(No Model.)

H. HEIDE.

CANDY CREAM HEATER AND COOLER.

No. 470,822. Patented Mar. 15, 1892.

Fig. 1.

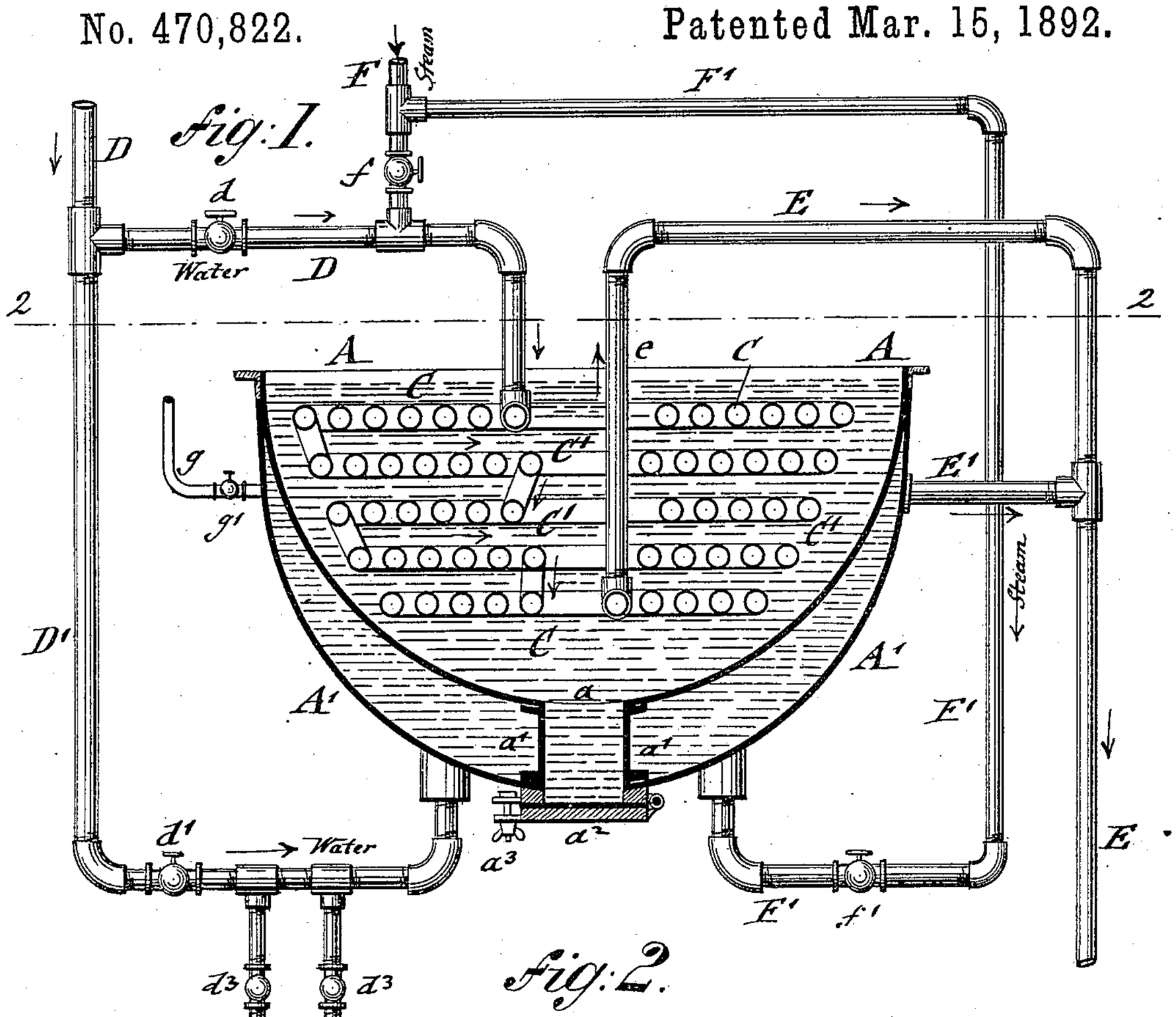
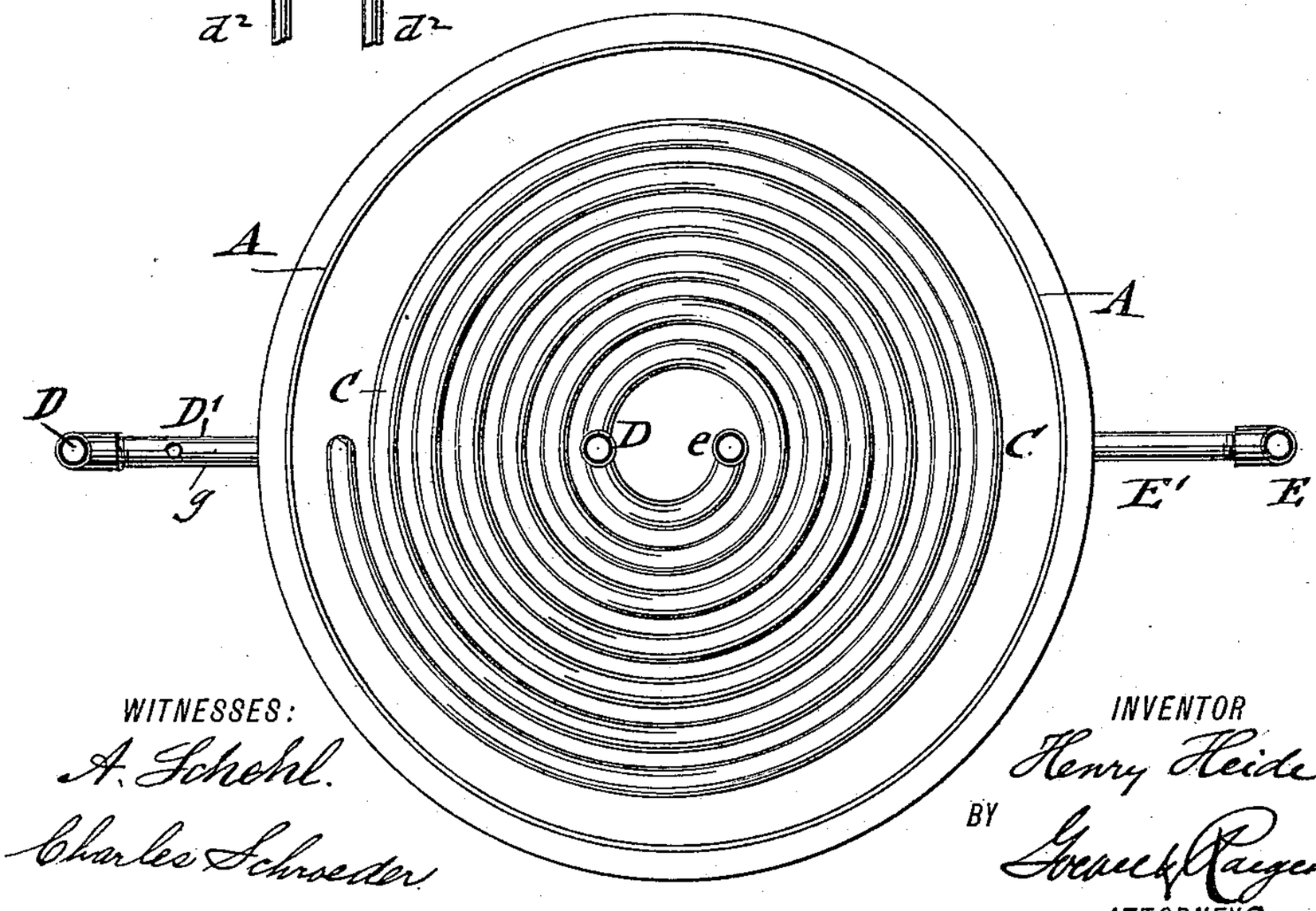


