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(54) Expandable pallet.

(57) An assembler-adapter (2) for pallets which procures an increase in the usable surface area of a pallet from 800 x 1,200 mm., so as to obtain a surface area of 1,000 x 1,200 mm. These adapters can be reused and once they have been received by the consignee, they are returned to the manufacturer. It also includes the provision of assembling half pallets, of the DUSSEL type, by means of projections (32) and slots (27) in the U-shaped metal fittings (25, 26) of these half-pallets, which fit into each other in a stable way in order to form a full-sized pallet. Other constructional variants relate to other types of half-pallets (34).

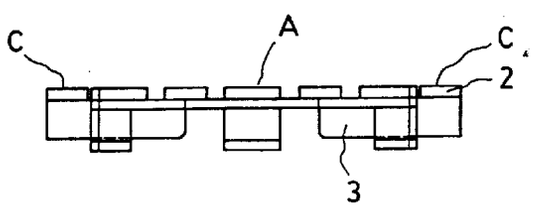

Fig.: 3

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This invention relates to an assembler-adapter for pallets, which has been conceived and designed in order to make it possible to achieve uniformity of the pallet model between suppliers of auxiliary materials, such as corrugated cardboard, card, plastics, etc. and the customers of these suppliers, manufacturers of a variety of products, who, due to the demands of their own distribution, find themselves obliged to necessarily used a type of pallet measuring 800 x 1,200 mm.

Manufacturers of auxiliary material use disposable pallets, usually of low quality, to supply their products to their customers. These pallets have a surface area of 1,000 x 1,200 mm., thus allowing good use to be made of them. Therefore, for example, the development of folded boxes adapts better to a pallet of this size, where 1 package of boxes is larger, while at the same time optimum use is made of the stowage capacity of each pallet.

Moreover, stowing boxes on pallets measuring 800 x 1,200 mm., causes, apart from taking lower advantage of the pallets, an increase in transport costs and deterioration of the quality of the product, due to the ends of the boxes overhanging the pallet and becoming damaged during transit. This, in turn, causes stoppages when the boxes are used with automatic packing machines.

With this situation, the manufacturer absorbs the cost of the 1,000 x 1,200 mm., pallets which are supplied by the cardboard manufacturer into his operating account, at a price of approximately 500-750 pesetas each, which means that apart from not being able to reuse these pallets, he also has the additional costs of having to dispose of them, by burning, removal from the factory, etc.

The ideal solution, therefore, would be for both, the manufacturer of the auxiliary materials and his customer, the product manufacturer, to use the same kind of pallet, although we have seen that this solution is not possible because of the reasons stated, with the current situation being that two types of pallets exist: the 1,000 x 1,200 mm., and the 800 x 1,200 mm. models.

On the other hand, at hypermarkets, supermarkets and other retail outlets, companies are accustomed to using smaller pallets, called half-pallets, which measure 600 x 800 mm. The use of these half-pallets is justified because of the method of operation of these companies, as well as by the advantages that they offer for the sale of products in their aisles.

Obviously, the solution to this problem could be for product manufacturers to use half-pallets for supplies to their customers. However several problems arise, for instance in the handling and production, as production lines are automated and have automatic palletizing systems; the half-pallet is not suited to working with roller conveyors and consequently reduces productivity. Therefore, these disadvantages are solved by placing a half-pallet on top of a full-sized pallet.

In rack-type storage systems, the racks are prepared for 1,200 x 800 mm., pallets, which means that it is impossible to store half-pallets measuring 600 x 800 mm., making it necessary to use full-sized pallets and then depalletize the said half-pallets, with the resulting inconvenience.

Consequetly, in transporting half-pallets, and in both loading and unloading operations, the movements to be carried out would be duplicated.

In palletizing, the above-mentioned solution regarding handling, storing, transporting, etc. of half-pallets by placing them on top of full-sized pallets duplicates the cost of this palletization with the resulting increase in handling operations.

In view of all these problems and disadvantages, it has been considered that the ideal solution is to join together two 600 x 800 mm., half-pallets so that they form a normal full-sized 1,200 x 800 mm., pallet. In this way, the two-part 1,200 x 800 mm. module would be used in production; the same 1,200 x 800 mm. module would be used in storage, with both drive-in type racking systems with supports at the sides and with normal or silo type systems with a central support, whereas in distribution, the goods would be delivered to their final distribution point intact on the half-pallets.

Already known in this field of half-pallets are the units known as DUSSEL, which have horizontal U-shaped metal reinforcements fitted to their four corners and in the middle of their 800 mm., sides. These half-pallets suffer from the same problems as those previously mentioned for their conversion into 1,200 x 800 mm., pallets.

