

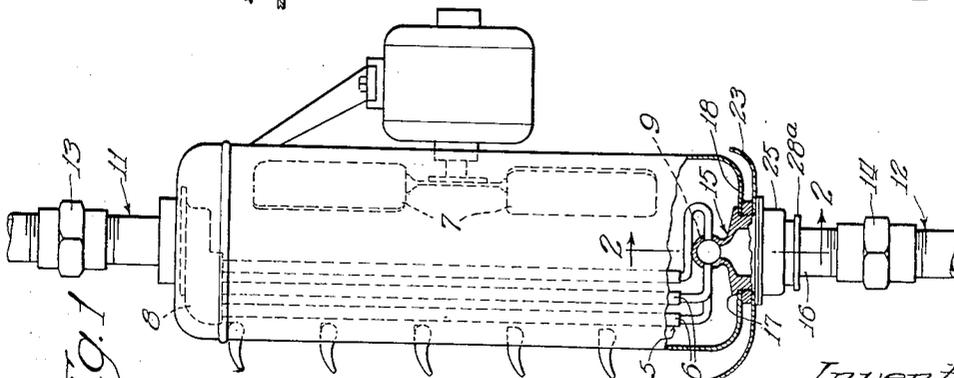
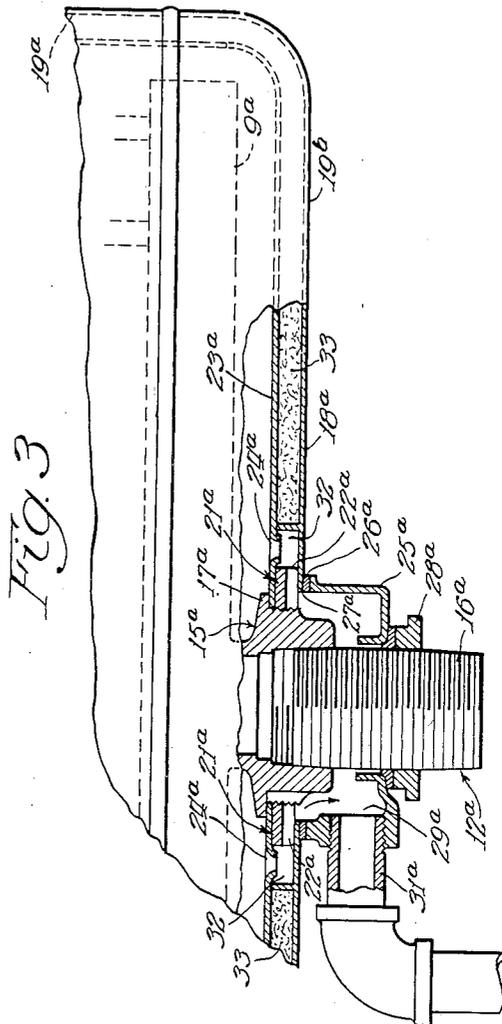
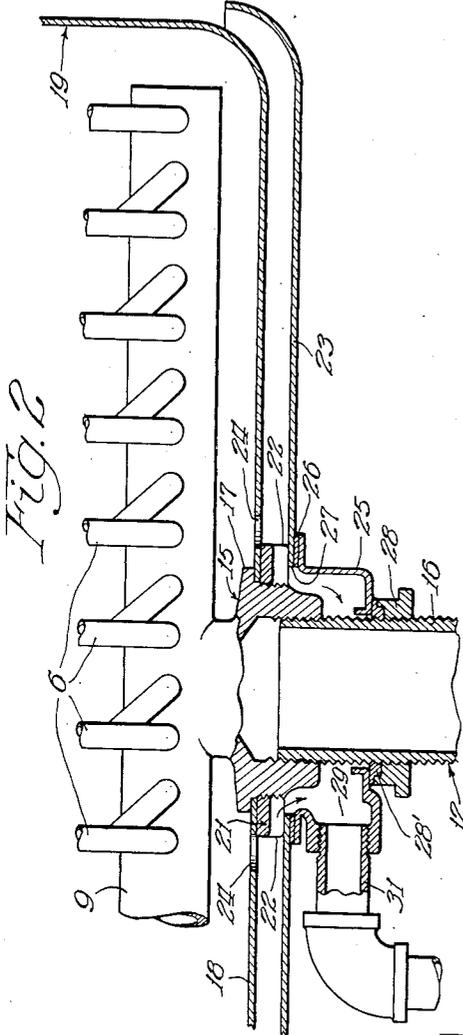
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COOLING UNIT

