March 1, 1932. G. M. KLEUCKER 1,847,878

PIPE FIN

Filed Oct. 8, 1930

Fig. 1.

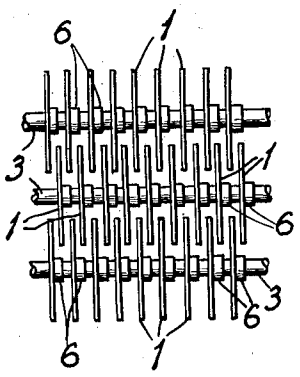



Fig. 2.

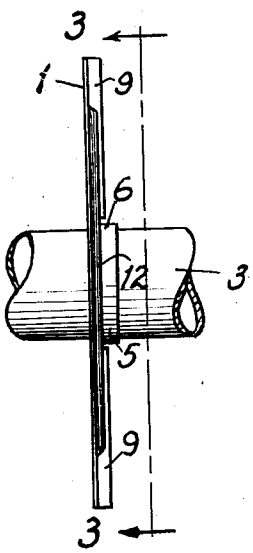



Fig. 3.

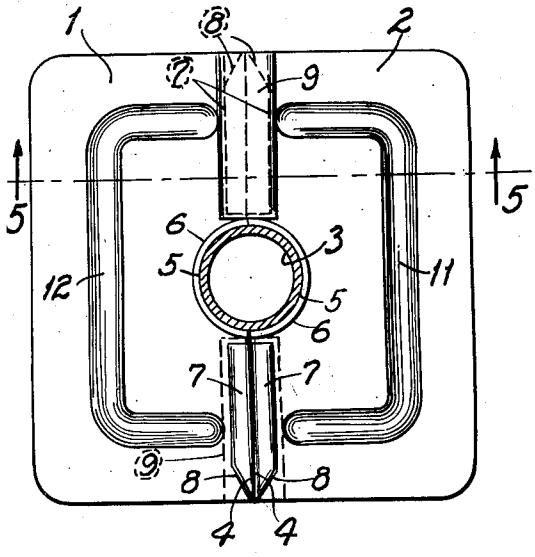



Fig. 4.

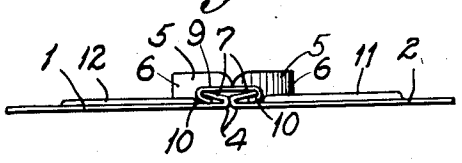
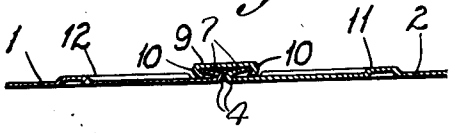



Fig. 5.

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Patented Mar. 1, 1932 1,847,878

# UNITED STATES PATENT OFFICE

GEORGE M. KLEUCKER, OF ST. LOUIS, MISSOURI

## PIPE FIN

Application filed October 8, 1930. Serial No. 487,148.

This invention relates to refrigerating apparatus and more particularly to evaporators.

The object of this invention is to provide greater evaporating surface so that greatly increased evaporating capacity may be obtained in a minimum space.

Another object of this invention is to provide a detachable fin which may be rigidly attached to the piping of an evaporator after installation, so that refrigerating plants already in use may have their capacity increased without in any way disturbing pipe connections or disposition of the evaporators.

Other incidental objects and advantages of this invention will be disclosed in the specification, claim and drawings, in which:

Fig. 1 is a sectional view of an evaporator, partly broken away, embodying my detachable fin.

Fig. 2 is a side view of the detachable fin showing it attached to a pipe.

Fig. 3 is a plan view of the detachable fin and cross-section of a pipe to which it is attached.

Fig. 4 is a section along the line 4—4 in Fig. 2.

Fig. 5 is a section along the line 5—5 in Fig. 3.

Generally speaking the capacity of a refrigerating plant is proportional to the area of the evaporating surface; therefore, in conventional ice plants, ice cream hardening rooms and cold storage rooms, the capacity of the evaporators is regulated by the number of pipes in a bank or the number of banks or evaporators installed. It is obvious that in a plant requiring large refrigerating capacity, the evaporators necessarily must occupy considerable space, which is a direct reduction of the storage capacity of the plant and greatly increases the cost of installation.

The object of this invention is to increase the evaporating surface and at the same time decrease the initial cost of installation by reducing the number of evaporators and reducing the space required for evaporating units. Manufacturers of air-cooled engines surround the engine cylinders with a number of fins to carry away excess heat, so that it has become well-established that capacity of heat transfer is directly proportional to the surface area.

In Fig. 1 is illustrated the manner of application of my detachable fin to three coils of an evaporator. In Fig. 3 is illustrated, in plan view, my detachable fin which consists of two identical members 1 and 2, preferably stamped from sheet metal, adapted to be joined together about a pipe 3.

The abutting edges 4 of the members 1 and 2 form a straight line except in the central portion where they form a curvilinear recess 5, the curvature of the curve being substantially a semi-circle of a radius substantially equal to the radius of the pipe to be encompassed.

The marginal edges of the recessed portion 5 are turned at rightangles 6 in order to give the fin more contact with the pipe. From the recessed portion outwardly to the edge of the fin, the marginal edges 7 are folded over substantially parallel with the body of the fin and spaced apart therefrom a distance approximately equal to the thickness of the fin.

The outer ends 8 of the folded marginal edges 7 are tapered so that when the locking mechanism 9 is put into place the two members 1 and 2 are drawn close and tight about the pipe 3. The locking mechanism 9 is a relatively long, narrow strip of metal having its opposite marginal edges 10 folded inwardly so as to engage the folded marginal edges 7 of the identical members 1 and 2.

For the purpose of giving rigidity to the fin, the members 1 and 2 may be embossed, as shown at 11 and 12, or corrugated.

While the drawings show the two members 1 and 2 installed on a pipe as being substantially square, the same results could, of course, be obtained by making the members 1 and 2 semi-circular so that when installed they present a full circle. The shape of the fin will depend upon the space in which the evaporator is to be installed. Under some conditions, square fins may be best, while under other conditions, semi-circular fins would be better; and under still other con-

ditions elongated quadrilateral fins would be more efficient.

Having fully described my invention, what I claim as new and useful and desire to protect by Letters Patent is:

A detachable pipe fin of the class described, consisting of a plurality of flat plates having one edge bifolded from a curvilinear recess near the longitudinal center of said edge outwardly to the outer edge of said plate, locking means consisting of a relatively long, narrow strip having its opposite sides folded inwardly adapted to engage the folds of said first-named plates and by reason of the taper of the upper ends of one of the folds of said first-named plates draw the plates close and taut around a pipe inserted in said recessed portion.

In testimony whereof I have hereunto affixed my signature this 16th day of September, 1930.

GEORGE M. KLEUCKER.