3 Sheets—Sheet 1.

G. L. IRWIN.

Apparatus for the Manufacture of White-Lead.

No. 200,726. Patented Feb. 26, 1878.

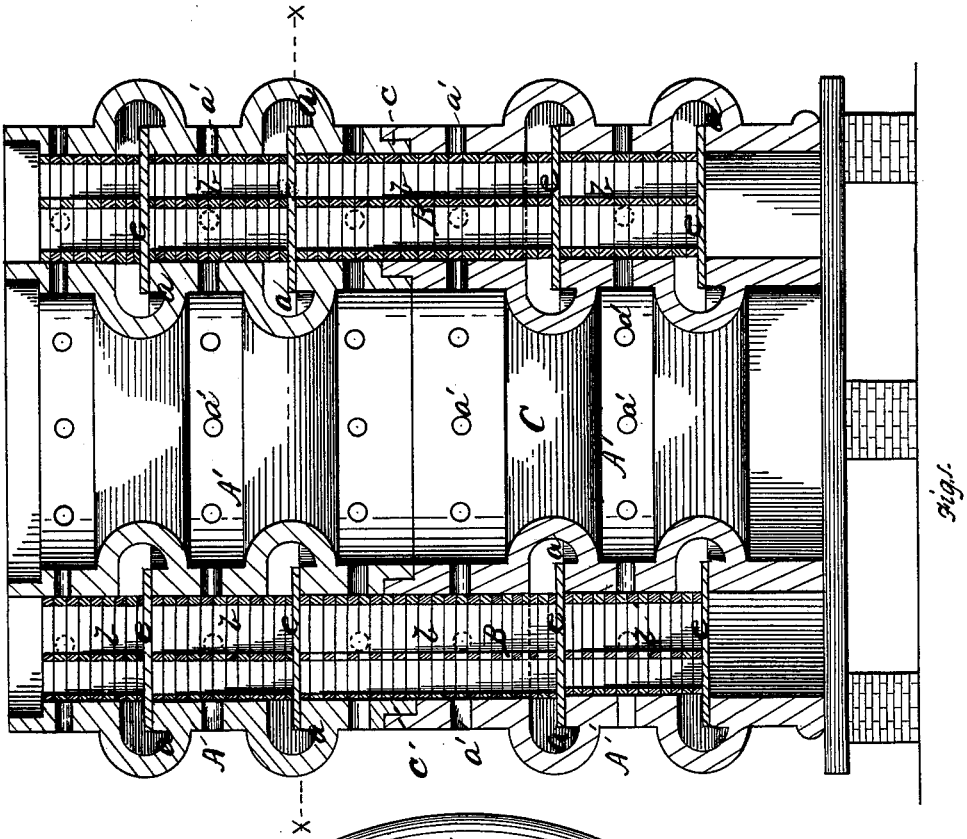

Fig. 1.

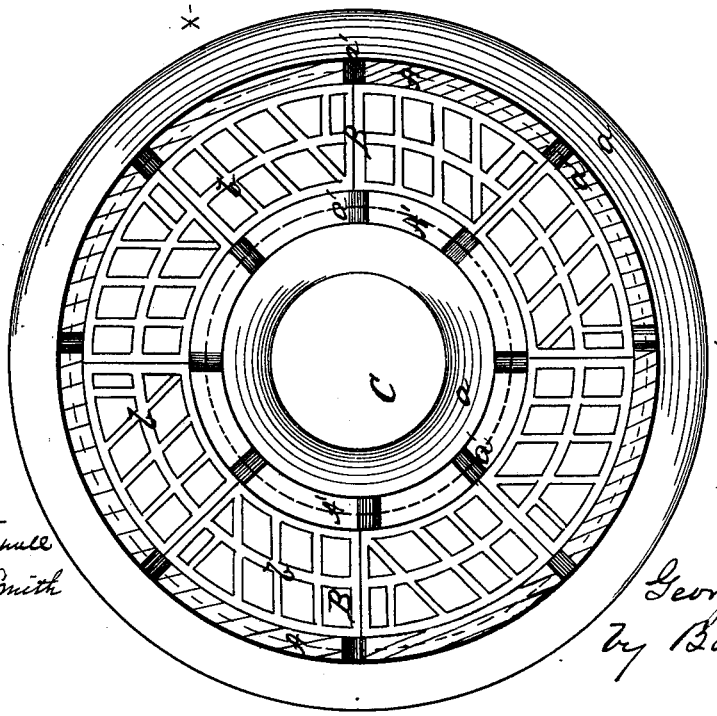

Fig. 2.

