Oct. 5, 1937. J. D. LEAR 2,095,219

CONDENSATE COLLECTOR

Filed June 26, 1936

Fig. 6

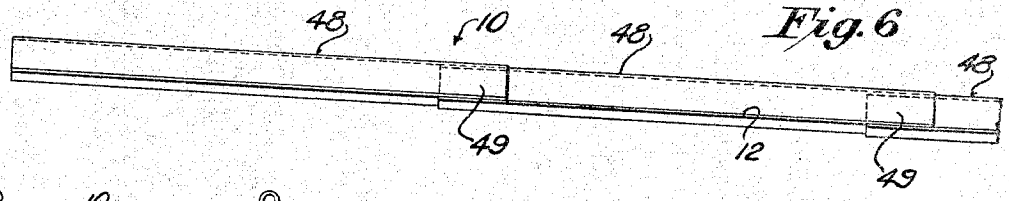



Fig. 1

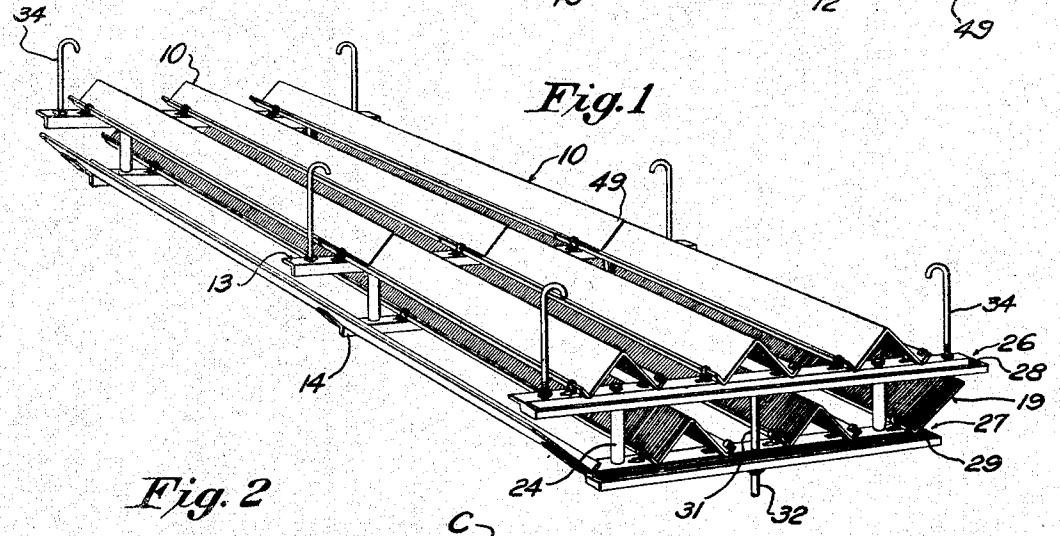



Fig. 2

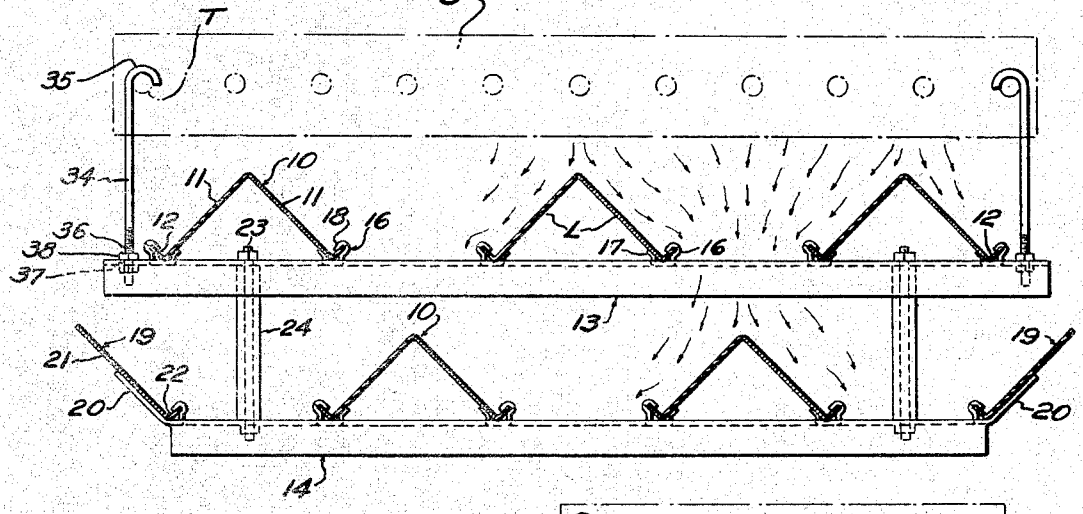



Fig. 4

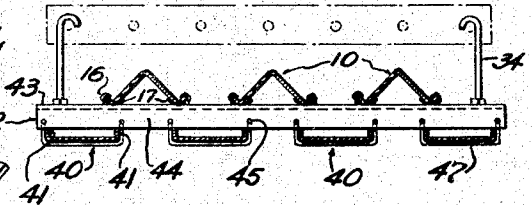



Fig. 3

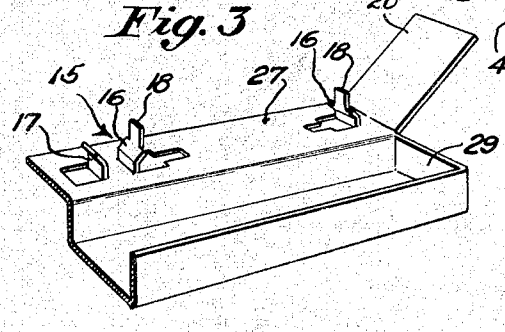
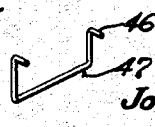



Fig. 5




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2,095,219

## CONDENSATE COLLECTOR

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Application June 26, 1936, Serial No. 87,409

6 Claims. (Cl. 62—103)

This invention relates to improvements in condensate collectors which are used with refrigeration coils.

The invention is directed to a device which serves to protect the commodities stored in a refrigerated room from condensate drippage from the overlying coil, and which additionally acts to direct the air in such manner as to induce an ideal convective flow thereof.

In recognition of the practical difficulties of supplying devices of this nature for the entire range of coil sizes, the present invention contemplates the construction of simple units which may be cut to the desired length and assembled one with the other to any desired size, with a minimum expenditure of time and labor. Inasmuch as the larger sizes of such fabricated structures are extremely difficult to handle for shipping, I have provided an assembly method which may be performed by unskilled labor; and further, I have formed the units so that when shipped in knocked-down form, they may be nested to occupy a minimum of space.

In the drawing:

Fig. 1 is a perspective view of the collector;

Fig. 2 is an enlarged cross sectional view through the collector;

Fig. 3 is an enlarged perspective view of one end of a supporting rail for the collector structure;

Fig. 4 is a sectional view of another embodiment of the invention;

Fig. 5 is a perspective view of one of the hangers of Fig. 4; and

Fig. 6 is a side view of a deflector showing the overlapping assembly thereof.

The collector of Figs. 1—3 consists of two superimposed receiver units fabricated chiefly of deflectors 10, which preferably are identical in size and shape. Each deflector is of ridge formation in cross section, the sides or legs 11 of said formation terminating in angular flanges 12 which form marginal troughs therewith. It is preferred that the flange and ridge angles of this structure be approximately 90 degrees to permit its fabrication on a simple brake, without the necessity of special dies or fixtures.

