(No Model.)

A. JAMIESON.

APPARATUS FOR DISTILLING CHLORIDE OF ZINC.

No. 303,736. Patented Aug. 19, 1884.

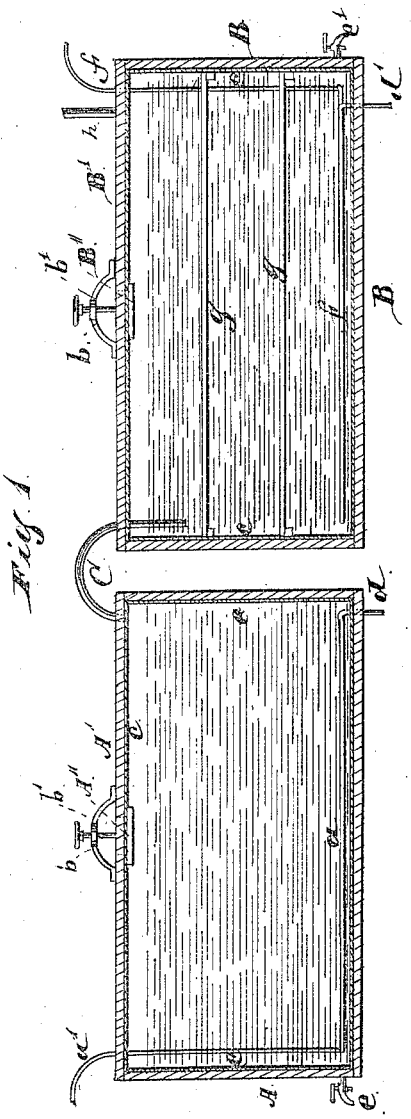

Fig. 1

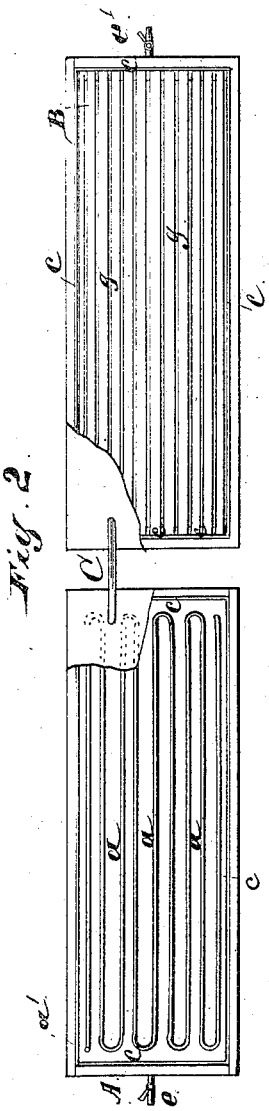

Fig. 2

Witnesses:

L. L. Russell

Albert H. Adams.

Inventor.

Augustus Jamieson.

UNITED STATES PATENT OFFICE.

AUGUSTUS JAMIESON, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND SAMUEL I. RUSSELL, OF SAME PLACE.

APPARATUS FOR DISTILLING CHLORIDE OF ZINC.

SPECIFICATION forming part of Letters Patent No. 303,736, dated August 19, 1884.

Application filed August 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS JAMIESON, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Apparatus for Distilling Chloride of Zinc, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section with the steam-pipes in elevation, and Fig. 2 a top or plan view with the cover partly broken away to show the arrangement of the steam-pipes and the supporting-shelves.

The object of this invention is to construct an apparatus for the production of a vapor that will act upon zinc and produce a liquid for use for various purposes; and its nature consists in providing a tank having a coil of steam-pipe located in its bottom or otherwise to receive the vapor-producing bodies, and connected with a second tank or receptacle having shelves, and having also a steam-pipe in its bottom or otherwise containing the zinc and water which is to be acted upon to produce the liquid, all as hereinafter more specifically described, and pointed out in the claim as new.

