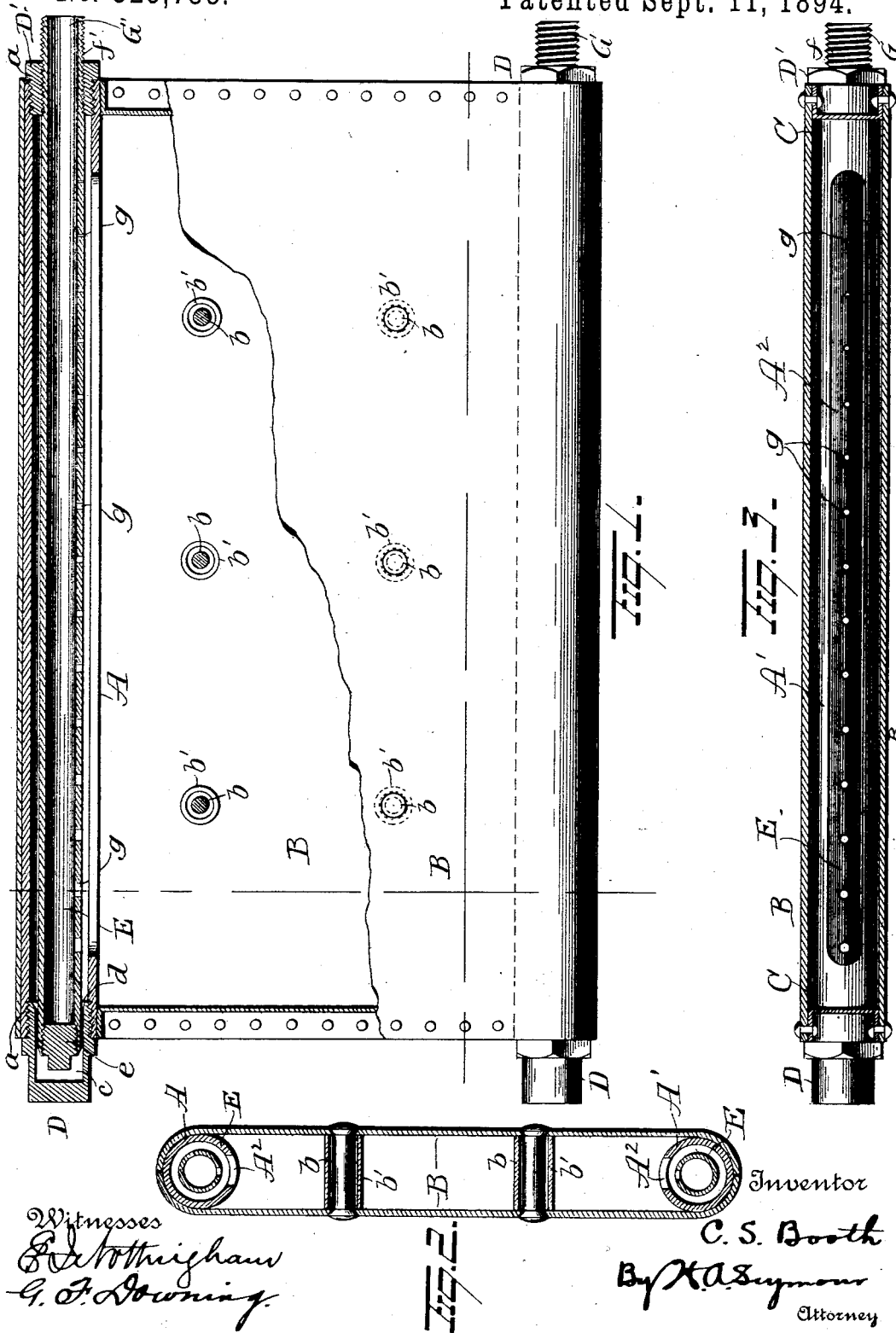


(No Model.)

C. S. BOOTH.

No. 525,733.

Patented Sept. 11, 1894.



UNITED STATES PATENT OFFICE.

CHARLES S. BOOTH, OF OAKLAND, CALIFORNIA, ASSIGNOR OF TWO-THIRDS
TO THOMAS L. ARMSTRONG AND EDWARD B. NORTON, OF SAME PLACE.

FREEZING-PLATE FOR ICE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 525,733, dated September 11, 1894.

Application filed March 23, 1894. Serial No. 504,857. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. BOOTH, a resident of Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Freezing-Plates for Ice-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in "freezing plates" for ice machines,—the object of the invention being to so construct a freezing plate that brine or other fluid can be made to circulate through it evenly and at a uniform velocity throughout the entire extent of the plate.

A further object is to construct a freezing plate for an ice machine in such manner that it can be readily cleaned should it become clogged.

A further object is to produce a freezing plate for an ice machine which shall be simple in construction and effectual, in every respect, in the performance of its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings: Figure 1 is a face view of my improved freezing plate partly in section. Fig. 2 is a vertical cross section. Fig. 3 is a horizontal cross section.

