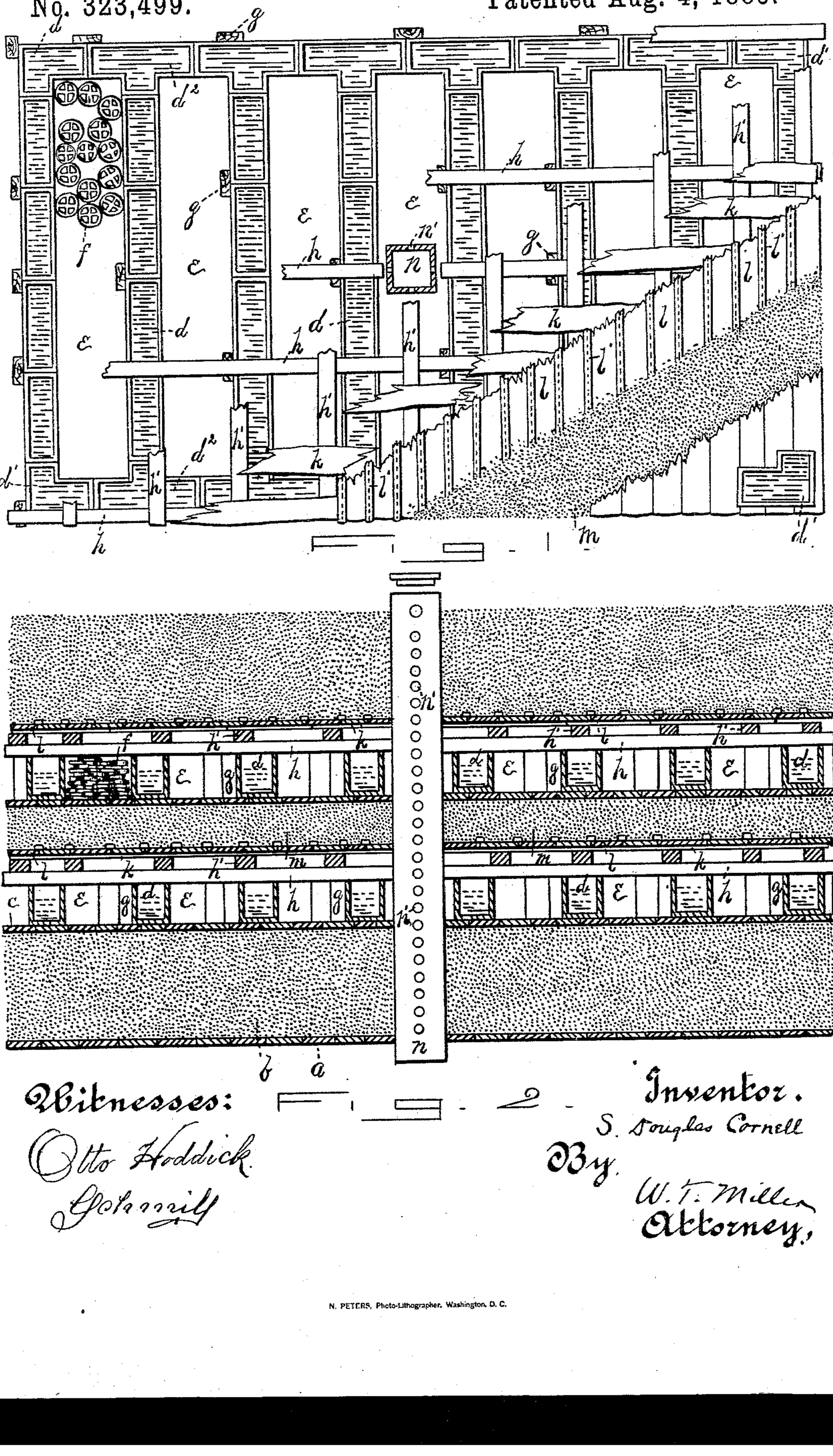
(No Model.) 2 Sheets—Sheet 1.

S. D. CORNELL.

APPARATUS FOR THE MANUFACTURE OF WHITE LEAD.

No. 323,499. Patented Aug. 4, 1885.



Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

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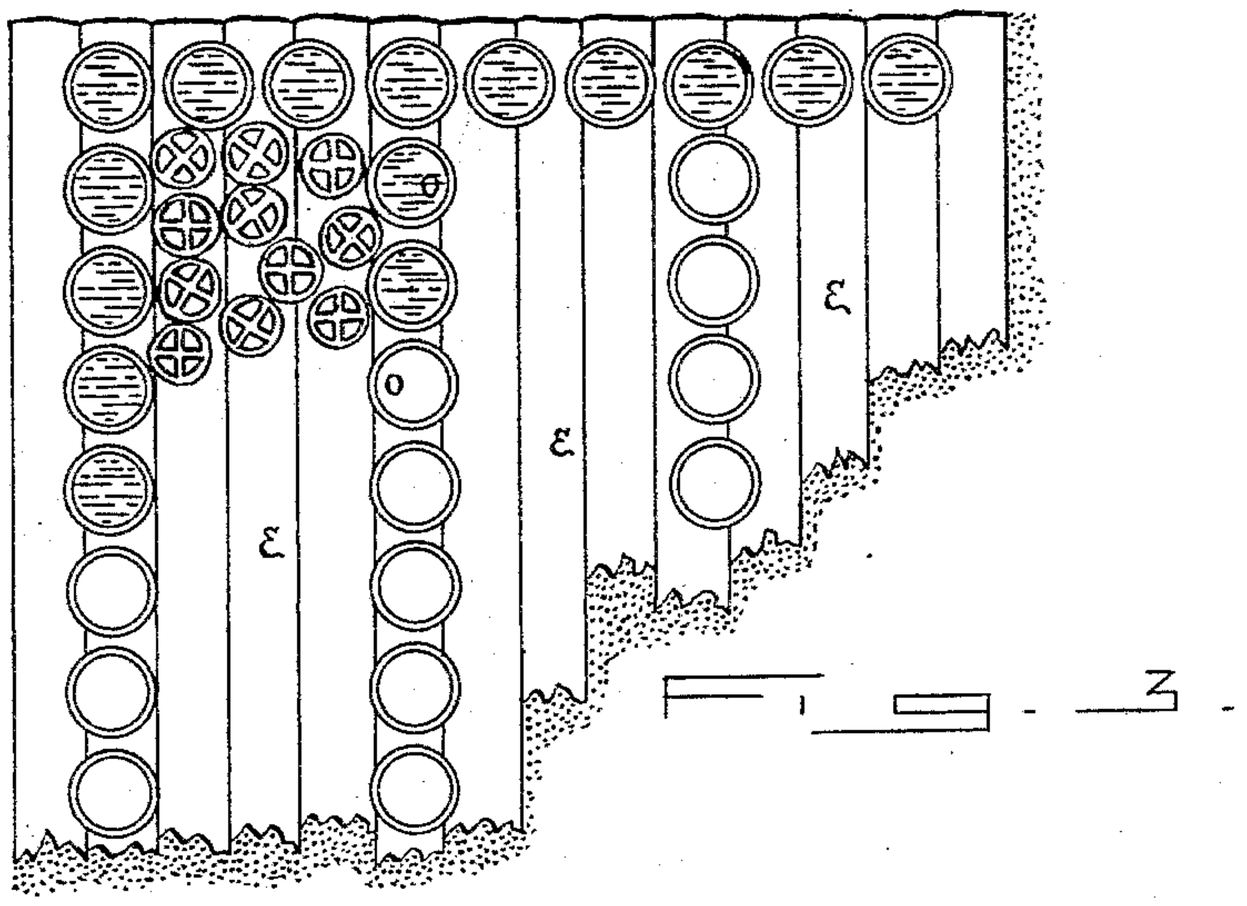

Fig. 3.

