No. 856,015. PATENTED JUNE 4, 1907.

E. A. APPELL.

APPARATUS FOR COOLING OR HEATING BEER.

APPLICATION FILED JAN. 22, 1907.

2 SHEETS—SHEET 1.

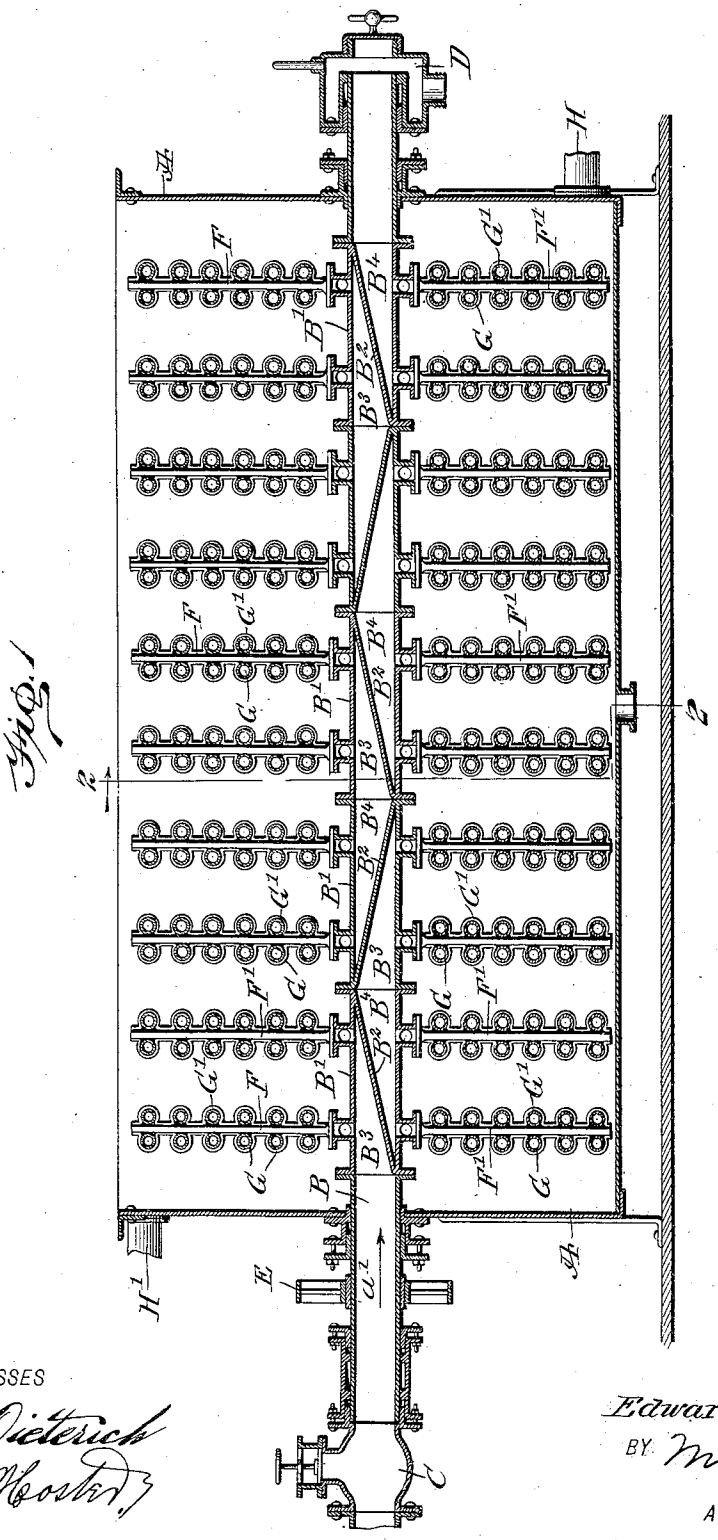

Fig. 1.