The deflectors of the upper and lower units are secured to transverse supports 13 and 14 respectively, which may be of similar angular construction. The horizontal legs of the supports 13 and 14 are provided with spaced locating sockets 15 for receiving the trough formations of the deflectors. Each socket is formed by striking a pair of opposed angular lugs 16 and 17 out of the body of the horizontal angle leg. The outer lugs 16 are additionally formed with vertical ears 18, which, after the deflectors are properly located in the sockets, are bent over the margin of the flanges 12, thus securely positioning the deflectors on the supports.

The marginal deflectors 19 of the lower row may be of special formation, each consisting of a body 21 terminating in a flange 22 which is similar to the trough formation of the deflector 10. The extremities of the lower supports 14 are formed with angular wings 20 which support the bodies 21, while the flanges 22 are engaged by the ears 18.

The deflectors secured to the lower supports 14 are positioned directly under the spaces between the deflectors of the upper unit, and the two rows are assembled in this position by bolts 23 and interposed pipe spacers 24, which connect and properly space the pairs of supports of the two units.

An end pair of supports 26 and 27 are provided with gutter formations 28 and 29, while otherwise they are similar to the supports 13 and 14. It will be observed that the extremities of the troughs of the deflectors 10 are disposed so as to discharge into the gutters, which in turn are provided with discharge pipes 31 and 32, the former being directed into the gutter 27, and the latter leading to a suitable drain.

The collector is positioned under a coil C, as shown in Fig. 2, by suspension members 34 which are formed with hooks 35 engaging the tubes T of the coil, and threaded extremities 36 which engage through holes 37 formed in the upper supports 13. Nuts 38 on the members engage the supports, and they are adjustable to permit proper spacing of the collector from the coil including a slight downward pitch so that drainage into the gutters 28 and 29 is obtained.

