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(12) # EUROPEAN PATENT SPECIFICATION

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(54) **MATERIAL HANDLING PALLET.**

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AU-A-1 069 347
AU-A-4 812 279
GB-A- 609 769
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Courier Press, Leamington Spa, England.

Description

Field of invention

This invention relates to pallets of the kind used for transport of a wide variety of goods and commodities according to the preamble of claim 1 (known from GB—A—609 769).

Background art

Wooden pallets are widely used but suffer from several disadvantages not the least of which is that they are easily damaged. Furthermore, wooden pallets readily absorb moisture which leads to increased weight and often to degradation of the timber.

Various metal pallets have been proposed but none has achieved commercial success, mainly because of the bulk of the metal pallet and/or its cost.

It is, therefore, an object of this invention to provide an improved pallet which is so designed that it may be constructed of lightweight material without sacrifice of its load carrying capacity.

GB—1-609 769 discloses a material handling pallet comprising a deck, a base, a bearer of generally H-section having upper and lower pairs of leg portions above and below an intermediate web, the leg portions being inclined at an oblique angle to the intermediate web, the upper legs being connected to the deck and the lower legs being connected to the base.

A single H-section bearer is centrally located between vertical side plates.

The present invention is characterised in that a pair of said bearers is provided adjacent opposite sides of the pallet and in that the oblique angle of each leg portion to the intermediate portion in each bearer is from 90° to 120°.

Description of drawings

In order that the invention may be more readily understood and put into practical effect reference will now be made to the accompanying drawings in which:

Fig. 1 is a perspective view of a pallet according to one embodiment of the invention,

Fig. 2 is a partially broken away end view of the pallet shown in Fig. 1, taken in the direction of arrow A,

Fig. 3 is an enlarged end view of a plank of the deck of the pallet shown in Fig. 1,

Fig. 4 is an enlarged end view of a bearer of the pallet shown in Fig. 1,

Fig. 5 is an end view of an alternative side channel for the pallet shown in Fig. 1, and,

Fig. 6 is an end view of a protection cap for the pallet shown in Fig. 1,

Description of preferred embodiment

The pallet as claimed in claim 1 comprises a pair of bearers 13 provided adjacent opposite sides of the pellet and the oblique angle of each leg portion to the intermediate web in each bearer is from 90° to 120°.

The pallet 10 of another preferred embodiment as shown in the drawings has a load-supporting deck 11, a base 12 and three bearers 13 connected between the deck 11 and the base 12. The deck 11 has four planks 40 which are formed from a light gauge, high strength steel sheet which is pressed into the corrugated shape shown in Fig. 3. In this instance, the pitch (P) of each corrugation is 75 mm and the height of each corrugation is approximately 23 mm. However, the corrugation pitch (P) can be varied as desired to accommodate variations in pallet size. The deck 11 could be of any desired shape or configuration. For example, there could be more or less planks 40 closer together or further apart, or the deck 11 could be continuous.

As shown in Fig. 3, the plank 40 has top webs 14 and bottom webs 16 interconnected by leg portions 15. Although the top web 14 of the plank 40 is shown as being horizontal it may, of course be curved.

As indicated in Fig. 1, the base 12 consists of a central corrugated plank 20 and two side planks 21. Side channels 22 are fitted along the outer extremities of the outer planks 40 of the deck 11 and the side portions 21 of the base 12. As can be seen in Fig. 2, each side channel 22 has a flange 41 by means of which the channel 22 is welded to the bearers 13. The channels 22 have a bull-nose portion 43 at their extremities as shown in Fig. 2. A side strip 42 may be fitted over the ends of the planks of the deck and the portions 20, 21 of the base 12 as indicated in Fig. 1.

An enlarged view of the bearer 13 is shown in Fig. 4. In this instance, the bearer 13 consists of an upper channel 30 and a lower channel 31 which are welded together at their webs 32 with the open mouth of each channel extending outwardly. Each channel 30, 31 has sloping leg portions 33, 34 at an oblique angle (W) to the webs 32. At the free end of the leg portions 33, 34 there are outwardly directed flanges 35 by means of which the bearer 13 is welded to the deck 11 and to the base 12. As indicated in Fig. 4, the width of each flange 35 is approximately half that of the web 32. In one embodiment of the invention the web 32 is effectively 27 mm wide, the leg portions 33, 34 effectively 47 mm wide and the flanges 35 effectively 15 mm wide.