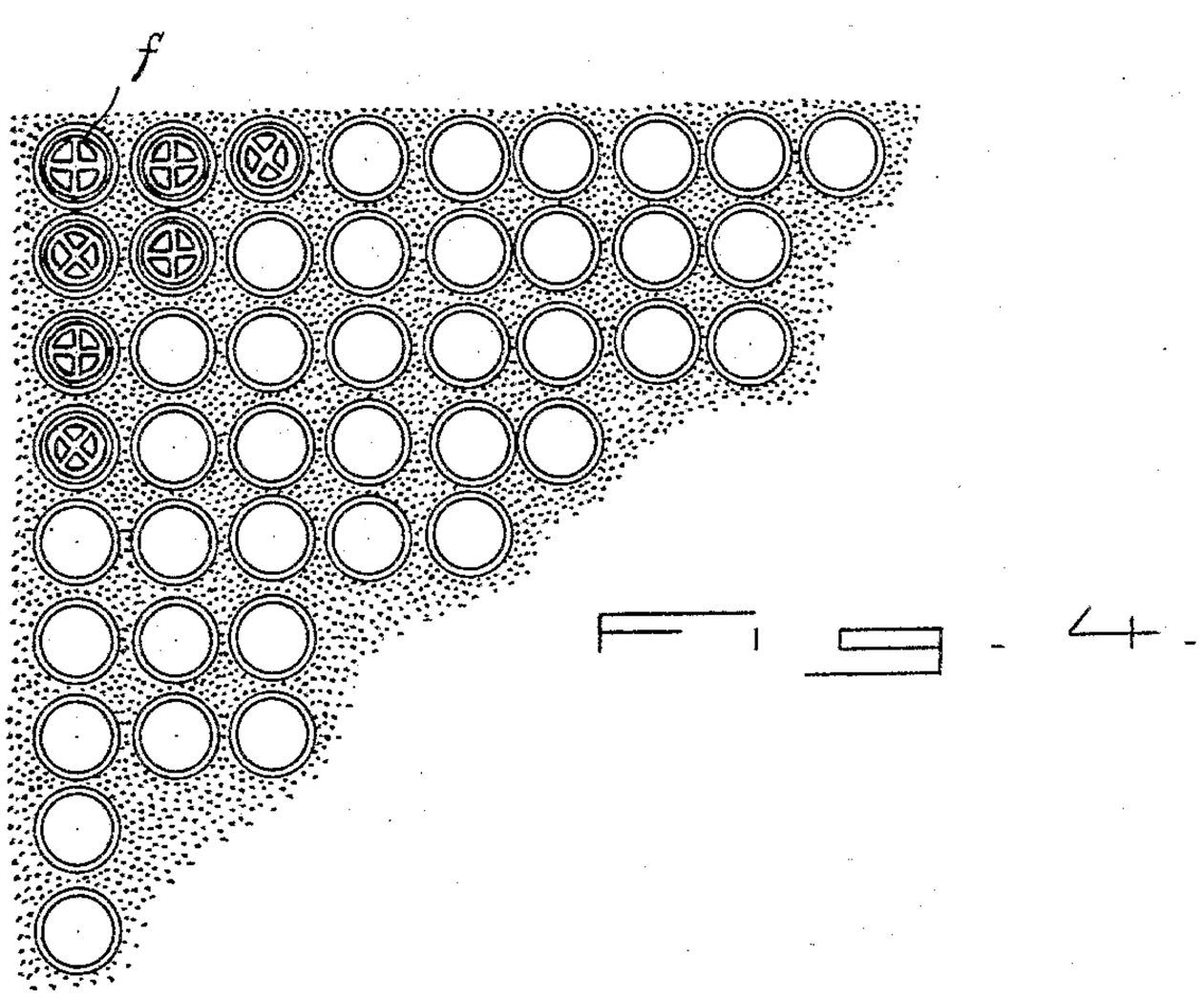

Fig. 4.

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UNITED STATES PATENT OFFICE.

S. DOUGLAS CORNELL, OF BUFFALO, NEW YORK.

APPARATUS FOR THE MANUFACTURE OF WHITE LEAD.

SPECIFICATION forming part of Letters Patent No. 323,499, dated August 4, 1885.

Application filed June 18, 1885. (No model.)

To all whom it may concern:

Be it known that I, S. DOUGLAS CORNELL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in the Manufacture of White Lead; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates particularly to that part of the process of manufacturing white lead known as the "corrosion," or, in other words, the conversion of the metallic lead into carbonate of lead. Prior to my invention the stack in which the corrosion is effected has commonly been arranged as follows: First, a layer of about three feet in depth of a mixture of new and spent tan. In this tan is arranged a series of earthen pots, containing strong acetic acid, and in these pots, over but not in contact with the acid, are placed cast gratings or buckles of the metallic lead. Stringers are laid upon these pots at intervals in both directions, and over these stringers is arranged a floor, upon which is again placed a layer of tan about one foot in depth, and so on as just described until a stack is built up from twenty to thirty feet in height. In this stack a double reaction takes place in consequence of the heat generated by the fermenting tan. The volatilized acetic acid changes the metal into an acetate, which is converted into a carbonate by combination with the carbonic-acid gas thrown off by the tan. The corrosion of the metallic buckles by this process has always been far from complete, owing to the failure of obtaining a proper circulation of the acid gases through and around the metallic buckles as arranged within the pots.

