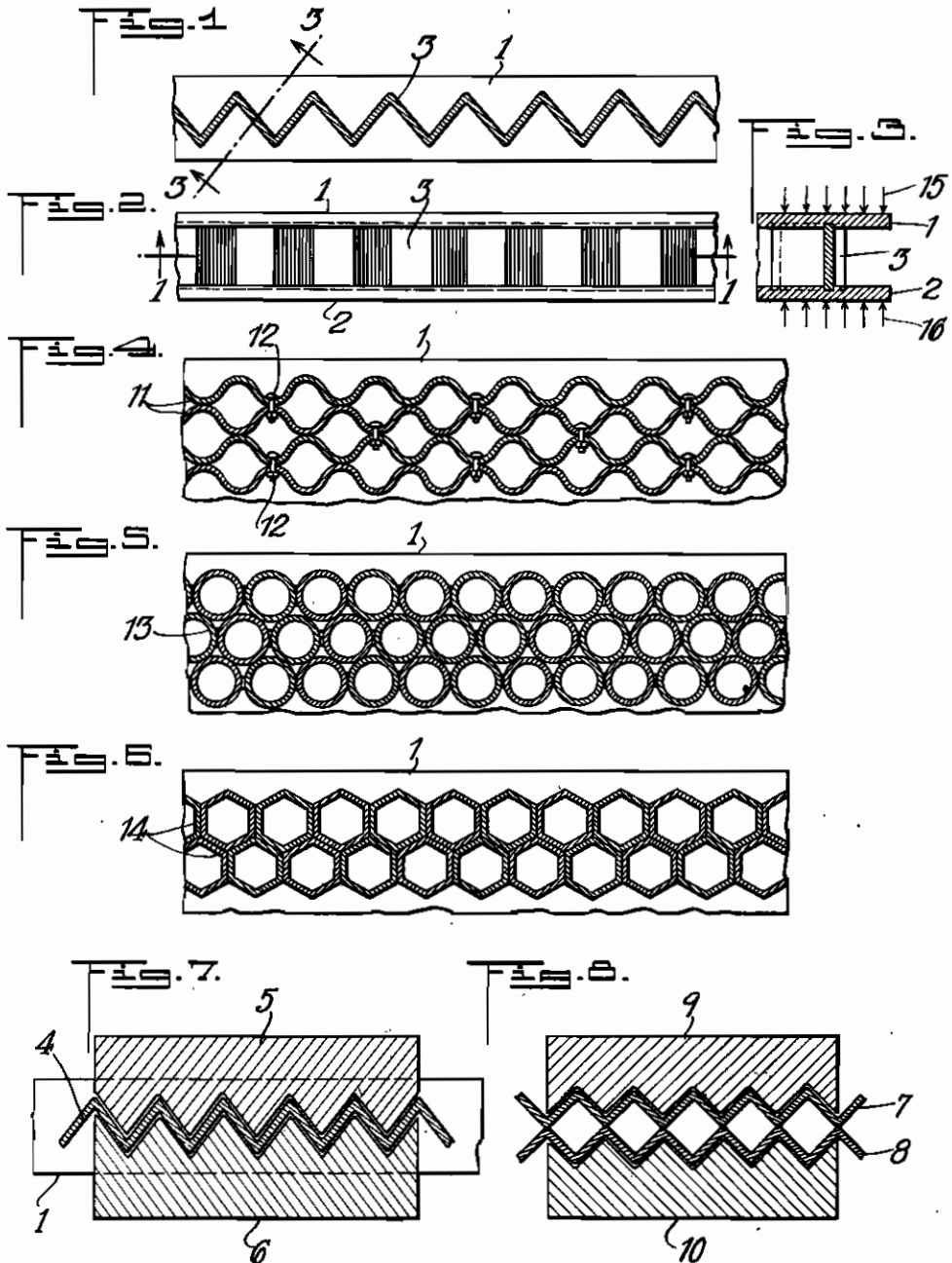


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LIGHT WEIGHT CONSTRUCTION MATERIALS
AND METHOD OF PRODUCING SAME
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ALIEN PROPERTY CUSTODIAN

LIGHT WEIGHT CONSTRUCTION MATERIALS AND METHOD OF PRODUCING SAME

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The present invention relates to light weight construction elements which are comparatively thin and particularly suitable for the manufacture of aircraft, and relates to a method for producing elements of the type set forth.

The present invention relates to construction elements of the type specified and made of metal, card board, fibre or any other suitable artificial substance. It particularly relates to elements which are composed of flat surface elements which are interconnected by corrugated or zigzag shaped stays which are in substantially perpendicular position with respect to the surface elements and which are so narrow that riveting, welding or soldering to the surface elements is not practical or impossible.