The choice of the angle (W) of the leg portions 33, 34 the web is a compromise between the optimum angle for each of the loads to which a pallet may be subjected. In the case of a load uniformly distributed across the deck 11, the optimum angle (W) is zero—that is the leg portions 33, 34 should be vertical. In the case of bending arising from point loads applied between the bearers 13, the optimum angle (W) is zero, however, the width of the web 32 is somewhat critical. In the case of shear (ie: a load is applied along the deck 11 and along the base 12, but in opposite directions, the optimum angle (W) is 30°.

Taking all these factors into account, and preferred angle (W) is 15°, however, angles between zero and 30° will suffice in certain circumstances. Thus, the angle between the leg portions and the

intermediate web is from 90° to 120° with 105° being preferred.

The side channel shown in Fig. 5 is substantially similar to that shown in Fig. 2 except that the bullnose 42a has an arcuate configuration.

An advantage of the construction of a pallet according the invention is that the pallet may be adapted to conform to relevant Standards. Furthermore, the optimum choice of the angle between the leg and the web of each channel of the bearer and the choice of an appropriate high strength material leads to a pellet of unique lightness and strength.

A closure plate 50 may be welded across the ends of each bearer 13 as shown in Fig. 1. The closure plate 50 has a central portion 51 having side flanges 52 that are welded to the leg portions 33, 34 of the bearers 13. End caps 53, 54 engage over and are welded to the side channels 27 of the deck 11 and base 12.

Claims

1. A material handling pallet comprising a deck (11), a base (12), a bearer of generally H-section having upper and lower pairs of leg portions (33, 34) above and below an intermediate web (32), the leg portions being inclined at an oblique angle to the intermediate web, the upper legs being connected to the deck (11) and the lower legs being connected to the base (12) characterised in that a pair of said bearers is provided adjacent opposite sides of the pallet and in that the oblique angle of each leg portion to the intermediate web in each bearer is from 90° to 120°.

2. A material handling pallet according to Claim 1 wherein each bearer (13) is formed by welding two channel members (30, 31) together by their webs (32) with the open face of each channel being outwardly directed.

3. A material handling pallet according to Claim 2 wherein the channel members (30, 31) have outwardly directed flanges at the free end of their legs and the outwardly directed flanges at the free end of the legs of the upper channel are welded to the deck (11) and the flanges of the lower channel are welded to the base (12).

4. A material handling pallet according to Claim 1, 2 or 3 wherein the angle between each leg portion (33, 34) and the intermediate web (32) is 105°.

5. A material handling pallet according to any preceding claim wherein closure plates (50) are secured to the ends of the bearers (13).

6. A material handling pallet according to any preceding claim including a further bearer (13) spaced between the side bearers.

Patentansprüche

1. Materialhandhabungsplatte mit einer Tragfläche (11), mit einer Basis (12) und mit einem Träger, der einen im allgemeinen H-förmigen Querschnitt mit Paaren von oberen und unteren Beinabschnitten (33, 34) oberhalb und unterhalb eines zwischengefügten Steges (32) aufweist, wobei die Beinabschnitte gegenüber dem zwischengefügten Steg unter einem schrägen Winkel geneigt und die oberen Beinabschnitte mit der Tragfläche (11) und die unteren Beinabschnitte mit der Basis (12) verbunden sind, dadurch gekennzeichnet, daß ein Paar der Träger an gegenüberliegenden Seiten der Palette anliegend vorgesehen sind, und daß der schräge Winkel zwischen jedem Beinabschnitt und dem zwischengefügten Steg in jedem der Träger zwischen 90° und 120° liegt.

2. Materialhandhabungspalette nach Anspruch 1, dadurch gekennzeichnet, daß jeder Träger (13) durch Zusammenschweißen zweier kanalartiger Elemente (30, 31) an ihren Stegen (32) gebildet ist, wobei die offene Fläche jedes kanalartigen Elementes nach außen gerichtet ist.

3. Materialhandhabungspalette nach Anspruch 2, dadurch gekennzeichnet, daß die kanalartigen Elemente (30, 31) an den freien Enden ihrer Beinabschnitte nach außen gerichtete Bordränder aufweisen, daß die nach außen gerichteten Bordränder an den freien Beinabschnitten des oberen kanalartigen Elementes mit der Tragfläche (11) verschweißt sind, und daß die Bordränder des unteren kanalartigen Elementes mit der Basis (12) verschweißt sind.

4. Materialhandhabungspalette nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, daß der Winkel zwischen den Beinabschnitten (33, 34) und dem zwischengefügten Steg (32) 105° beträgt.

5. Materialhandhabungspalette nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß Abschlußplatten (50) an den Enden der Träger (13) befestigt sind.

