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(54) **FOIL ARRANGEMENT.**

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Description

The present invention relates to a foil arrangement in a plate heat-exchanger. Such a heat-exchanger is generally in the shape of a cube formed by a frame. The flat and corrugated foils are arranged alternately within the cube. The corrugated foils located on top of each other are arranged so that the direction of one foil deviates by 90° from the direction of the foils located above and below it. Such a heat-exchanger is described in FR-A-2 346 661. During assembly of such plate heat-exchangers a flat foil must first be inserted, then a corrugated foil, followed by a flat foil, and so on. This procedure is tedious and time-consuming. Furthermore, it is difficult to ensure satisfactory sealing at the edges of a flat and corrugated foil which are parallel to the direction of flow.

In DE-B-1 025 821 is another type of heat-exchanger described consisting of an arrangement with canals which are situated in one and the same plane. Here a corrugated foil is forming the intermediate part of a coherent unit and two flat foils are forming the side parts of the unit located one on each side of the intermediate part which side parts are designed to be folded so as to form an upper side and an under side in respect of the intermediate part. However, this unit is not designed for piling.

The object of the present invention is to eliminate the drawbacks mentioned above and this is done by using a single blank, not divided into several parts, to form a unit consisting of both a flat and a corrugated foil. The starting blank consists of a rectangular foil with three consecutive fields, the middle field being flat and the other two fields corrugated. A blank of this type can be produced in a machine. The corrugated fields of the blank thus produced are folded towards each other so that the free end edges of the latter fields are in contact with each other and are joined in some manner. The two corrugated fields may be of equal or unequal length.

According to an alternative the middle field may constitute the corrugated part and the end fields the flat parts. In this alternatively the edges of the flat parts are joined together.

Meeting edges may be joined together in various ways, such as by welding, glueing, riveting or the like. Meeting edges in the preceding alternative may also be just located opposite each other, either spaced or in contact with each other. The foils should preferably be of aluminium. Other materials are also possible, such as cardboard, plastic, pasteboard.

Additional characteristics of the present invention are revealed in the following claims.

The present invention will be further described with reference to the accompanying two sheets of drawings, in which

Figure 1 shows a blank for manufacture of a unit for a plate heat-exchanger,

Figure 2 shows the blank being folded and

Figure 3 shows the finished unit.

The blank shown in Fig. 1 has been obtained by passing a sheet of plastic foil the same width as the blank 1 through a machine which forms the sheet into consecutive fields, alternate fields 3 being flat and preceding and subsequent fields 2 and 4 being corrugated. Blanks 1 are cut from the sheet and supplied to a machine to bend the fields 2 and 4 as shown in Figure 2. When bending is complete the end edges 5 and 6 are in contact with each other. These edges can be joined in any manner whatsoever. In the present case the intention is that they shall be joined by welding or glueing. A finished unit is shown in Fig. 3, the join being designated 7. It is also possible to refrain from joining the edges 5 and 6. In this case it is advisable for the edges 5 and 6 to be located opposite each other. They may either be edge to edge or spaced from each other. From Fig. 3 it is clear that when a plate heat-exchanger is to be assembled, only the unit shown in the latter figure is required, that is to say, only one product which is placed in a certain direction, the next being turned 90° in relation thereto, and so on. Each unit is automatically sealed at the edges parallel to the direction of flow.

Claims

1. Foil arrangement in plate heat-exchangers consisting of a number of over each other located foils in which the foils are alternately flat and corrugated and in which corrugated foils are directed alternately in one direction and in a direction 90° thereto, characterised in that a flat foil or a corrugated foil forms the intermediate part (3) of a coherent unit and two corrugated foils, when said intermediate part (3) is flat or two flat foils, when said intermediate part (3) is corrugated, form the side parts (2 and 4) of said coherent unit located one on each side of the intermediate part (3) which side parts are designed to be folded, the free ends (5 and 6) to be joined by means of welding, glueing, riveting or the like whereby said unit is so formed that two over each other located foils are obtained.

2. Foil arrangement according to claim 1, characterised in that the intermediate part (3) and the two parts (2 and 4) located one on each side of the intermediate part (3) are produced from a single blank (2-4).

3. Foil arrangement according to claims 1 or 2, characterised in that the gap between the opposite edges (5 and 6) of the free ends, when not joined, varies from zero upwards.