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COOLING UNIT

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15 Claims. (Cl. 62—140)

This invention relates to a cooling unit, and particularly to means associated therewith for collecting and removing condensate therefrom.

One object of the present invention is to provide a novel construction and arrangement, whereby the condensate dripping from the core and/or shell of a cooling unit may be collected and drained away to a suitable place of disposal.

Another object of the invention is to provide a rotatably adjustable cooling unit with suitable means rotatable therewith for removing the condensate therefrom.

A further object of the invention is to provide a construction and arrangement of the character described, wherein the condensate receiving means and drain pipe associated therewith may be relatively fixed, and wherein the cooling unit and the condensate collecting means therefor may be rotatable and relatively movable with respect to the receiving means and drain pipe.

A still further object of the invention is to improve devices of the character described in sundry details hereinafter referred to and particularly pointed out in the appended claims.

One embodiment of the present invention is shown for illustrative purposes in the accompanying drawing, in which:

Fig. 1 is an elevational view, partly in section, of a cooling unit illustrating the application of the present invention thereto;

Fig. 2 is an enlarged fragmentary sectional elevational view of the structure illustrated in Fig. 1 and taken substantially as indicated by the line 2—2 thereof; and

Fig. 3 is a fragmentary sectional elevational view similar to Fig. 2 illustrating a slightly different arrangement of various elements embodied in the present invention.

Referring particularly to Figs. 1 and 2 of the drawing, the present invention is illustrated in connection with a cooling unit having a fluid circulating core indicated, as a whole, by the numeral 5 and comprising a plurality of tubes 6 between which currents of air may be circulated by a fan 7, the tubes 6 being provided adjacent their opposite ends with headers 8 and 9, respectively, adapted to communicate with aligned intake and outlet conduits 11 and 12, respectively, including unions 13 and 14 in the respective conduits, the lower header 9 being provided with a connector 15 internally screw-threaded to receive a nipple 16 forming part of the conduit 12, the said connector having a flanged portion 17 against which the lower portion 18 of a shell 19 for surrounding the core 5 is secured by a castellated nut 21, screw-threaded onto the outer surface of the connector 15.

Positioned beneath the core 5, header 9 and shell 19 and against the castellations 22 of the

nut 21, is a condensate collector or drip pan 23 adapted to extend beyond the sides of the shell 19 in a manner to collect any condensate dripping therefrom and from the core 5 and headers 8 and 9, the bottom portion 18 of the shell 19 being provided with a plurality of apertures 24 providing communication with the interior of the shell.

Positioned below the drip pan 23 is a condensate receiver or trap 25 having a gasket 26 positioned between a flange adjacent the upper end of the trap and the drip pan 23 to provide a fluid-tight connection therebetween, the side walls of the trap 25 being spaced from the connector 15 in a manner to provide communication between the trap and the drip pan through an aperture 27 formed in the pan 23 and between the castellations 22 of the nut 21 in a manner to receive the condensate collected by the drip pan 23.

Beneath the trap 25 and operatively related to the screw-threaded portion of the nipple 16 is a packing gland 28 and packing 28' adapted to provide a fluid-tight connection between the nipple 16 and trap and to secure the gasket 26 securely adjacent the bottom portion of the drip pan 23.

Formed in one of the side walls of the trap 25 is an aperture 29 adapted to communicate with a drain pipe 31 by which the condensate may be drained from the trap 25 to a suitable place of disposal.