Fig. 2.



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CANDY-CREAM HEATER AND COOLER.

SPECIFICATION forming part of Letters Patent No. 470,822, dated March 15, 1892.

Application filed March 4, 1891. Serial No. 383,785. (No model.)

To all whom it may concern:

Be it known that I, HENRY HEIDE, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Apparatus for Cooling Hot Liquid Sugar, of which the following is a specification.

This invention relates to an improved apparatus for cooling boiled liquid sugar that is to be used in the manufacture of cream-candy, so that the change from the crystalline structure into a soft creamy mass can be accomplished in a quicker and more convenient manner. For this purpose my improved cooling apparatus consists of a cooling-receptacle having a jacket extending around the same and a pipe-coil composed of a series of horizontal pipe-sections arranged at different levels within the receptacle, said pipe-coil and jacket being connected with a water-supply pipe and with a common discharge-pipe.

The invention consists, secondly, of the combination, with a cooling-receptacle having a jacket surrounding the same, of a pipe-coil formed of a series of horizontal pipe-sections arranged at different levels within the receptacle, a water-supply pipe connected with the pipe-coil and jacket, steam-supply pipes connected with the water-supply pipe and jacket, stop-cocks for shutting off the water and steam supply pipes, and a common discharge-pipe for the water or steam in the pipe-coil and jacket.

