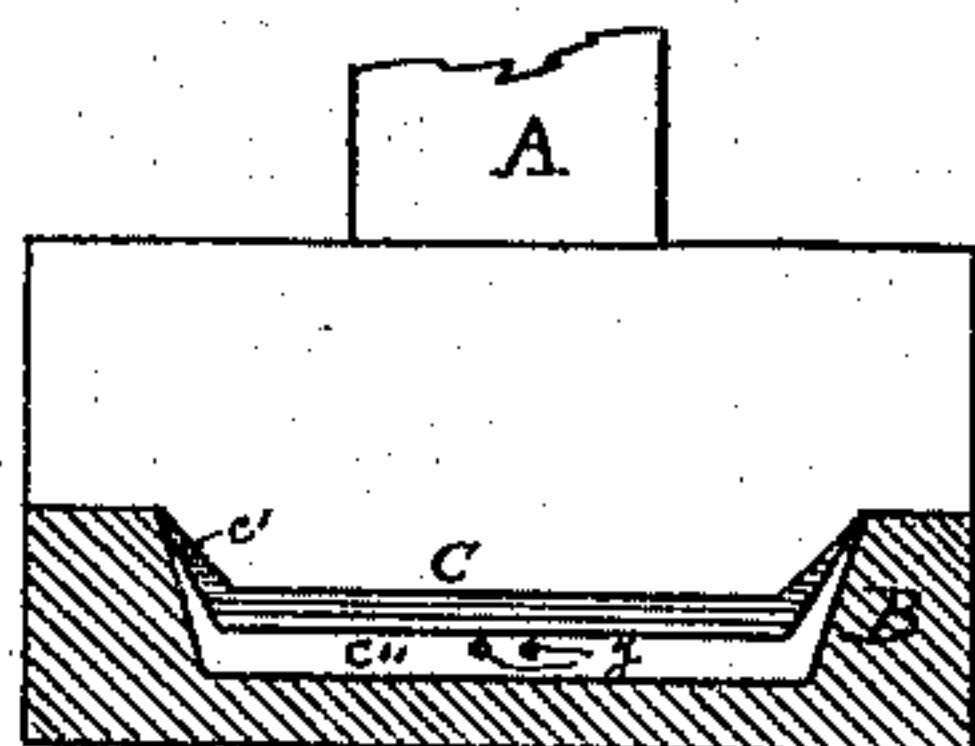
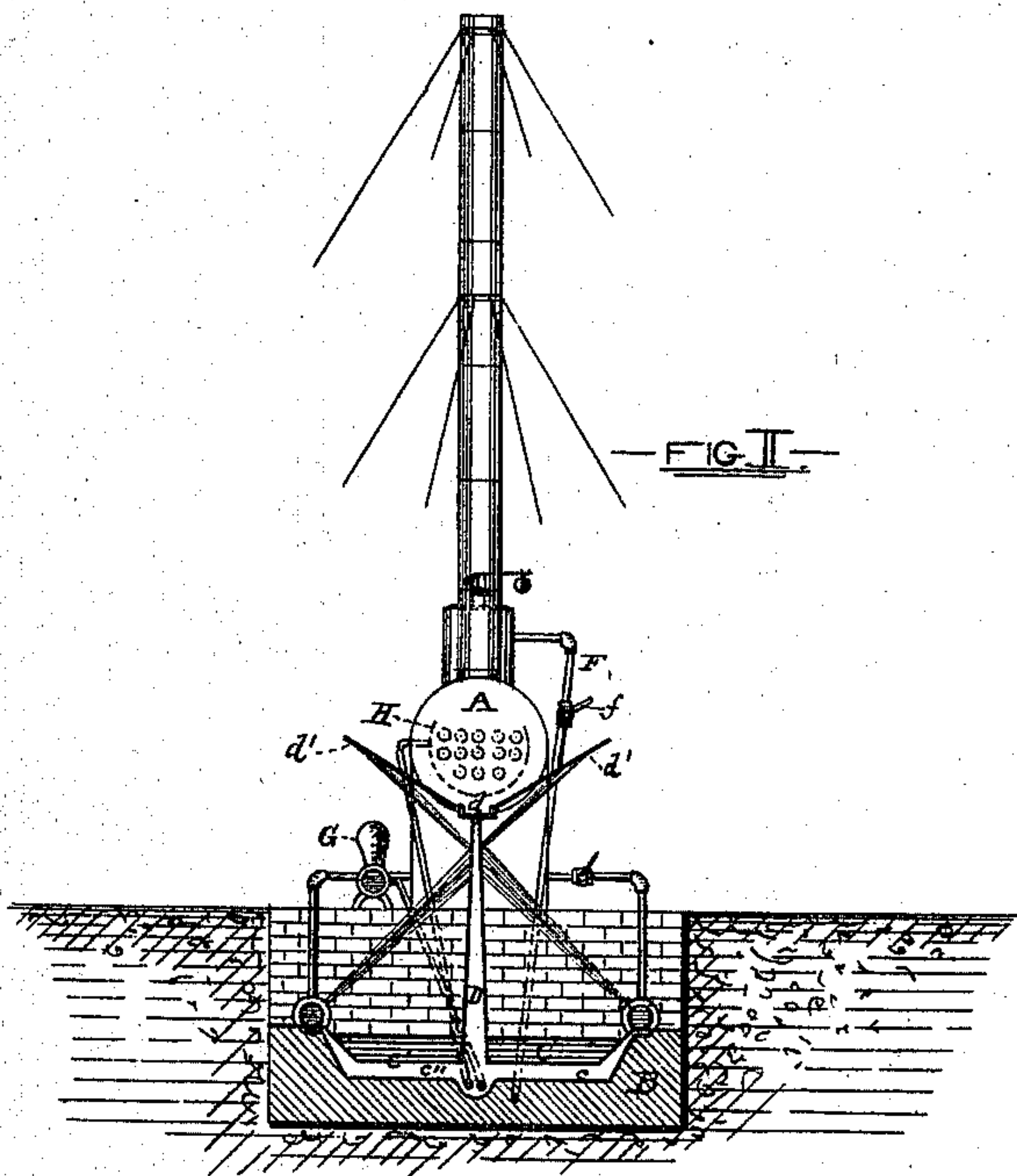