Witnesses.
R. C. Dunnell
John K. Smith

Inventor.
George L. Irwin
by Bakewell & Kerr
Attys

3 Sheets—Sheet 2.

G. L. IRWIN.

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Fig. 3.

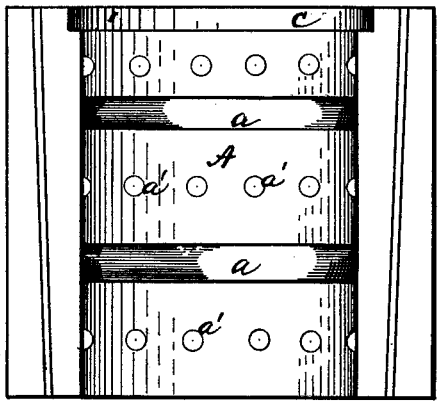
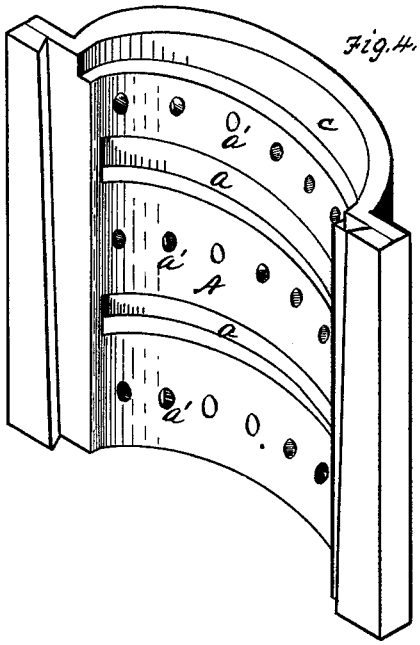


Fig. 4.



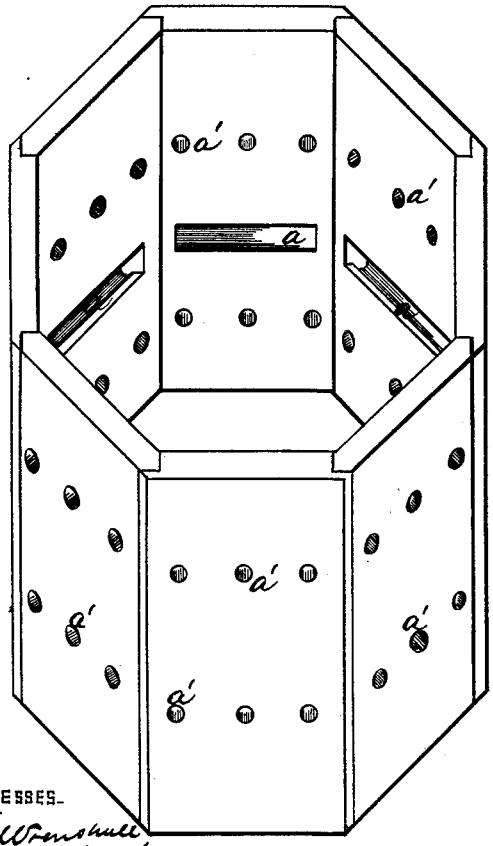


Fig. 5.

