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# SAMUEL D. GILSON.

## Improvement in Apparatus for Evaporating Brines.

No. 119,136. Patented Sep. 19, 1871.

Fig. 1.

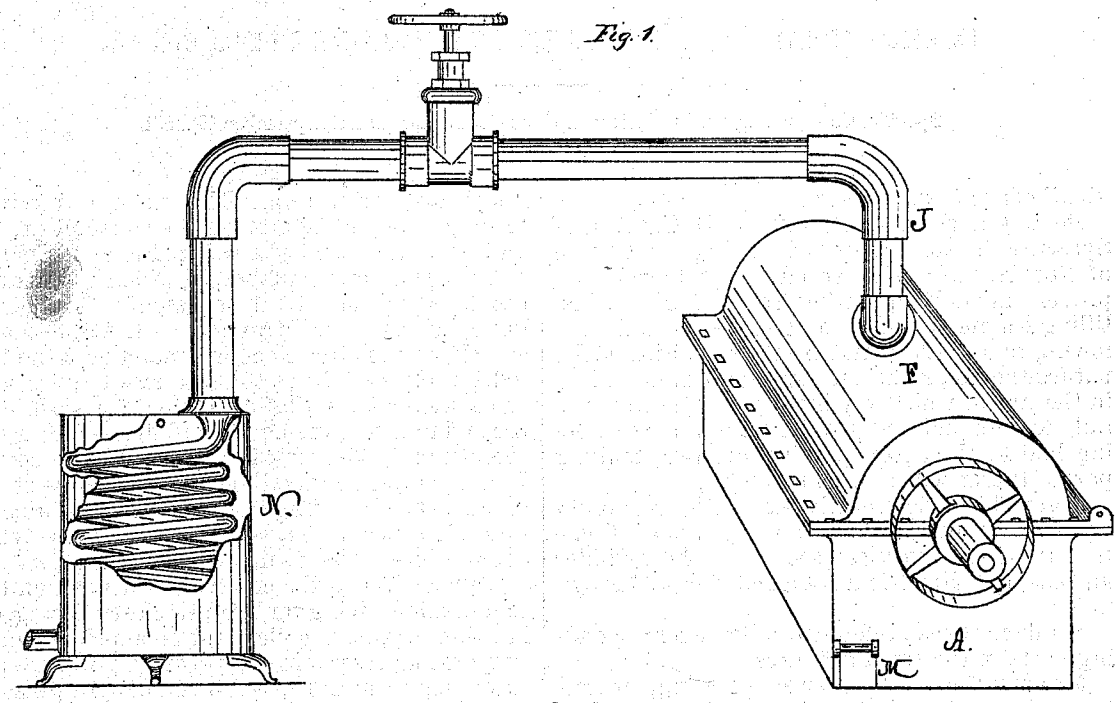



Fig. 2.

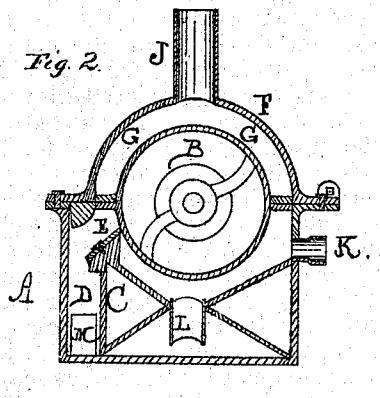
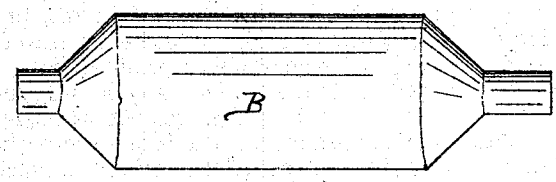



Fig. 3.




Witnesses:
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# UNITED STATES PATENT OFFICE.

SAMUEL D. GILSON, OF SYRACUSE, NEW YORK.

## IMPROVEMENT IN APPARATUS FOR EVAPORATING BRINE.

Specification forming part of Letters Patent No. 119,136, dated September 19, 1871.

*To all whom it may concern:*

Be it known that I, SAMUEL D. GILSON, of Syracuse, in the county of Onondaga and State of New York, have invented new and useful Improvements in Evaporating, Saturating, and Distilling-Engines; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand and use the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a view, partly perspective and broken away, as illustrative of my invention. Fig. 2 is a transverse vertical section of the cylinder and casing. Fig. 3 is a detached view of the cylinder.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to an evaporating, saturating, and distilling-engine, which is adapted for several purposes, among which may be mentioned the manufacture of salt, sugar from cane-juice, refining sugar and oils, distilling liquors and essences, generating steam from fresh and salt-water, manufacture and drying of peat, manufacture of starch, soap, and other substances, plastic or otherwise. It consists of a closed casing forming a part of the boiler-tank and a rotating cylinder or cylinders therein, which is or are heated by steam, hot air or water, and suspended by journals in suitable bearings, with stuffing-boxes and steam-pipes for induction to and eduction from the cylinder, with valves or cocks for regulating the amount of the medium to produce the quantity of heat requisite for the purposes intended. It also consists of a deposit-chamber in the receiving or boiler-tank. It also consists in the arrangement of a scraper or knife so as to operate upon the surface of the revolving cylinder and in connection with the deposit-chamber. It further consists of a door, or equivalent, for access to the deposit-chamber.

