

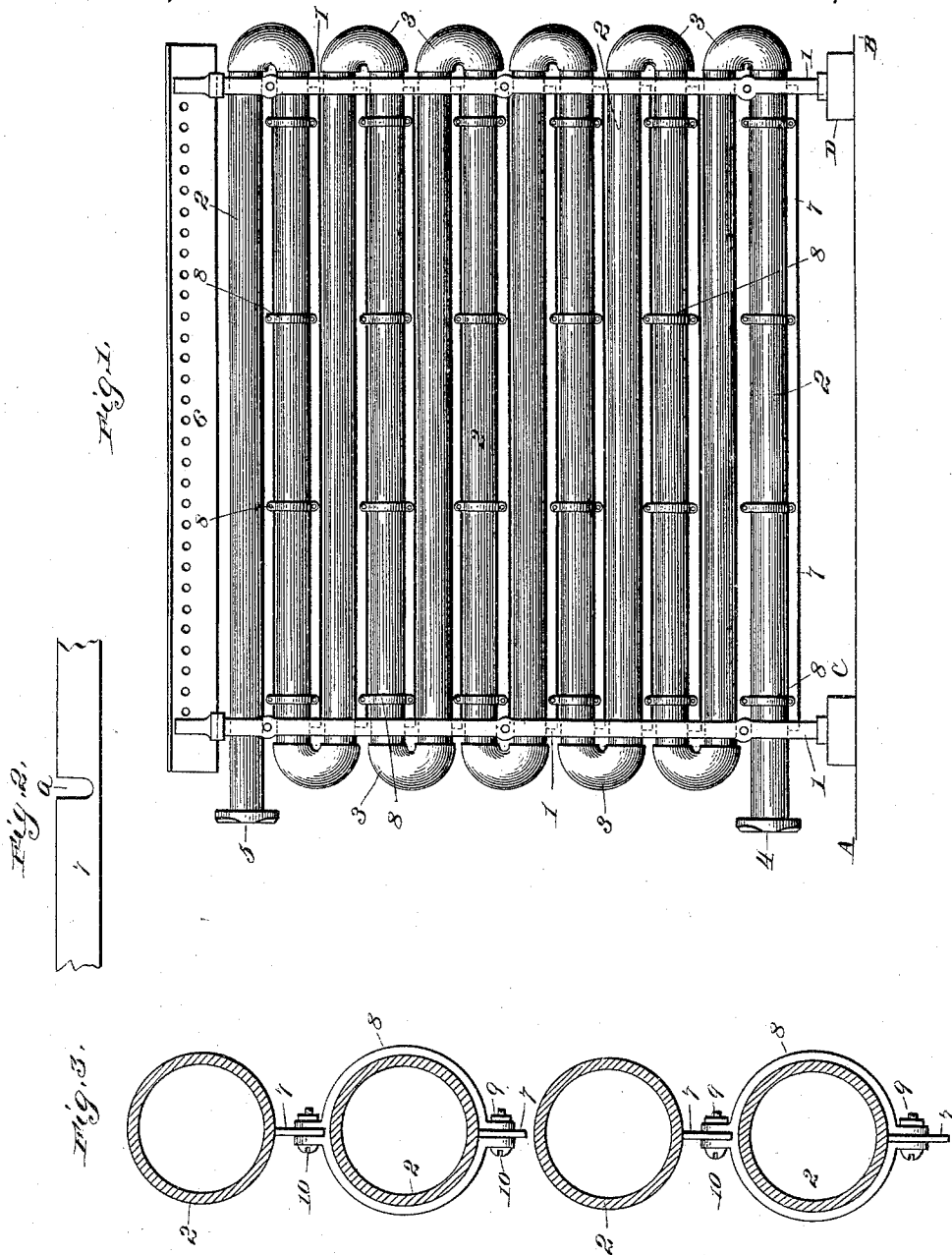
(No Model.)

2 Sheets—Sheet 1.

J. F. DUFFY.
BEER COOLER.

No. 487,405.

