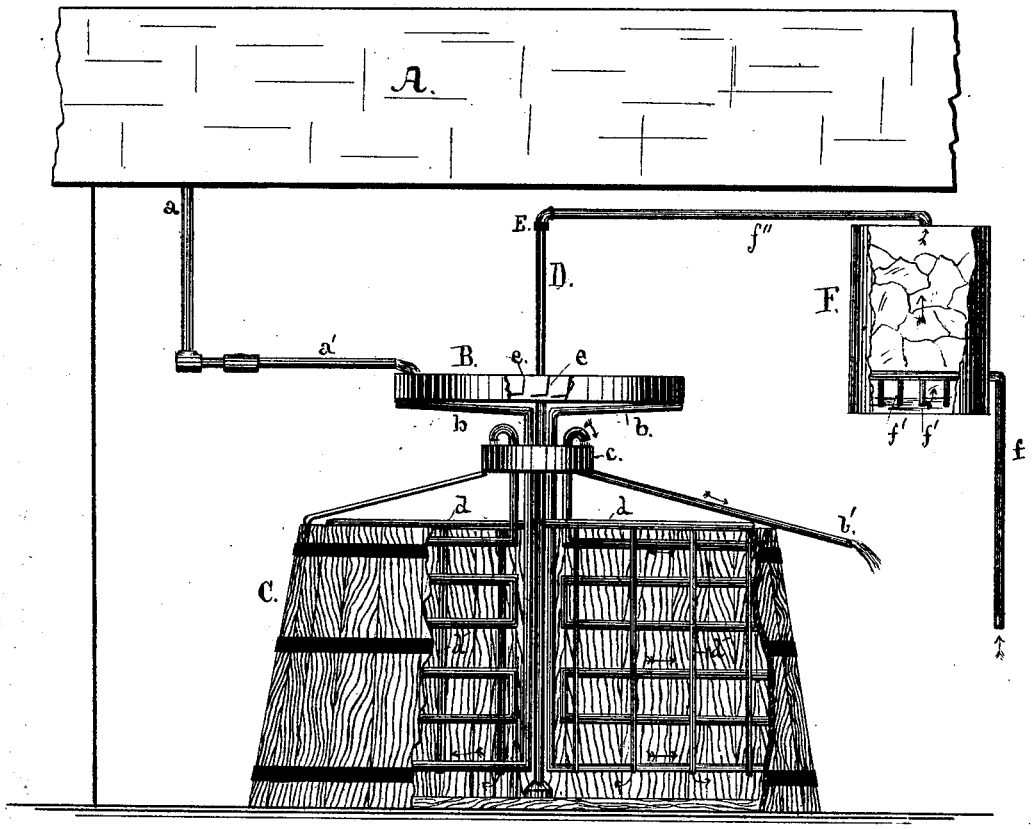
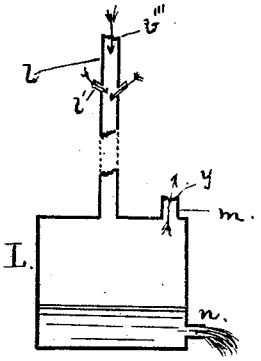
J. RAIBER.

Wort-Cooling Vats.

No. 208,764. Patented Oct. 8, 1878.





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JOSEPH RAIBER, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN WORT-COOLING VATS.

Specification forming part of Letters Patent No. **208,764**, dated October 8, 1878; application filed June 25, 1878.

To all whom it may concern:

Be it known that I, JOSEPH RAIBER, of the city of Baltimore, State of Maryland, have invented certain new and useful Improvements in Beer-Coolers; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which the device is represented in side elevation, certain portions being broken away in order to illustrate features of internal construction.

This invention relates to that class of apparatus in use for rapidly cooling the worts from the mash-tun; and it consists in a wort-cooling vat containing a series of pipes, through which a cooling medium passes, and a series of air-pipes, the first set of pipes being caused to rotate within the vat through the impact of the cooling medium, which latter is utilized upon its escape from the pipes to induce a blast of air through the air-pipes and into the vat, the various parts being constructed and operating substantially as hereinafter set forth.

My invention relates, as stated, to apparatus made use of in cooling the worts before delivering them to the fermenting-vats. As is well known, it is desirable that this cooling be effected as quickly as possible, and it is a matter of comparative indifference whether the wort be violently agitated or not, except in so far as the agitation conduces to rapidity of cooling by exposing an increased surface of liquid to the air.

The construction of the apparatus of which I make use in the process of cooling the wort is as follows:

A represents a suitable tank for containing cold water, from which leads a pipe, *a*, communicating with a water-wheel, B, rigidly secured to a hollow shaft, D, which is mounted in a step upon the bottom of the vat C and has its upper bearing in a sleeve, E. To the shaft D are attached pipes *d d*, with which communicate a series of pipes extending nearly to the bottom of the vat, as shown. The buckets *e e* of the wheel B do not extend quite to the bottom, leaving a space, through which the water flows to the pipes *b b*. These are coiled back and forth horizontally in the vat, and finally discharged into a stationary annular trough, *c*, from which the waste-pipe *b'* leads.

F is a vessel for containing ice, into which a pipe, *f*, leads, having a series of vertical pipes, *f'*, extending nearly to the bottom of the vessel F, so as to dip below the surface of the water from the melting ice. A pipe, *f''*, leads from this vessel and communicates with the hollow shaft D.

Any convenient air-forcing device is attached to the end *x* of the pipe *f*, a simple and convenient form being shown below the main figure in the drawings.

The waste-pipe *b'* being attached at *b'''* to a pipe, *l*, having short lateral pipes *l'*, the water flows into a chamber, L. As is well known, air will be caused thereby to flow in through the openings *l'* and mingle with the stream of water. The level of water in L being maintained above the orifice *n*, the indrawn air is forced out at *y* through a pipe, *m*, which is made to communicate with the pipe *f*.

The operation of the device is as follows: The hot wort being pumped from the boilers into the vat C, a stream of ice-water is allowed to flow from the tank A through the pipe *a'* upon the wheel B. The latter is thereby caused to rotate, carrying with it the pipes in the tank. The water from the wheel flows through the pipe *b*, and, finding its exit from the tank, induces, through the medium of a suitable air-forcing device, a blast of cold air through the ice-chamber F, pipe *f''*, shaft D, pipes *d*, and vertical pipes within the tank. It will be observed that this air is purified from all dust and impurities by its passage through the water-seal in the vessel F, and finally escapes through the beer, thoroughly agitating it and exposing a maximum surface of it to the air.

While I have illustrated but a single form of air-forcing device, any convenient and well-known form may be used, the waste-water being allowed to fall, for instance, on a water-wheel, which is made to drive a bellows or pump.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for cooling wort, a vat having a series of tubes for containing a cooling medium, and open pipes entering the body of the wort for the passage of air, substantially as described.

2. In an apparatus for cooling wort, and in combination with its vat, a cooling-pipe receiving motion from the impact of the cooling medium, substantially as described.

3. In an apparatus for cooling wort, and in combination with its vat, a cooling-coil carrying a water-wheel, substantially as described.

4. In combination with the vat C, the vessel F, pipes $f f' f''$, and the tubes d, substantially as described.

5. In combination with the vat C, the coil b, wheel B, and trough c, substantially as described.

6. In combination with the vat C, having water-pipes b and air-inlet pipes, the waste-pipe b', and an intermediate air-forcing device actuated by the waste-water, substantially as described.

JOSEPH RAIBER.

Witnesses:
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