A. HAMMER.

Beer Cooler.

No. 18,201. Patented Sept. 15, 1857.

Fig: 1.

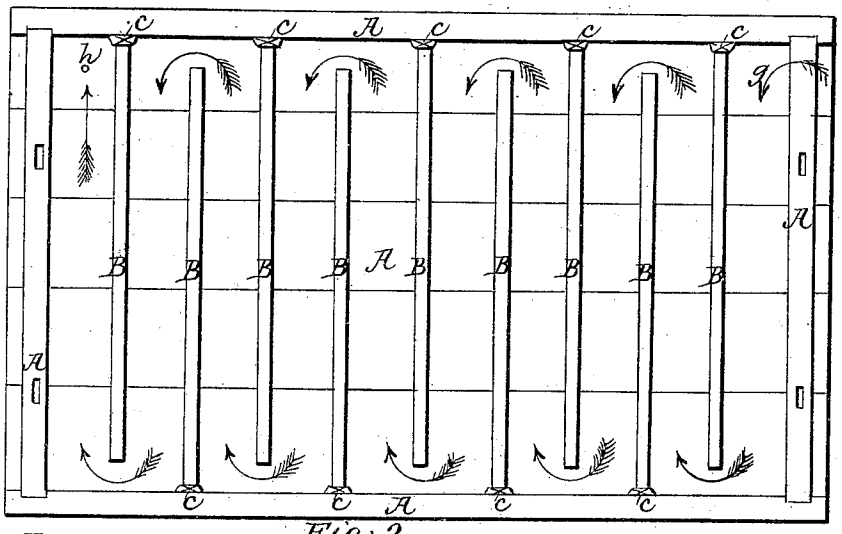


Fig: 2.

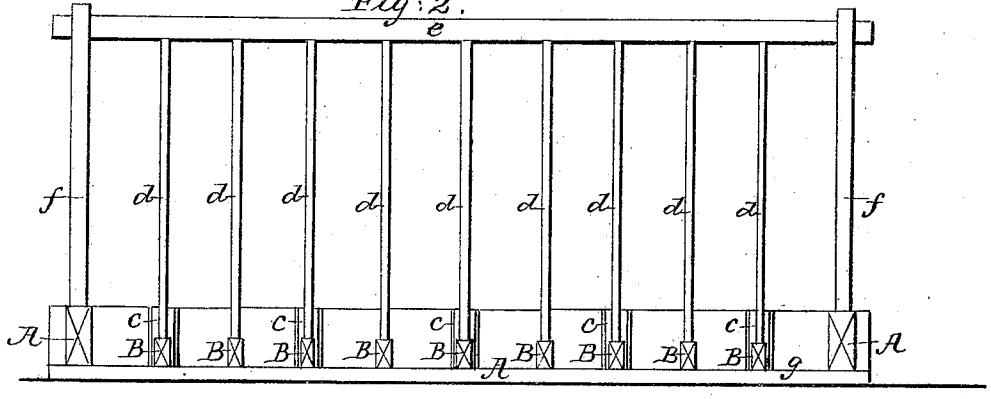
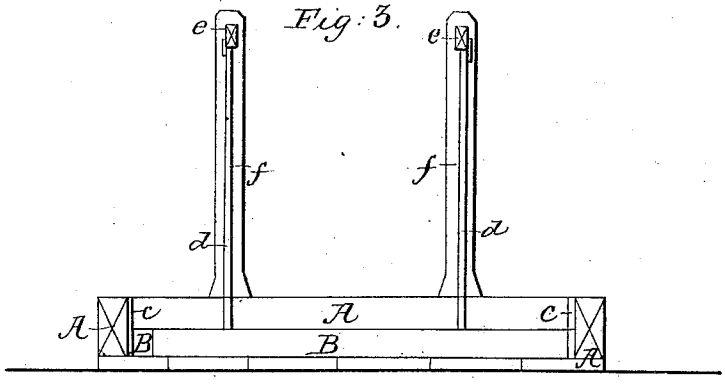


Fig: 3.



Witnesses.

George W Brockman

Matthias Menzel

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UNITED STATES PATENT OFFICE.

A. HAMMER, OF READING, PENNSYLVANIA.

COOLER FOR BREWERIES.

Specification of Letters Patent No. 18,201, dated September 15, 1857.

To all whom it may concern:

Be it known that I, ADOLPH HAMMER, of Reading, in the county of Berks and State of Pennsylvania, have invented a new and useful Improvement in the Arrangement of Coolers for Breweries; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan view of a cooler with the improvement applied, and Figs. 2 and 3, vertical longitudinal and transverse sections, respectively, of the same, like letters in the several figures indicating the same objects.