The object of my invention is to further increase this circulation, and thereby effect a largely-increased corrosion of the metallic lead; and to that end it consists, substantially, in arranging a stack in which, instead of having the buckles laid within the pots, I arrange a series of suitable troughs or pots (containing the acetic acid alone) in such manner as to leave open spaces between the troughs or pots and the floors, in which spaces the buckles are to be laid or piled upon the floor beneath sufficiently far apart to allow a free circulation of the acid gases around and between the buckles.

I will now proceed to more definitely describe the manner in which I have arranged my improved stack in accordance with my invention.

In the drawings, Figure 1 is a top plan view of one form of my improved stack with the different layers broken away to show the entire construction. Fig. 2 is a vertical section of Fig. 1. Fig. 3 is another form of my improved stack, and Fig. 4 shows the old arrangement of acid pots and buckles.

Referring to the drawings, *a* is the bottom flooring of the stack, upon which is laid the tan-bark *b*, or equivalent material—such as manure, &c.—to the depth of about three feet. Upon this tan-bark is laid the flooring *c*, for the reception of my improved arrangement of acid receptacles and metallic buckles. These acid receptacles, as shown clearly in Fig. 1, consist of the narrow troughs *d*, the angular troughs *d'*, and the T-shaped troughs d^2, so arranged as to leave the rectangular spaces *e*. These troughs are filled, or partially filled, with acetic acid, and in the spaces *e* are laid the metallic buckles *f*, so arranged as to permit a free circulation of the acid gases through and around them. Under this improved arrangement a much more complete contact of the gases with the metallic lead is permitted than in the old arrangement where the buckles are placed within the pots, as clearly shown in Fig. 4.

g are blocks of the same height as the troughs, which are placed at intervals alongside of the troughs, and upon these blocks are laid the stringers *h*, the object of the blocks being to relieve the earthen troughs of the heavy weight of the stack above.

h' are cross-stringers laid upon the stringers *h*. This arrangement of stringers permits of a space between the upper edge of the troughs and the under side of the flooring next above, through which the acid gases pass to permit of corroding contact with the adjacent metallic buckles *f*. Thin rough boards *k* are laid at intervals upon the top series of stringers, *h'*,

and upon these is laid the flooring *l*, similar to the floorings *b* and *c* beneath. Upon this flooring *l* is placed another layer of tan, *m*, the narrow strips *l'* being placed along the joints in the floor to prevent the tan from sifting through into the spaces *e* below. In this manner the stack is formed by similar successive layers, and in the center is the ventilating shaft or chimney *n*, with perforations *n'* opening into the layers of the tan and the spaces *e*. This shaft permits of the escape of the surplus vapor and gases from the stack and enables the temperature of the stack to be ascertained at any point in its height.

If it is desirable to utilize the old form of pots *o* in my improved construction, they can be arranged as shown in Fig. 3, forming substantially the same arrangement as shown in Fig. 1.

The form of stack described, with the exception of my improved arrangement of troughs or pots and buckles, is substantially old and well known.

I claim—

1. In the manufacture of white lead, a corroding-stack constructed with a series of courses, each course consisting of a number of troughs or pots to hold the acid alone, and arranged with spaces between them, the metallic buckles being placed within such spaces between the troughs or pots, flooring above and below the troughs or pots, and a layer of tan-bark or equivalent material, the whole suitably ventilated, substantially as and for the purpose set forth.

2. A corroding-stack constructed with a series of courses, each course consisting of the layer of tan-bark *b*, the flooring *c*, the acid-troughs *d d' d²* or pots *o* arranged with the spaces *e* between them, the blocks *g*, the two sets of stringers *h* and *h'*, the boards *k*, and flooring *l*, all arranged as shown, and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

S. DOUGLAS CORNELL.

Witnesses:

SHELDON THOMPSON,

W. T. MILLER.