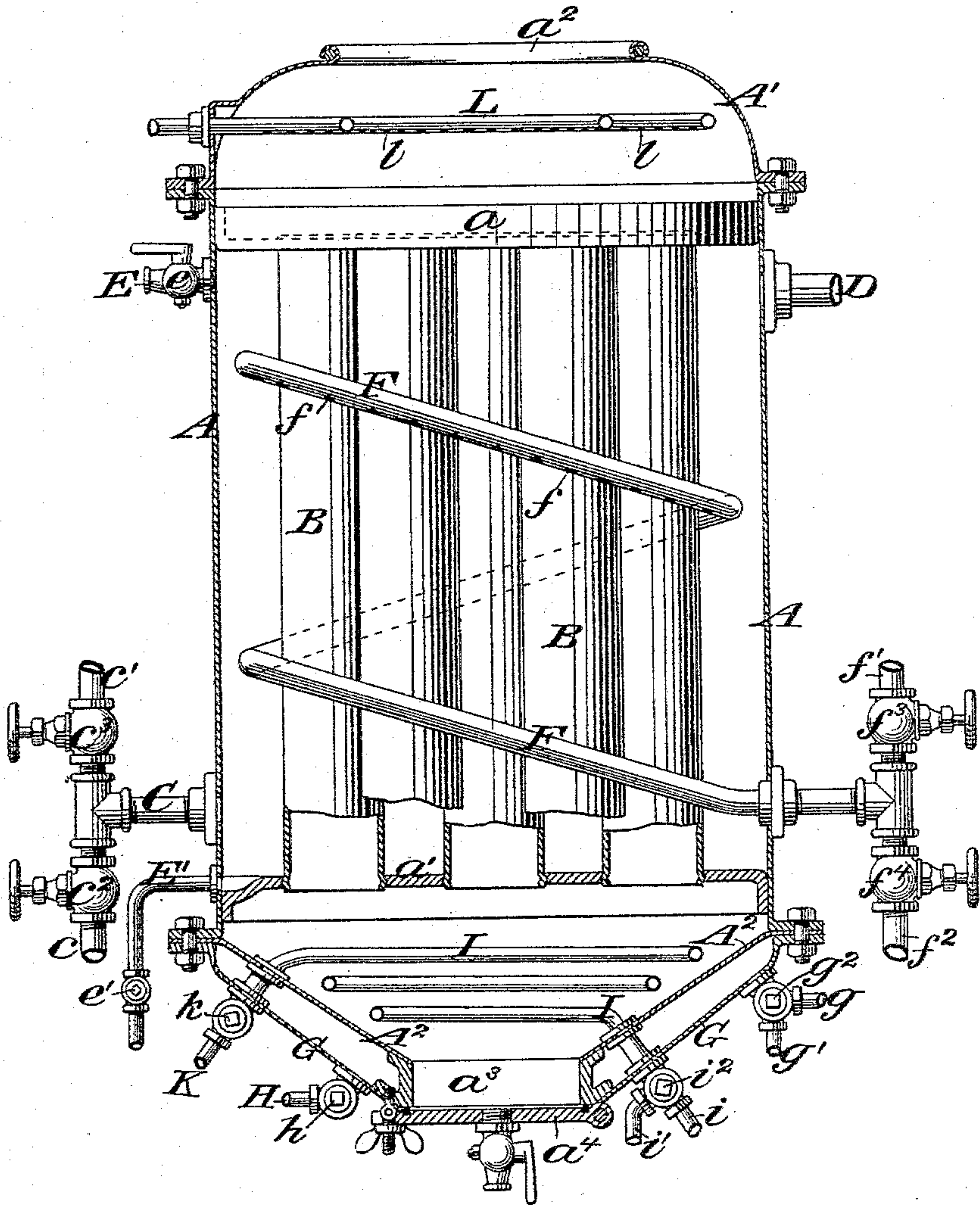


(No Model.)

T. BURKHARD.
COOLING APPARATUS.

No. 494,841.

Patented Apr. 4, 1893.



Witnesses:

Ol. Sundgren
George Barry.

Inventor:

Thomas Burkhard
by attorneys
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UNITED STATES PATENT OFFICE.

