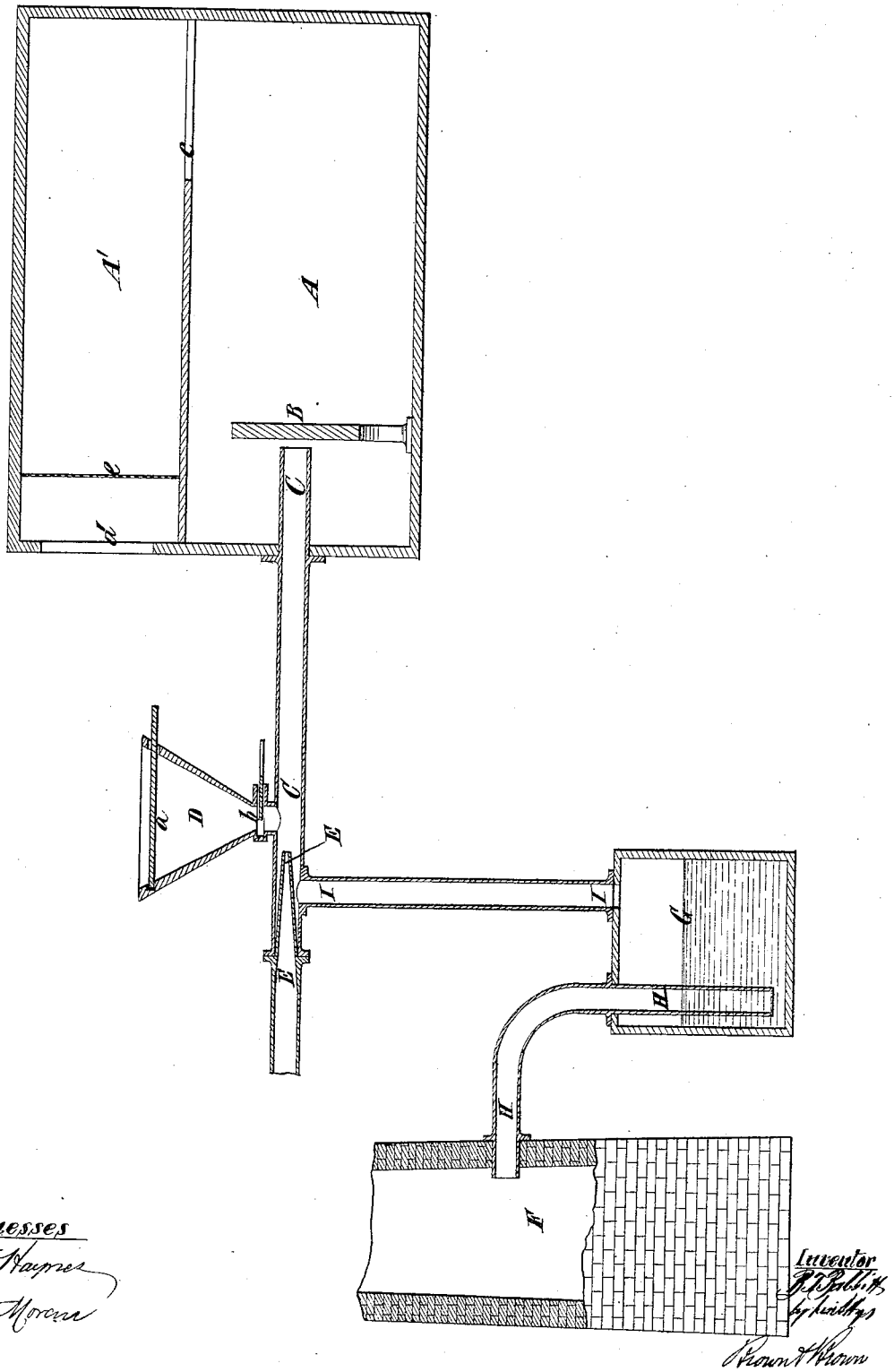
(No Model.)

B. T. BABBITT.

MANUFACTURE OF BICARBONATE OF SODA.

No. 265,367. 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. 265,367, dated October 3, 1882.

Application filed February 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN T. BABBITT, of the city of New York, in the county and 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.