In the drawing, A represents a receiving-tank, within which is suspended a revolving cylinder, B, whose bearings are on the end of said tank, and made hollow for the purpose of introducing into the cylinder steam, hot water, or air, and provided with stuffing-boxes, pipes, valves, and cocks at either end to regulate the amount of the heating material required to perform the evaporation and saturation. This tank A receives through an opening or pipe the substance to be treated, and is partly partitioned longitudinally, as at C, to form a chamber, D, which I designate the deposit-chamber. E represents a scraper or knife, which is so arranged with the deposit-chamber as to be or come in contact with the cylinder B alternately, as the case may require, and cause the matters that collect on the surface of the cylinder to be removed and deposited in the chamber D. The tank is to be closed by a cover, F, and may be hinged, bolted, or otherwise secured to the receiving-tank, and of such dimensions that a space, G, is left between the cylinder and inner face of said cover, forming a steam-chamber. When the cover F is in position the cover and receiving-tank form a closed casing, or, in other words, a boiler and steam-chamber or evaporating-reservoir. J represents a tube or pipe extending from the cover for forming a passage for the rising vapors from the casing, and directing them to a condenser, place of collection or discharge. The substance to be treated is introduced into the casing through a pipe, K, suitably located, and a pipe, L, is arranged below the cylinder for discharging from the casing any matters that may at any time require such discharge, and, where more than one cylinder is used, to form a connection between them. Access is had to the deposit-chamber, for the removal of the collections, by means of one or more doors, M, or equivalent port or entrance, which should fit snugly and tightly in place to prevent escape of heat from the casing or tank. If desired, a series of cylinders may be employed with one casing.

In operation the substance to be evaporated is to be brought in contact with the cylinder either in the form of spray or within the receiving-tank, with the cylinder dipping into said substance, the cylinder being heated by steam, hot air, heated water, or otherwise.

In the process or method of manufacturing sugar, &c., the water is evaporated and passed off in the form of vapor through the pipe at the top of the casing to a place of discharge or collection; or, if the cover of the casing is removed, said vapor passes directly into the atmosphere; but in the manufacture of salt the operation may be similar to that described in the Letters Patent heretofore granted to me. The solid matters collect on the surface of the cylinder, and are taken there-

from by means of the scraper, which causes said matters to drop into the deposit-chamber, where they are readily accessible and removable.

By means of this device fresh water may readily be distilled from salt or impure water, and the salt or impurities be collected on the cylinder, while the fresh water will be conducted to a suitable place and there collected.

In the manufacture of steam for engines the cylinder takes up the impurities, such as lime, magnesia, and like substances which make the water hard, and prevents incrustation and renders the water soft.

In the manufacture of whisky (and other spirits) the bran or other heavy matter is taken up on the surface of the cylinder, scraped therefrom, and dropped into the deposit-chamber. In this case a suitable condenser, N, pump, or other appliance, may be attached by pipes to the casing.

By this invention I also can refine coal-tar, oil, &c., generate steam for engine or culinary uses, treat all plastic substances, and apply it to other purposes. The casing is easily opened for examination and repairs, but when closed becomes an air, steam, and water-tight chamber. A vacuum may be formed within the casing by an air-pump or other suitable means for economizing heat and evaporating at lower temperature. In some instances the cover of the casing may be removed as unnecessary, as where the vapors are permitted to pass into the atmosphere; but this will not affect the use of the deposit-chamber, which is of importance whether the casing is closed or open.

When steam or other heating medium is in the cylinder, and the offal is to be removed from the deposit-chamber, the said medium must be properly shut off from the cylinder. The offal that does not come in contact with the scraper or knife is deposited in the tank.

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

1. The deposit-chamber D within the tank of a closed chamber A, substantially as set forth.

2. The doors M, or equivalent port or entrance, for access to the deposit-chamber, as set forth.

3. The revolving cylinder B, knife E, and chamber D, combined and operating substantially as described.

4. The pipes K L, cylinder B, knife E, chamber D, and cover F, combined and operating substantially as described.

The above specification of my invention signed by me this 10th day of July, 1871.

SAML. D. GILSON.

Witnesses:

J. A. NOTTINGHAM,

J. W. PERKINS.

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