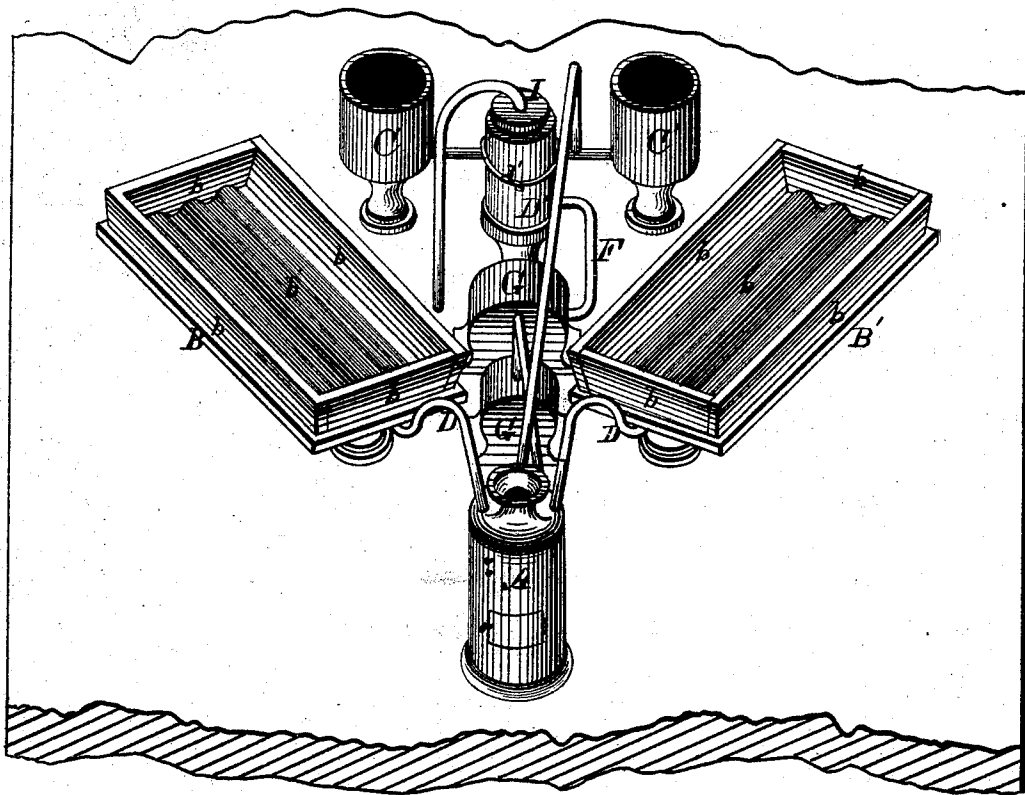


2 Sheets--Sheet 1.

G. W. STORER.
Evaporating-Pans and Plants for Salt Manufacture.
No. 144,159. Patented Oct. 28, 1873.

Fig. I.



WITNESSES:

*Jas. E. Hutchinson.
 Harry Coleman.*

INVENTOR.

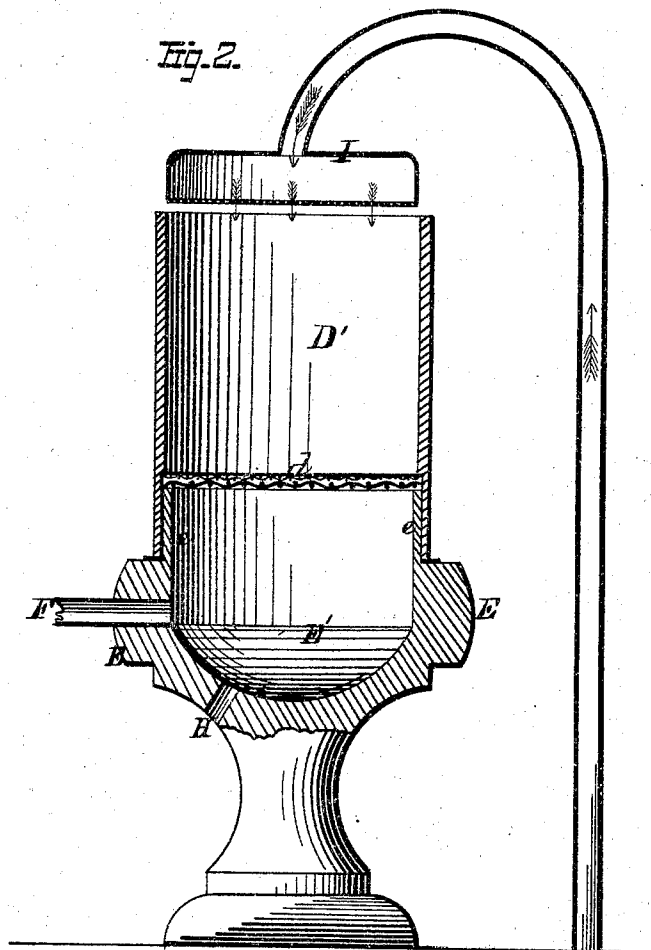
*Geo. W. Storer, by
 Prindle and Sears, his
 Attorneys*

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UNITED STATES PATENT OFFICE.

