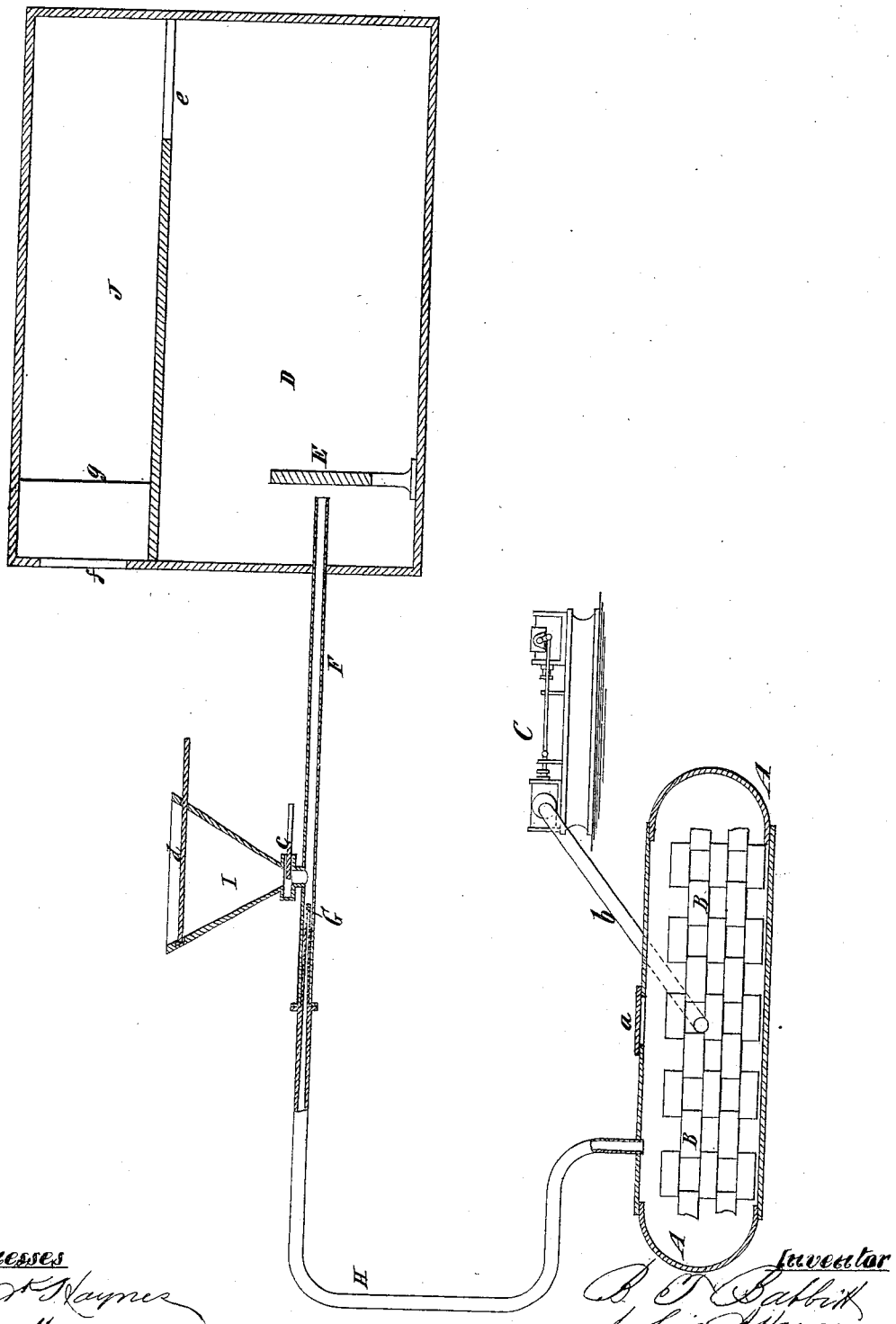
(No Model.)

B. T. BABBITT.

MANUFACTURE OF BICARBONATE OF SODA.

No. 265,368. Patented Oct. 3, 1882.



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UNITED STATES PATENT OFFICE.

BENJAMIN T. BABBITT, OF NEW YORK, N. Y.

MANUFACTURE OF BICARBONATE OF SODA.

SPECIFICATION forming part of Letters Patent No. 265,368, dated October 3, 1882.

Application filed March 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN T. BABBITT, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in the Manufacture of Bicarbonate of Soda, of which the following is a specification.

