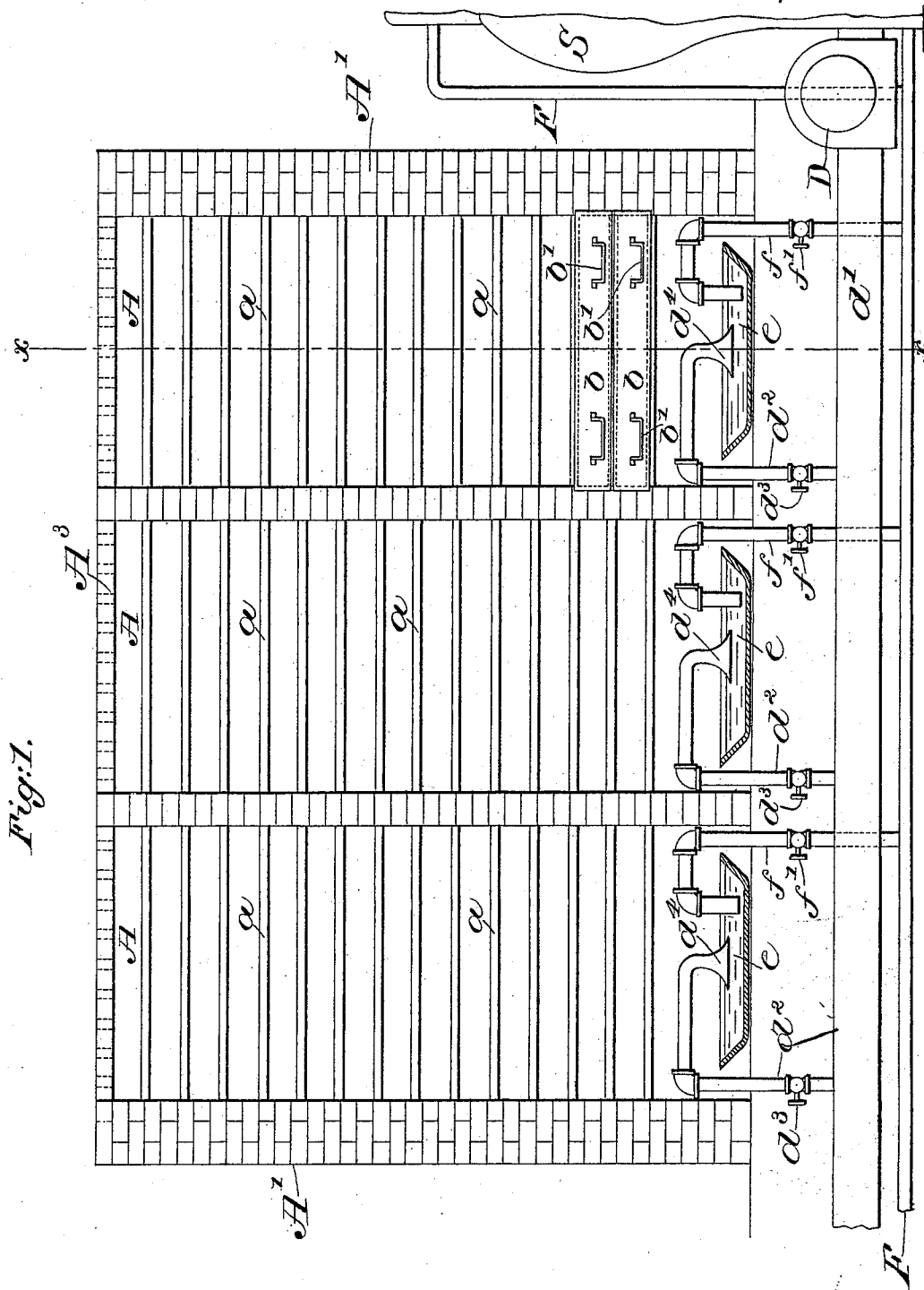


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APPARATUS FOR THE PRODUCTION OF WHITE LEAD.

No. 513,130.

Patented Jan. 23, 1894.