In order to rotate the cooling unit with respect to the supporting inlet and outlet conduits 11 and 12, the unions 13 and 14 of the respective conduits may be loosened and the packing gland 28 backed off slightly to permit the drip pan 23 to be rotated with the unit and the cooling unit to be angularly adjusted, without disturbing the drain piping connection 31, to direct the air currents in the direction desired. It will be noted from the foregoing description that notwithstanding the complete adjustability of the unit, the trap 25, drain pipe 31 and the conduits 11 and 12 may remain in relatively fixed position with respect to each other, and that by backing off the packing gland 28 to relieve the pressure at the upper end of the trap 25 against the gasket 26, the drip pan 23 may be rotated with the cooling unit in order to retain the pan in operative relation thereto for effectively receiving the condensate therefrom.

The arrangement illustrated in Fig. 3 of the drawing is substantially like that shown in Fig. 2, except that a drip pan 23a is positioned inside a shell 19a having a bottom portion 19b extending beneath the drip pan 23a, said drip pan being secured against a flange 17a of a connector 15a by a castellated nut 21a, the bottom portion 19b of the shell 19a shown in Fig. 3 being provided

with a chamber 32 surrounding the nut 21a and adapted to communicate with the drip pan 23a through apertures 24a formed in the bottom of the pan.

5 In the arrangement illustrated in Fig. 3, the necessity of positioning the drip pan beneath the shell is obviated by reason of the fact that the shell 19a and shell 19b are insulated as indicated at 33, thereby preventing the accumulation of condensate on the outer portions of the shell. 10 In other respects the manner of providing for the removal of the condensate from the pan 23a is substantially as described with reference to the arrangement illustrated in Fig. 2, the correspondingly indicated portions in Fig. 3 being designated by like numerals bearing the exponent "a".

It will be observed from the foregoing description that the present invention provides a novel, 20 simple and efficient arrangement whereby condensate may be collected from the core and/or shell and conducted to a suitable place of disposal, and wherein collecting means may be operatively associated therewith and with the adjustable cooling unit in a manner to retain the drip pan in operative position with respect to the unit regardless of the angular adjustments thereof with respect to the supporting conduits 11 and 12, trap 25 and drain pipe 31, and without 30 disturbing the drain piping.

Obviously, the present invention is not limited to the precise construction and arrangement shown and described as the same may be variously modified. Moreover, all the features of the 35 invention need not be used conjointly as the same may be used to advantage in variously different combinations and sub-combinations.

What I claim as new and desire to secure by Letters Patent is:

40 1. In a cooling unit having a fluid circulating core supported on and between adjacent ends of vertically aligned inlet and outlet conduits and adapted to rotate with respect thereto around the axes of said conduits, the combination of a drip pan beneath said core and rotatable therewith, 45 and a drain pipe communicating with said drip pan in relatively fixed position with respect to portions of said conduits.

2. In a cooling unit having a fluid circulating 50 core supported on and between and communicating with adjacent ends of vertically aligned inlet and outlet conduits and adapted to rotate with respect thereto around the axes of said conduits, the combination of a drip pan for receiving condensate from the core and adapted to rotate therewith, a fluid trap adjacent one of 55 said conduits and communicating with said pan, and a drain pipe communicating with said trap.

3. In a cooling unit having a fluid circulating 60 core supported between and communicating with adjacent ends of inlet and outlet conduits having movable and fixed portions, said core being adapted to rotate with respect to a portion of said conduits, the combination of a drip pan for receiving condensate from the core and adapted to rotate therewith, a fluid trap surrounding one of said conduits and communicating with said pan, and a drain pipe communicating with said trap at one side of said one of the conduits. 65