6. Materialhandhabungspalette nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß ein weiterer Träger (13) zwischen den Seitenträgern angeordnet ist.

Revendications

1. Palette de manutention de marchandises, comportant une plateforme (11), une base (12), un élément porteur ayant une section sensiblement en forme de H avec une paire supérieure (33) et une paire inférieure (34) de branches situées respectivement au dessus et en dessous d'une âme intermédiaire (32), les branches étant inclinées en oblique par rapport à l'âme intermédiaire, les branches supérieures étant reliées à la plateforme (11) et les branches inférieures étant reliées à la base (12), caractérisée en ce qu'une paire des ces éléments porteurs est disposée à proximité immédiate de côtés opposés de la plateforme et en ce que chaque branche fait par rapport à l'âme de chaque élément porteur un angle compris entre 90° et 120°.

2. Palette de manutention de marchandises selon la revendication 1, dans laquelle chaque élément porteur (13) est formé en soudant ensemble par leurs âmes (32) deux profilés en U (30, 31), l'ouverture de chaque profilé étant dirigée vers l'extérieur.

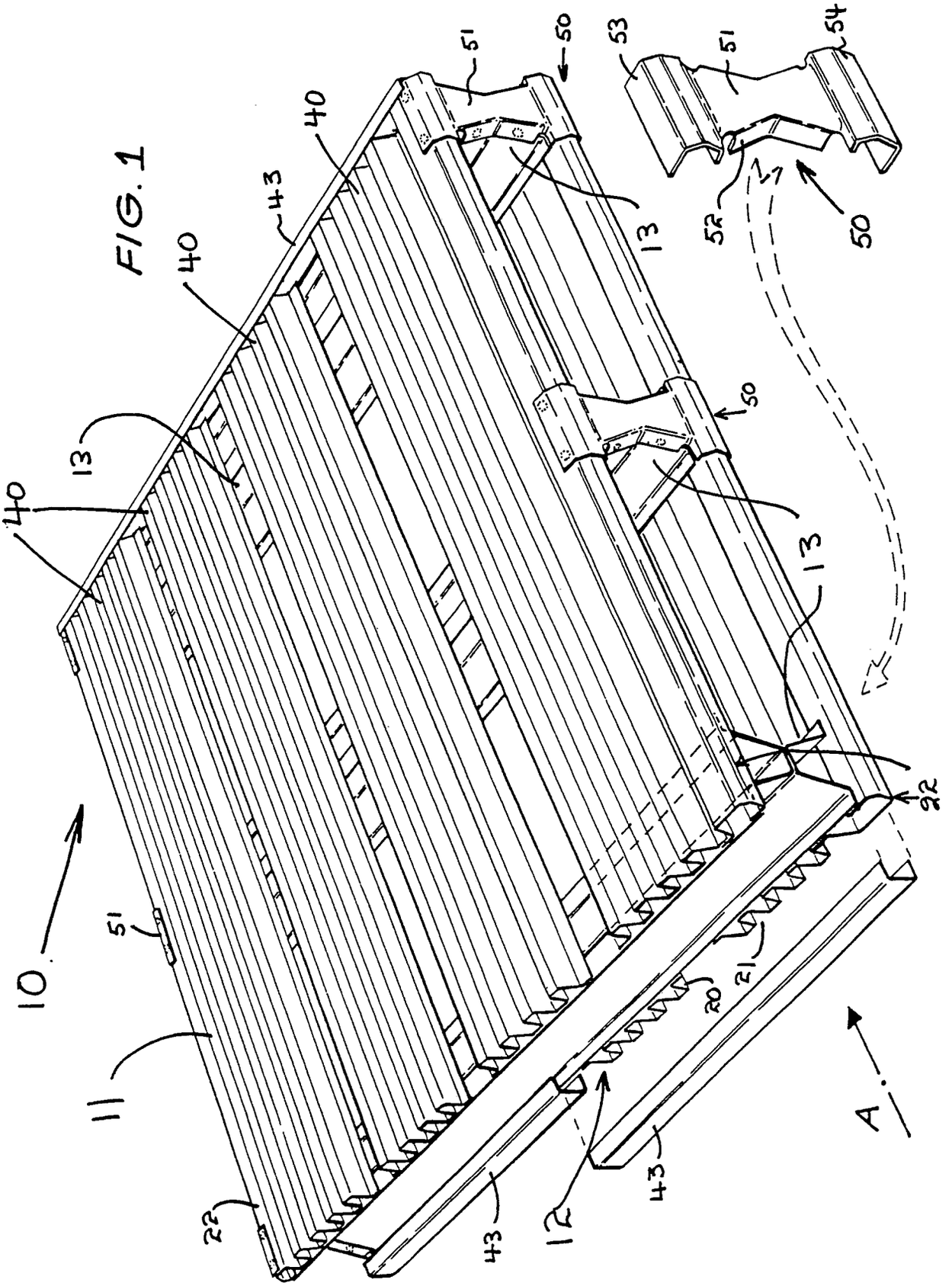
3. Palette de manutention de marchandises selon la revendication 2, dans laquelle les profilés en U (30, 31) ont, au niveau des extrémités libres de leurs branches, des rebords dirigés vers l'extérieur et les rebords dirigés vers l'extérieur au niveau des extrémités libres du profilé supérieur sont soudés sur la plateforme (11) et les rebords du profilé inférieur sont soudés sur la base (12).