The first object of the present invention is to solve the problem of the 1,000 x 1,200 mm., pallets by providing an assembler-adapter that allows a smaller pallet to be made bigger and viceversa.

Another object of the invention is to allow the same pallets to be reused, thus obtaining a substantial reduction in costs.

A third object of the invention is an assembly method that connects together two half-pallets, whether DUSSEL type half-pallets or other more conventional half-pallets.

As regards the first object of the invention, and for the corresponding purposes of interpretation of the invention, mention will be made, by way of example, to the previously-mentioned case of pallets measuring 800 x 1,200 mm., and 1,000 x 1,200 mm., although it must be well understood that this does not in any way place any limitation or restriction on the scope of the invention.

According to the invention, adapters are produced, whose use will cause disposable 1,000 x 1,200 pallets to disappear. As mentioned earlier, the disadvantage of these pallets is not only that they

must be removed or destroyed but also the cost of doing so, while at the same time causing serious environmental damage due to the fact that they cannot be recycled.

In the present case, a single type of pallet is used, which is the one used by product manufacturers, measuring 800 x 1,200 mm., so that, when used in combination with an adapter, the pallet becomes converted into a final surface measuring 1,000 x 1,200 mm., on which the manufacturer of auxiliary material (boxes, cardboard, etc.) supllies the product manufacturer. The latter uses the materials supplied on the pallet and later, in turn, uses the same pallet for his own distribution, returning the adapters to the manufacturer of auxiliary material, so that they can be reused and the cycle recommence.

In the case of a basic pallet measuring 800 x 1,000 mm, the adapter is fitted to its longer sides. This adapter is composed of two essentially equal items, each of which has a body equal in size to the long side of the basic pallet. The lower side of this body is fitted with two essentially parallel projections of a certain length, which fit flush with one long side of the body while jutting out at the other side.

By means of these two projections, each of the two items is inserted into the gaps in the sides of the pallets, with which, due to the sufficient length of the projections, they become fitted to the said longer sides of the basic pallet.

Each of the bodies of these two items fits flush with the upper or top surface of the pallet, so that if the smaller measurement of the basic pallet is 800 mm., the width of these bodies will be 100 mm., which means that when all are joined together, they create a top surface area of 1,000 x 1,200 mm.

Each of the adapters can be extracted from the basic pallet without any kind of problems, so as to allow both the said pallet and the adapters to be used separately.

As a constructional variant, the invention proposes the arrangement of two bodies which are fitted to the longer sides of the basic pallet, with each of these sides being provided with pairs of approximately L-shaped metal fittings, having one of the arms considerably longer than the other. The longer arm is fixed to the top surface of the body in such a way that it juts out a certain amount from it, with this prolongation being situated onto the top surface of the pallet, while the other arm acts like a hook and becomes housed in such a way that it grips one side of one of the parts of the top of the pallet.

Another constructional variant consists of using one single piece whose surface measures 1,000 x 1,200 mm., and which has longitudinal projections incorporated into one of its sides, with these projections corresponding in position and dimensions to the recesses or gaps in the basic pallet.

This single part is situated onto the pallet so that the longitudinal projections become housed in the recesses in the top surface of the profile with a certain amount of pressure to ensure that their position is stable.

The invention also applies to the assembling together of two separate pallets, whether fitted together by means of their longer sides or their shorter sides. In both these supposed cases, the single body so formed will result in two different dimensions being formed, one of 1,000 x 2,400 mm., and the other of 1,800 x 1,200 mm., as will be appreciated with later reference to the drawings.

In one of the cases, at least one of the longer sides of the adapter is provided in its lower part with lugs that are housed in the gaps in the sides of the two pallets fitted together by their shorter sides. These side gaps exist in the 1,200 mm., sides of both basic pallets.

In the other case, the lugs in the lower part of the adapter are made in its shorter sides so that the lower lugs are housed in the side gaps of the two pallets which are fitted together, also in the 1,200 mm. sides. of both basic pallets.

When wishing to fit together two pallets, either when fitted together by their longer or their shorter sides, without it being necessary to increase the usable surface of the total surface area, adapters based on iron bars are provided, equipped with hook-shaped ends, by means of which it is possible to connect the said pallets. In both cases, the adapters will be of a suitable length, i.e. 1.6 m. when the basic pallets are joined together by their longer sides and 1.33 m. when the pallets are joined together by their shorter sides.

In order to achieve the other objective, half-pallets measuring 600 x 800 mm., are used. Known as DUSSEL pallets, they are in general use in Germany, for instance, and are provided with U-shaped metal fittings, with their arms situated horizontally, arranged at the four corners and in the middle area of their 800 mm. sides.