4. In a cooling unit having a fluid circulating 70 core provided with headers adjacent its opposite ends communicating, respectively, with upper and lower supporting conduits having movable and fixed portions, said core being rotatable with respect to the fixed portions of the conduits, one 75

of said headers having a connector associated therewith adapted to receive a portion of said lower conduit, a shell surrounding said core and headers in a manner to rotate therewith, a drip pan beneath said core and headers for receiving condensate therefrom and adapted to rotate with said core and shell, a fluid trap surrounding said lower conduit and communicating with said pan, and a rigid drain pipe connected to and communicating with said trap. 5 10

5. In a cooling unit having a fluid circulating core provided with headers adjacent its opposite ends communicating, respectively, with upper and lower supporting conduits having movable and fixed portions, said core being rotatable with respect to the fixed portions of the conduits, one of said headers having a connector associated therewith adapted to receive a portion of said lower conduit, a shell surrounding said core and headers, means for securing the shell to said connector in a manner to rotate therewith, a drip pan beneath said shell and communicating with the interior thereof beneath said core and headers for receiving condensate therefrom and adapted to rotate with said core and shell, a fluid trap surrounding said lower conduit and communicating with said pan, and a rigid drain pipe connected to and communicating with said trap in relatively fixed relation with respect to a portion of said lower conduit. 15 20 25 30

6. In a cooling unit having a fluid circulating core provided with headers adjacent its opposite ends communicating, respectively, with upper and lower supporting conduits having movable and fixed portions, said core being rotatable with respect to the fixed portions of the conduits, one of said headers having a screw-threaded connector associated therewith adapted to receive a portion of said lower conduit, a shell beneath and surrounding said core and headers, a threaded nut operatively related to said connector for securing the shell thereto in a manner to rotate therewith, a drip pan beneath and extending beyond the sides of said shell and communicating with the interior thereof for receiving condensate from said core, headers and shell and adapted to rotate therewith, a fluid trap surrounding said lower conduit and communicating with said pan, means on said lower conduit for supporting said trap in operative position with respect to said pan, and a drain pipe rigidly connected to and communicating with said trap in relatively fixed relation with respect to a portion of said lower conduit. 35 40 45 50

7. In a cooling unit having a fluid circulating 55 core provided with headers adjacent its opposite ends communicating, respectively, with upper and lower supporting conduits having movable and fixed portions, said core being rotatable with respect to the fixed portions of the conduits, one of said headers having a screw-threaded flanged connector associated therewith adapted to receive a portion of said lower conduit, a shell surrounding said core and headers and having an aperture therein adapted to receive said connector adjacent the flange thereof, a castellated nut on said connector for securing the shell against the flange of the connector in a manner to rotate therewith, a drip pan beneath said shell and adjacent the castellations of said nut and having an aperture adapted to receive said connector in spaced relation to the pan, said pan communicating with the interior of said shell beneath said core and headers for receiving condensate from said core, headers and shell and 60 65 70 75

adapted to rotate therewith, a fluid trap surrounding said lower conduit and communicating with said pan, means on said lower conduit for supporting said trap and pan snugly against the 5
castellations of said nut and providing a fluid tight connection between said trap and lower conduit, and a drain pipe connected rigidly to and communicating with said trap in relatively fixed relation with respect to a portion of said 10
lower conduit.

8. In a cooling unit having a fluid circulating core provided with headers adjacent its opposite ends communicating, respectively, with upper and lower supporting conduits having movable and 15
fixed portions, said core being rotatable with respect to the fixed portions of the conduits, one of said headers having a screw threaded connector associated therewith adapted to receive a portion of said lower conduit, a drip pan be- 20
neath said core and headers for receiving condensate therefrom, means for securing the pan to said connector in a manner to rotate therewith, a shell surrounding said core and headers and having a bottom portion extending beneath 25
said pan, said bottom portion having a chamber communicating with the pan for receiving condensate therefrom and adapted to rotate with said core and pan, a fluid trap surrounding said lower conduit and communicating with said 30
chamber, and a rigid drain pipe connected to and communicating with said trap in relatively fixed relation with respect to a portion of said lower conduit.

