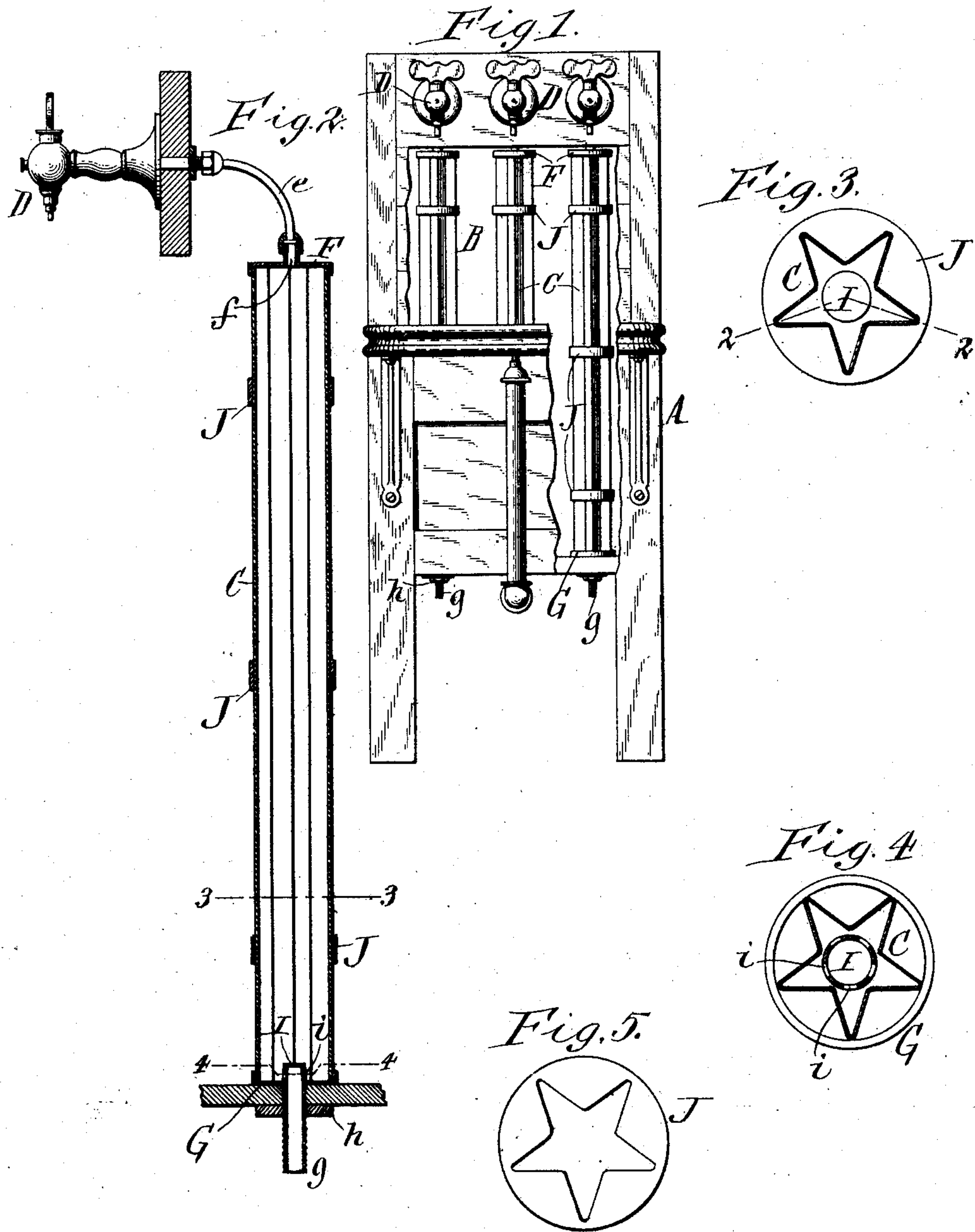


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BEER COOLER.  
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907,018.

Patented Dec. 15, 1908.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

FREDERICK G. ENGEL, OF BUFFALO, NEW YORK, ASSIGNOR TO THE ECONOMY COOLER COMPANY, OF BUFFALO, NEW YORK, A CORPORATION OF NEW YORK.

## BEER-COOLER.

No. 907,018.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed April 29, 1907. Serial No. 370,966.

*To all whom it may concern:*

Be it known that I, FREDERICK G. ENGEL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Beer-Coolers, of which the following is a specification.

