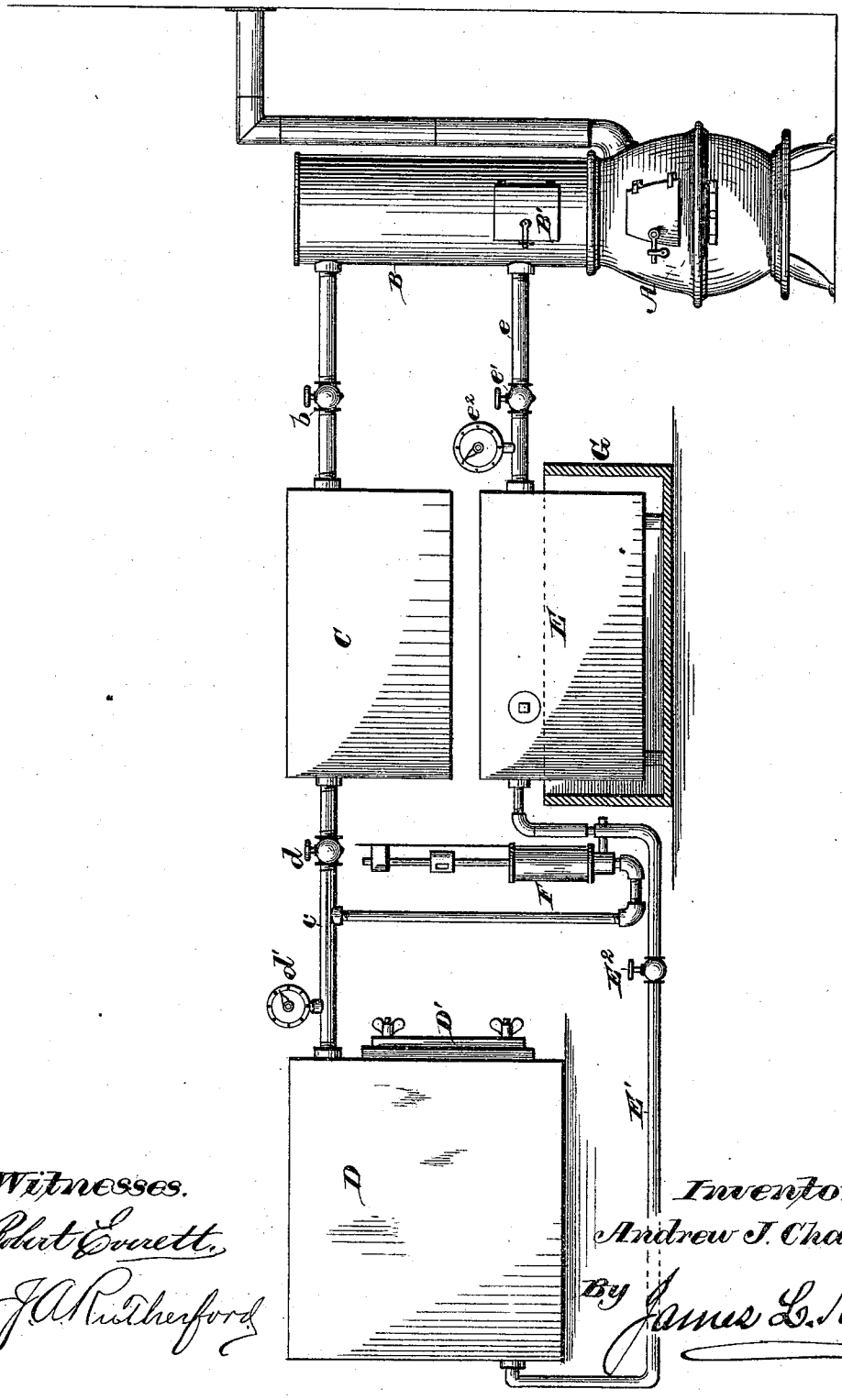
(No Model.)

