

(No Model.)

H. E. DECKEBACH.

APPARATUS FOR COOLING AND AERATING MALT LIQUORS.

No. 518,941.

Patented May 1, 1894.

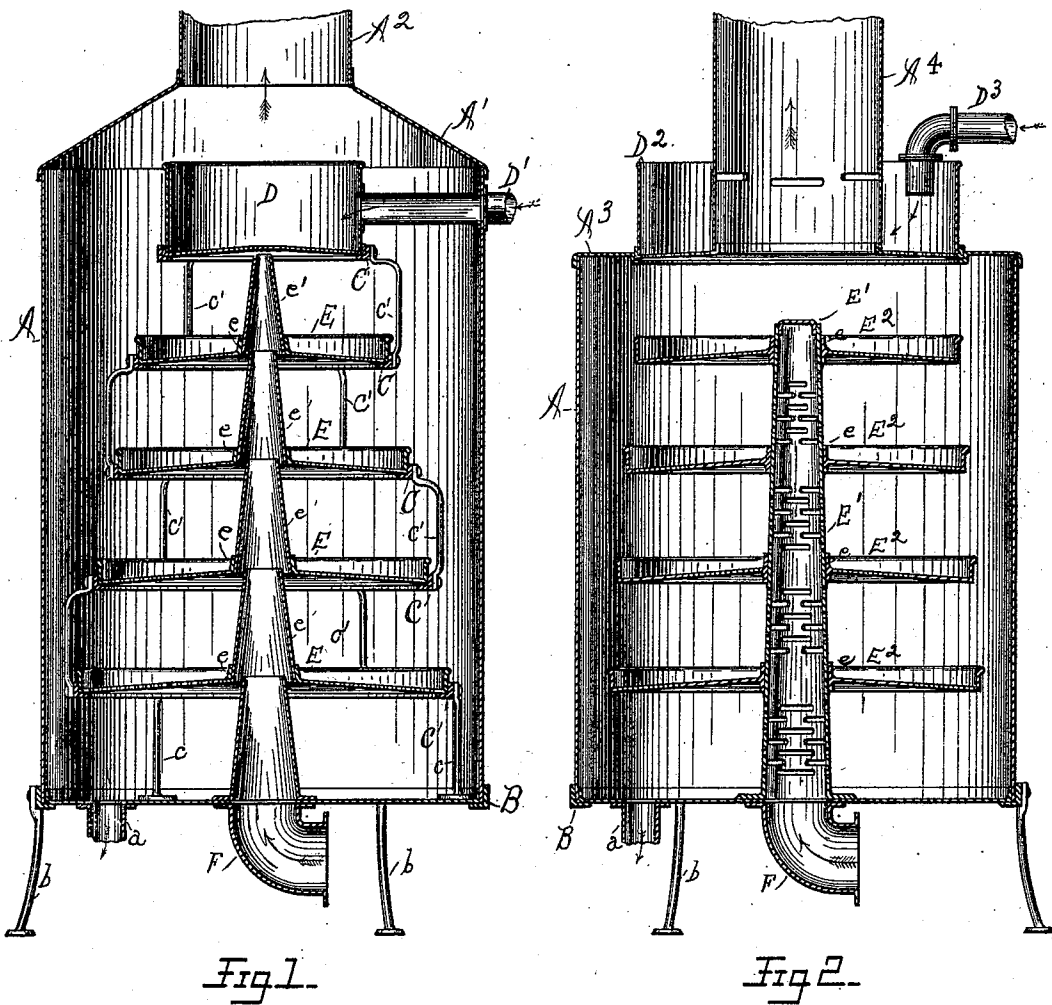


Fig. 1.

Fig. 2.

Witnesses.

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APPARATUS FOR COOLING AND AERATING MALT LIQUORS.

SPECIFICATION forming part of Letters Patent No. 518,941, dated May 1, 1894.

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To all whom it may concern:

Be it known that I, HENRY E. DECKEBACH, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Apparatus for Cooling and Aerating Malt Liquors, of which the following is a specification.

My invention relates to means to cool wort after it leaves the boiler and before it passes to the tuns in the fermenting room. Its objects are to rapidly cool the wort and to supply it with pure air entirely free from bacteria or other deleterious organisms, without dissipating the volatile oil of the hops which imparts to malt liquor its delicate flavor.

The invention will be first fully described in connection with the accompanying drawings, and will then be particularly referred to and pointed out in the claims.

Referring to the drawings, in which like parts are represented by similar reference letters wherever they occur throughout both views: Figure 1 is a central vertical sectional view of my preferred form of apparatus. Fig. 2 is a similar view of a modified form of the same.