4. Palette de manutention de marchandises selon l'une des revendications 1, 2 ou 3, dans laquelle l'angle entre chaque branche (33, 34) et l'âme intermédiaire (32) est 105°.

5. Palette de manutention de marchandises selon l'une des revendications précédentes, dans laquelle des plaques de fermeture (50) sont fixées aux extrémités des éléments porteurs (13).

6. Palette de manutention de marchandises selon l'une des revendications précédentes, comportant un autre élément porteur (13) disposé entre les éléments porteurs latéraux et espacé de ceux-ci.

FIG. 1



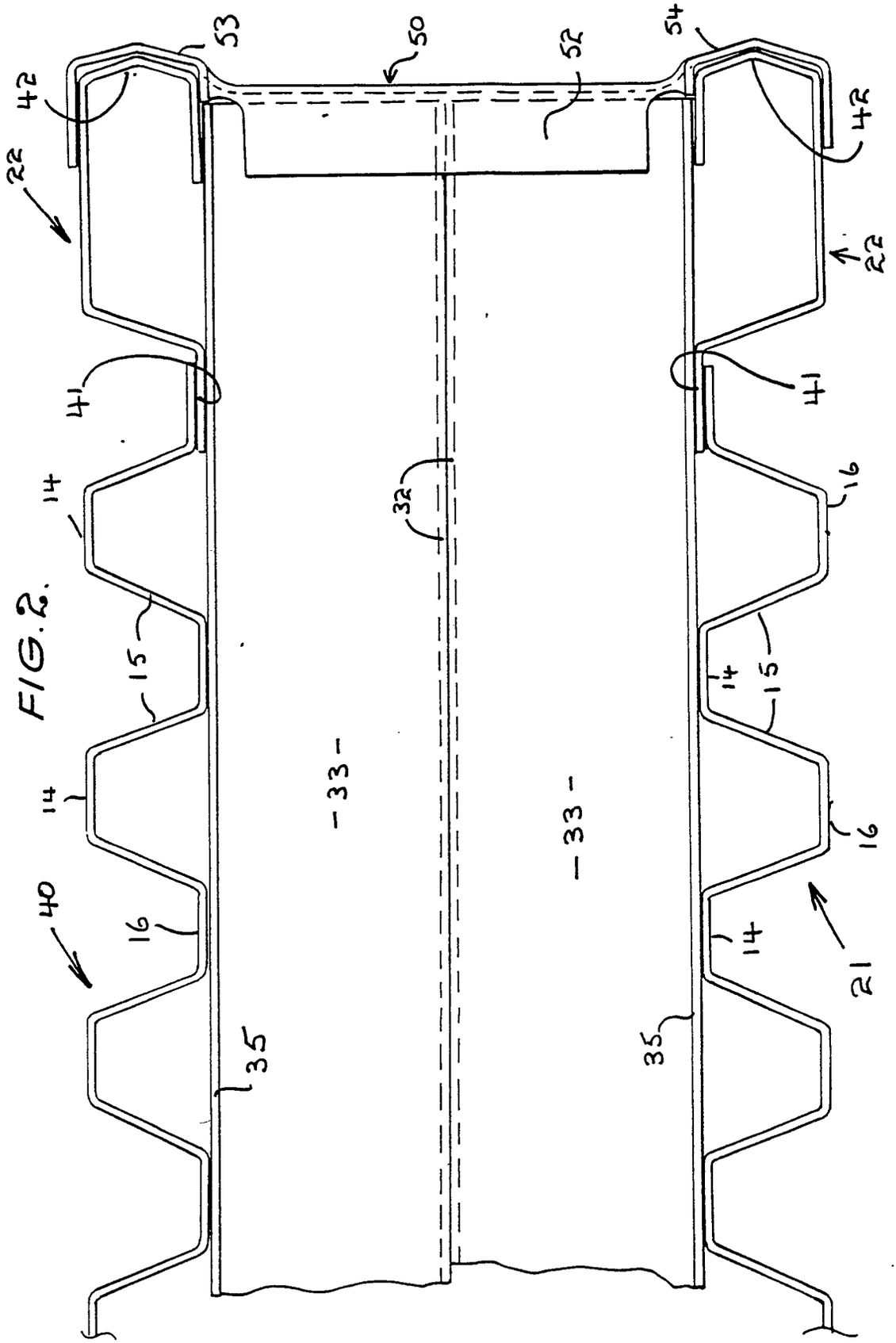

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FIG. 2.

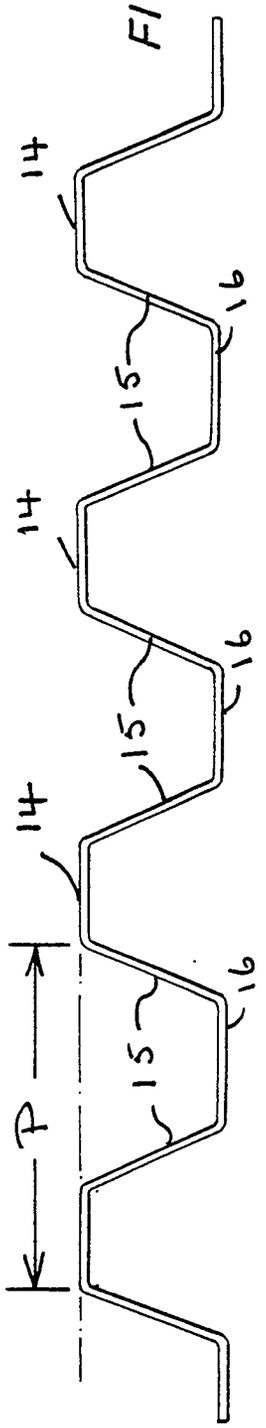


FIG. 3

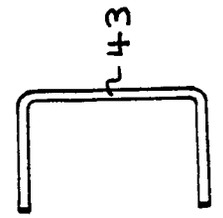


FIG. 6.

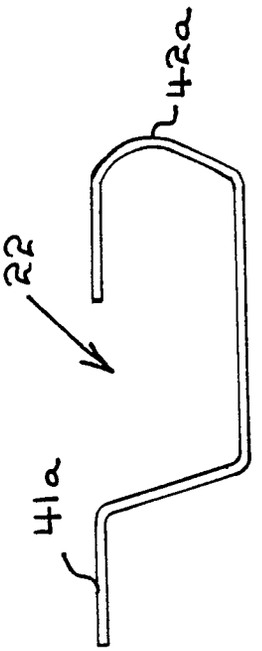


FIG. 5

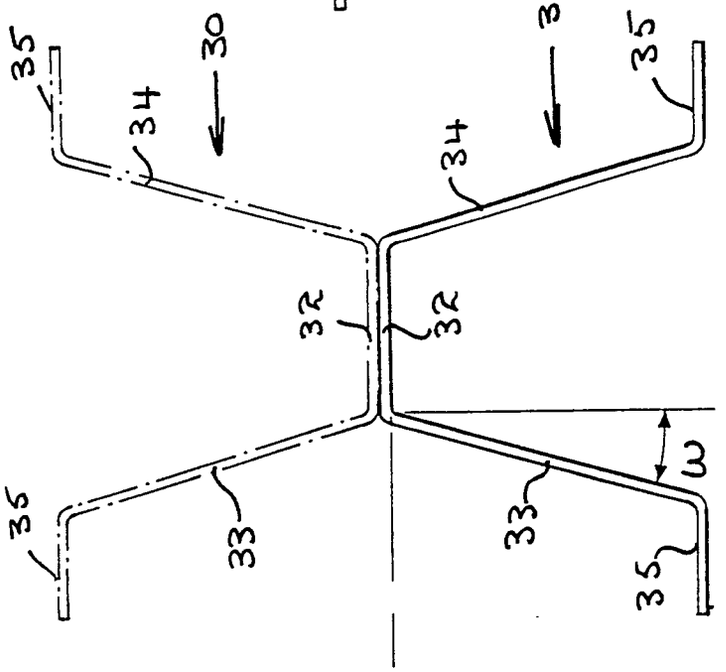


FIG. 4