A. J. CHASE.

PROCESS OF AND APPARATUS FOR CURING ARTICLES OF FOOD.

No. 275,145. Patented Apr. 3, 1883.



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UNITED STATES PATENT OFFICE.

ANDREW J. CHASE, OF BOSTON, MASSACHUSETTS.

PROCESS OF AND APPARATUS FOR CURING ARTICLES OF FOOD.

SPECIFICATION forming part of Letters Patent No. 275,145, dated April 3, 1883.

Application filed December 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. CHASE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Process of and Apparatus for Curing Articles for Food, of which the following is a specification.

One of the objects of this invention is to cure meats and fish in such manner that the article, when cured, shall retain its original flavor and nutritive properties, and also so that, in curing the same, oversalting and a consequent destruction of some of its principal nourishing elements shall be avoided, and only sufficient salting to render the article of food palatable required.

A further object of my invention is to economize the agents employed for curing the meats or fish, and to give to the articles to be cured the full benefit of the curative properties of such agents.

These objects I accomplish in the manner and by the means hereinafter described and claimed, and illustrated in the accompanying drawing, which is an elevation of an apparatus for carrying the invention into effect.

Referring by letter to the drawing, A indicates a furnace or other suitable heater, which is employed for the purpose of heating the generator B, provided with a door, B′. This generator connects by a pipe or flue with the cooling-reservoir C, and a cock or valve, *b*, is arranged within said flue or pipe, so that communication between the generator and the cooling-reservoir can be established or closed, as may be required. The cooling-reservoir C communicates with a curing-chamber, D, through the medium of a pipe, *c*, which is provided with a suitable valve or cock, *d*, and also, if desired, with a pressure-gage, *d′*. The curing-chamber is adapted to receive the meats and fish to be cured, and can be provided with shelves, hooks, or other supports for the articles requiring treatment. The door D′ of the chamber will be adapted to be closed, so as to render the chamber air-tight, whereby the air within the same can be partially exhausted.

E indicates the condenser, which connects with the generator by a pipe, *e*, provided with a cock or valve, *e′*, and with a pressure-gage, e^2. The condenser also connects with the curing-chamber through the medium of a pipe, E′, which is provided with a suitable valve or cock, E^2. By means of this pipe the air from the curing-chamber can be returned to the condensing-chamber. This condensing-chamber can be supported in a tank, G, for containing ice or some cooling or freezing mixture, whereby the air condensed therein can be relieved of its moisture before it is allowed to enter the generator. The condenser is also connected with both the curing-chamber D and the cooling-chamber through the medium of an air-pump, F, and suitable pipe-connection connecting the air-pump with pipes *c* and E′, whereby the air can be exhausted from the curing-chamber, or from both the curing-chamber and the cooling-reservoir, and forced into the condenser.

Having now described the construction of an apparatus for carrying my invention into effect, I will first describe the use of the said apparatus in connection with the air-pump.

To cure meats or fish I place the same within the curing-chamber D and close the latter air-tight. Communication is then established between the curing-chamber and the cooling-reservoir and closed between the latter and the generator, after which the air is exhausted from the said two communicating members and compressed within the condenser E by means of the air pump. Any suitable material for generating an antiseptic gas—such, for example, as brimstone—is placed in the generator and heated so that it will give out gas for charging the cooling-reservoir. By opening communication between the generator and the cooling-reservoir the latter will be charged with the gas, and by opening communication between the condenser and the generator air from the former will pass into the latter, so as to take the place of the air which is charged with gas and passed into the cooling-reservoir. From the latter the charge of gas enters the curing-chamber under pressure, caused by the expansion of the gas or air in the generator and pipes, and hence the gas is caused to enter the distended pores of the meat, fish, or poultry. This process can be repeated as often as may be necessary by manipulating the cocks and operating the pump in the man-

ner hereinbefore described. If desired, the meat or fish can also be smoked by placing corn-cobs or some other suitable article in the generator, and hence the articles within the curing-chamber can be thoroughly smoked and cured.