THOMAS BURKHARD, OF BROOKLYN, NEW YORK.

COOLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 494,841, dated April 4, 1893.

Application filed July 22, 1892. Serial No. 440,878. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BURKHARD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful
5 Improvement in Cooling Apparatus, of which the following is a specification.

My invention relates to an improvement in cooling apparatus for candy and other fluid
10 or semi-fluid substances in which the substance to be cooled is passed along one or more conduits surrounded by the cooling medium, provision being made for regulating the temperature of said cooling medium at pleasure.

A practical embodiment of my invention is
15 represented in the accompanying drawing in which the cooling apparatus is shown in side elevation, partly in section.

The case which surrounds the cooling medium through which the substance to be cooled
20 is passed is represented by A and is provided with heads a a' located respectively at its upper and lower ends. The heads a and a' are provided with suitable openings for receiving the opposite ends of tubular conduits B
25 through which the substance to be cooled is conducted. The number of said tubular conduits may be determined at pleasure, in the present instance I have provided for seven, one at the center and six spaced from each
30 other and from the central tube and surrounding the central tube.

The casing A is provided with an arched removable top A' having an opening A^2 for the reception of the substance to be cooled
35 and with a funnel shaped base A^2 into which the material from the tubes B falls and by which it is directed to an outlet opening a^3 , closed by a door a^4 . The cooling medium enters the casing A through the inlet pipe C
40 and, after circulating around the several tubes B within the casing, passes out at the outlet D, at or near the top of the casing. The branch pipes c and c' connect with the inlet pipe C and are provided with suitable stop
45 cocks c^2 , c^3 , so that either steam, or hot water, or cold water may be admitted through the pipe C at pleasure. An air escape nozzle E provided with a cock e , is provided near the upper end of the casing and a drain pipe E'
50 provided with a cock e' , is provided at the base of the casing.

For the purpose of regulating the temperature of the cooling medium within the casing to keep the substance being cooled at the proper consistency, I provide a coil pipe F
55 which, enters the casing near the bottom and winds one or more times around the group of tubes B. The said pipe is provided with a series of perforations f within the casing, through which the hot or cold medium may
60 be ejected into the medium surrounding the tubes within the casing. Branch pipes f' and f^2 communicate with the pipe F at its inlet end and are provided with suitable stop cocks
65 f^3 and f^4 for the purpose of admitting hot water, or steam, or cold water at pleasure.

The funnel shaped base A^2 is surrounded by a false bottom G, between which and the bottom of the base A^2 there is a chamber
70 formed for the circulation of a heating or cooling medium. Such heating or cooling medium may be admitted into the chamber G through the one or the other of the branch
75 pipes g or g' , controlled by the two-way cock g^2 , and after circulating through the chamber may pass out through the outlet H under the control of the cock h . To further control the temperature within the funnel shaped base, I provide therein a pipe coil I, into which the
80 hot or cold medium may be admitted through the one or the other of the branch pipes i i' under the control of the two-way cock i^2 , and after passing through the coil may pass out through the outlet K under the control of the
85 cock k .

For purposes of cleaning the interiors of the tubes B, I provide a pipe coil L within the top A' and extending over the upper ends of the tubes B for the purpose of admitting steam
90 spray. The pipe coil L is provided on its under side with a series of perforations l , through which the steam may escape into the tubes and onto the head surrounding their upper ends.

What I claim is—

1. The combination with the casing, its heads, the tubes connecting the heads and the means for maintaining the circulation of a cooling medium within the casing, of the funnel shaped base at the lower end of the casing, the chamber for a circulating medium
100 around the base, the pipe coil within the cham-

ber formed by the funnel shaped base and means for maintaining a circulation of heating and cooling mediums through the pipe coil and circulating chamber, substantially as set forth.

2. The combination with a casing, its heads, the tubes connecting the heads and the chambers at the opposite ends of the casing, of a spray pipe arranged in a horizontal coil with-

in the chamber at the upper end of the casing and provided with perforations on its under side for spraying the steam directly into the upper ends of the tubes for cleaning them, substantially as set forth.

THOMAS BURKHARD.

Witnesses:

FREDK. HAYNES,
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