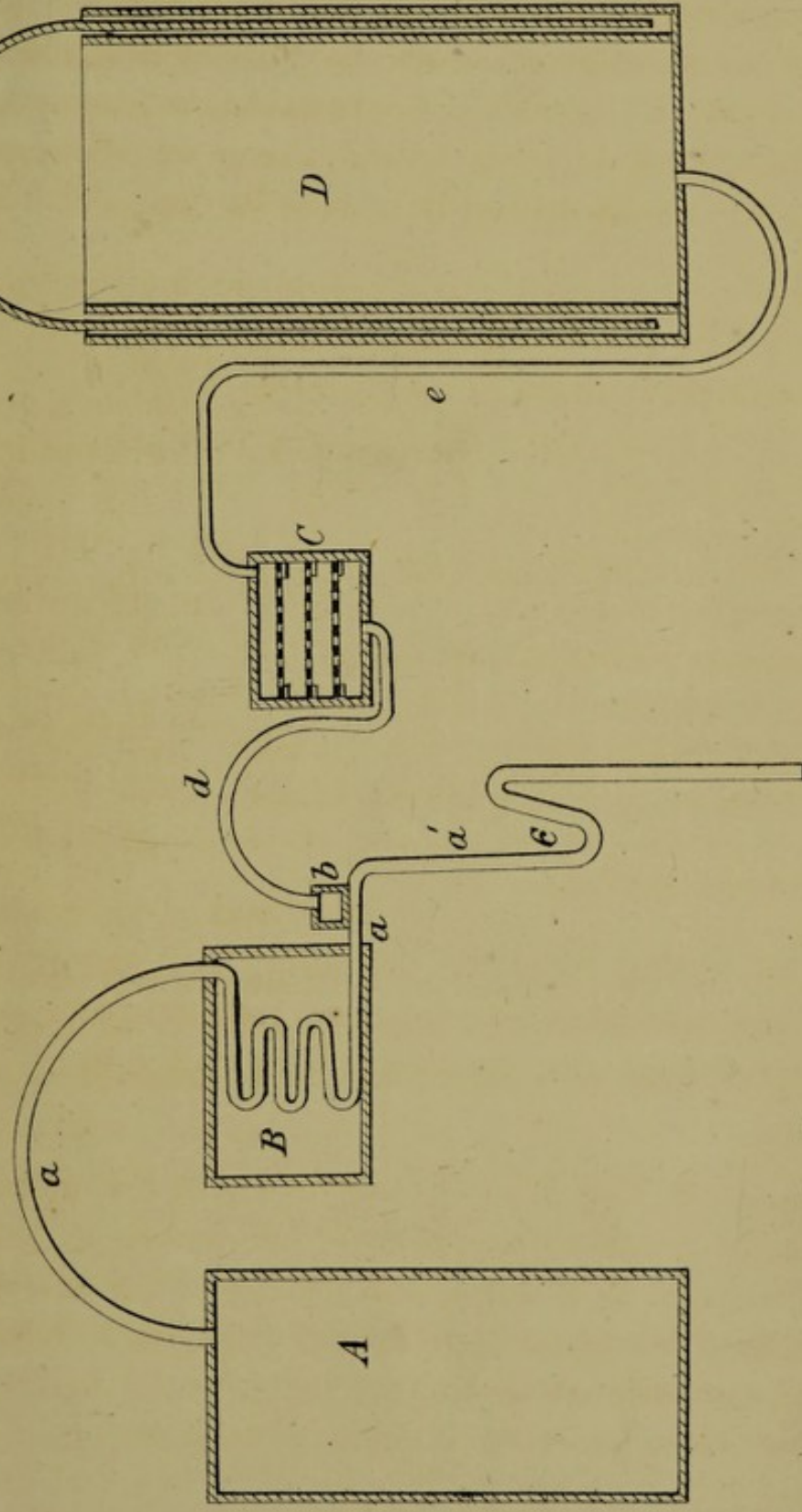
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A.D. 1875. JUNE 3. N° 2046.
LAKE'S SPECIFICATION.

(1 SHEET)



The filed drawing is not colored.

Drawn on Stone by Malby & Sons.

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