The "cooler" of breweries is a shallow square, wooden vessel of from 6 to 12 inches depth, which is used for the purpose of reducing the higher temperature of the boiled wort, by exposing an enlarged surface of the same, to the cool atmosphere, after it has passed through the hop strainer into the said cooler, preparatory to its admission into the "refrigerator," where the process of cooling is completed. Experience has shown that it is injurious to the liquor to admit it at a very high temperature into the refrigerator. It is therefore preferable to cool the liquor first, down to, say about 120 or 130 degrees, Fahrenheit's thermometer, by exposure of the same to the atmosphere, on the said cooler, in a stratum of from, say, 4 to 10 inches depth, where it sometimes has to remain ten hours or more before the temperature has decreased sufficiently to commence the final cooling by the application of the "refrigerator." When thus sufficiently reduced the liquor is let into the "refrigerator" gradually and according to the cooling power of the latter. This refrigerating process takes, in warm weather, sometimes from 3 to 6 hours if the refrigerator is not very powerful, during which time the liquor on the cooler becomes so cool that evaporation therefrom almost ceases; and the escaping vapor being the only protective of the liquor against the injurious action of the oxygen while the said liquor is on the cooler, ceasing to be formed, an inclination of the liquor to become soon acid, is the consequence.

To obviate this very objectionable result incident to the coolers now universally used in breweries, is the object of my invention

It consists in providing the said "cooler" with a series of movable partitions so arranged and applied that the incoming current of hot wort is compelled thereby to flow in a continual stream or stratum of about 12 inches width, and less than one inch depth, from the hop-strainers, successively through all the divisions formed by the partitions, over the whole area of the cooler without stopping, and arriving finally at the outlet of the cooler, passes directly into the refrigerator—the current of the flowing liquor being, of course, regulated by a stop-cock in the hop strainer, to accord with the cooling power of the refrigerator, and in providing so that the said partitions can be readily removed therefrom to afford free and unobstructed access to every part of the cooler as before, for the purpose of cleansing.

Referring to the drawings, A, is the cooler, and B—B, the movable partitions. Small mortised blocks, *c*—*c*, are fixed permanently to the sides of the cooler at equal distances apart, and so that those on one side thereof shall be directly opposite to the middle of the spaces between those on the opposite side.

The movable partitions (B) consist of pieces of inch board, about two inches wide and five or six inches shorter than the width of the cooler, which are placed upon their edges and about 12 or 15 inches apart, across and in close contact with the bottom of the cooler, and with one of the ends of each inserted within the mortise, respectively, of one of the blocks (*c*) as seen in the figures. These partitions are held in place as described, parallel with each other, partly by means of the blocks (*c*), which keep them in vertical positions upon their edges, and partly by means of swing stays, *d*—*d*, which are suspended in two rows from the over head joists of the building, or, from the two pieces of stiff timber *e*—*e*, which are supported a few feet above the cooler, upon suitable posts *f*—*f*, so that by sliding their lower ends upon the upper edges of the partitions the latter are thereby pressed down into close, or water-tight contact with the bottom of the cooler, thus producing a continuous channel, reaching alternately from one side to the other of the cooler, and from the place of entrance, *g*, of the hot wort, to the place of its exit, *h*, at the opposite end, as seen in Fig. 1.

Operation: It is obvious that when the hot wort is admitted from the hop-strainer into the head (*g*) of the channel, it will continue to flow therein from one side to the other of the cooler (in the direction of the arrows) until it reaches the outlet (*h*), and that the whole of the outgoing wort, having thus, and for the time, been exposed to the cooling atmosphere, must be greatly more reduced in temperature than it could possibly have been during the same time in the same cooler without the said partitions. In this manner the liquor is compelled to travel, in a cooler of ten feet square, about one hundred feet, which is about one thousand per cent. more than by the cooler as now generally used; and at the same time it is kept in motion, by its own current, as long as it remains on the cooler; and the coolest liquor is always the nearest to the outlet, yet the temperature of the latter is reduced only sufficiently to be admitted into the refrigerator, and consequently a strong evaporation over the whole cooler (excepting over a few of the last divisions which contain the coolest liquor) is produced, and protects the liquor underneath against the injurious action of oxygen from the atmosphere; and the time during which the liquor is on the cooler being also so considerably shortened, the danger, hitherto great, of the liquor being injured while on the cooler, by becoming acid, is reduced almost to nothing. The continual motion of the liquor from thus flowing in the channel, produces likewise a continual changing of its exposed surface and therefore aids in producing evaporation and shortening the time required for the cooling process.

Expedition in cooling down the wort, it is well known, is of prime importance, and hence the utility of the invention on this ground, is sufficiently apparent; but I would also remark, in addition, that by using my improved arrangement as herein described, the operation goes on so rapidly that the whole process of cooling is finished, and the whole quantity of the brewed liquor is in the fermenting tun and has commenced fermenting, before a brewer, cooling in the old way, can commence passing the liquor through the refrigerator.

The mode of applying the partitions so as to render them readily removable from the cooler—the swing stays (*d*) being adapted for tying or hooking up—affords the original, free and unobstructed access for cleansing.

What I claim as my invention and desire to secure by Letters Patent in coolers for breweries, is—

The application thereto of the movable partitions (B—B) rendered stationary in the manner substantially as described, and for the purpose set forth.

ADOLPH HAMMER.

Witnesses:
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MATTHIAS MENGEL.