It is an object of the present invention to provide light weight, sheet like or beam like construction materials which consist substantially of two surface members which form the exterior skins or flanges and of filling members interconnecting said surface members and of a method to produce such construction materials. I may provide one or more intermediary wall members which are located in between and substantially parallel to said surface members. The filling members may be of undulating or zigzag configuration or they may be of cylindrical or polygonal cross sectional configuration. In all cases the filling members are positioned substantially perpendicular with respect to the surface members.

With the method according to my present invention, the surface or wall members are pressed or rolled in soft condition on to the filling members and are thereby connected thereto. The filling members are in stiff and hard condition during this process step. A modification of my process is to apply a binding material between the edges of the filling members and the surface and/or wall members, for example glue, when the construction elements are made of cardboard or the like.

In many cases, particularly when making large sheets having a great number of filling members, I propose to fasten the filling members or bodies together before applying the surface members. This preliminary connection is not rigid and is only for the purpose of holding the members in position when the surface and/or intermediary sheets are applied.

In order to prevent lateral yielding or snapping of the filling bodies when pressure is applied for pressing the surface sheets to the filling members, I provide special means for lateral propping

or supporting. In case of only one undulated or zigzag shaped filling body the propping means conform with said body. When a plurality of filling bodies are used the propping or support means are associated with the outermost support means only.

Further and other objects of the present invention will be hereinafter set forth in the accompanying specification and claims and shown in the drawings which, by way of illustration, show what I now consider to be a preferred embodiment of my invention.

In the drawings:

Figure 1 is a longitudinal sectional view of a girder or beam according to the present invention and taken along line 1—1 of Fig. 2.

Figure 2 is a side view of the construction element shown in Fig. 1.

Figure 3 is a transverse sectional view of the construction element shown in Figs. 1 and 2 and taken along line 3—3 of Fig. 1.

Figure 4 is a cross sectional view taken parallel to the surface members of a construction element according to the present invention.

Figure 5 is a cross sectional view taken parallel to the surface members of a modified construction element according to the present invention.

Figure 6 is a cross sectional view taken parallel to the surface members of another modification of a construction element according to the present invention.

Figure 7 is a cross sectional view of a one filling member construction element with the propping up provisions in position.

Figure 8 is a cross sectional view of a construction element having two zigzag filling members and with the propping up provisions in supporting position.

Referring more particularly to the drawing, Figs. 1, 2 and 3 show a construction element which can be used as a beam or girder and which consists of flanges 1 and 2 and a stay 3 between the flanges which has zigzag configuration. As is obvious from Fig. 3, the flanges 1 and 2 in soft condition are pressed onto the edges of the stay 3 so that said edges are embedded in the flange material after it is hardened. The direction of the pressure for assembling the construction element is indicated by means of arrows 15 and 16.

Figure 4 is a longitudinal sectional view of a sheet like element with a plurality of stays 11, which have an undulating configuration and abut one another. The stays 11 may be held together at a few points by means of small bolts 12 as

shown in order to produce a more rigid construction for the rolling and pressing operation. Instead of bolts 12 rivets, screws, pins, small pieces of wire, welding or soldering may be used.

Figure 5 is a cross sectional view of a construction element according to the present invention in which tubular stays 13 are used. These stays are held together by means of soldering or welding. It is pointed out that the means for holding the stays together are only for facilitating the pressing or rolling operation; permanent rigidity of connection is achieved by the pressing on of the surface sheets as described.

Figure 6 is a cross sectional view of a construction element according to the present invention in which the stays have a polygonal cross sectional configuration. In the embodiment of my invention shown in Fig. 6 the stays 14 are set together in honeycomb configuration. Depending on strength requirements, the polygonal stays may be set together in another way, for example, with the edges abutting one another.

Figure 7 is a longitudinal sectional view of a

one zigzag stay construction element showing the propping up or the temporary support members 5 and 6 in position so that the stay 4 cannot collapse during the pressing or rolling operation.

5 Members 5 and 6 are withdrawn after the construction element is completed and may be used again for making another element.

Figure 8 is a cross sectional view of a multi stay construction element according to the present invention with the temporary support members 6 and 10 in position. These support members are in contact with the outermost surfaces of the zigzag stays 7 and 8 only. They are removed after completion of the construction member.

15 While I believe the above described embodiments of my invention to be preferred embodiments, I wish it to be understood that I do not desire to be limited to the exact details of method, design and construction shown and described, for obvious modifications will occur to a person skilled in the art.

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 CLAUDE DORNIER.