Patentansprüche

1. Folienanordnung in einem Plattenwärmetauscher, die aus einer Vielzahl von übereinander

angeordneten Folien besteht, bei welcher die Folien alternierend flach und gewellt sind und bei welcher die gewellten Folien alternierend in eine Richtung gerichtet sind und in eine Richtung unter 90° dazu, dadurch gekennzeichnet, daß eine flache Folie oder eine gewellte Folie einen Mittenteil (3) einer zusammenhängenden Einheit bildet, und daß zwei gewellte Folien, wenn der Mittenteil (3) flach ist, oder zwei flache Folien, wenn der Mittenteil (3) gewellt ist, die Seitenteile (2 und 4) der zusammenhängenden Einheit bilden, die jeweils auf einer Seite des Mittenteiles (3) angeordnet sind, wobei die Seitenteile zum Falten bestimmt sind und die freien Enden (5 und 6) zum Verbunden werden mit Hilfe von Schweiß-

2. Folienanordnung nach Anspruch 1, dadurch gekennzeichnet, daß der Mittenteil (3) und die zwei Teile (2 und 4), die je auf einer Seite des Mittenteiles (3) angeordnet sind aus einem einzelnen Blech (2-4) hergestellt sind.

3. Folienanordnung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Spalt zwischen den gegenüberliegenden Kanten (5 und 6) der freien Enden, wenn diese nicht verbunden werden, von Null aufwärts variiert.

Revendications

1. Dispositif de feuillards pour échangeurs de chaleur en tôle, dans lequel les feuillards plans et les feuillards ondulés sont alternés et les feuillards ondulés orientés alternativement l'un dans une direction et l'autre à 90° par rapport à cette direction, caractérisé par le fait qu'un feuillard plan (3), constitué par une ou deux sections, et un feuillard ondulé (2 et 4), constitué par une ou deux sections, forment un ensemble cohérent, que ladite plaque consiste d'une section intermédiaire plane (3) et de deux sections ondulées (2 et 4) placées de part et d'autre de la section intermédiaire (3) et conçues pour être repliées, les extrémités libres (5 et 6) étant jointes par soudage, collage, rivetage ou autre opération analogue et que la section intermédiaire est ondulée et les sections de part et d'autre de celle-ci sont planes.

2. Dispositif de feuillards selon la revendication 1, caractérisé par le fait que le feuillard plan (3) et les feuillards ondulés (2 et 4) de l'ensemble sont fabriqués à partir d'une plaque unique.

3. Dispositif de feuillards selon les revendications 1 ou 2, caractérisé par le fait que l'écart entre les bords opposés (5 et 6) des extrémités libres, celles-ci n'étant pas jointes, varie de zéro à au-dessus de zéro.