One feature of my invention consists in the method of producing bicarbonate of soda by subjecting soda-ash to the action of carbonic-acid gas under a tension or pressure in excess of the atmospheric pressure, whereby the soda-ash takes up the additional equivalent of carbonic acid necessary to convert it into bicarbonate of soda more readily than when it is subjected to carbonic-acid gas of the atmospheric pressure.

Another feature of my invention relates to the method of making bicarbonate of soda described in my application for Letters Patent filed February 15, 1882, and which consists in impelling the soda-ash against an abutment in a closed chamber by means of an injector for the purpose of scattering it, and subjecting it while in suspension and before it settles to the action of carbonic-acid gas, which may be the agent employed to work the injector and pass into the chamber with the soda-ash.

The object of the second feature of my invention is to provide for using the carbonic-acid gas which escapes from the chamber wherein the soda-ash is subjected to the gas under pressure for supplying the blast for working the injector to impel soda-ash against an abutment, as and for the purpose above described; and to this end this feature of my invention consists in the combination, with a closed receiver and a pump or other means for supplying carbonic-acid gas thereto under a pressure in excess of that of the atmosphere, of a closed chamber containing an abutment, an injector for impelling soda-ash into said chamber against said abutment, and a pipe for conducting surplus gas from said receiver to said injector for operating the latter to impel soda-ash into said chamber.

The accompanying drawing represents a sectional elevation of an apparatus embodying my invention and for carrying out my improved method.

A designates a closed receiver, which may be constructed of boiler-plate of sufficient strength to withstand an internal pressure considerably in excess of the atmospheric pressure. This receiver may be of any desirable size or shape, and in it are arranged, in tiers, the trays B, containing soda-ash, which are of the same kind as those commonly employed to contain soda-ash when it is subjected to the action of carbonic-acid gas in the usual way. The trays B may be introduced into and withdrawn from the receiver A through a man-hole or door, *a*, and they are so arranged therein as to leave spaces between them for the free passage of gas.

C designates a pump for supplying gas from any suitable source of supply through a pipe, *b*, to the receiver A; but in lieu of the pump any other means may be employed for supplying gas under a pressure in excess of that of the atmosphere. When the soda-ash is subjected to gas under such a pressure it more readily and rapidly takes up the additional equivalent of carbonic-acid gas necessary to convert it into bicarbonate of soda.

D designates a chamber containing an abutment, E, and F designates a pipe or conduit entering the chamber and terminating in front of the said abutment.

G designates an injector nozzle or jet, which is supplied with carbonic-acid gas by a pipe, H, leading from the receiver A, and through this pipe all the surplus gas which is not taken up by the soda-ash in said receiver passes to the nozzle or jet G and creates a blast or current through the pipe or conduit F.

In front of the jet or nozzle G is a hopper, I, which communicates with the pipe or conduit F, and which is provided with gates or valves *c d*. When the hopper is to be filled with soda-ash the gate *c* at the mouth is closed and the gate *d* opened; but when the contents of the hopper is to be delivered to the pipe or conduit F the gate *d* is closed and the gate *c* opened. The soda-ash, entering the pipe or conduit F, is impelled by the blast or current of gas against the abutment E, and by its impact is scattered in a minutely-divided state, in which state, and before it settles, it is subjected to the action of the gas, which enters with it through the pipe or conduit F.

Above the chamber D, I have represented a second chamber, J, which communicates therewith by an opening, *e*, and is itself provided

with an opening, *f*, for the escape of any air or gas after the carbonic acid has been absorbed by the soda-ash to form bicarbonate of soda.

To prevent the bicarbonate of soda from escaping from the chamber J through the opening *f*, I may protect the opening by a screen, *g*, of muslin or similar material. Of course I may employ the receiver A and the pump C without the other part of the apparatus; but when the whole apparatus is employed the carbonic-acid gas is first used to treat the soda-ash in the receiver, and all acid which is not taken up thereby is subsequently combined with the scattered soda-ash in the chamber D.

I do not claim broadly the production of bicarbonate of soda by subjecting dry carbonate of soda on shelves to the action of carbonic acid; but

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

1. The method of producing bicarbonate of soda consisting in subjecting soda-ash to the action of carbonic-acid gas under a pressure in excess of atmospheric pressure, substantially as herein described.

2. The combination, with a closed receiver and a pump or other means for supplying carbonic-acid gas thereto under a pressure in excess of that of the atmosphere, of a closed chamber containing an abutment, an injector for impelling soda-ash into said chamber against said abutment, and a pipe for conducting surplus gas from said receiver to said injector for operating the latter, substantially as and for the purpose herein described.

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