In the drawings, A represents the tank or receptacle for containing the bodies to be acted upon, having in its bottom a coil of steam-pipe, *a*, through which steam is supplied by a supply-pipe, *a'*, from a boiler or other supply-head. The top or cover A' is provided with a mouth or opening, which is closed by a suitable plug or cover, A", which, as shown, is held tightly closed by means of a screw-stem, *b*, passing through a yoke, *b'*, the yoke being located on the cover A' of the tank and the stem passing through a screw-threaded hole in the yoke and being suitably connected with the plug or cover A", so as to be turned and draw the cover tightly to place. The tank A may have an exterior of wood or other suitable material, and may be rectangular in shape or of some other form, and its interior is lined or covered with lead, with which material the top or cover A' is also lined, and for greater security the plug or stopper A" should be made of lead or some material covered on its exterior with lead. The steam-pipe passes through the bottom of the tank and its terminal end *d* is to be provided with a suitable draw-off cock for removing the water of condensation, and one end of the tank is provided with a draw-off cock, *c*, for the removal of the sediment. This tank or receptacle A forms the still portion of the apparatus, and is to be filled partially and nearly to the top with water, and in this tank or still with the water are placed the bodies from which the vapor is to be produced, consisting of common salt or chloride of sodium and sulphuric acid in the proportions of pound for pound of each ingredient, and this mixture of water, chloride of sodium, and sulphuric acid under the action of the heat from the steam-coil *a* produces vapor which rises to the top of the tank, and in order to insure the vapor from escaping, except at the outlet provided therefor, the tank or still is to be made steam-tight.

B is another receptacle or tank similar in construction to the tank A and having its top or cover provided with an opening closed by a plug or stopper, B", operated by a screw-threaded stem, *b*, working in a yoke, *b'*. This tank or receptacle can also be made of wood or other suitable material, and its interior is to have a lining, *c*, of lead, and is also to be made steam-tight. The bottom of the tank is provided with a steam-coil, *f*, through which steam is supplied from a suitable head by a supply-pipe, *f'*, and the terminal *d'* of the coil passes through the bottom of the tank and is provided with a suitable draw-off cock for the water of condensation, and one end of the tank is provided with a draw-off cock, *e'*, for the removal of the prepared liquid. The interior of the tank is provided with two series of bars or shelves, *g*, on which are placed pieces of zinc, and the tank is to be nearly filled with water.

C is a pipe connecting the two tanks, the end connecting with the tank A terminating on the under side of the cover A', and the end connecting with the tank B passing down and terminating below the water-line of the tank.

The operation is as follows: The still-tank is nearly filled with water and the chloride of sodium and sulphuric acid are supplied thereto pound for pound, the filling being done through the plug or cover A″, which can be removed or dropped down from the hole for that purpose, and the tank B is filled with water likewise, and pieces of zinc are placed on the bars or shelves *g*, when the apparatus is ready for use. Steam is admitted to the coil *a* through the supply-pipe *a′* and the action of the heat caused thereby on the mixture within the tank produces a vapor which rises to the top of the tank and passes through the tube C into the tank B below the water-line and is forced and intermingles with the contents of that tank, acting on the pieces of zinc on the plates or shelves *g*, producing chloride of zinc. The tank or receptacle B is the condenser portion of the apparatus, and at the beginning no steam is essential to the operation; but in order to produce the proper action near the end steam is admitted to the coil *f* through the supply-pipe *f′*. When the action is completed and the contents of the condenser B are turned into chloride of zinc, the liquid thus produced is withdrawn through the cock *e′* and the tank A is emptied of the sediment therein through the cock *e*, to be again recharged with water, salt, and sulphuric acid for the next operation, the tank or condenser B being also recharged.

The apparatus is very simple, and in use will be found effectual and reliable for the purpose for which it is intended.

The action of the vapor produced in the still A, passing down and into the water in the condenser B, acting on the zinc, transforms the contents of the condenser into chloride of zinc, and in this process hydrogen gas will be generated, and this gas must be allowed to escape from the condenser, which can be accomplished by means of a pipe, *h*, entering through the top or cover B′, as shown in the drawings, or in any other suitable manner.

It is to be understood that the tank can be varied in size to suit the quantity of chloride of zinc which it is desired to have produced, and the pipe *c*, connecting the two tanks, must be of sufficient diameter to readily pass the vapor from the still and into the condenser and project the same below the surface of the water in the condenser.

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

The tank or still A, provided with the steam-coil *a*, in combination with the tank or condenser B, provided with steam-coil *f*, and shelves *g*, and a tube or pipe, C, connecting the still and condenser, and terminating in the condenser below the water-line, substantially as and for the purposes specified.

AUGUSTUS JAMIESON.

Witnesses:

S. I. RUSSELL.

ALBERT H. ADAMS.