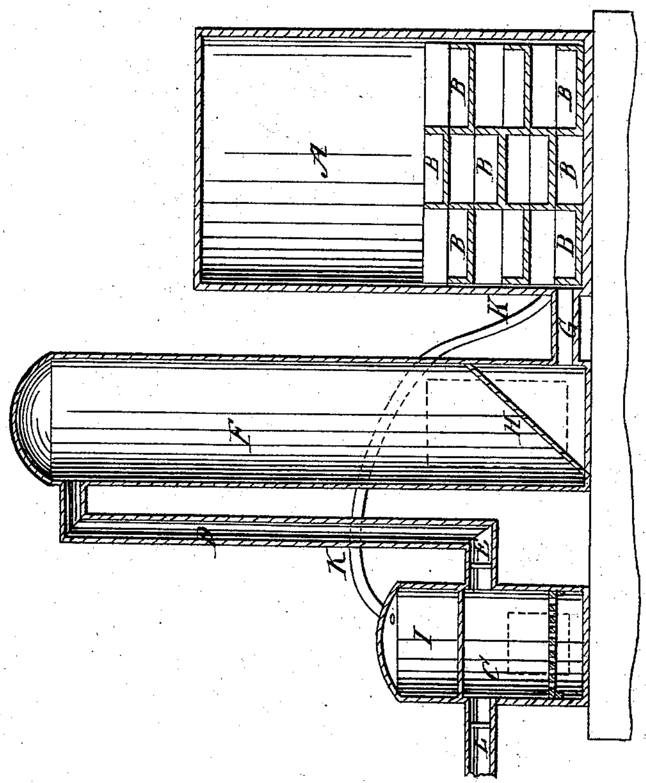
E. CHAMBERLIN.

Making Alkalies.

No. 3,733. Patented Sept. 7, 1844.



UNITED STATES PATENT OFFICE.

EDWARD CHAMBERLIN, OF BOSTON, MASSACHUSETTS.

MAKING SALERATUS.

Specification of Letters Patent No. 3,733, dated September 7, 1844.

To all whom it may concern:

Be it known that I, EDWARD CHAMBERLIN, of Boston, in the county of Suffolk and State of Massachusetts, have discovered a new and useful Improvement in the Manufacture of Saleratus, and that the following is a full and exact description of the same.

It is well known that the most economical method of manufacturing the article known in commerce under the name of "saleratus" or carbonated pearlash, has been to suspend common pearlash (inclosed in proper receptacles) in distillers or brewers fermenting vats and then subject the same (for such time as might be necessary) to the action of the carbonic acid atmosphere which always occupies the upper parts of the vats, and is produced during the process of fermentation. After a time the alkali becomes saturated with the acid; and although the salt so prepared does not possess the chrystaltive form, yet it is equally useful for most purposes for which it is used in the arts. The preparation of this article by distillers has now become a very important addition to their business, so much so that it very often occurs that the only profits of their distilleries arise from its manufacture, that is to say, while the market price of alcoholic spirits will not afford any profit to the distiller, the manufacture of saleratus enables him by the profit it alone affords to keep his distillery in operation. The great and constant decrease of distilleries from causes well understood will soon require a resort to some other and cheaper means of producing the above mentioned article all others heretofore practised (owing to their great expense) having been superseded by that adopted in distilleries.

The improvement in the manufacture of saleratus which I have discovered and by which I am enabled to produce it at a very cheap rate, and in fact by reason of the time saved, &c., at a much cheaper one than by the common process as above set forth, is as follows, viz. I inclose the crude pearlash in an air tight box or apartment, A (see the accompanying drawing which is a vertical and longitudinal section through the apparatus) in which are suitable shelves or other proper contrivances (B B B &c.), for spreading or exposing the alkali to the action of the gases or volatile products of combustion which I afterward admit therein. In connection with the said box or apartment and outside thereof I employ a stove or furnace (C) suitable for the combustion of anthracite coal the said furnace being connected with the said apartment by a smoke or discharge pipe or passage (D) leading therefrom into the apartment and having a damper or valve (E) in it (or not as circumstances may require) by which the communication between the furnace and chamber may be interrupted or opened at pleasure.

Between the furnace and the apartment the discharge pipe which connects the two should be enlarged so as to contain sieves or some proper means of separating the fine dust (that proceeds from the fire), from the gaseous products of combustion. The mode I have practised of separating the said dust has been to erect by the side of the apartment a second apartment (F) of smaller size in its horizontal dimensions, but somewhat or about one foot higher than the first. The two apartments are to communicate with each other by means of a pipe or suitable passage (G) leading from one to the other just above their floors. Over the mouth of the said passage or where it opens into the smaller apartment I have arranged a thin layer of unglazed cotton batting (H) or some other proper material which would permit the passage of the gases through it and interrupt that of the fine dust. The pipe from the stove or furnace ought to enter the smaller apartment at the top thereof as seen in the drawing. Such a mode of arranging the furnace, the appendage to the conductor therefrom (for the purpose of preventing the admission of fine dust into the alkaline apartment) and the said apartment I have found to operate best in practice.

A boiler (I) or means of generating steam is also connected with the apartment for alkali by means of a pipe K, and so arranged as to enable me to inject steam into the same, in such quantities as may be desirable during the process of preparing the alkali. This boiler may be placed directly over the anthracite furnace so that the fire thereof may be employed in the generation of the steam required during the process of manufacturing the saleratus. The furnace being charged with anthracite and the charge fired, it is often advisable for a short time to discharge the smoke or volatile products of combustion into the atmosphere through

a second discharge pipe (L) or suitable orifice of escape. When the fire is well lighted or sufficiently so for our purpose the volatile products arising from the combustion of the anthracite together with more or less steam (as circumstances from time to time may require) are to be thrown or suffered to enter into the apartment containing the pearlash, and come into contact with it. The hot gases and steam intermingling with the alkali are rapidly absorbed by the same, the steam enabling the alkali to readily receive such of the volatile products of the combustion of the anthracite as produce the necessary chemical effect to convert it into saleratus.

Bituminous coal cannot be profitably employed as the volatile products of its combustion besides the separation of the fine dust and lamp black from them require purification before being admitted to the apartment and this cannot be effected without so much expense of time and money in the mechanical means of purification as render such a process wholly objectionable on account of its cost. The employment of wood or charcoal requires also a purification to free them from hyroligneous acid or "black acid" tar, and other injurious properties they may contain. I have discovered in practice that the employment and use of anthracite and steam in the manner set forth fully accomplishes the end desired and enables me to manufacture the saleratus by a mode so rapid, certain, and cheap in comparison with that heretofore adopted in the production of this article of commerce, as to entitle it to be considered a great improvement. The employment of steam in connection with the anthracite I deem of the highest importance to effect the quick absorption of carbonic acid and thereby render this application of anthracite practically available within proper limits as respects time, expense, &c., but if the alkali is exposed to the atmosphere for a long period so as to deliquesce, the gases, &c., proceeding from the furnace may be employed independently of the use of steam. Although the absorption of acid may be so effected I doubt whether it ever can be profitably accomplished.

Having thus described my discovery in the manufacture of saleratus that which I claim and desire to secure therein by Letters Patent, consists in—

The employment and use of anthracite *i. e.*, its volatile products of combustion, in connection with steam without any purifying process of the volatile products of combustion, other than the separation of fine dust, as set forth, the whole being substantially in the manner and for the purpose as herein before specified.

In testimony that the above is a true description of my said discovery I have hereto set my hand this third day of July, A. D. 1844.

EDW. CHAMBERLIN.

Witnesses:
R. H. EDDY,
OLIVER YOUNG.