In the second embodiment of the invention (Fig. 4), the upper row of deflectors may be identical to the deflectors 10 of the first embodiment. The lower row of deflectors 40, however, are of channel construction, having vertically disposed flanges 41 which form a trough structure. Single supports 42 serve to connect the units, and each support is provided with a horizontal leg 43 formed with sockets 15 in the same manner as the supports of the first embodiment. The vertical legs 44 of the supports 42 are formed with spaced holes 45 for receiving the prongs 46 of wire bails 47 (Fig. 5) which extend about the deflectors 40 and resiliently retain them against the lower edge of the legs 44.

Referring to Fig. 6, it will be observed that each deflector may be formed of several lengths 48, which may be overlapped, as indicated by the numeral 49, in the direction of drainage. This construction is utilized in the longer types of collectors (Fig. 1) and they may be assembled as easily as the shorter collectors, since the supports may be positioned beneath the overlapped joints with the ears 18 bent over the superimposed lengths to provide a rigid assembly.

In operative position, it is preferred that the upper deflector unit be mounted in close proximity to the overlying coil C so that the cooled air may flow directly down the angular sides of the deflectors and deposit a large portion of its moisture content thereon, which will be directed to the troughs and finally to the drain of the upper unit. Moisture will also be deposited on the lower surfaces L of the deflectors, but the angle to the vertical of the ridge structure is sufficiently great to permit the water to cling thereto and finally drop off the edge of the troughs and into the troughs of the underlying unit.

The deflectors of the lower unit, aside from receiving moisture from the surfaces L of the upper unit, also function as condensers and deliver the water to their common gutter.

The funnel-like openings between the adjacent deflectors, as formed by the ridge structures, have been found to enhance greatly the convective air flow through the coil, since, first, the deflectors distribute the air and cause a uniform downward flow, and second, the air in transit is caused to traverse the relatively warm condenser surfaces of the deflectors in a natural flow without blocking at any point in the entire collector area.

I claim:

1. A collector adapted to be suspended beneath a refrigeration evaporator comprising superimposed receiver units, each unit being formed of a plurality of elongated individual deflectors disposed in spaced parallel relation, each deflector having a medial crest and downward sloping sides to provide a ridge, upward bent flanges providing troughs at the extremity of each ridge, the deflectors of the upper unit being positioned over the spaces between the deflectors of the underlying units.

2. A collector adapted to be suspended beneath a refrigeration evaporator comprising a receiving unit formed of a plurality of elongated individual deflectors disposed in spaced parallel relation, each deflector having a medial crest and downward sloping sides to provide a ridge, upward bent flanges providing troughs at the extremity of each ridge, and a second receiving unit under said first unit having spaced deflectors disposed beneath the spaces between the deflectors of the upper unit and formed with marginal flanges.

3. A collector adapted to be suspended beneath a refrigeration evaporator comprising a receiving unit formed of a plurality of elongated individual deflectors disposed in spaced parallel relation, each deflector having a medial crest and downward sloping angular sides to provide a ridge, upward bent flanges providing troughs at the extremity of each ridge, transverse supporting members disposed beneath the deflectors at spaced intervals, sockets formed in the members for receiving the trough formations of each deflector, securing means for connecting each socket to each trough, and a second receiving unit under said first unit and having spaced deflectors disposed beneath the spaces of the deflectors of the upper unit.

4. A collector adapted to be suspended beneath a refrigeration evaporator comprising a receiving unit formed of a plurality of elongated sheet metal individual deflectors disposed in spaced parallel relation, each deflector having a medial crest and downward sloping sides disposed at substantially right angles to each other to provide a ridge, marginal flanges on each side disposed substantially perpendicular thereto and providing troughs on each extremity of the ridge, and a second receiving unit under said first unit having spaced deflectors disposed beneath the spaces between the deflectors of the upper unit.

5. A collector adapted to be suspended beneath a refrigeration evaporator comprising a receiving unit formed of a plurality of individual deflectors disposed in spaced parallel relation, each deflector formed of a plurality of lengths of sheet metal formations bent to provide symmetrical structures having a medial crest and downward sloping sides and upward bent marginal flanges providing troughs at the extremity of each side, said lengths of each deflector being overlapped with each other at their extremities, supports extending transversely across the bottom of the deflectors at the overlapping portions of each, sockets formed in the supports for receiving the trough formations of each deflector, securing means for connecting each socket to each overlying trough, and a second receiving unit under said first unit and having spaced deflectors disposed beneath the spaces between the deflectors of the first unit.

6. A collector adapted to be suspended beneath a refrigeration evaporator comprising a receiving unit formed of a plurality of individual deflectors disposed in spaced parallel relation, each deflector having a medial crest and downward sloping sides terminating in upward bent marginal flanges forming troughs therewith, transverse sheet metal supports disposed beneath the deflectors at spaced intervals, sockets formed in the supports for receiving the trough formations of each deflector, a projecting ear on each socket adapted to be bent about the edge of each flange to secure the deflectors to the sockets, and a second receiving unit under said first unit and having spaced deflectors disposed beneath the spaces between the deflectors of the first unit.

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