In the accompanying drawings, Figure 1 represents a vertical central section of my improved apparatus for cooling hot liquid sugar preparatory to making cream-candy from the same; and Fig. 2 is a horizontal section of the same on line 2 2, Fig. 1, showing a plan view of the pipe-coil.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents an open receptacle in the shape of a kettle, which is provided with a jacket A′, that extends around the same, with a bottom-opening *a*, and with a discharge-tube *a′*, that is closed by a hinged trap-door a^2, having a fastening device a^3 for tightly closing the discharge-tube *a′*, so as to prevent any escape of sugar from the interior of the receptacle A while it is exposed to the cooling action in the same. In the interior of the receptacle A is arranged a pipe-coil C, which is formed of a number of horizontal coil-sections C′, that are arranged at different levels below each other within the receptacle, the upper end of the pipe-coil C being connected with a water-supply pipe D, which is connected by a branch pipe D′ with the bottom part of the jacket A′. The water-supply pipes D D′ are provided with stop-cocks *d d′*, so that the supply of cold water to the pipe-coil C and jacket A′ can be shut off whenever desired. The lower end of the pipe-coil C is connected by an upwardly-extending pipe *e* to a discharge-pipe E, which is connected by a branch pipe E′ with the upper part of the jacket A′, said branch pipe acting as an overflow-pipe for the cooling-water supplied to the jacket. A steam-supply pipe F, having a stop-cock *f*, is connected with the water-supply pipe D at a point between the coil C and the stop-cock *d*, so that when the latter is shut off steam can be supplied to the pipe-coil C. A branch steam-pipe F′ is connected with the lower part of the jacket, the branch steam-pipe F′ being also provided with a stop-cock *f′* for shutting off the supply of steam to the jacket. The jacket A′ is further provided at its upper part with a small vent-pipe *g*, having a stop-cock *g′* for permitting the escape of the air when the jacket is to be filled with water. The water for cooling is either supplied by means of a force-pump or from a tank on the top of the building, into which the water is pumped.

The branch supply-pipe D′ is provided, preferably, with two small discharge-pipes d^2, each having a stop-cock d^3, which is opened whenever either the steam and water of condensation or the cooling-water is to be discharged from the jacket. When the cooling-water is to be discharged preparatory to admitting steam for heating the receptacle A, the stop-cock *d′* and the stop-cock d^3 of the water-exit pipe d^2 are opened and the water, which is generally well-water, drawn off to the sewer, while when the steam and water of condensation are to be discharged from the jacket the stop-cock *d′* and the stop-cock of the water-exit pipe d^2 are opened and the contents of

the jacket returned to the boiler, while simultaneously air is permitted to enter into the jacket, so as to prevent the formation of a vacuum in the same.

The sugar which is to be worked up into cream-sugar (fondant) is dissolved in a boiling-kettle and then heated to the boiling temperature until a perfectly-clear solution is obtained. This hot liquid sugar is then transferred to the cooling-receptacle A, in which it is cooled off by permitting cold water from the water-supply pipes D D′ to pass through the pipe-coil C and the jacket A′, said cooling operation being necessary preparatory to the kneading or mixing operation by which the liquid sugar is changed into cream sugar. When the reduction of temperature of the liquid mass is accomplished, the latter is transferred by opening the trap-door a^2 of the cooling-vessel into a mixing-machine, located below the same (not shown in the drawings) and there exposed to the usual kneading or mixing action, whereby the crystallizing of the sugar is prevented and a white creamy mass obtained, which is known as "cream-sugar" (fondant.)

During the cooling of the liquid sugar in the receptacle A a layer of sugar is deposited on the cooling-surfaces of the pipe-coil C and the walls of the receptacle A. To transfer the entire body of sugar from the cooling-receptacle to the mixing-machine it is also necessary to remove the adhering body of sugar that has settled on the cooling-surfaces, which, owing to the close proximity of the coil-sections, cannot be accomplished by mechanical means, but is best accomplished by the action of the heat. For doing this quickly the supply of cold water is interrupted by closing the stop-cocks d d' of the water-supply pipes D D′, while the stop-cocks f and f' of the steam-supply pipes F F′ are opened, so that steam is supplied to the pipe-coil C and the jacket A′, whereby the entire apparatus is heated and the sugar that is deposited on the surfaces of the pipe-coil and wall of the receptacle is liquefied and runs into the mixing-machine, where it is mixed or kneaded until the proper consistency required for cream-candy is obtained.

By the apparatus described the hard manual work heretofore required in working up the liquid sugar on marble or metallic cooling-slabs is dispensed with, while, furthermore, a large quantity of sugar can be treated at one time and changed into cream sugar in a quicker, easier, and more uniform manner than by the manual treatment heretofore in use.

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

1. The combination, with a receptacle having a jacket surrounding the same, of a pipe-coil formed of a number of horizontal coil-sections arranged at different levels within the receptacle, a water-supply pipe connected with one end of the coil and with the bottom of the jacket, independent stop-cocks in said supply-pipe for shutting off the supply of water to the pipe-coil and jacket, steam-supply pipes provided with stop-cocks and connected with the pipe-coil and the jacket, and a common discharge-pipe connected to the other end of the coil and the upper part of the jacket, so as to discharge the water or steam, the construction being such that water and steam can be alternately supplied to said coil and jacket, substantially as set forth.

2. The combination, with a receptacle having a jacket surrounding the same, of a pipe-coil formed of a number of horizontal coil-sections arranged at different levels within the receptacle, a water-supply pipe connected with one end of the pipe-coil and with the bottom of the jacket, independent stop-cocks in said supply-pipe for shutting off the supply of water to the coil and jacket, drain-pipes connected with the water-supply pipe for the jacket and provided with stop-cocks, steam-supply pipes provided with stop-cocks and connected with the pipe-coil and the jacket, and a common discharge-pipe connected to the other end of the coil and the upper part of the jacket, the construction being such that water and steam can be alternately supplied to said coil and jacket, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HENRY HEIDE.

Witnesses:
PAUL GOEPEL,
CHARLES SCHROEDER.