Witnesses.
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

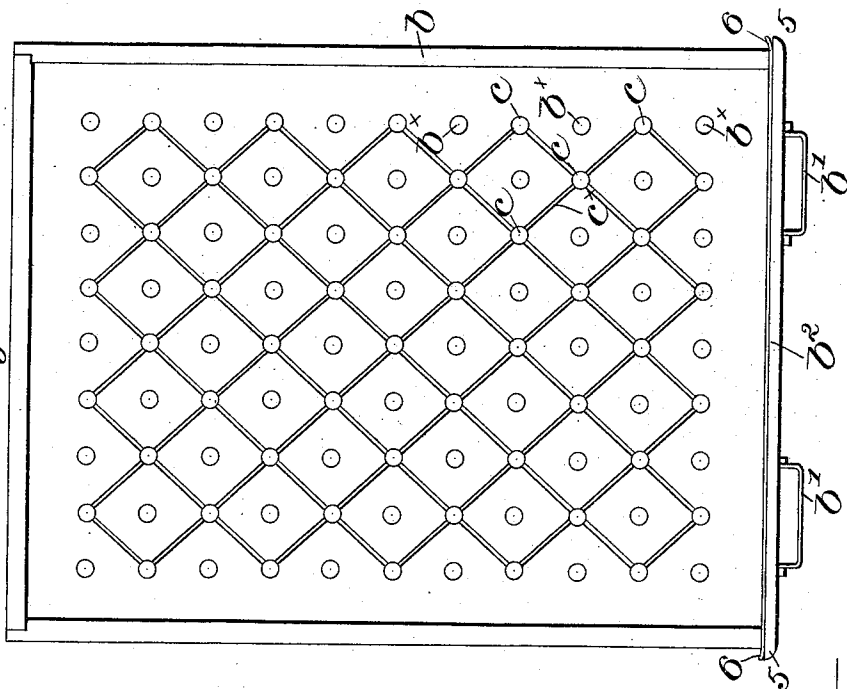
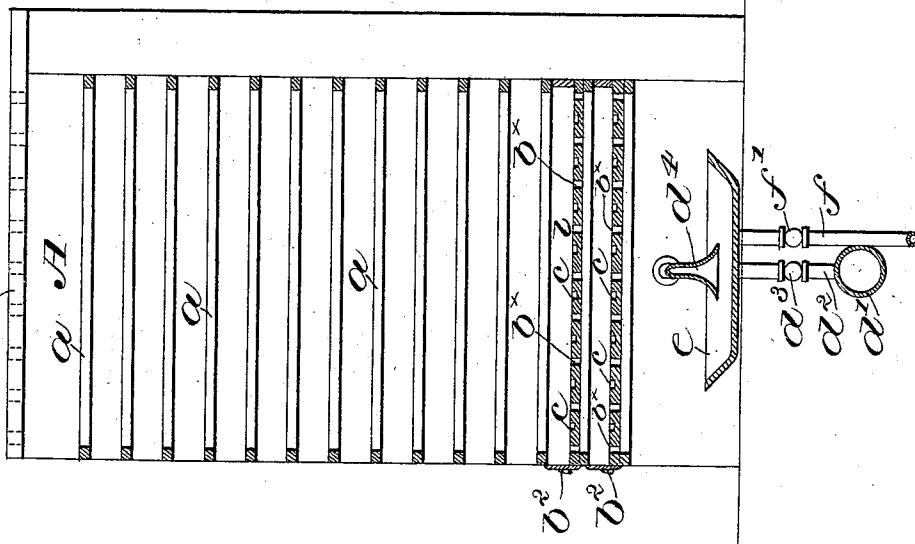


Fig. 2.



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UNITED STATES PATENT OFFICE.

NORMAN K. MORRIS AND JOHN W. BAILEY, OF DENVER, COLORADO.

APPARATUS FOR THE PRODUCTION OF WHITE LEAD.

SPECIFICATION forming part of Letters Patent No. 513,130, dated January 23, 1894.

Application filed December 30, 1891. Renewed December 13, 1893. Serial No. 493,581. (No model.)

To all whom it may concern:

Be it known that we, NORMAN K. MORRIS and JOHN W. BAILEY, of Denver, county of Arapahoe, State of Colorado, have invented an Improvement in Apparatus for the Production of White Lead, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to apparatus for the production of white lead or lead carbonate.

The principal objects of the invention are, first, to provide the corroding chamber with a series of independently removable drawers or racks, on which the lead fiber is placed, and which may be removed from the exterior without access to the chamber; second, to provide a series of acid receiving reservoirs, distributed throughout the corroding chamber to uniformly supply the entire quantity of fiber contained in the chamber; third, to take the gases from the combustion chamber of a steam generator to supply the corroding chambers of the apparatus; and fourth, to provide suitable reservoirs to contain water through which the gas is passed to thereby wash the same and also render it hydrous.

Other features of the invention will be hereinafter described and pointed out in the claims.

Figure 1 of the drawings represents in elevation and partial section, an apparatus embodying this invention; Fig. 2 a vertical section on the dotted line $x-x$; Fig. 3, a plan view of one of the racks or drawers on which the lead fiber is placed.

Referring to the drawings, A, A, A, represent corroding chambers having, as represented, brick walls A' fitted with suitable division strips a , to form guideways to receive the drawers b , fitted with suitable pulls b' and having their front pieces b^2 made to project laterally as at 5, on all sides of the drawer, said projecting edges 5 lapping over and completely closing the entrance opening when the drawer is in place. The projecting edge 5 may be provided with a rubber or other suitable packing strip 6, to more tightly close the opening when the drawer is in place to thus exclude air from the chamber, or if desired, the packing may be arranged on the walls of