The bases of these metal fittings therefore remain flush with the 800 mm. sides, which are the sides that need to be connected together in order to form a 1,200 x 800 mm., pallet.

In order to do this, the invention claims the making of slots or females in the bases of the three metal fittings in one of the 800 mm. sides, as well as the making of projections or males in the bases of the other three metal fittings in the other 800 mm. side, in such a way that these male and female parts coincide and interlink when two half-pallets are fitted together by their said 800 mm. sides, so as to form a single pallet measuring 1,200 x 800 mm.

In this coincide, the projections or male parts of one set of metal fittings are housed in the slots or females of the other metal fittings, causing the surfaces of the metal fittings, as well the sides of the half-

pallets, to be in surface contact with each other.

The ends of the projections or males are each provided with a catch or prong with a greater cross-section than the rest of the said projections.

The slots or females are grooves cut in the metal fittings, with a wide upper portion which allows the catches on the projections to pass through, and another narrower lower portion in which the projections are received and fit quite tightly, with the catches or prongs jutting out through the inside face of these metal fittings and being supported on the surface of the said metal fittings on both sides of the narrow portion of the slots.

Thus, the assembly or fitting together of the two half-pallets is carried out by placing both side by side and slightly lifting the side edge of the half-pallet with the projections so that the prongs can pass through the upper portion of the slots. Once the prongs have passed through, the corresponding half-pallet is lowered, by its own weight, for instance, with which the projection becomes housed in the narrow portion of the slot and a perfectly stable assembly is achieved.

Obviously, in order to disconnect the two parts, it is sufficient to raise the side of the half-pallet that is equipped with the projections in order to also raise the projections, withdraw them through the upper portion of the slots and separate the half-pallets.

In particular, and as a preferable solution, the slots or females in the metal fittings have a wide circular upper portion and a narrow vertical groove extending downwards a certain distance from the bottom of the said circular portion.

The projection or male part is a straight cylindrical part, welded to the metal fitting, whose outer end or prong takes a circular shape with a flattened upper area which is established as a continuation of the cylindrical portion of the projection. The purpose of this arrangement, as will be explained later with reference to the drawings, is to make it easier for the projection to be inserted and withdrawn through the slots.

In the other hypothesis concerning half-pallets, we refer firstly to the case of two half-pallets joined to each other by their facing wings, a case which, as will be explained later, is specially conceived for those cases in which the complete pallet is stored in a drive-in type racking system, although it can also be used for silo type racking systems.

Once that the two half-pallets have been arranged in position, a part is housed through their two longitudinal sides, with this part being composed of a central portion with a cross-section equal to the section of the space produced by the pairs of wings of each half-pallet and the blocks attached to these wings. This central portion thus adjusts in all its dimensions to those of the two sides in their encounter areas.

Starting from the said central portion of the assembler, two wings protrude outwards, also longitudinal and of the same height, which extend on the outside over the also outer faces of the blocks, with the ends of these wings having right angle bends which adjust to those faces of the said blocks which are farthest from each other.

With the two parts of the assembler thus arranged in the sides, the parts are then secured to the two half-pallets by means of the appropriate strips that fit round the parts against the two blocks in each of the half-pallets.

The central portions of the two assemblers will preferably be made of metallic material and hollow inside, so that, without any loss of strength, they do not excessively increase the weight of the complete pallet assembly which has been formed. In terms of the possible load to be borne by the pallet in question, more than one strip can be fitted, with which the effect of the loads on the connection area of the half pallets can be neutralized.

One constructional variant for this arrangement consists of providing the assembly parts with another side face with wings parallel to the mentioned face and of the same size, although without its ends being bent. These assembly parts are situated in a different way to those described previously. Their inclusion between the two half-pallets is carried out by situating them with the sides with wings facing each other so that both portions situate their wings over the central portion while the wings of the assembly parts laterally clasp the nearby blocks. As before, these parts are secured with strips.

The provision of this variant also includes the two end portions of the connection of the two half-pallets and, if necessary, the central portion of this connection.

Another constructional variant of the invention consists of applying assemblers when wishing to connect the two half-pallets by their outer wings.

For this solution, parts with two portions will be used, which are housed between the two blocks of each half-pallet, with both portions being joined by another straight outer portion, which is applied against the two blocks of the half-pallets which are facing each other.

All these and other details of the invention will be appreciated in greater detail by referring to the sheets of drawings which are attached herewith and which, in a non-restrictive way, represent the following:

- Figures 1, 2 and 3 are three views of one solution for the adapter which is housed on two sides of the pallet.
- Figures 4, 5 and 6 correspond to three views of the extension system arranged on the sides of the pallet with top entry and exit.
- Figures 7, 8 and 9 show three views of the adapter, supposing that this is one single part.
- Figures 10 and 11 make it possible to appreciate the position of the adapters when two pal-

lets are joined together by their longer or shorter sides.