Referring first to Fig. 1: A is a cylindrical sheet metal vessel. It is supported in a stand consisting of a flanged ring B and feet, *b*, which are secured to the ring; and is provided with a removable cone-shaped top A', which terminates at its cone end in an uptake pipe or chimney A². Within the shell or case A is a cone-shaped stand composed of a series of flanged rings C, the lower one of which is supported upon legs, *c*, and the ones above it are supported by braces, *c'*, secured to the vertical flanges of the adjacent rings. The upper ring of the stand supports the receiving vessel D, and each of the rings below it supports pans E. The bottoms of receiving vessels D and pans E are concavo-convex, and perforated to break up the wort in finely divided streams as it passes from the receiving vessel to the bottom of the case A. The wort is delivered from the boiler to the receiving vessel through pipe D', which passes through the case A and into the vessel D. The inner end of the pipe D' is preferably connected to the vessel by a slip joint, which permits the removal of the vessel and the

section of the pipe within the case, in order that the vessel and pans may be readily taken out for cleansing when desired.

The bottoms of pans E are each centrally perforated, the edges of the perforations being turned up forming the flanges, *e*. Within the upturned flanged portions of the bottoms are secured the cone-shaped flues, *e'*. A similar cone-shaped pipe is secured over an opening in the bottom of the case A. Immediately below said opening is secured an elbow union F, the open end of which is flanged to connect with a cold air pipe leading from a force blower for the purpose of forcing a blast of pure cold air through the case and through the descending streams of wort. The cold air pipe and force blower are not shown, but it should be understood that to produce the best results the blower should be interposed in a pipe leading from an air cooling and filtering chamber to the case A; but the induction end of the air pipe which connects to the elbow F may be carried above the building a sufficient distance to receive comparatively pure air. The contracted end of each air flue except the upper one enters a short distance into the enlarged end of the flue above it; while the contracted end of the upper flue is but a short distance below the bottom of the receiving vessel D. The effect of this arrangement is to cause the cold air to be deflected across each of the perforated bottoms and through the descending hollow columns of wort, forcing the heated vapors to pass up around the pans and receiving vessel and out through the uptake A², as indicated by arrows.

The cooled wort is carried from the bottom of the vessel A to the fermenting tuns through the pipe, *a*, thus keeping it free from contact with the atmosphere from the time it leaves the boiler until it reaches the fermenting vats, and as free from bacteria as boiled or distilled water.

In the modification shown in Fig. 2 the outer case is fitted with a flat cover A³, within which is centrally fitted the receiving vessel D², which vessel is centrally provided with the uptake A⁴, which is slotted within the vessel to draw the vapors into it from the vessel D². The wort is delivered to the receiving vessel D², around the uptake, through a pipe

D³ which leads from the boiler. The cold air flue in this case is the cone-shaped pipe E', which is closed at the top and transversely perforated or slotted between the distributing pans E². These pans are, in general construction, the same as those shown in Fig. 1, and are supported by the flue E'. I have, however, shown a slight modification in the perforated bottoms of the alternate pans below the upper one. It will be noticed that the second pan from the top has the central portion of its bottom imperforate, the one below it its outer portion imperforate, and the lower one its central portion imperforate. The object of this arrangement is to interrupt the descending streams, and subject them for a longer time to the action of the cold air, which is forced through the slotted stand pipe E'. The upper end of the air pipe E' is closed by a cap, to compel the air to pass laterally through the liquid which descends in hollow columns of finely divided streams. The pans, E or E², may be used in either the preferred form of case and pan-support shown in Fig. 1, or the modified form shown in Fig. 2.

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

1. The combination in a wort cooler of the closed chamber into which the wort is delivered and from which it is discharged, an uptake flue leading centrally from the top of said chamber, a series of pans arranged one above the other and supported centrally with-

in the chamber, a receiving vessel above said series of pans, said pans and receiving vessel having their bottoms perforated to break up the wort and cause it to descend in thin streams from the receiving vessel to the bottom of the chamber, the pipe leading from the boiler to said receiving vessel, a central air flue from the bottom of said chamber to force cold air centrally through the descending streams and carry the heated vapors out of the chamber through the uptake, and a discharge pipe for the cool wort in the bottom of said chamber, substantially as shown and described.

2. The combination of the outer case having removable top, uptake from the top and discharge pipe from the bottom, the stand consisting of a series of rings braced apart, and the feet for supporting it on the bottom of the case, the receiving vessel and pans supported in said stand, and having perforated bottoms to cause the wort to descend in small streams from one to the other, the cone-shaped air flues centrally secured within the pans, the air pipe leading to the bottom of the case, and terminating within the case in a cone-shaped branch which discharges into the lower cone-shaped flue, substantially as and for the purpose set forth.

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Witnesses:

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