A, A', represent two pipes, each having interior screw threads *a*, at each end, and each having an elongated slot A², which slots extend to within about two inches of the ends of said pipes. The pipes A, A' are placed a proper distance apart and are inclosed by the sides of the freezing plate, said sides being composed of two plates of galvanized iron B, B, the upper and lower edges of which are made to embrace the respective pipes A, A', as shown in Fig. 2, and are soldered to said pipe. Thus it will be seen that the pipe A is located at the top of the freezing plate and the pipe A' at the bottom thereof. The plates B, B, are connected at their ends by means of narrow plates C, C, bolted or riveted thereto. At intermediate points the plates B, B,

are connected by rivets *b* and encircling these rivets sleeves *b'* are located between the plates B, B,—the purpose of these rivets and sleeves being to assist the plates B in withstanding the pressure brought to bear against them when the device is in operation. One end of each pipe A, is provided with a closed plug D having screwthreads to mesh with the internal screwthreads *a* at that end of the pipe, each of said plugs being made with a chamber *c*, and the inner end of each plug is beveled as at *d*, whereby to properly direct the end of a pipe E thereinto, there being one of these pipes E within each pipe A, A', and the pipes E are retained properly in the center of the pipes A, by the chambered plug D at one end, and by means of a sleeve or collar D' at the other end. One end of each pipe E is internally screwthreaded for the reception of a screwthreaded plug *e* which closes said end of the pipe, and the other end of each pipe E is screw threaded exteriorly as at *f*, for the reception of the sleeve or collar D'. The sleeve or collar D' is placed on the end of pipe E and screwed to the end of the screw threads on said pipe and then soldered. The exterior of the sleeve or collar D' being screw threaded, it is then screwed into the end of the pipe A, this connection between the pipes A A' and E being the same both at the top and the bottom of the freezing plate. The pipe E is made with a number of perforations *g* which should exactly align with the elongated slots in the pipes A, A', and the perforations in said pipes E at the inlet end of the freezing plate are made smaller than those at the opposite end, for a reason which will presently be made apparent.

In the construction of freezing plates for ice machines it has heretofore been proposed to provide single pipes at the top and bottom thereof and to perforate these single pipes. The perforations are liable to become clogged after the plate has been in use for a time and with single pipes secured within the top and bottom of the plate, access cannot be had to them for the purpose of cleaning the perforations. By providing outer slotted pipes A A' and interior removable perforated pipes E the latter can be readily withdrawn from the former, the perforations cleaned and the

pipe E again inserted within the pipe A and secured as before.

The freezing plate, when in use, operates as follows: I submerge the plate (or a series of such plates) in clean water in a suitable tank, the plates being arranged vertically in said tank. A suitable pipe is connected with the lower inlet G and another pipe with the outlet G'. Brine is made to flow into the plate at inlet G, and from the lower pipe E the brine will flow through the perforations therein and fill the plate, and then passing through the perforations in the upper pipe E and escaping through the latter. The reason that the perforations at the inner ends of the pipes E are smaller than those at the other end, is so that the brine running into the lower pipe will distribute itself evenly the entire length of the plate. If these perforations were the same size the entire length, brine coming in under pressure would discharge itself through the perforations nearest the inlet and, of course, would pass up the plate and out at a few holes nearest the outlet end, but by making some of these holes larger than others, the brine will distribute itself the entire length of the pipe or plate and discharge evenly the entire length of the upper or outlet pipe. Thus it will be seen that the brine will be made to circulate through the plate evenly and at the same velocity throughout the entire surface of the plate.

My improvements are very simple in construction, comparatively cheap to manufacture, can be easily kept in good working order and are effectual, in every respect in the performance of their functions.

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

1. The combination with the walls of a freezing plate, of removable perforated pipes located between said walls at diametrically opposite edges of the plate, substantially as set forth.

2. The combination with the walls of a freezing plate, of a perforated pipe located between said walls, the perforations at the inlet end of said pipe being smaller than those at the opposite end, substantially as set forth.

3. In a freezing plate, the combination with the walls thereof, of pipes located between said walls and having slots therein, and a perforated pipe within each of said first-mentioned pipes, substantially as set forth.

4. In a freezing plate, the combination with the walls thereof, of pipes located between

said walls, each of said pipes having an elongated slot therein, and perforated pipes removably secured within said first-mentioned pipes and having therein perforations in alignment with said elongated slots, substantially as set forth.

5. In a freezing plate, the combination with the walls thereof, of pipes located between said walls, a plug closing one end of each of said pipes, a perforated pipe located within each of said first mentioned pipes and having a bearing at one end in said plugs, the perforations of said pipes being adapted to align with slots in the first-mentioned pipes, and collars adapted to close the opposite ends of said first-mentioned pipes and encircling the perforated pipes, substantially as set forth.

6. In a freezing plate, the combination with the walls thereof, of slotted pipes secured between said walls, a hollow plug having a beveled inner end, closing one end of each of said pipes, a collar adapted to enter the other end of each pipe, and a perforated pipe within each first-mentioned pipe, one end of each perforated pipe being closed and having its bearing in said hollow plug and the other end passing through said collar, the perforations of said pipes being adapted to align with the slots of the first-mentioned pipes, substantially as set forth.

7. In a freezing plate, the combination with the walls thereof, of pipes having slots, secured between said walls, a plug closing one end of each pipe, a perforated pipe within each slotted pipe and having its perforations in alignment with said slots, and a removable plug at one end of each perforated pipe, substantially as set forth.

8. In a freezing plate, the combination with the walls thereof, of pipes having slots, secured between said walls, both ends of each pipe being internally screwthreaded, a hollow plug adapted to screw into one end of each pipe, a screwthreaded collar adapted to screw into the other end of each pipe, and a perforated pipe within each slotted pipe and having their bearings at one end within said hollow plugs and adapted at the other end to mesh with screwthreads in said collars, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

C. S. BOOTH.

Witnesses:

E. B. NORTON,
J. C. BAKER.