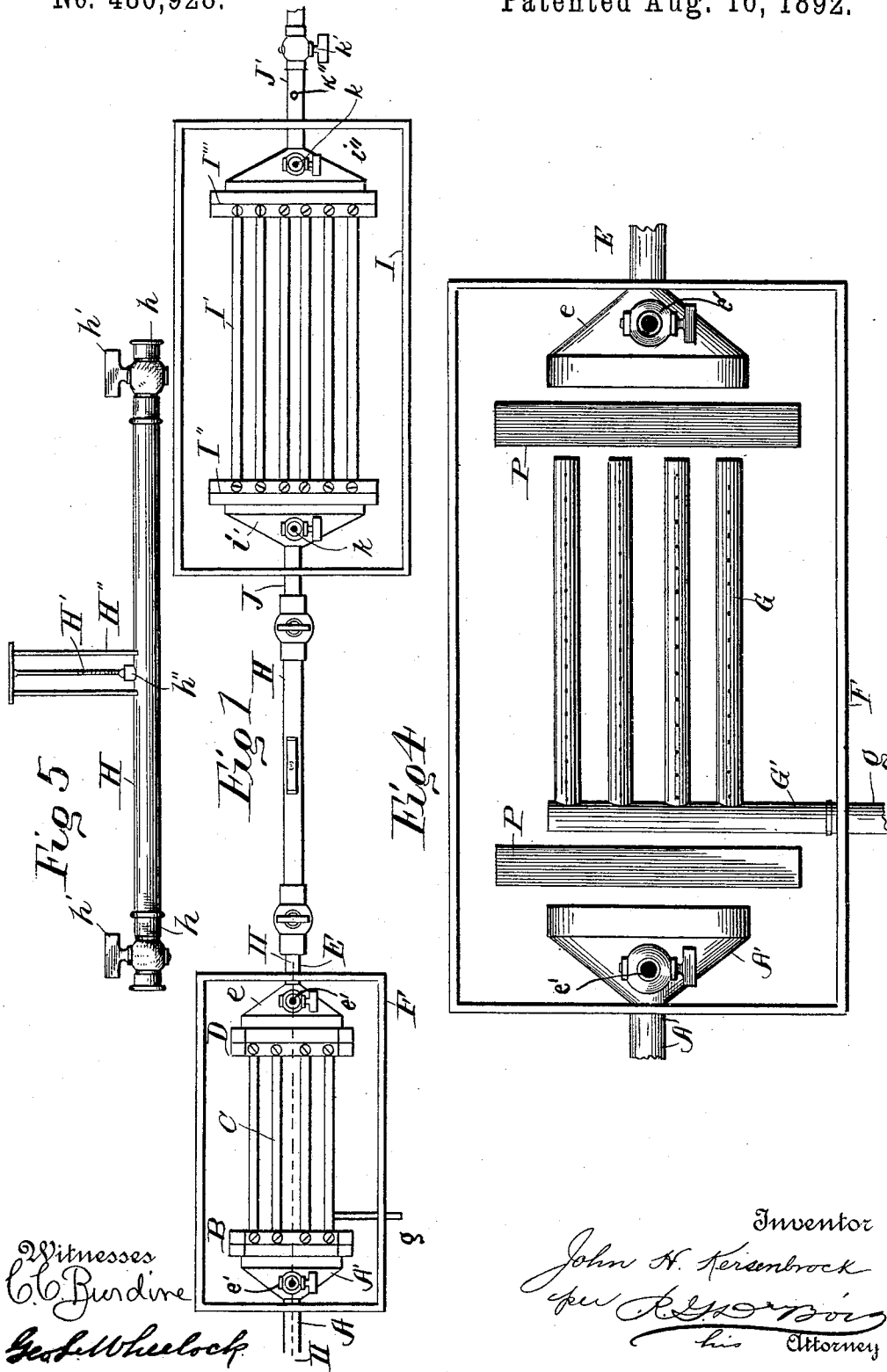


J. H. KERSENBROCK.

HEATER AND COOLER FOR FERMENTED MALT LIQUORS.

No. 480,928.

Patented Aug. 16, 1892.



