

July 28, 1931.

J. W. SMITH

1,816,159

EVAPORATOR SECTION

Filed Sept. 26, 1928

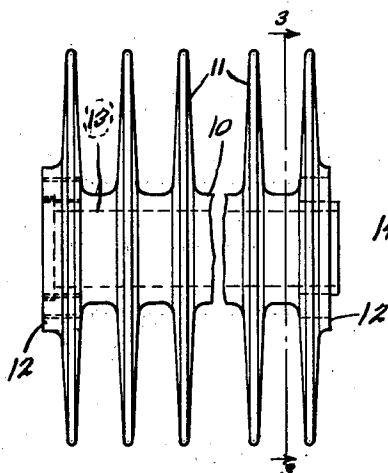


Fig. 1

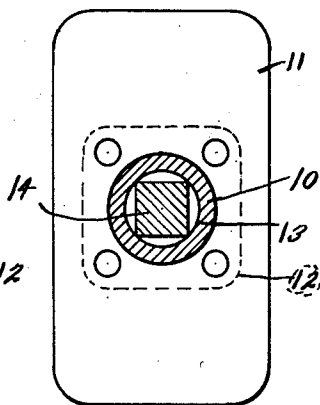


Fig. 3

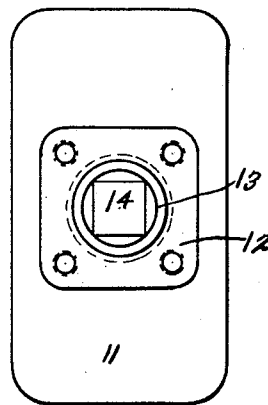


Fig. 2

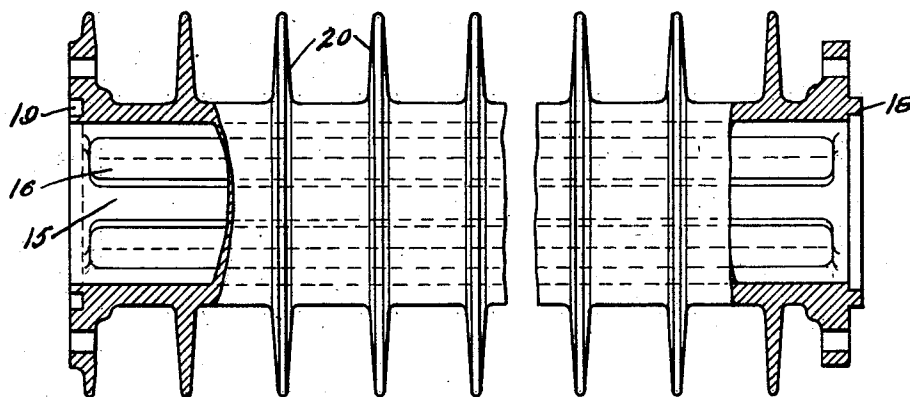


Fig. 4

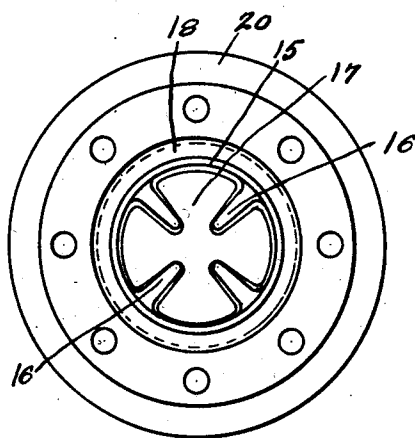


Fig. 5

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EVAPORATOR SECTION

Application filed September 26, 1928. Serial No. 308,557.

