F KRANZ.

Beer-Cooler.

No. 162,078. Patented April 13, 1875.

Fig. 1.

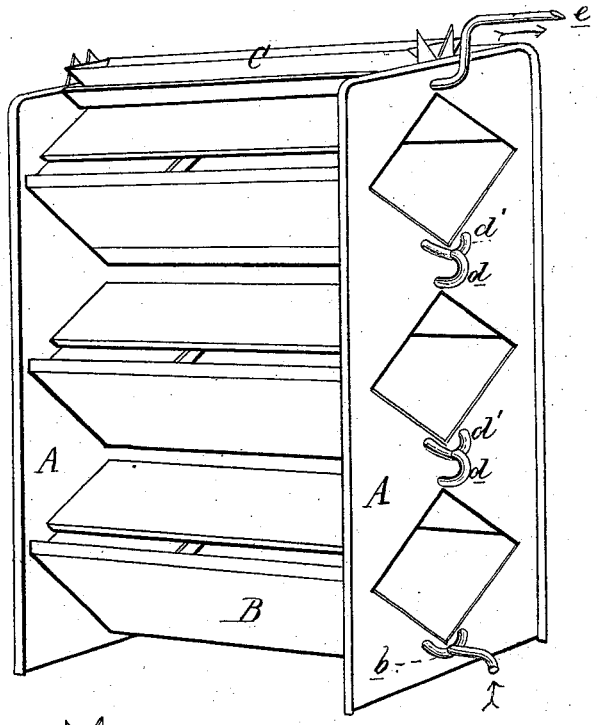


Fig. 2.

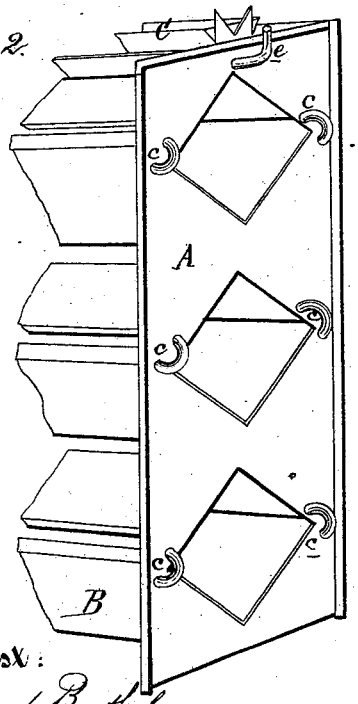
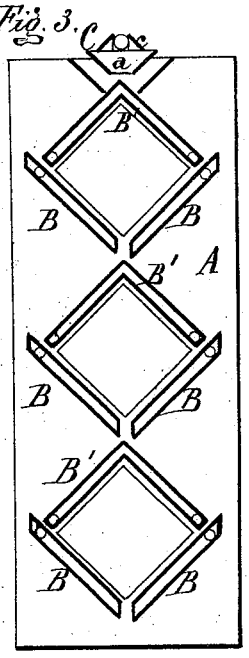


Fig. 3.



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UNITED STATES PATENT OFFICE.

FRIEDRICH KRANZ, OF SANDUSKY, OHIO.

IMPROVEMENT IN BEER-COOLERS.

Specification forming part of Letters Patent No. **162,078**, dated April 13, 1875; application filed August 24, 1874.

To all whom it may concern:

Be it known that I, FRIEDRICH KRANZ, of Sandusky, in the county of Erie and State of Ohio, have invented an Improvement in Beer-Coolers, of which the following is a specification:

The nature of my invention relates to an improvement in that class of coolers wherein the beer or other fluid to be cooled is allowed to drip over sheet-metal pipes or vessels through which cold water is circulated; and it consists in a series of alternating A-shaped and half-V-shaped chambers secured at their ends between two vertical walls, so arranged and connected by pipes as that a volume of cold water may be forced into the lowermost chambers and be compelled to circulate through those above it before being discharged at the top, while the fluid to be cooled drips from the inclined upper surface of one vessel to that of the next one below, meeting colder surfaces as it descends, until discharged cool at the bottom.

Figure 1 is a perspective view of the cooler, looking at it from the end which has the water inlets and outlets. Fig. 2 is a partial perspective view of the other end, showing the return-bend connections. Fig. 3 is a cross-section.

In the drawing, A A represent two standards, which form the end walls of the cooler. Between them, near the bottom, are secured two vessels, B, of thin sheet metal, closed at the ends, which are supported at the end walls by cleats or otherwise. The vessels have parallel side walls, close together, leaving a contracted passage between them. They are inclined toward each other at an angle of forty-five degrees, or thereabout, with a passage between the lower edges of the vessels. B′ is a Λ-shaped vessel, of similar construction, secured in like manner between the standards, and above it two inwardly-inclined vessels, B, are again placed, so as to discharge the beer dripping from their upper sides upon the apex of the vessel or chamber B′. Above these similar chambers B and B′ are arranged in like order, the upper one being a chamber, B′, surmounted by a trough, C, having a perforated bottom, *a*, for distributing the hot liquid uniformly upon the ridge or apex of the said chamber, flowing down its sides, and dripping thence onto those of the chambers B next below, and so on until discharged at the bottom. *b* is a branched or "Siamese" pipe, delivering water under pressure to the lowest point of the two lowermost chambers B at one end thereof. At the upper corners of the opposite ends thereof two return-bends, *c*, connect them with the lower outer corners of the chamber B′ above, through which the water flows and issues through an elbow, *d*, into a return-bend, *d′*, connecting the two inner lower corners of the next pair of chambers B above, and circulating in this manner through all the chambers issuing from the upper end of the upper chamber B′ through the discharge-pipe *e*.

The thin sheet of liquid is not only cooled by the atmosphere as it trickles down from chamber to chamber, but is rapidly reduced in temperature by contact with the cool surfaces thereof, which are colder at the bottom than above, thereby subjecting the liquid to the coldest or lowest temperature at the termination of the cooling process, which is thus rendered more gradual and certain than in the usual method of exposing the fluid to the coldest surface in the beginning.

I am well aware that liquids have heretofore been cooled by allowing them to drip over tubes and vessels through which cold water was circulated, and disclaim, broadly, the invention of that process of cooling; but

What I do claim as new, and desire to secure by Letters Patent, is—

The combination of the standards A A, perforated trough C, inclined vessels B B′, and connecting-pipes *b c d d′*, whereby liquor passing downward on the outsides of the vessels B B′ is cooled by water forced upward within and through said vessels, as and for the purpose set forth.

FRIEDRICH KRANZ.

Witnesses:
FREADRICK C. RIMHIME,
CHARLES KUBACH.