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Fig 2

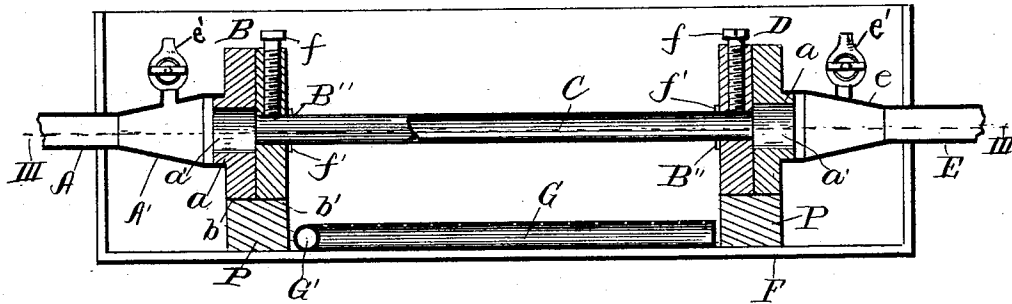
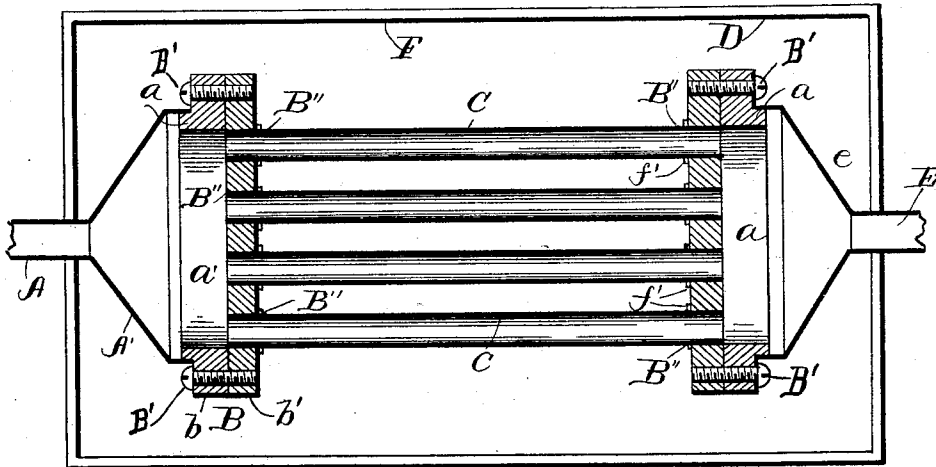


Fig 3



Witnesses
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Inventor
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UNITED STATES PATENT OFFICE.

JOHN H. KERSENBROCK, OF COLUMBUS, NEBRASKA.

HEATER AND COOLER FOR FERMENTED MALT LIQUORS.

SPECIFICATION forming part of Letters Patent No. 480,928, dated August 16, 1892.

Application filed June 30, 1891. Serial No. 397,974. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. KERSENBROCK, a citizen of the United States, residing at Columbus, in the county of Platte and State of Nebraska, have invented certain new and useful Improvements in Heaters and Coolers for Fermented Malt Liquors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to apparatus for steaming or heating and cooling beer, its object being to provide a simple and at the same time effectual apparatus for the purposes stated.

My invention consists in certain features of novelty, to be hereinafter described, and then particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of the apparatus. Fig. 2 is a longitudinal section on line II II, Fig. 1. Fig. 3 is a horizontal section on line III III, Fig. 2. Fig. 4 is a plan view of the heater, showing the circulating-pipes and heads removed and the funnel-shaped or flared portions pushed back. Fig. 5 is a detail view of the connecting-pipe between the heater and cooler, showing its attachments.

This apparatus is only used for fermented malt liquors, and is particularly designed for use in the well-known Pasteur process, wherein the beer is heated and then cooled.

A is the pipe in which the beer enters, said pipe having a flattened funnel-shaped or flared portion A', that fits over a flange a, that surrounds an elongated slot or mouth a' of an outer section b of a metallic elongated head B. The inner section b' of the head B is identical with the other section b in general contour, and is secured thereto by the screws B'. Spaced at suitable regular intervals across the inner section b' are circular openings B'', that register with the mouth a' of the outer section b. There are preferably four of these openings, corresponding with the number of spaced pipes C, which fit at one end tightly in said openings. The other ends of pipes C fit in similar openings B'' of another metallic head D, similar in construction to the head B. Over the flange a, surrounding the mouth a' of the head D, fits a flattened funnel-shaped or flared portion e of an outlet-pipe E.

e' are air-cocks applied to flared portion e of pipe E and flared portion A' of pipe A.