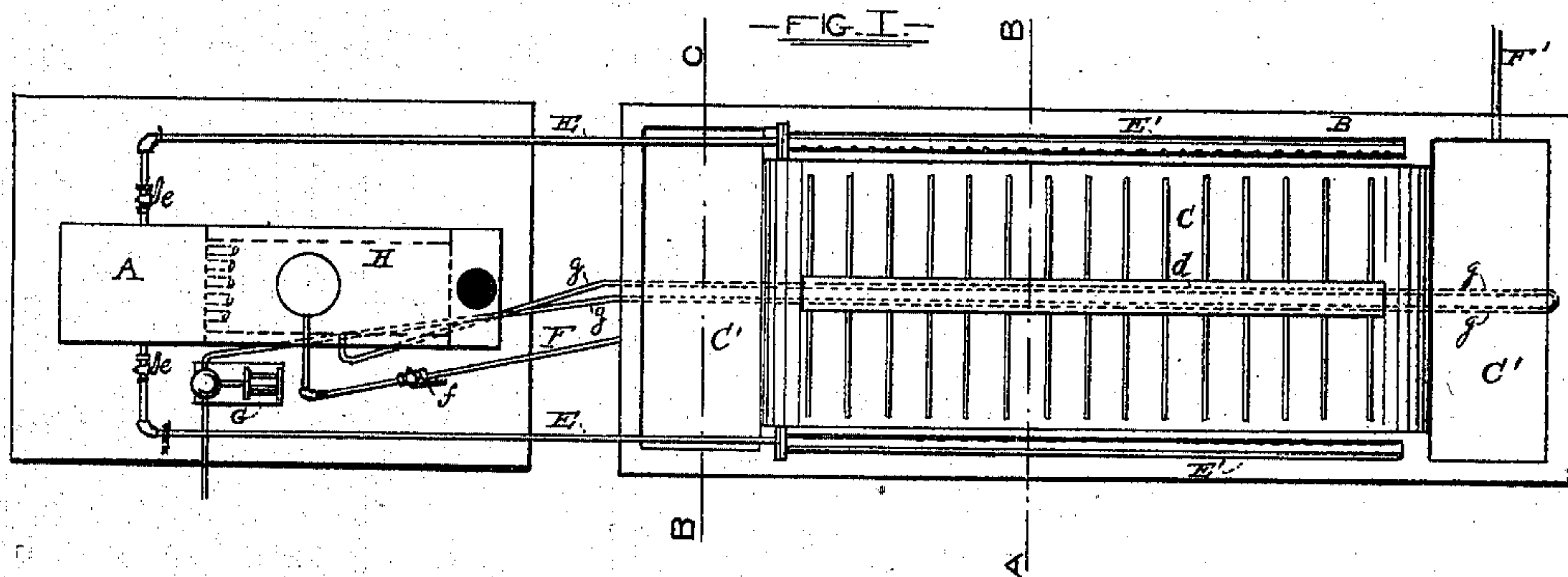