When considerable drying is necessary the condenser E can be made very cold by the use of a suitable freezing mixture in tank G, or in any other convenient way, and as the air is pumped from the curing-chamber and into the condenser the moisture will be expelled in proportion to the lowness of temperature to which it is subjected before returning to the curing-chamber. In this way the apparatus could be used as a drier independent of the employment of antiseptic gas or gas and smoke. I propose, however, to employ a gas which shall thoroughly destroy all animal or vegetable germs of life which may be concealed in the food tissue, thus curing the article of food, so that it can be safely eaten in a raw state, if so desired. By my improved method choice meats and fish can be preserved comparatively fresh for a long time and the necessity of oversalting the same avoided. It will be seen, however, that after exhausting the air from the curing-chamber, communication can first be established between the generator and the curing-chamber by opening the cocks *b* and *d*, respectively located in the pipes between the cooling-chamber C and the generator and curing-chamber. Air will also be let into the generator from condenser E to supply the place of the air which, by reason of its expansion, will pass from the generator to the cooling-chamber, and thence to the curing-chamber. If, now, the cock E^2 in pipe E′, between the curing-chamber and the condenser, is opened, air or gas will pass from the curing-chamber to the condenser, and thence to the generator, as a source of supply to the latter; hence, the air or gas, becoming heated in the generator, will flow into the curing-chamber, and then back to the generator through the condenser and lower pipes, E′ and *e*, whereby a steady and continuous automatic circulation will be maintained. In this way the air or gas is utilized repeatedly, so that the meats, fish, or poultry will derive the full benefit of the curing agent, whether such agent be gas, or air heated with or without being impregnated with gases. By opening the four cocks *b*, *d*, E^2, and *e′* and heating the air in the generator, either with or without placing some gas-generating substance in the generator, a continuous circulation will be gradually established through the several parts. While the air-pump, or some equivalent therefor, is essential for producing a vacuum, it will be obvious that after the process is once started the operation of the pump or other vacuum-producing means can be stopped, for the reason that the heat developed in the generator would serve as a motive power to send the curative agent over through the top pipes by expansive force, such agent returning through the bottom pipes to the generator to be reused.

Having thus described my invention, what I claim is—

1. The herein-described process of curing articles of food, said process consisting in placing the food in a curing-chamber, wholly or partially exhausting the air therefrom, driving a charge of antiseptic gas or air, or both combined, from a generator through a cooling-chamber, thence through a curing-chamber, and finally condensing the moisture taken up thereby by passing said gas or air through a condensing-chamber before returning it to the generator, whence it is again driven through the cooling-chamber and back to the curing-chamber, substantially as described.

2. The process herein described of curing articles of food, which consists in generating gas or smoke by means of heat in a generator, cooling and then admitting the charge of gas or smoke into the curing-chamber to permeate the articles to be cured, and then condensing the air derived from the curing-chamber and admitting it into the generator to be again used, substantially as described.

3. The combination, with a generator, of a cooling-chamber connected with the upper part of the generator, and also connected with a curing-chamber, and a condenser connected with the curing-chamber and with the lower portion of the generator, whereby a constant circulation can be established through said members, substantially as described.

4. The combination, with a generator, of a curing-chamber, a condenser, a cooling-chamber between the generator and the curing-chamber for restoring the normal temperature of the air as it passes from the latter to the former, and an air-pump, said members being connected by pipes provided with cocks or valves, substantially as described.

5. The combination, with a generator, of a cooling-reservoir, a curing-chamber, a condenser, and an air-pump, said members being connected by pipes provided with valves or cocks, and being relatively arranged so that a circuit can be established from the condenser to the generator, from the latter to the cooling-reservoir, to the curing-chamber, and from both the curing-chamber and the cooling-reservoir back to the condenser, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ANDREW J. CHASE.

Witnesses:
E. P. NETTLETON,
THOMAS F. FEE.