the chamber and the division strips. The bottoms of the drawers b are perforated as at b^x to permit the corroding gas and vapor to rise through the drawers in the chamber, and act upon the lead fiber which is placed in the drawers. The bottoms of the drawers are also provided with numerous small reservoirs c , to contain acetic acid or acidulated water, which when vaporized assists in the corrosion of the lead fiber, the drawers thus constituting reservoir supports to distribute the reservoirs throughout the corroding chambers to more evenly supply the lead fiber with the acid vapor, so as to produce a more uniform corrosion. The reservoirs c may be connected by grooves or troughs c^x , if desired, to permit the acid to circulate freely between the several reservoirs. The conduit d' enters the combustion chamber of any suitable furnace, preferably employed in connection with a steam generator S, which supplies steam for the apparatus, the said conduit having connected with it a fan or blower D, which takes the products of combustion, which consist mainly of carbonic acid gas, from the combustion chamber, and forces the same under pressure into the conduit d' , provided with branches d^2 , which enter the several corroding chambers of the apparatus, the said branches being fitted with suitable regulating valves d^3 . The branches d^2 terminate in bell-shaped mouths or outlets d^4 , which are directed downwardly into the reservoirs e , one of which is provided for and preferably placed in the bottom of each chamber A, the said reservoirs e being filled with wash water above the mouths of the branches d^2 , so that the gas issuing from the said mouths will pass through the wash water in the reservoir and thus become washed or purified, the said reservoirs also serving as reservoirs of moisture for the corroding chambers to independently supply moisture to the chambers to assist the gases in their corroding action. By forcing the gases taken from the combustion chamber of a furnace into the apparatus under pressure, the supply for each corroding chamber may be controlled independently of the other chambers of the apparatus. A steam pipe F, leading from the generator S, has branches f , controlled by valves f' , entering

the reservoirs *e*, see Fig. 1, to properly heat the wash water in the reservoirs to assist in the corrosion.

The operation of the apparatus is as follows, viz:—The lead to be corroded, preferably in the form of fiber, is placed in suitable quantities in the several drawers *b*, which are then immersed in acetic acid or acidulated water for the double purpose of wetting and acidulating the lead fiber, and of filling the reservoirs *c* with acid. After draining sufficiently, the drawers are placed in the corroding chamber and the gas and steam turned on. The gas enters the chamber through the wash water contained in the reservoirs *e*, which takes from it all dust, smoke or other foreign or impure particles, and at the same time moistens the gas to render it hydrous, so that it will not dry out the lead fiber as it passes through it. The gas passes from the free surface of the wash water up through the chambers, and through the several drawers therein, and with the acetic acid vapors, rising from the numerous reservoirs distributed throughout the chambers, acts upon and corrodes the lead fiber contained in the drawers, the gas passing off through the perforated tops *A*³ of the chambers. The various drawers with their contents being accessible from the exterior of the corroding chamber, may be removed individually from the corroding chamber for examination, permitting the corroding process to continue uninterrupted in the other drawers, and as fast as the fiber in a drawer is completely and properly corroded, it may be replaced by another drawer containing fresh fiber, the apparatus thus being convenient to operate and capable of producing a very uniform product.

This invention is not limited to the particular construction herein shown and described, as the same may be varied without departing from the spirit and scope of the invention. For instance, the acid receiving reservoirs *c* may be distributed through the chambers and supported or formed independently of the drawers.

The drawers *b* may be varied in shape or construction to meet various requirements.

By connecting a series of corroding chambers in the manner illustrated, each chamber may be run independently of the others and still take the gas and steam from the same source, forming in effect, so many independent apparatuses.

We claim—

1. In an apparatus for the production of white lead, a corroding chamber containing a series of drawers having perforated bottoms to receive the lead, and accessible from the exterior of the chamber, and a series of acid

receiving recesses in said drawer bottoms substantially as described.

2. In an apparatus for the production of white lead, a corroding chamber containing a series of drawers to receive the lead, the bottoms of said drawers being perforated and provided with recesses to form reservoirs, and channels connecting said recesses substantially as described.

3. In an apparatus for the production of white lead, a corroding chamber to contain the lead to be converted, combined with a reservoir in said chamber, a gas conduit discharging in said reservoir and a steam supply entering said reservoir, substantially as described.

4. The combination with a series of corroding chambers, of an open top wash reservoir in the lower part of each chamber, and a gas conduit having branches leading to the reservoirs in the several chambers of the series, whereby said reservoirs serve to purify and moisten the gas and also to independently supply moisture to assist in the conversion of the lead, substantially as described.

5. In an apparatus for the production of white lead a corroding chamber having near its bottom a gas inlet, a vertical series of independently-removable drawers in the said chamber having perforated bottoms through which the gas may rise, and a top plate for the chamber provided with perforations by which a direct upward draft and passage of the corroding gas is secured from the gas inlet through the successive vertically-arranged drawers containing the lead, substantially as described.

6. The combination with a corroding chamber having at or near its bottom a reservoir by which a constant supply of moisture may be supplied to the chamber, and a steam generator having a combustion chamber, of a conduit leading from the said combustion chamber and entering said corroding chamber through said water reservoir, whereby the gases from the combustion chamber are purified by the water used to furnish moisture for the chamber, a blower to create a pressure in the said conduit, and a steam pipe leading from the said steam generator to, and to warm the liquid in said reservoir, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

NORMAN K. MORRIS.
JOHN W. BAILEY.

Witnesses:

PLINY W. ALLEN,
JOHN M. KINKADE.