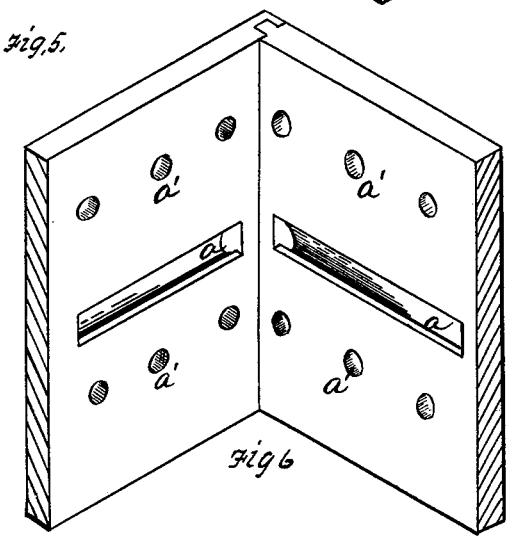


Fig 6

Witnesses.
R. C. Winslow
John K. Smith

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Attys

G. L. IRWIN.

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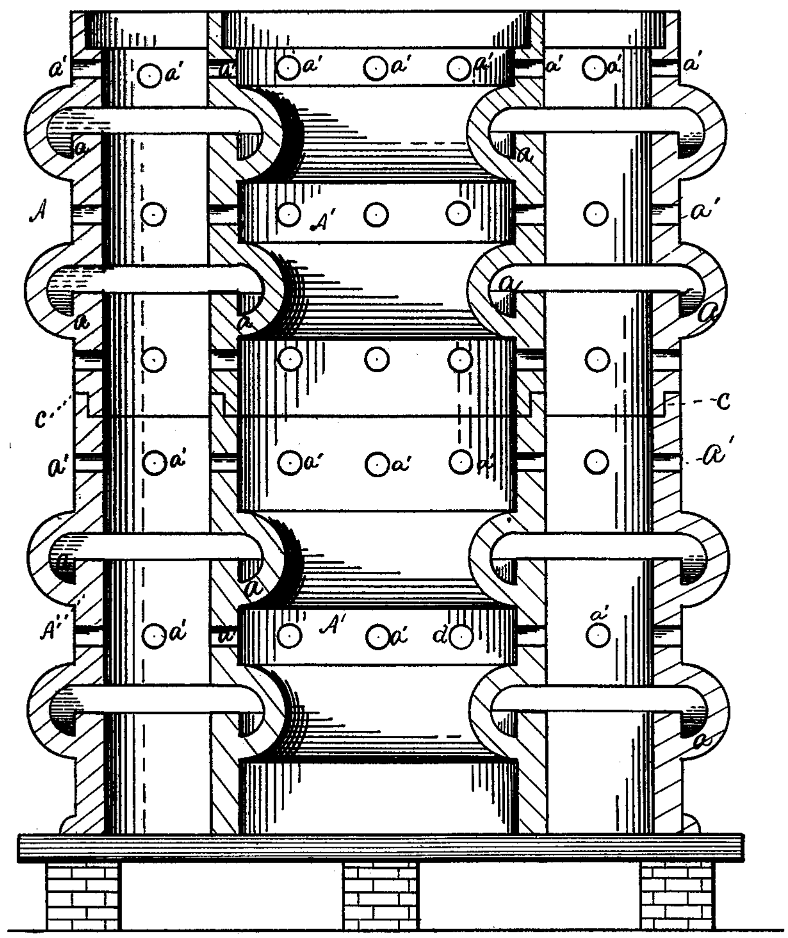

Fig. 7.

Witnesses.

R. C. Marshall
Jno. K. Smith

Inventor.

George L. Irwin
by Bakewell & Kerr
attys

UNITED STATES PATENT OFFICE.

GEORGE L. IRWIN, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN APPARATUS FOR THE MANUFACTURE OF WHITE LEAD.

Specification forming part of Letters Patent No. **200,726**, dated February 26, 1878; application filed November 28, 1877.

To all whom it may concern:

Be it known that I, GEORGE L. IRWIN, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Corroding Lead; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a sectional view of devices embodying my invention as employed in the corroding chamber or stack. Fig. 2 is a horizontal sectional view. Figs. 3 and 4 are modifications of the annular tiles, and Figs. 5 and 6 are modifications. Fig. 7 is a view similar to Fig. 1, the buckles being omitted.

Like letters refer to like parts wherever they occur.

My invention relates to the construction of stacks for the manufacture of white lead, and to tiles for the formation of the corrosion-chambers of stacks; and consists, first, in the combination and arrangement, to form a sectional stack, of perforated tiles having devices for sustaining the buckle-supports, whereby the capacity of the corroding-chamber and its proper ventilation and heating can be adjusted and controlled; secondly, in a tile perforated and provided with means of sustaining supports for the lead, and adapted to the construction of corroding-chambers of varying capacity; thirdly, in a perforated tile provided with acid pockets or receptacles, and adapted to the construction of stacks for the manufacture of white-lead corroding-chambers.