Patented Dec. 6, 1892.



Witnesses:
Jm. A. Pollock
Anthony [Signature]

Inventor:
John F. Duffy
By G. N. Dickerson
Attorney.

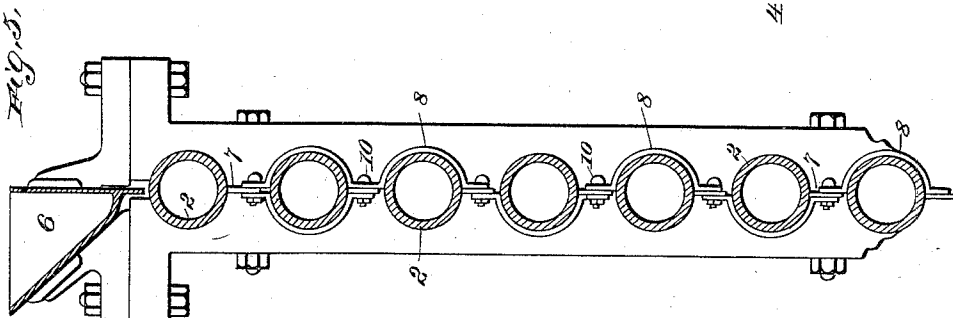
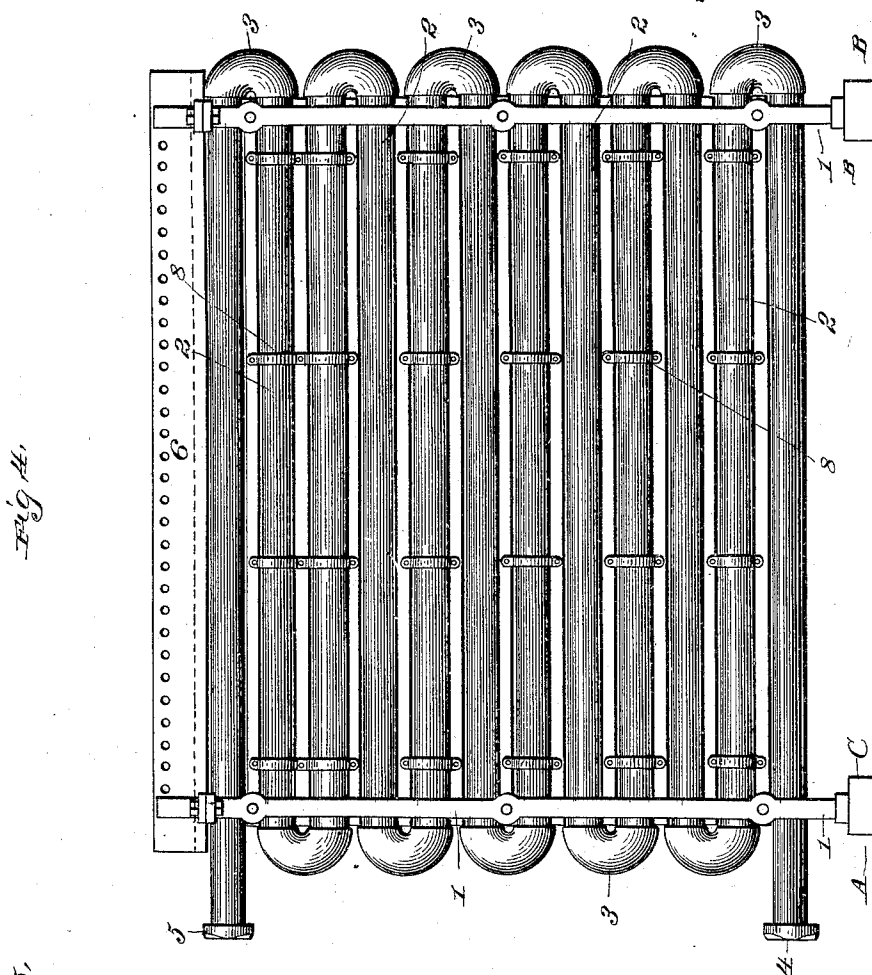
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2 Sheets—Sheet 2.

