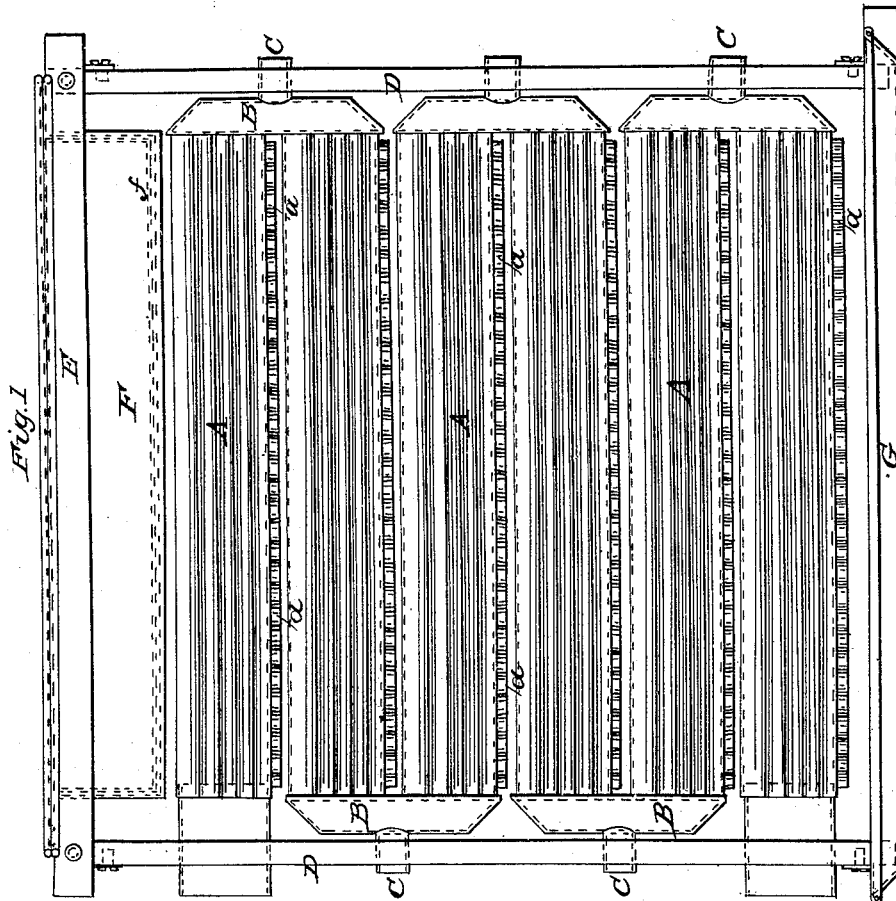
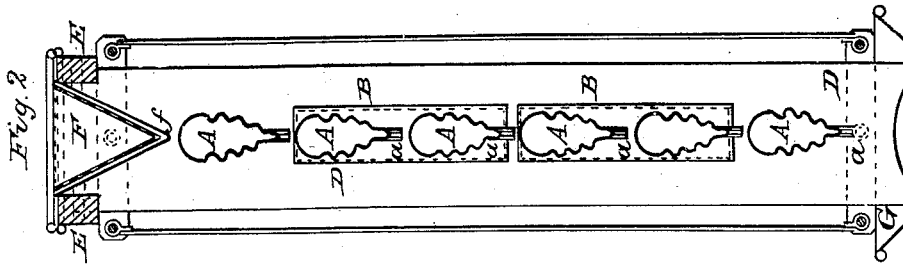


F. L. WISSMANN.
Apparatus for Cooling Malt Liquors.

No. 50,293.

Patented Oct. 3, 1865.



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IMPROVED APPARATUS FOR COOLING MALT LIQUORS.

Specification forming part of Letters Patent No. 50,293, dated October 3, 1865.

To all whom it may concern:

Be it known that I, FRANCIS L. WISSMANN, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Cooling Malt Liquors; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, and to the figures and letters of reference marked thereon.

My invention relates to that class of cooling apparatus in which the liquor to be cooled is conducted over the outer surface of a series of horizontal pipes, these being alternately so connected at the ends as to form a continuous vertical coil or tier, through which flows the cooling agent, (ice-water or cold spring-water.)

The object of my improvement is to increase the efficiency of such apparatus so that a given quantity of liquor may be cooled with a lesser number of pipes and by means of a smaller quantity of cooling liquid than with the same class of apparatus as heretofore constructed; and the nature of the improvement consists in the use of tubes of such peculiar form as will give a much greater amount of cooling-surface in proportion to the area of section than could be obtained with the use of plain cylindrical pipes.

Another feature of my improvements consists in providing a more perfect delivery and even distribution of the liquor over both sides of each pipe in its descent from one to the other.

Instead of the plain cylindrical tubes heretofore employed, I use tubes of a flat or oval section, the sides of which are, moreover, corrugated, whereby the cooling-surface is so much increased that an apparatus of a certain capacity will, when made on my improved plan, require but half the number of tubes that were heretofore necessary to effect the same object. With the use of fewer tubes their connecting-pieces and end joints are likewise diminished in number, and thus the cost of the apparatus is very much reduced.

In order that my said invention may be fully understood, I will now proceed more particularly to describe the same.

On reference to the drawings making part of this specification, and in which similar letters allude to like parts in both views, Figure 1 is a side view of my improved cooling apparatus, and Fig. 2 a sectional end view of the same.

A A are the corrugated pipes, the whole

series (numbering six in the drawings) being so connected by end pieces, B B, as to form a continuous channel for the cooling liquid. The pieces B B are provided with pivots or bearers C C, by means of which the whole train of pipes is suspended in a wooden frame consisting of two uprights, D D, and top cross-bars, E E, which latter pieces carry the V-shaped distributing-trough F. The uprights D D rest in the receiving-trough G, in which the cooler liquor, after having flowed from the vessel F over the outer surface of the corrugated pipes, is collected, and from here conducted to the fermenting-vats or other vessels through the outlet H. The distributing-trough F is, at its lower edge, provided with a row of small holes, *f f*, through which the liquor flows in small jets and is distributed over the top surface of the uppermost one of corrugated pipes A A.

In order to insure a perfectly even distribution of the liquor over both sides of each succeeding pipe, I make use of zigzagged or laterally-undulated distributing-strips *a a* at the bottom of each pipe, which strips, deviating from the center line to both sides of the same, produce the desired effect, so that with their use any slight defect in the setting of the pipes will have no injurious effect upon the working of the apparatus, while with the means heretofore employed for this purpose (consisting in straight strips with toothed saw-shaped lower edge) the least inequality in the fitting of the tubes causes an unequal distribution of the liquor in its descent.

Having thus described the object and nature of my invention, I desire to be understood that I do not broadly claim as new a method of cooling liquors by flowing the same over the outer surface of pipes, arranged as herein set forth; but

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

1. The described improvement in apparatus for cooling malt liquors, consisting in the use of the corrugated pipes A A, of a flattened or oval section, and otherwise arranged as and for the purpose specified.

2. The laterally zigzagged or undulated distributing-strips *a a*, whether used in connection with the described corrugated pipes or with any other form of tubes, as and for the purpose described.

Witnesses:
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