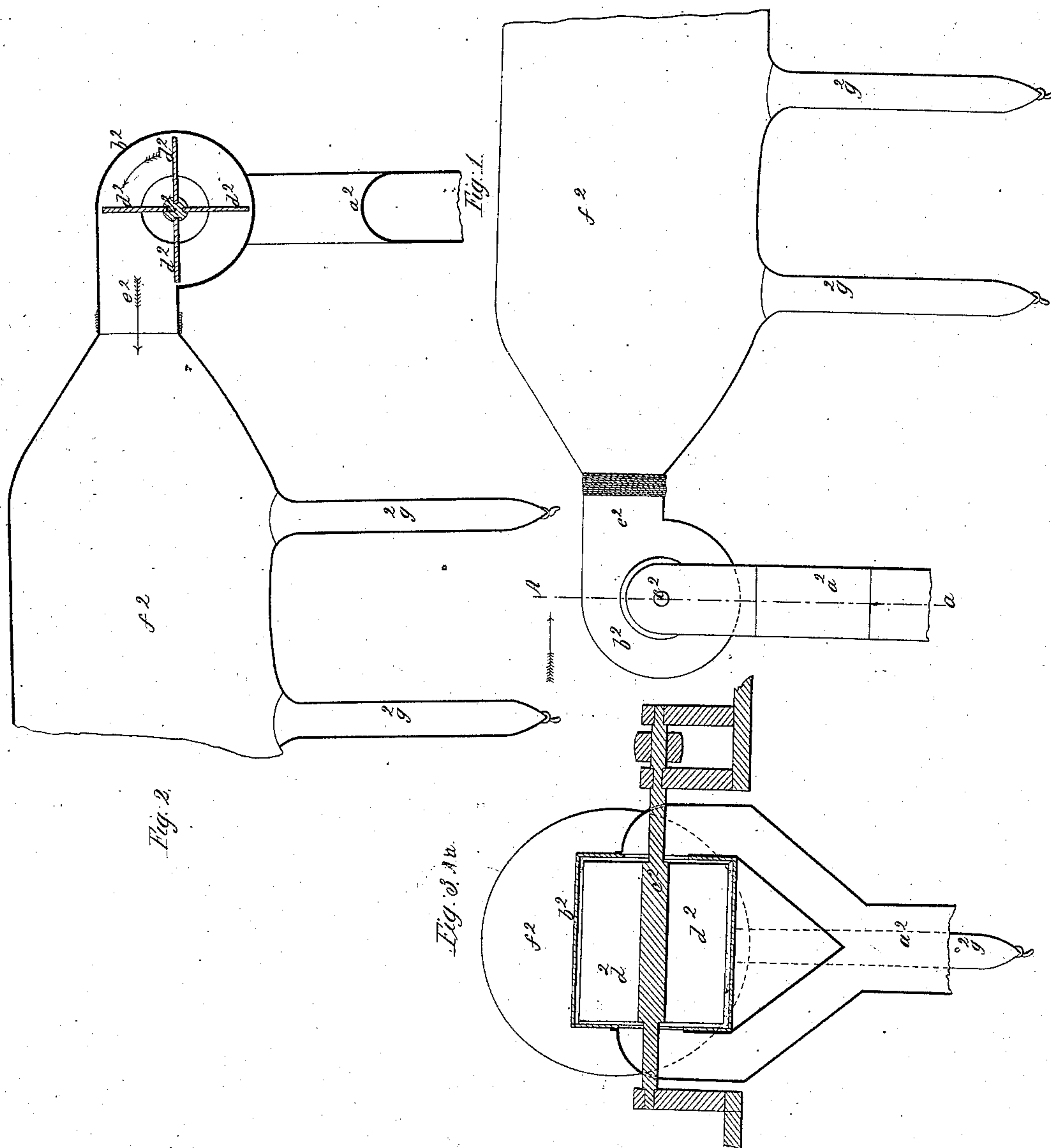


S. T. Jones,

Making White Zinc,

Nº 8,756.

Patented Feb. 24, 1852.



UNITED STATES PATENT OFFICE.

SAMUEL T. JONES, OF NEW YORK, N. Y.

IMPROVEMENT IN THE MANUFACTURE OF ZINC-WHITE.

Specification forming part of Letters Patent No. 8,756, dated February 24, 1852.

To all whom it may concern:

Be it known that I, SAMUEL T. JONES, of the city, county, and State of New York, have invented certain new and useful improvements in the method of collecting or saving the volatile products of distillation or oxidation of zinc and other volatile metals; and I do hereby declare that the following is a full, clear, and exact description thereof.

Drawings are hereinafter described.

My invention relates to the collecting or saving of the volatile products of distillation or of oxidation of zinc and other volatile metals, which I propose to collect in chambers or bags constructed wholly or principally of closely-made cloth of cotton, woolen, flaxen, or other fibrous or textile material capable of separating and retaining the desired products, while the air or gaseous portion is to be forced or drawn through the pores of the cloth by means of a fan-blower or other suitable propelling or exhausting apparatus. This apparatus should be placed in a main or large tube, or in connection therewith. This main or large tube is to be in communication with the several smaller pipes or tubes adjusted to the retort or retorts or ovens and to the condensing chamber or bag or bags, to be attached thereto, and is intended for the double purpose of drawing the vapors from the retorts or ovens, as well as the atmospheric air admitted for the purpose of oxidizing the vapors at the small opening in the oxidizing pipe or chamber near the mouth of the retort, or through an opening or openings into the ovens for its admission, and these pipes communicate with the main pipe, which forms the channel through which the oxidized products and accompanying air and gases are respectively forced into or through the pores of the bag or chamber, so that the atmospheric air or gases may be propelled into the open air, while the oxidized products will be retained in the bag or chamber.