In the manufacture of white lead it is a well-established fact that no process yet devised results in the production of so fine and even-bodied an article as what is termed the "Dutch" process. The Dutch process, as commonly practiced, consists in the formation of "stacks" composed of alternate layers or beds of spent tan and pots for the lead and acid, the latter covered by suitable boards to support the superimposed bed or layer of tan and to form air-spaces, the number of pots in a layer as well as the number of layers varying according to the ideas of the constructor or manufacturer. The formation of such stacks involves much labor, and the operation thereof, even when carefully constructed, is more or less uncertain, either from improper circulation of the air, insufficiency of heat to properly evaporate the acid, or from other causes not easily determined.

The object, therefore, of the present invention is to reduce the labor involved in the construction of stacks, insure a proper construction thereof, as far as ventilation, &c., are concerned, and to control the capacity of the corroding-chambers.

I will now proceed to describe my invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, A A′ represent tiles embodying my invention in the preferred form. Such tiles are of annular shape, provided or encircled with annular troughs, pockets, or gutters *a* for the reception of acid, and perforated at intervals between the pockets, as shown at *a′*, for purposes of heat and ventilation. The characteristic features of the tiles A A′ are the same; but for convenience in building a stack the specific construction is modified—as, for instance, in the annular tiles the acid-pockets *a* of A will be formed on the exterior and open on the interior, while the acid-pocket of A′ will be formed on the interior and open upon the exterior. The size of the tiles A A′ will vary at the will of the manufacturer, and depend upon the size desired for the annular corroding-space B and the flue C, Fig. 2; but each tile should be formed with the rabbet *c*, or equivalent means of securing the tiles in position or together. One annular tile is inserted within another, so as to form the annular space or corroding-chamber B for the reception of the buckles, sufficient tiles being added, one above another, to gain the desired height.

In forming a stack or corroding-chamber the lower sections of each receptacle should be supported upon stone or brick pillars to insure a firm foundation, and a false bottom of plank or other suitable material placed in or under the section. The bed of tan can be formed in the usual way, the acid-pockets *a* filled with dilute acid by means of a hose or in any other convenient manner, and supports for the buckles *b* obtained by laying cross-pieces *e* from the ledge of the inner to the ledge of the outer acid-pocket *a*. When one section has been

supplied with acid, lead, &c., it may be surrounded by the tan, and another section added, filled, and surrounded in like manner, until the desired height is obtained; or the several sections may be adjusted and filled before the tan is placed around them, as preferred.

In order that the full scope of my invention may be clearly understood, I desire to say that the cylindrical form of tile is not essential, as the same may be polygonal or concave, and flat single perforated tile may be used to construct the receptacle, in each or all of which cases the advantages of my principle of constructing corroding-chambers would be attained to a greater or less extent, though in some cases more labor would be required to construct a firm receptacle.

I prefer to form my tile of porous clay, such as is used in the manufacture of pots at present in use in lead-manufactories.

The advantages of my invention are that a proper circulation of air is insured, the heat of the stack can be controlled, stacks can be readily constructed and taken down, the contents of any chamber can be removed without displacing or affecting the remainder of the stack, and stacks so constructed give uniform results.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A stack for the manufacture of white lead, consisting of a double series of columnar sectional perforated tiles, so arranged that an interspace or corrosion-chamber is produced thereby, said tiles being applied, one above the other, to the required height, substantially as specified.

2. A tile for constructing corroding-chambers for sectional white-lead stacks, said tiles being perforated and provided with rests to the cross-pieces which support the buckles, substantially as specified.

3. A tile for constructing corroding-chamber for sectional white-lead stacks, said tile being perforated and provided with acid-pockets, substantially as specified.

In testimony whereof I, the said GEORGE L. IRWIN, have hereunto set my hand.

GEORGE L. IRWIN.

Witnesses:
JAMES I. KAY,
JOHN K. SMITH.