C. E. TRIPLER.

Improvement in Apparatus for Evaporating Salt-Brines, &c.

No. 131,721.

Patented Sep. 24, 1872.



—WITNESSES:—

Geo. H. Howard  
Fred Daly

—INVENTOR:—

Charles E. Tripler  
By his attorney  
T. H. Wofford



# UNITED STATES PATENT OFFICE.

CHARLES E. TRIPLER, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN APPARATUS FOR EVAPORATING SALT BRINES, &c.

Specification forming part of Letters Patent No. 131,721, dated September 24, 1872.

*To all whom it may concern:*

Be it known that I, CHARLES E. TRIPLER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Apparatus for Boiling and Evaporating a Liquor Saturated with a Salt, by means of which apparatus, and the process thereby effected, the separation of the saline matter from the liquor is caused; and I do hereby declare that in the following specification of my invention is contained a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates to the apparatus hereinafter described, and to the process thereby accomplished whereby common culinary salt, known in chemical nomenclature as muriate of soda or chloride of sodium is separated from a liquor saturated or impregnated with it.

In the accompanying drawing forming a part of this specification, Figure 1 is a plan view of my improved apparatus. Fig. 2 is a transverse section upon line A B of Fig. 1. Fig. 3 is a similar section upon line B C.

Similar letters of reference indicate similar parts of my invention in all the figures.

A is a steam-boiler, resting upon a suitable foundation. B is a brick-work, serving as a base for certain pans and other parts of the apparatus, hereinafter described. Of such parts C is a large pan, formed of two sheets of metal, the lower one of which, *c*, is fitted to and covers the greater part of the area of the brick-work B. The upper sheet *c'* constitutes what may be termed a false bottom, and the intervening space between the two sheets a jacket, *c''*, for the entrance or circulation of the steam, hereinafter more fully explained. The pan C terminates longitudinally at either end in an end pan, C', also formed of two sheets having a space, constituting a part of the above-named jacket, between them, which two end pans are set lower in the brick-work than the center and larger pan C. The upper sheet of the pan C is raised in the center longitudinally thereof, forming the steam-chamber D of two slanting sides, approaching each other as they rise, and uniting at their apex and two closed ends. These two sides and two ends constitute what may be termed a

vertical evaporator, and virtually divide the pan C longitudinally into two parts. The steam-jacket *c''*, situated between the several sheets of the pans C and C' and the vertical evaporator D, connects to the steam-space of the boiler by means of the pipe F, which is provided with a cock, *f*. The discharge or blow-off pipe F' leads from the jacket *c''*. Resting upon the upper surface of the brick-work B near each outer edge thereof, and parallel thereto, is a perforated pipe, E'. The two pipes E' connect by the pipes E directly with the boiler. The pipes E are also provided with cocks *e*, by means of which the communication between the boiler and the pipes E' may be closed.

While giving a further description of the several parts of my invention, I will also describe the process by which the evaporation of the saline liquor is effected and the salt produced. The boiler A is supplied with salt-water by means of the independent steam-pump G. The feed-water is pumped through a pipe, *g*, which extends through the steam-jacket *c''* and returns, entering the boiler. It will be seen that the boiler is supplied with an inside jacket, H, having two sides and a bottom, but no top. The feed-water is forced into the jacket which incloses the tubes of the boiler, only a small space being left between their exterior and the respective sides of the jacket. The feed-water is thus brought and temporarily confined within a limited part of the whole water-space of the boiler, and in which from its close proximity to the heated tubes the water is more readily heated than it would be by being forced into a boiler unprovided with a jacket. The pressure of steam generated within the boiler forces the boiling water, when the cocks are opened, through the pipes E into the perforated pipes E'. The apertures in the pipes E' point upward at an angle of sufficient number of degrees to allow the boiling salt-water passing through the perforations to strike against the vertical evaporator D, somewhat as is shown in Fig. 2. At the apex of the vertical evaporator is a capping, *d*, to each side of which are hinged strips *d'*, capable of being raised or lowered to any desired angle from the horizontal cap. The spray or crystallized atoms projected from the slanting sides of the vertical evaporator cling to



the strips *d'* in the form of a pellicle or incrustation, in which form the salt is collected in quantities deemed sufficient, when it is removed by scraping or other means, in a condition fit for culinary purposes. It will be seen, and it has been herein stated, that the end pan *C'* is set lower in the brick-work than the pan *C*. This arrangement, as the ends of the bottom of the pan *C* are rounding and lead into the pan *C'*, allows the liquid to drain off from the pan *C* into the end pan *C'*, leaving a saline deposit upon the surface of the pan *C*. The salt may then be removed in the same condition and in the same manner as that from the wooden strips *d'*. The boiler *A* is provided with suitable salt-traps and pipes, by means of which it may be relieved

of the deposit of salt, or which may be used for common blow-off purposes.

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

1. The arrangement of the pans *C C'*, pipes *E E'*, vertical evaporator *D*, and capping and strips *d d'*, substantially as and for the purposes herein set forth.

2. In combination with the boiler *A* having the inside jacket *H*, the above apparatus, as connected and claimed, for the purposes specified.

3. The process, as herein described.

Witnesses: CHAS. E. TRIPLER.

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