The invention consists in reducing soda ash to powder and scattering it by impelling it against a solid body or abutment, and subjecting it while so scattered and before it settles to the action of carbonic-acid gas, whereby the soda is subjected in a state of extremely minute subdivision to the action of the carbonic acid and quickly converted into bicarbonate of soda.

The invention also consists in the process of manufacturing bicarbonate of soda by impelling soda-ash against a solid body or abutment by means of a blast composed of or comprising carbonic-acid gas.

The invention also consists in the process of manufacturing bicarbonate of soda by impelling soda-ash against a solid body or abutment and inducing a current of carbonic-acid gas with the soda-ash by means of a blast of superheated steam.

The invention also consists in novel apparatus for carrying out my invention, hereinafter described and claimed.

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

A designates a room, chamber, or compartment wherein is supported in any suitable manner a block or abutment, B, of metal, stone, or any other suitable material calculated to resist the impact of soda-ash against it.

C designates a conduit, here represented as arranged horizontally, and terminating in close proximity to the block or abutment B, and D designates a hopper, which is adapted to receive soda-ash and which communicates with said conduit. The hopper is represented as provided with gates or valves *a b* at its top and at its outlet, which communicates with the conduit C, and when the hopper is to be filled the gate or valve *b* is closed and the gate or valve *a* is opened, and when the material is to be delivered from the hopper the gate or valve *a* is closed and the gate or valve *b* is opened.

E designates an injector-nozzle, which enters the conduit C behind the hopper D, and by passing a blast of steam or gas through said nozzle soda-ash delivered from said hopper will be impelled through said conduit into the compartment A and against the block or abutment B.

F designates a chimney or smoke-flue, and G designate a wash-box, which is connected with the chimney or flue F by a pipe, H, which terminates below the level of water in it, and which is connected with the conduit C by a pipe, I.

For operating the injector E, I may employ steam at a pressure of from one hundred to two hundred pounds, and this steam is preferably superheated to a temperature of 400° to 500° Fahrenheit. The blast of steam serves not only to impel the soda-ash against the block or abutment B, but it also induces a current of carbonic-acid gas from the chimney or flue F through said conduit. The soda-ash, by its impact against the block or abutment, is reduced to the finest powder and scattered throughout the compartment A, and while it is in suspension, and before it can settle, it is attacked by the carbonic-acid gas, which, owing to its intimate contact with the soda, combines therewith very quickly, and thereby forms bicarbonate of soda. The moisture of the steam enables the gas to take hold of the soda-ash much more quickly, and thereby hastens the process, and superheated steam is desirable because it gives sufficient moisture for the purpose and not so much as to be undesirable.

In lieu of impelling the soda-ash by means of a blast comprising carbonic-acid gas, I may force gas directly into the compartment A independently of the conduit C, which will then serve for the passage of steam and soda-ash only; or I may impel the soda-ash by a blast of compressed carbonic-acid gas alone, and steam may be dispensed with.

I may employ the compartment A alone; but I prefer to arrange above it a second compartment, A′, which communicates with it by an opening, *c*, and which is provided with a gas-outlet, *d*, opening into the atmosphere, and protected by a screen of cloth or other material, *e*. This arrangement tends to keep the soda longer in suspension and affords a greater length of time for carbonic acid to combine with it.

I do not claim the manufacture 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 process of making bicarbonate of soda, consisting in reducing soda-ash to powder, and at the same time scattering it by impelling it against a solid body or abutment, and subjecting it while so scattered to the action of carbonic-acid gas, substantially as herein described.

2. The process of making bicarbonate of soda, consisting in impelling soda-ash against a solid body or abutment by means of a blast composed of or comprising carbonic-acid gas, substantially as herein described.

3. The process of making bicarbonate of soda, consisting in impelling soda-ash against a solid body or abutment and inducing a current of carbonic-acid gas by means of a blast of superheated steam, substantially as herein described.

4. The combination, with a lower compartment containing an abutment against which soda-ash is to be impelled, of an upper compartment communicating therewith and provided with an outlet-opening for gas, protected by a screen, substantially as herein described.

5. The combination of a chamber containing an abutment, a conduit, and a hopper communicating with said conduit, a chimney or smoke-flue, a pipe or pipes connecting said conduit with said chimney, and an injector for impelling soda-ash through said conduit against said abutment and for inducing a current of carbonic-acid gas through said conduit, substantially as herein described.

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