WITNESSES

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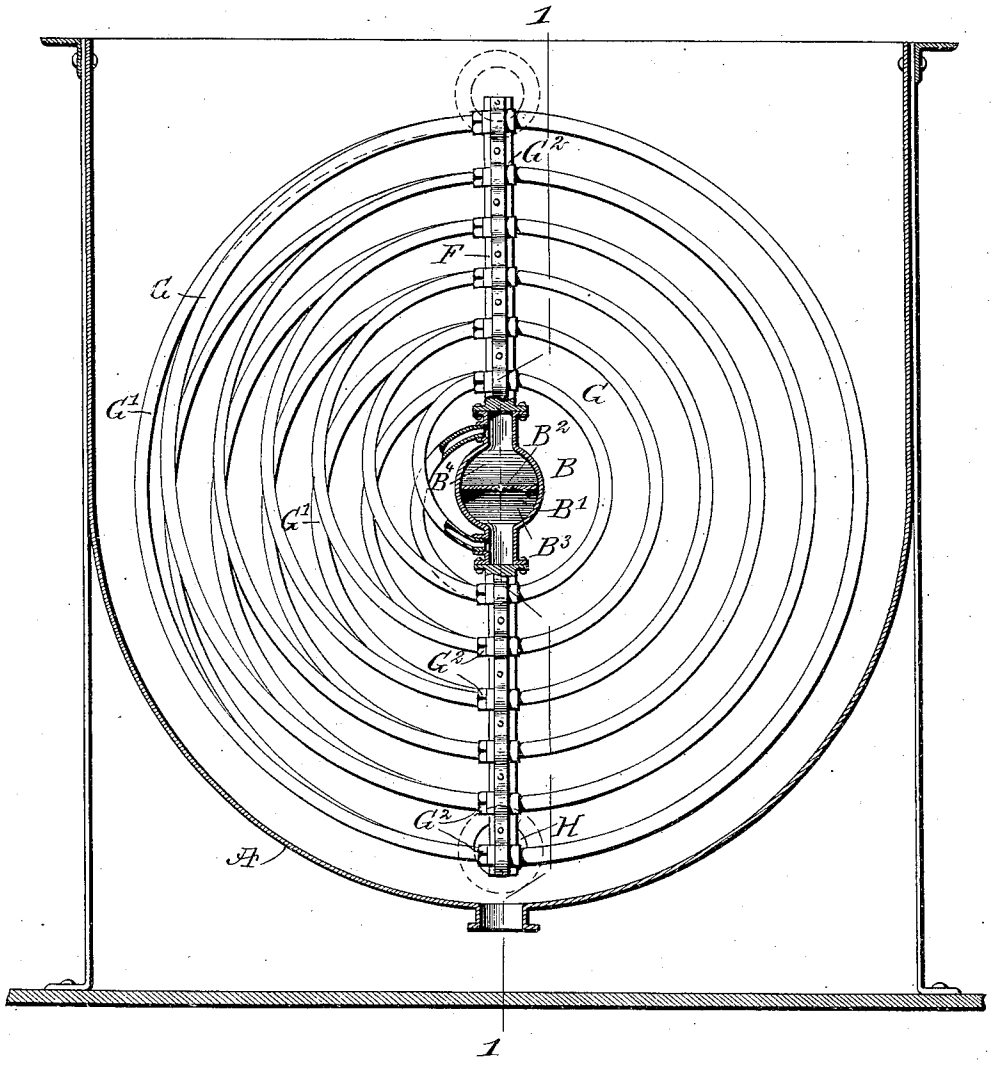
2 SHEETS—SHEET 2.

Fig. 2.



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EDWARD AUG. APPELL, OF NEW YORK, N. Y.

APPARATUS FOR COOLING OR HEATING BEER.

No. 856,015. Specification of Letters Patent. Patented June 4, 1907.

Application filed January 22, 1907. Serial No. 353,411.

To all whom it may concern:

Be it known that I, EDWARD AUG. APPELL, a subject of the German Emperor, and a resident of the city of New York, (borough of Manhattan,) and county and State of New York, have invented a new and Improved Apparatus for Cooling or Heating Beer, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved apparatus for use in breweries and other establishments, and designed for cooling beer and like liquids in a very simple and rapid manner, or for heating fluids by the use of steam or a like heating medium.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the views.