The present invention, relating, as indicated, to evaporators for use in connection with refrigerating machines, has for its principal object the provision of an improved evaporator wherein the area of surface in contact with the refrigerant is increased and the capacity or volume of the evaporating space correspondingly decreased, and wherein fins of such form are provided that the heat conductivity through all radial volumes of equal cross-section in the same plane is substantially uniform.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims; the annexed drawings and the following description setting forth in detail certain structure embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:

Fig. 1 is a fragmentary side elevational view of an evaporator section embodying the present improvements; Fig. 2 is an end elevation of the section illustrated in Fig. 1; Fig. 3 is a transverse section taken on a plane indicated by the line 3—3 of Fig. 1; Fig. 4 is a side elevational view of a modified form of my invention; and Fig. 5 is an end elevation of the evaporator section shown in Fig. 4.

That embodiment of my invention illustrated in Figs. 1 to 3, inclusive, consists of a substantially tubular body 10 which is provided with radial fins 11 and end flanges 12, those latter being adapted for axial interconnection when a surface larger than that afforded by a single section is desired. The entire section is preferably an integral casting of iron for example, and the fins, which may have any desired shape, are so proportioned that when refrigerant is being evaporated the temperature of all areas of the outside of the barrel 10, as well as all equivalent areas of the fins 11, have and retain substantially the same temperature. For reducing the volume or capacity of the

passageway or bore 13 and in some measure increasing the area of conducting surface in contact with the refrigerant, a core 14 is provided, this core being removably positioned within such bore and having contact with its walls, whereby to not only diminish the capacity of the expanding chamber without detrimentally affecting its area, but to also provide a direct metallic conducting path between interior parts of the refrigerant and the medium surrounding the evaporator. If desired, the core 14 may have a cross-sectional shape other than that illustrated and may be twisted longitudinally to form helical flukes which will agitate the refrigerant and induce movement thereof towards the conducting surfaces.

In Figs. 4 and 5 a modified embodiment of my invention is illustrated. In the form shown it differs from the one previously described in that the bore 15 is provided with a plurality of inwardly extending fins 16 which increase the inside superficial area and form supports for a core 17, this core preferably having somewhat the shape illustrated and serving about the same purpose as the similar core shown in preceding figures. One end may be formed with a tongue 18 and the other end may be provided with a groove 19 so that similar sections can be secured together axially in case a single section does not present a large enough exterior surface. As before, the fins 20 are so tapered and proportioned that when refrigerant is being evaporated all equal areas perpendicular to radii from the longitudinal axis pass about the same quantity of heat and all similar exterior areas have about the same temperature. Also, as before, the core is provided for decreasing the volume of the evaporating passageway and together with the inwardly extending fins affords a much enlarged area for conducting heat to the refrigerant.

Other modes of applying the principle of my invention may be employed instead of the one explained; change being made as regards the structure herein disclosed, provided the means stated by any of the follow-

ing claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

5 1. A device of the character described, comprising a body provided with external fins and a longitudinal bore, and means for breaking up stratification in fluid currents therein, said means including a core pre-
10 senting sweeping curved surfaces to guide such fluid.

2. A device of the character described, comprising a body provided with outstand-
15 ing radial fins and a longitudinal bore, and means for breaking up stratification in fluid currents therein, said means including a core with flukes having sweeping curved surfaces.

3. A device of the character described, comprising a body having a bore, and a core
20 therein of substantially uniform diameter having flukes widened at their periphery.

4. A device of the character described, comprising a body having a bore formed with inward projections, and a core having
25 flukes widened at their periphery and interdigitating with such projections.

5. A device of the character described, comprising a body provided with external fins and a longitudinal bore, and a core hav-
30 ing flukes widened at their periphery.

6. A device of the character described, comprising a body provided with external fins and a bore with inward projections, and
35 a core having flukes widened at their periphery and interdigitating with said projections.

7. A device of the character described, comprising a body provided with external fins and a bore with inwardly projecting
40 ribs, and a core having flukes widened at their periphery and interdigitating with said ribs.

Signed by me, this 18th day of September, 1928.

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JAMES W. SMITH.

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