In the accompanying drawings, Figure 1 represents a longitudinal elevation of the straining apparatus which has been successfully used; Fig. 2, a longitudinal vertical section, and Fig. 3 a cross-section taken at the line A a of Fig. 1.

The same letters indicate like parts in all the figures.

a^2 represents a portion of the main pipe,

made of metal. It leads to the various retorts, muffles, or ovens, and receives the fumes and gases therefrom. The main pipe should be of sufficient length to permit the fumes and gases to cool, so as to prevent them from burning the strainer. The end of this pipe communicates with the casing b^2 of a fan-blower mounted on the shaft c^2 , so that the fumes and gases shall be drawn into the fan by the centrifugal action of its vanes d^2 and forced out through the spout e^2 into the mouth of a long straining-bag, f^2 , made of canvas or other cloth closely made of cotton, wool, flax, or other textile substance. Strong cotton cloth closely woven has been found by experience to produce a good effect.

Along the bottom, at convenient distances apart, the strainer is provided with branch pipes g^2 , of the same material, open at both ends, but which are to be tied at the lower end to collect the products of the distillation when deposited. Before opening the lower end, in order to discharge these branch pipes, they are to be tied up tight near the strainer, and then opened at the lower end, and the contents allowed to fall out. If the bag or sides of the chamber be composed of materials too slight to withstand the pressure on its inner surface, that pressure may be received by an exterior inclosing-bag of network, or one formed of stouter materials, which outer bag should be made of somewhat smaller size than the inner bag, or by an open frame-work of wires crossing and recrossing each other, and forming an exterior support to the cloth sides of the chamber, in order to receive its pressure. Should the pores of the inner bag or sides of the chamber become clogged, they may be relieved by striking or whipping it on the outside, or by stopping for a short time the exhausting or blowing apparatus and allowing it to collapse, and then shaking it, or by turning the bag inside out, and then to apply the pressure to the opposite side. It is necessary to make this bag or chamber of a size to present sufficient straining-surface, according to the power of the blower and the work to be done, so as to allow the air and gases to make their escape with facility, it being a principal feature of the invention that the pores of the cloth should be so minute that the products of distillation may not be forced through by the power of the blower or ex-

hausting apparatus, and at the same time not to prevent the escape of the air and accompanying gases, which will be by the most gentle exhalation through the extended surfaces formed by the sides of the receiving bag or chamber, or otherwise the desired products will escape at the same time and be lost. It is evident, therefore, that a single strainer of moderate size will be ineffective and unable to accomplish the collection of such rare substances to any useful or desirable extent, and that the extended surfaces of my receiving bag or chamber, whose sides are composed entirely or principally of the porous cloth, will be adequate thereto. A bag about eight feet in diameter and seventy feet long has been used for the collection of the white oxide of zinc from sixty small retorts; but if made larger, better results will be attained; and, if deemed advisable, the diameter of the bag may be lessened, while its length should be increased in proportion; or several bags may be used instead of a single one; and so, also, in respect to a chamber composed of porous sides of cloth, should it be used in preference to a bag.

It is evident that a square or oblong chamber may be used instead of a bag, the principal portions of the top or sides or bottom part of which may be formed of the straining-cloth, as above described. An air-tight chamber may also be used with a straining-bag adapted to its end and passing into the interior of the chamber, the end of the bag being in communication with the main or tubes communicating with the retorts or ovens; and on applying the exhausting apparatus at the other end of the chamber the same object may be accomplished. Besides collecting the products of zinc, it is evident that these collecting bags or chambers may be used for other similar useful purposes.

I am aware that lamp-black has been collected by causing it to deposit on the inner surface of a series of canvas bags by causing the products of the combustion to pass through a series of such bags, the upper end of the last of the series being open for inducing a current; but this cannot be successfully employed for the collection of the volatile products of the distillation or oxidation of zinc and other volatile metals, for the reason that there is a great waste by the escape at the open end of the series; and I am also aware that lamp-

black has been collected on the inner surface of a hood made of porous cloth covering a vessel or receiver, the gases escaping through the meshes or pores of the cloth and depositing the lamp-black on the inner surface; but this will not answer a practical purpose for the collection of the volatile products of the distillation or oxidation of zinc and other volatile metals, because the cloth hood so far impedes the draft induced by rarefaction that the collection will not be formed on the surface of the cloth; and if the pores or meshes of the cloth be made sufficiently large to induce the required draft, then the metallic fumes will escape and be wasted; and I am also aware that it has been tried to effect the separation of the air and other foreign gases from the gaseous products of the distillation of zinc by drawing or forcing the air and foreign gases through the pores or meshes of screens placed in the collecting-chamber or the flue; but this has been found to be impracticable, for the reason that the amount of surface presented by such screen or screens is insufficient for the separation, unless the collecting-chamber be made of so great a capacity as to occupy an amount of room too great for practical purposes. I do not therefore wish to be understood as making claim, broadly, to the use of a screen or screens with forced currents for the separation of air and other foreign gases from the gaseous products of distillation, nor do I claim, separately, making the collecting-chambers of woven cloth when this is not used in combination with the means of producing a forced current; but

What I claim as my invention, and desire to secure by Letters Patent, is—

The use of a porous or fibrous bag or receiving-chamber with porous sides or bottom, or an air-tight chamber with a straining or porous bag adapted to the inside thereof, and used in connection either with a blowing or exhausting apparatus, so that the products of the distillation and oxigenation of zinc or other volatile metals may be separated from the accompanying air and gases, which latter will be forced or otherwise drawn through the pores of the cloth bag or chamber and escape into the atmosphere.

S. T. JONES.

Witnesses:

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