9. In a cooling unit having a fluid circulating core provided with headers adjacent its opposite ends communicating, respectively, with upper and lower supporting conduits having movable and fixed portions, said core being rotatable with respect to the fixed portions of the conduits, 40
one of said headers having a screw-threaded flanged connector associated therewith adapted to receive said lower conduit, a drip pan beneath said core and headers for receiving condensate therefrom, said pan having an aperture therein adapted to receive said connector adjacent the 45
flange thereof, a castellated nut on said connector for securing the pan against the flange thereof in a manner to rotate therewith, a shell surrounding said core and headers and having a bottom portion extending beneath said pan ad- 50
jacent the castellations of said nut and provided with an aperture adapted to receive the connector in spaced relation to the bottom portion of the shell, said bottom portion having a chamber adjacent said nut and communicating with the pan for receiving condensate therefrom and 55
being adapted to rotate with said core and pan, a fluid trap surrounding said lower conduit and communicating with said chamber, means on said lower conduit for securing said trap and shell snugly against the castellations of said nut and providing a fluid tight connection between said trap and lower conduit, and a rigid drain pipe 60
connected to and communicating with said trap in relatively fixed relation with respect to said lower conduit. 65

10. In a cooling unit having a fluid circulating core rotatably mounted on and between relatively fixed portions of inlet and outlet conduits operatively related to and communicating with opposite ends of said core, the combination of condensate collecting means operatively associated with said core and adapted to rotate therewith, and con-

densate receiving means and a drain pipe therefor operatively associated with one of said conduits in relatively fixed position with respect to a portion thereof and adapted to communicate with said collecting means for receiving con- 5
densate therefrom.

11. In a device of the kind described and in combination, a supply conduit and a return conduit, a condensate drain pipe having a trap communicating therewith, a cooling unit adjustably 10
carried between and rotatable on said conduits and having its inlet and outlet communicating with the same, a drip pan associated with said unit and adjustable therewith and with respect to said trap, and means for adjustably securing 15
said trap and pan in operative relation.

12. In a cooling unit of the kind described having a fluid circulating core adjustably supported between and communicating with adjacent ends of vertically aligned supply and return 20
conduits, the combination of a drip pan associated with the core for receiving condensate therefrom and adjustable therewith between said conduits, a stationary fluid trap provided with a drain pipe extending therefrom, said trap commu- 25
nicating with said pan and adjustably secured thereto to permit relative movement of the pan and trap.

13. In a cooling unit of the kind described having a fluid circulating core rotatably supported between and communicating with adja- 30
cent ends of aligned supply and return conduits, the combination of a drip pan for receiving condensate from the core and rotatable therewith between said conduits, a fluid trap provided with a drain pipe communicating therewith, said trap 35
communicating with said pan and operatively connected therewith whereby the pan may be rotated with the core without rotating the drain pipe and trap.

14. In a device of the kind described and in combination, a supply conduit and a return conduit having movable and fixed portions, a cooling unit adjustably carried by one of said conduits with its inlet and outlet communicating with 45
said conduits, a drip pan associated with said unit and adjustably carried therewith, a condensate drain pipe, a condensate trap communicating with said drain pipe, said trap mounted upon and carried by a portion of one of said 50
conduits and communicating with said drip pan, and means for adjustably maintaining said trap in operative relation with said drip pan, whereby the drip pan may be adjustable with the unit without adjustment of the trap on its support. 55

15. In a device of the kind described and in combination, a supply conduit and a return conduit having movable and fixed portions, a cooling unit adjustably supported adjacent said conduits with its inlet and outlet communicating with 60
said conduits, a condensate drip pan associated with said unit and adjustably supported therewith, a condensate drain pipe, a condensate trap communicating with said pipe, said trap mounted upon and carried by a portion of one of said 65
conduits and communicating with said drip pan, and means for adjustably maintaining said trap in operative relation with said drip pan, whereby the drip pan may be moved for adjustment with the unit without adjustment of the drain pipe and the trap on its support. 70

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