J. F. DUFFY.
BEER COOLER.

No. 487,405.

Patented Dec. 6, 1892.



Witnesses:

Wm. A. Pollock
Anthony Gref

Inventor:
John F. Duffy

By E. W. Dickerson
Attorney.

UNITED STATES PATENT OFFICE.

JOHN F. DUFFY, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE NATIONAL ICE MACHINE COMPANY, OF SAME PLACE.

BEER-COOLER.

SPECIFICATION forming part of Letters Patent No. 487,405, dated December 6, 1892.

Application filed February 25, 1890. Serial No. 341,771. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. DUFFY, of Brooklyn, Kings county, New York, have invented a new and useful Improvement in the Distribution of Liquids, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

My invention relates to a class of mechanism utilized on vertical condensers, as beer and brine coolers, to effect a more even distribution of liquid in contact with the exterior surfaces of their pipes when condensing vapors or cooling liquids.

The objects of my improvement are to simplify the parts requisite for the purpose, to expedite their attachment, to properly adjust them if occasion requires, to be able to replace broken or disarranged pieces without removing heavy sections or coils of pipe, and to lessen the cost of applying the same.

Hitherto strips have been soldered to the under side of the pipes of the coolers or condensers, requiring considerable time and the exercise of much care to have them accurately placed and in line, as well as the labor of a skilled mechanic with special appliances. Strips have also been secured to the pipes by means of split rings, which encircle the pipe to which the strip is attached, being fastened thereto by having the ends drawn together with a screw or rivet. In either case the method of fastening is unsatisfactory. With the flow of liquid over the pipes there is an accumulation of scum, froth, or filth that is usually removed by scrubbing the pipes and strips with a scrubbing-brush and sometimes with a metal brush. If the thin fins or strips are soldered on, they frequently become detached and broken and scatter the liquid being cooled or used as a cooling medium, in consequence of which there is not only a waste of liquid, but the condensers or coolers become less effective. If the split rings are used, it necessitates the cutting out of holes in the strip immediately above the rings to permit the ends of the ring, which are the largest part, to pass through and encircle the pipe. They require more fitting, and the fins or strips are more readily moved from place and get out of line when cleansed. I attain the object by the mechanism illus-

trated in the accompanying drawings, in which—

Figure 1, Sheet 1, is a view of the same in elevation. Fig. 2 is a section of a strip cut to fit between pipes of a vertical cooler to distribute a moving liquid over pipes beneath it when attached to a pipe, showing a notch at *a*, punched or cut therein to admit of adjustment to or from a pipe when used in connection therewith. Fig. 3 is an end sectional view of some of the pipes of the cooler with the return-bends removed to show the manner of attaching the strips to the pipes. Fig. 4, Sheet 2, is another view of the invention in elevation, showing another method of applying the several parts. Fig. 5 is an end sectional view of the pipes of Fig. 4.

Similar letters and figures refer to similar parts throughout the several views.

A B represent the ground-line, and C D pieces of timber upon which the frames of the cooler are mounted and to which they are bolted.

1 1 are the frames which support the vertical line of pipe 2 2 2 2, of which the cooler is formed.

3 3 3 3 are return-bends into which the pipe ends are screwed to form a continuous passage for gas or liquid from inlet to outlet.

4 may be the inlet and 5 the outlet, or they may be reversed.

6 is a V-shaped trough resting upon two V-shaped brackets or supports bolted or otherwise secured upon the top of the frames 1 1. The bottom of the trough 6 is perforated to permit any liquid allowed to run therein to leak through the perforation and trickle over the exterior surface of the pipes.

7 7 7 7 are strips cut of the proper width to fill the space between the pipes, or if the fit is not exact the strips are always made to touch the pipes above them at their upper edges, as shown in Fig. 3, to prevent spatter and waste.