This invention relates to a cooler for beer and other liquids, and more particularly to that class of coolers comprising tubes which are submerged in ice-water and through which the liquid to be cooled passes.

The object of my invention is to improve the construction of the cooler with a view of obtaining a large refrigerating area within a comparatively small compass and effecting a uniform distribution of the liquid throughout the refrigerating tubes, so as to utilize their full cooling capacity.

In the accompanying drawing: Figure 1 is a front elevation of the improved cooler, a portion of the casing being broken away to expose the cooling tubes. Fig. 2 is an enlarged vertical section of one of the tubes and adjacent parts of the casing, the plane of the section being in line 2—2, Fig. 3. Figs. 3 and 4 are cross sections, on an enlarged scale, in the correspondingly numbered lines in Fig. 2. Fig. 5 is a plan view of one of the reinforcing collars.

Similar letters of reference indicate corresponding parts throughout the several views.

A is the casing of ordinary construction containing the usual water and ice chamber B. In this chamber the upright refrigerating tubes C are arranged, which extend from the bottom nearly to the top of the chamber, so that the greater portion of the same is immersed in the ice-water, in a manner common to this class of coolers.

D indicates the customary delivery faucets which are connected with the upper ends of the respective refrigerating tubes by pipes *e*. In the preferred construction shown in the drawing, each tube is closed at its upper end by a cap or head F having a central discharge nipple *f* to which the pipe *e* is joined by an ordinary union.

The tubes C are preferably constructed of copper or other highly conductive material, and in order to increase their refrigerating area they are corrugated lengthwise, the same being preferably star-shaped in cross section for this purpose, as shown. Each

tube is closed at its lower end by a flanged cap or base plate G resting upon the bottom of the chamber B and having a central depending inlet nipple *g* which passes through said bottom and to which is attached the usual pipe or hose (not shown) leading from the barrel or other vessel to the cooler. To this nipple, which is screw threaded, is applied a clamping nut *h* which bears against the bottom of the casing A.

I is a hollow distributing head arranged at the upper end of the nipple *g* and preferably formed in one piece with the same and the base plate G, as shown. This head is closed at its upper end and provided in its sides with apertures *i* by which said nipple communicates with the lower portion of the tube. One of these apertures is preferably arranged directly opposite each of the hollow V-shaped wings or ribs of the tube, as shown in Fig. 4, so that the incoming liquid is distributed radially in all directions by the head I and directed into the various wings of the tube. By this construction, the liquid is brought into contact with all sides of the tube throughout the length of the same and the entire refrigerating surface of the tube is effectually utilized.

In order to stiffen the refrigerating tubes and resist expansion or distortion thereof, each of the same is preferably provided at suitable intervals with reinforcing bands or collars J. These collars may be of cast iron and their bores or openings are polygonal and closely follow the outline of the tubes, the collars shown in the drawing having star-shaped openings to fit the corresponding cross section of the tubes, as best shown in Fig. 5. These collars may be soldered to the tubes or simply driven thereon.

The cooler shown in the drawing contains three refrigerating tubes, but a greater or less number may be employed according to the desired capacity of the apparatus.

I claim as my invention:—

1. In a liquid cooler, the combination of a chamber adapted to contain ice water, a longitudinally corrugated refrigerating tube arranged therein and provided at one end with an inlet and at its opposite end with an outlet for the liquid to be cooled, and a distributing head arranged in the inlet end of the tube and provided in its side opposite each of the several longitudinal grooves or



channels of the tube with an aperture where-  
by the incoming liquid is delivered laterally  
into all of said grooves.

2. In a liquid cooler, the combination of  
5 a chamber adapted to contain ice-water, a  
refrigerating tube of substantially star-  
shaped cross-section arranged in said cham-  
ber and provided at one end with an inlet  
and at its opposite end with an outlet for  
10 the liquid to be cooled, and reinforcing col-  
lars encircling the tube, substantially as set  
forth.

3. In a liquid cooler, the combination of  
a chamber adapted to contain ice-water, a

refrigerating tube of substantially star- 15  
shaped cross-section arranged in said cham-  
ber and provided at one end with an inlet  
and at its opposite end with an outlet for  
the liquid to be cooled, and reinforcing col-  
lars encircling the tube and having bores or 20  
openings which conform to the outline of the  
tube, substantially as set forth.

Witness my hand this 24th day of April,  
1907.

FREDERICK G. ENGEL.

Witnesses:

C. F. GEYER,

E. M. GRAHAM.