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FIG. 1

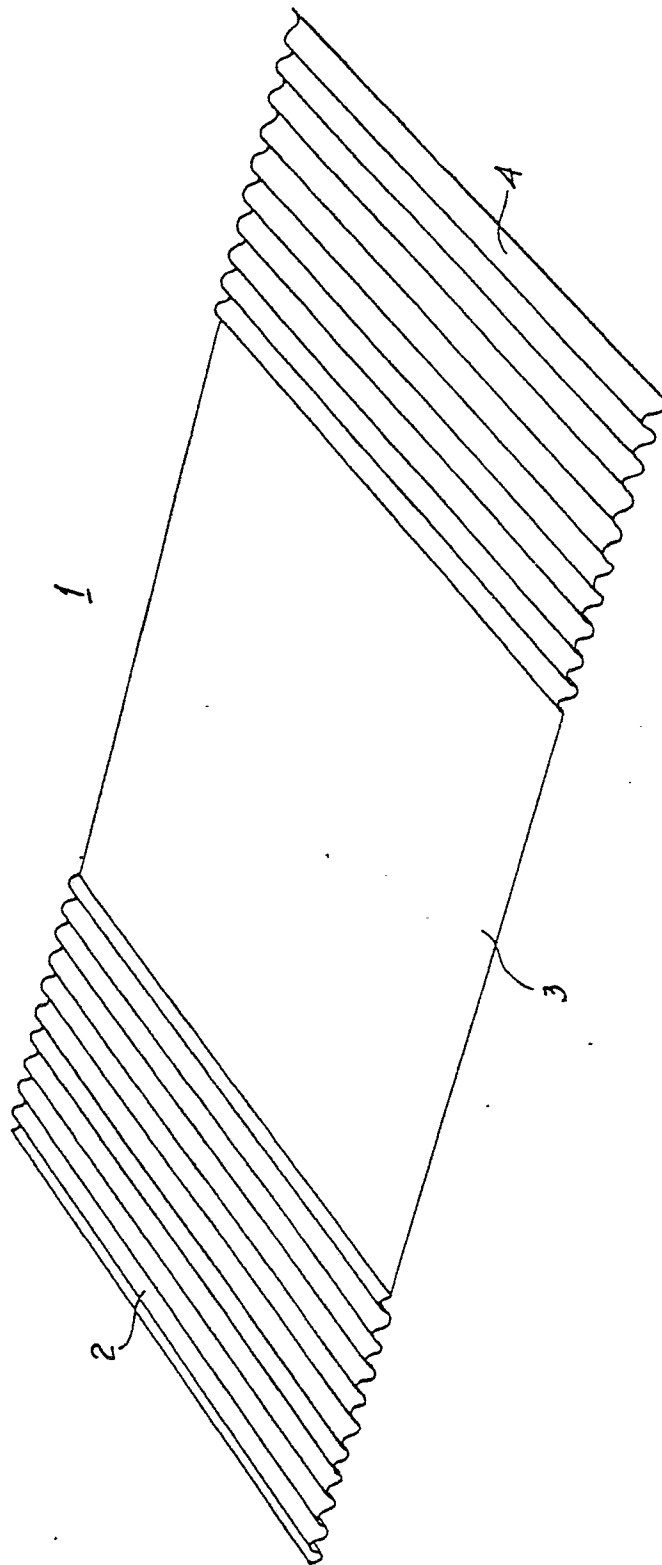


FIG. 2

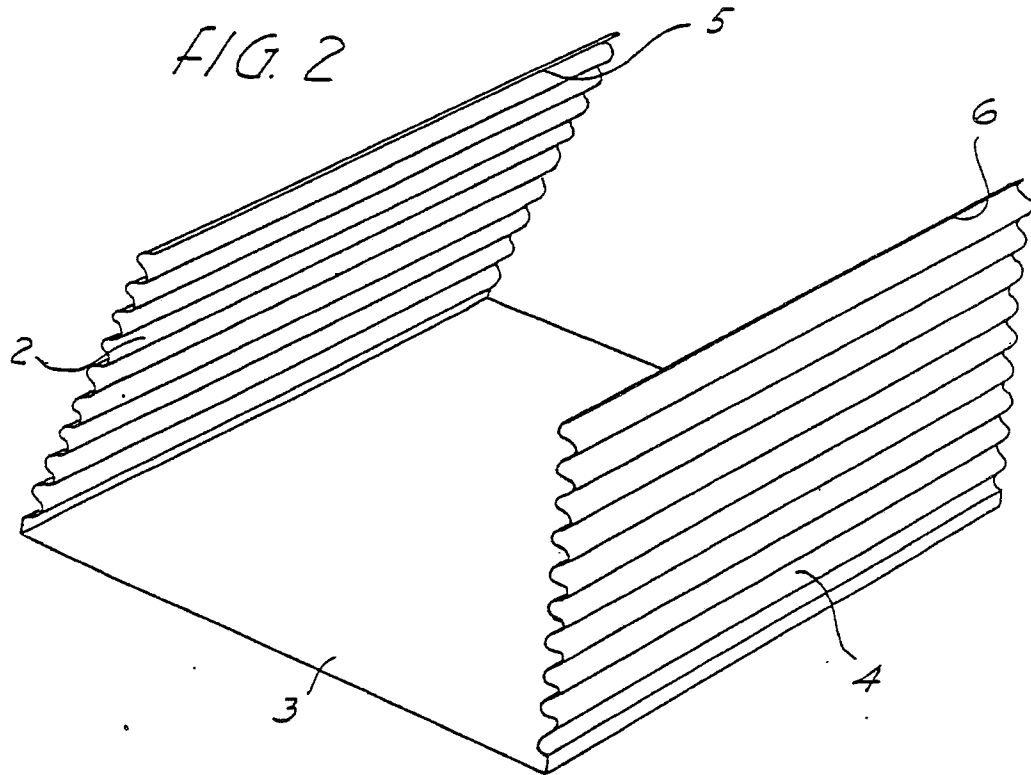


FIG. 3