Figure 1 is a longitudinal sectional elevation of the improvement on the line 1—1 of Fig. 2, and Fig. 2 is an enlarged transverse section of the same on the line 2—2 of Fig. 1.

In the ends of a suitably constructed tank A is journaled a hollow shaft B connected at one end with a fixed inlet pipe C, and at its other end with a fixed discharge pipe D, and on the said shaft B outside of the tank A is secured a pulley E connected by belt with other machinery for imparting a rotary motion to the shaft B.

The shaft B within the tank A is preferably made in sections B′ bolted together, and each having a partition B^2 for dividing the section into an inlet chamber B^3 and an outlet chamber B^4, of which the outlet chamber B^4 of one section opens into the inlet chamber B^3 of the next adjacent section, as will be readily understood by reference to Fig. 1. Now each of the inlet chambers B^3 of the sections B′ is connected with the inner or entrance end of one or more spiral tubes G connected at their outer ends with the outer ends of return spiral tubes G′, discharging at their inner ends into the corresponding discharge chamber B^4 of the section.

Each of the spiral tubes G, G′ is made in sections, and are secured to arms F, F′ fastened to the section B′ of the shaft B and radiating therefrom. the individual sections of each spiral tube G or G′ being connected with each other by suitable couplings G^2, as plainly indicated in Fig. 2.

The tank A is provided at one end with a pipe H connected with a pump or other suitable device for supplying the tank A with water or otner cooling medium, and the tank is also provided with an overflow pipe H′ for carrying off the surplus water. Now the beer or other liquid to be cooled and passing from the inlet pipe C into the shaft B, in the direction of the arrow *a*′, passes into the inlet chamber B^3 of the first section B′, and then flows out through the spiral tubes G, to finally pass into the return spiral tubes G′, and from the latter into the outlet chamber B^4, from which the beer passes into the inlet chamber B^3 of the second section B′, to then flow outward through the spiral tubes G and return by the tubes G′ to the outlet chamber B^4 of the second section B′, and this operation is repeated throughout the entire sections of the shaft B and the double spiral tubes G, G′, until the beer finally reaches the discharge end of the shaft B and flows from the said discharge end into the outlet pipe D. Now during the time the beer travels through the hollow shaft B and the double spiral tubes G, G′, the shaft and the said tubes are rotated, so as to cause the spiral tubes and shaft to travel through the cooling medium flowing through the tank A.

From the foregoing it will be seen that an exceedingly large cooling surface is provided for the liquid in a comparatively small space, and a very large amount of liquid can be treated in a very short time.

If desired the apparatus may be used for cooking purposes by placing the fluid to be heated into the tank A, and sending steam or a like medium through the hollow shaft B and the double spiral tubes G, G′ in the manner above described.

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

1. An apparatus of the class described comprising a tank having an inlet and an outlet, a shaft journaled longitudinally of the tank, said shaft comprising a plurality of hollow sections, each section being divided into an inlet and an outlet chamber, the outlet chamber of one section opening into the inlet chamber of the succeeding section, spiral tubes encircling the shaft, the inlet chambers being connected with the entrance ends

of said spiral tubes, and the outlet chambers with the outlet ends, and means for supplying fluid to one end of the shaft and delivering it from the other end of the shaft.

2. An apparatus of the class described, comprising a tank for receiving a cooling fluid, a shaft journaled longitudinally of the tank, said shaft comprising a plurality of hollow sections, each section being divided into an inlet and an outlet chamber, the outlet chamber of one section opening into the inlet chamber of the succeeding section, and spiral tubes encircling the shafts and connecting the inlet chamber of each section of the shaft with the outlet chamber of the other section, and means for supplying fluid to the shaft and discharging it therefrom.

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

EDWARD AUG. APPELL.

Witnesses:

ANNA OGREN,

EMIL A. VON PEIN.