F is the vat that contains the series of pipes C, and through the ends of which the pipes A and E pass.

ff represent thumb-screws, one for each end of pipe C, said screws being screwed through the heads B and D into engagement with the pipes mentioned.

f'f' are tight-fitting rubber washers placed one over each end of pipes C, close up against the heads B and D to render the parts airtight.

P are supporting-blocks at each end of the vat F, projecting up from the bottom, and on which the heads B and D rest for taking the strain off the connections.

G represents a series of preferably four perforated pipes, arranged upon the bottom of the vat and being closed at one end and open at the other end, where they communicate with a cross-pipe G'.

g is a steam-pipe that passes through one side of the vat F and connects with pipe G'.

The process carried on in the heater is as follows: Beer is conducted into the pipe A, from whence it spreads into flared portion A' and enters the pipes C, through which it is forced through flared portion e, here contracting again and entering pipe E. When beer enters the series of pipes C from the left, steam enters the series of perforated pipes G, lying underneath pipes C, from the side, at the same time heating the water in the vat and keeping the same at the necessary degree of heat. In this connection it will be observed that the parallel pipes C are arranged in a horizontal plane, and being each directly above the pipes G, with no intervening obstructions, they will be thoroughly and uniformly heated throughout. Connecting the heating and the cooling apparatus is a pipe H, having couplings h at each end provided with turning-cocks h'. In the middle of pipe H is a thermometer H', mounted in a frame H'', the bulb of which is received by a socket-piece h''. The purpose of this thermometer is to ascertain the degree of heat of the beer passing through the pipe.

The cooling apparatus is constructed similarly to the heating apparatus, without the steam appliances, and consists of a vat I, a series of spaced pipes I', preferably six in

number, heads I'' and I''' at the ends of said pipes, and flared portions $i' i''$ of the inlet and outlet pipes $J J'$, respectively, which pass through the ends of the vat. A detailed description of said parts is not necessary, for the reason just stated.

If the beer is to be cooled with ammonia, brine, or ice, the number of pipes I' must be six (more or less) to give ample room. The flared portions $i' i''$ are provided with air-cocks k , and the pipe of the part i'' is provided with a stop-cock k' and a thermometer k'' . The pipe J' is connected with the inlet-pipe of a bottling apparatus, and, if desired, a filter can be placed, so that the beer after being cooled is filtered before entering said inlet-pipe.

The various parts of this apparatus are so made that while they fit tightly together they can be readily taken apart and cleaned. Each part through which the beer passes is made either wholly of or is lined with non-corrosive material.

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

1. In a steaming, heating, or cooling apparatus for beer or other malt liquors, the combination of a vat, a single inlet-pipe; and a single outlet-pipe, located, respectively, at opposite ends of and projecting into the vat, funnel-shaped or flared portions at the inner ends of the pipes, a series of circulating-pipes located wholly within the vat, heads at the ends of the pipes secured to the funnel-shaped

or flared portions and provided with openings receiving the ends of the pipes, set-screws for securing the heads to the pipes, and means, located between the ends of the vat, for supporting the heads directly from the bottom of the vat, substantially as set forth.

2. In a steaming, heating, or cooling apparatus for beer or other malt liquors, the combination of a vat, inlet and outlet pipes at the ends of the vats, respectively, provided with funnel-shaped or flared portions at their inner ends, a series of circulating-pipes, located within the vat-heads at the ends of said series of pipes, having openings to receive the ends of the latter, and flanges projecting from the heads and surrounding the openings, over which said funnel-shaped or flared portions fit, substantially as set forth.

3. The combination of a vat, a series of parallel circulating-pipes contained therein and arranged in a horizontal plane, outlet and inlet pipes communicating with the ends of the circulating-pipes at each end of and projecting through the ends of the vat, and a series of parallel steam-pipes parallel with and situated below the circulating-pipes and provided with perforations, whereby the circulating-pipes will be uniformly heated throughout, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. KERSENBROCK.

Witnesses;

CHAS. SEGELKE,
GUS. FALBAUM.