8 8 are clamps by which the strips 7 are fastened to the pipes 2. They are made to correspond with the exterior sections of the pipes, having at each end an elongation, with the inner side thereof flattened to correspond with other clamps of the same kind, and the surface of the strips 7, which go between them when two clamps are used opposite to each

other on the same pipe and to which they are bolted or fastened. The ends are perforated, as at 9, to admit a bolt or other fastening, as shown at 10. The strips 7, Figs. 1 and 3, are placed between the pipes 2 and are secured thereto by the clamps 8 8, used in pairs, in which case four pairs of clamps are made to attach two of the strips or fins in proper position with each of their upper edges against the under side of a pipe. If they are moved from this position, the bolts may be loosened and with a screw-driver they may be quickly replaced, the notch *a* admitting of all necessary vertical adjustment.

Another method of attaching the fins or strips is shown in Figs. 1, 4, and 5, where the clamps are used singly and are made to bear against a section of each pipe, but alternately on opposite sides, thus admitting of fastening all the strips together and to the pipes, as though made in one piece, insuring strength, accuracy, and an even distribution of liquid. The strips in Figs. 4 and 5 are capable of adjustment, as illustrated by Fig. 3. The fins or strips having been attached to the pipes of a condenser or cooler, as described, liquid is conveyed to the perforated trough 6, from which it trickles through the perforations in its bottom over the pipes beneath it. The strips or fins attached thereto and touching the under side of each pipe at its center spread the liquid passing over them and distribute it more uniformly on the pipes beneath.

In an application filed under even date herewith, Serial No. 341,769, I have shown and claimed a gutter similar to the distributor shown herein, and therefore in this application I do not specifically or broadly claim the distributor.

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

1. A condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser, of a plate, fin, or strip attached thereto by clamps or other fastenings when the said plate or fin is adjustable to or from the said pipe or another pipe in line therewith and is arranged and operates to distribute a liquid brought in contact with it over a pipe or pipes beneath it, substantially as described.

2. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser, of a removable and adjustable plate, fin, or strip attached thereto by clamps or other fastenings, when the said plate or fin is arranged and operates to distribute a liquid brought in contact therewith over a pipe or pipes beneath it, substantially as described.

3. In a condenser or cooler constructed and

arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser or cooler and suitable fastenings, of a removable plate, fin, or strip having one or more perforations or slots that admit of its adjustment to or from the said pipe to which it is attached or of its adjustment to or from another pipe in line therewith when the said plate, fin, or strip is attached by said fastenings to a pipe of such condenser or cooler and operates to distribute a liquid brought in contact therewith over a pipe or pipes beneath it, substantially as described.

4. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser or cooler, of one or more clamps having a section thereof corresponding in form to the exterior of said pipe and having the ends at right angles with the horizontal axis of the said pipe thereof, extending in opposite directions and adapted for being secured to other clamps or other objects by bolts or other fastenings, and a plate, fin, or strip attached by said clamps and by bolts or other fastenings to said pipes when the said plate, fin, or strip is arranged to operate to distribute a liquid brought in contact therewith over a pipe or pipes beneath it, substantially as described.

5. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with a pipe of such condenser or cooler, of two plates, fins, or strips connected therewith by clamps and bolts or other fastenings when the said plates, fins, or strips are arranged and operate to distribute a liquid brought in contact therewith over a pipe or pipes beneath it, substantially as described.

6. In a condenser or cooler constructed and arranged to admit of the passage of a liquid over its exterior surface, the combination, with pipes of such condenser or cooler, of plates, fins, or strips attached thereto by clamps and bolts or other fastenings when the said plates, fins, or strips or any of them are held in contact with said pipe and are connected together by clamps which bear against a section of pipe, but alternately on opposite sides of said pipe, and the said plates, fins, or strips or any of them are so connected and operate to distribute a liquid brought in contact therewith over the said condenser or a part thereof, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. DUFFY.

Witnesses:

H. COULANT,
ANTHONY GREF.