GEORGE W. STORER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN EVAPORATING PANS AND PLANTS FOR SALT MANUFACTURE.

Specification forming part of Letters Patent No. **144,159**, dated October 28, 1873; application filed September 30, 1873.

To all whom it may concern:

Be it known that I, GEO. W. STORER, of Philadelphia, in the county of Philadelphia and in the State of Pennsylvania, have invented certain new and useful Improvements in the Method of, and Apparatus for, Manufacturing Salt; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is a perspective view of my apparatus, as arranged for use, and Fig. 2 is a vertical central section of the apparatus used for cleansing and drying the salt.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to enable an improved quality of salt to be produced in a cheap, convenient, and expeditious manner; and it consists, principally, in the apparatus employed for cleansing and drying the salt, substantially as is hereinafter shown. It consists, further, in the construction, combination, and arrangement of the entire apparatus, substantially as and for the purpose hereinafter set forth.

In the annexed drawings, A represents a steam-boiler, having any desired construction, around which are arranged, radially, a series of vats or pans, B and B', and between each pair of the latter two tanks, C and C, as shown. The vats B and B' are constructed, preferably, with wooden sides *b* and double metal bottoms *b'*, between which latter is formed a space that is connected with the boiler A by means of a pipe, D; and serves to contain steam for the purpose of heating the contents of said vat. The tanks C are constructed in substantially the same manner as the vats, and their hollow bottoms are in a like manner connected with the boiler A, so as to enable the heating of their contents.

As thus constructed and arranged, the apparatus is employed in the following manner: One of the tanks is filled with salt-water, and heat applied to its bottom until said water has attained a sufficient temperature to cause its impurities to be precipitated, after which it is permitted to cool, and is then drawn into one of the pans or vats, where it is subjected to

heat until brought to a state of saturation. While the last part of this operation is being performed the second tank is filled with water, and the impurities of the latter precipitated, after which said water is drawn into said vat, said tanks being alternately cleansed, filled, heated, and their contents discharged into said vats until the latter is filled with water at the point of saturation. The water in the vat B, above named, is now drawn into the second or finishing-vat B', where evaporation takes place until the salt is crystallized, the first vat B, in the meantime, being cleansed and refilled, as before, nearly all of the impurities remaining in the water as it leaves the tanks, being deposited in the bottom of said first vat. From the finishing-vat B' the salt is conveyed to a drier, which, as seen in Fig. 2, consists of a cylindrical vessel, D', which has open ends and is, at a point somewhat above its lower end, provided with a woven-wire screen or bottom, *d*, upon which said salt is to rest. The lower end of the vessel D is fitted over a projecting annular flange, *e*, which is attached to, and forms part of, a base, E, in such a manner as to make an air-tight joint. Within the upper portion of the base E is formed a chamber, E', which communicates, by means of a pipe, F, with suitable apparatus, G, for exhausting air, while, from the lower side of said chamber, a water-pipe, H, extends outward and downward. A shower-bath, I, having a head that corresponds in size and shape to the upper end of the vessel D, is so arranged as to enable it to be moved over the latter, or, when not in use, turned to one side. The vessel D being now filled with salt water at the point of saturation is showered within its upper end and passes downward through said salt and out of the discharge-pipe H, having, during such passage, dissolved and carried away all remaining impurities. The waste-pipe H is now closed, the sprinkler I turned to one side, and the air-exhausting apparatus set in motion, so as to cause a strong downward current of air through the salt, by which means all moisture is speedily and thoroughly removed and the contents of the vessel D rendered dry. A bail, *d'*, or other suitable means, enables said vessel to be removed, emptied, and refilled.

By means of my method and apparatus a perfectly pure article of salt is produced in a comparatively short time, and with but little labor and expense.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The vessel D, provided with a reticulated bottom, *d*, and the base E, provided with the chamber E' and waste-opening H, constructed and combined with each other, and with suitable water-showering and air-exhausting apparatus, substantially as and for the purpose shown.

2. The precipitating-tanks U and U', the evaporating-pans B and B', the drier D and E, and the showerer I, arranged as shown, and combined with suitable steam-generating and air-exhausting apparatus, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of September, 1873.

GEO. W. STORER.

Witnesses:

GEO. S. PRINDLE,
JOHN R. YOUNG.