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(54) **Eutectic plates**

(57) A eutectic plate 1 for attachment to the wall of a cylindrical storage vessel comprises spaced apart skins 3,4 interconnected by members 5 to define a plu-

rality of compartments 8. Some compartments contain eutectic material 10 whilst other compartments define passageways for the flow therethrough of a fluid.

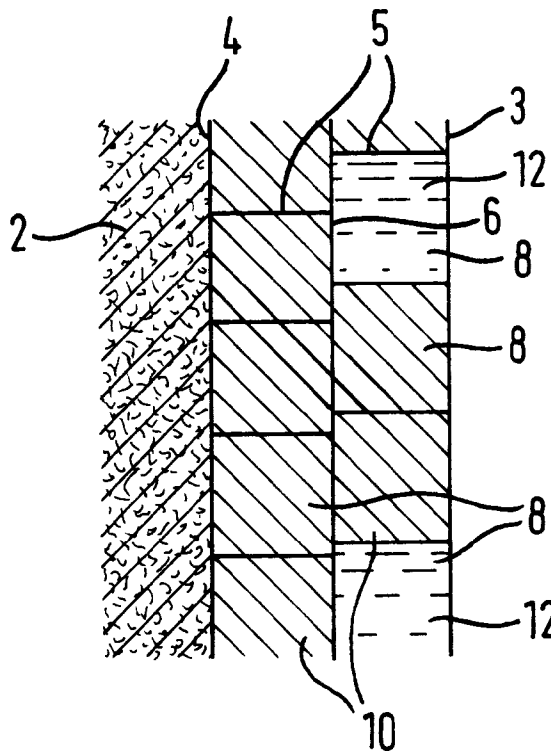


FIG. 2

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Description

The present invention relates to eutectic plates and in particular to eutectic plates adapted to be attached to the outer surface of cylindrical storage tanks, for example, refrigerated storage tanks.

Access to refrigerated storage tanks held within frames constructed to international standards is limited at the sides and the nozzles for entry into the tank are usually located on the median line along the top of the tank. Such tanks are usually insulated and then covered with a material for protecting the insulation.

It is an aim of the present invention to provide eutectic plates which are adapted to be clamped directly against the cylindrical outer wall of a tank and which can be made to function either as heating or cooling plates.

According to the present invention a eutectic plate of arcuate configuration for ready attachment directly to the wall of a cylindrical storage tank comprises spaced apart first and second skins interconnected by members to define a plurality of compartments in which some compartments contain eutectic material while other compartments define passageways for the flow there-through of a fluid.

Preferably the disposition of the members between the skins defines compartments in the form of a honeycomb and in which each compartment is generally square in cross-section.

An embodiment of the invention will now be described, by way of example, reference being made to the Figures of the accompanying diagrammatic drawing in which:

Figure 1 is a perspective view of two eutectic plates according to the present invention; and

Figure 2 is a detail in cross-section of one of the eutectic plates illustrated in Figure 1.

As shown in Figure 1, two eutectic plates 1, each have a generally arcuate configuration for ready attachment directly to the outer wall of, for example, a cylindrical refrigerated storage tank (not shown). Referring also to Figure 2, the plates 1 are fixed to the tank under the conventional insulation 2 usually surrounding the tank when containing chilled products.

Each plate 1 as shown comprises inner and outer skins 3, 4 interconnected by cross members 5 and a thin intermediate plate member 6 which define with the skins 3,4 a plurality of compartments 8 of generally square cross-section. Some compartments 8 are filled with eutectic material 10 whilst others particularly those adjacent the inner skin 3 define passageways 12 for the passage therethrough of a fluid.

The plates 1 are shown with one plate member 6 but it will be appreciated that eutectic plates can be constructed according to the present invention with a plurality of thin plates 6 and a plurality of thin members at

right angles to the plates 6 and the skins 3,4 thereby to form a honeycomb type structure.

It is relatively easy for the compartments to be made leak-tight, one against the other, and in practice eutectic plates 1 will be formed with passageways 12 preferably adjacent the inner skin 3 said passageways 12 will be connected by headers so that for example, liquid nitrogen could be passed through these passageways 12 to chill the eutectic mixture 10. This is a rapid process and achieves in minutes full cooling which would normally take several hours. Since the passageways 12 are directly adjacent to the tank surface, cold will also be transferred to the tank contents thereby aiding the chilling process. Again, because of the short time period involved, once the eutectic plates 1 have frozen, virtually all the cold becomes available for cooling the tank contents.

The eutectic plates 1 can also be used for heating a tank by passing steam through the passageways 12 to warm the tank contents. In this situation, the eutectic material 10 will melt and will act as a transfer medium by convection and conduction around the periphery of the tank.

Claims

1. A eutectic plate 1 of arcuate configuration for ready attachment directly to the wall of a cylindrical storage tank comprising spaced apart first and second skins 3,4 interconnected by members 5 to define a plurality of compartments 8 in which some compartments contain eutectic material 10 while other compartments define passageways 12 for the flow therethrough of a fluid.
2. A eutectic plate as claimed in Claim 1, in which the disposition of the members between the skins defines compartments in the form of a honeycomb.
3. A eutectic plate as claimed in Claim 2, in which each department is generally square in cross-section.