- Figures 12 and 13 show the two variants relating to the adapter when it is not necessary to increase the joint usable surface.
- Figure 14 represents the adapter to be used in the case in the previous paragraph.
- Figures 15 and 16 represent a solution of the adapter with folding legs.
- Figures 17 and 18 refer to a reinforced variant of the same.
- Figure 19 shows a perspective of two DUSSEL half-pallets, including the solution provided by the invention.
- Figure 20 shows two views of the metal fitting that includes the slots or females.
- Figure 21 also shows two views of the metal fitting that includes the projections or males.
- Figure 22 is a detail of the projections or males.
- Figure 22 is a detail of the projections.
- Figure 23 represents the final connection of the two DUSSEL-type half-pallets.
- Figure 24 is a perspective of another type of half-pallet.
- Figures 25 to 29 represent the connection of two half-pallets by their facing sides, as well as by the assembly part.
- Figure 30 is a perspective of a constructional variant for when two half-pallets are connected by their facing wings and by approximation over the assembly parts.
- Figures 31 and 32 are variants of the above.
- Figures 33 to 35 represent the way in which the assembler shown in Fig. 30 becomes housed.
- Figures 36 and 37 show the connection between two half-pallets by their outer wings, as well as the assembler.

Looking now at Figures 1, 2 and 3, we can appreciate a basic pallet (1) measuring 800 x 1,200 mm., to which, along its longer sides (B), two parts (2) provided with projections (3) have been added. The measurement (B) of the adapters (2, 3) is equal to that of the basic pallet, so the projections (3) become housed in the recesses or gaps in the longer sides of the pallet (1). The other dimension (A) of 800 mm., corresponding to the shorter side of the basic pallet, is thus increased by the amount of the two dimensions (C), which are each of 100 mm., with which the total size of the pallet with the adapter reaches 1,000 mm.

The other variant shown in Figs. 4, 5 and 6 represents the other side variant in which the longer sides (B) of the basic pallet (1) receive the two adapters (4), which include the appropriately secured L-shaped metal parts (5). These parts or fittings (5) are situated above the side ends of the basic pallet (1) in order to hook onto the said sides.

The variant represented in Figs. 7, 8 and 9 refers to the adapter as a single body (6), whose overall size is 1,000 x 1,200 mm., with its lower longitudinal ribs (7), which are inserted, with a certain amount of pressure, into the gaps in the basic pallet (1).

According to Fig. 10, two basic pallets (1', 1") are shown joined together by their shorter sides, with the adapter (8) fitted to them, provided with lower lugs (9, 9') which, as in the case of Figs. 1, 2 and 3, are inserted to the side gaps in the pallets (1', 1"), in this case in only one of the sides in order to make their insertion easier.

On the contrary, in the case of Fig. 11, the adapter (9) takes in two pallets (1', 1") joined together by their longer sides and is provided with wedges (10, 10') which are established on both sides of the shorter sides, given that for their insertion, the two pallets (1', 1") can be arranged at an angle, thus allowing the entry of the two pairs of lugs (10, 10').

Referring now to Figs. 12 and 13, it must be pointed out that, in this variant, the adapter is articulated based on the bars (11, 12) with hook-shaped ends, which are used in the appropiate sizes, according to whether the pallets are joined together by their longer or their shorter sides. In either of these two cases, the individual pallets are fitted together by placing them at an angle in order to allow the bars (11, 12) to be inserted and thus carry out the assembly of the said pallets.

As was explained previously, and as shown in Fig. 14, the bars or elements (11, 12) will be of different sizes depending on which of the supposed cases shown in Figs. 12 and 13 are being used.

Figs. 15 and 16 represent the adapter (13) with its top surface (14) and the legs (15) secured to this surface by means of hinges (16), which allow them to be folded away when not in use.

Figs. 17 and 18 show the reinforced solution (17) for the adapter, with its top (18) and bottom (19) surfaces, with the legs for insertion into the sides of the pallet situated between them.

As regards Fig. 19, we can observe two DUSSEL-type half-pallets (D, E), which each have two sides (21, 22) measuring 600 mm. in length, whereas the other two sides (23, 24) measure 800 mm. Metal fittings (F) are shown at the corners and in the middle of their longer sides. These metal fittings are divided into two types, with one type (26), equipped with slots or females, being fitted to one side of each pallet and the other type (25), equipped with projections or males, fitted to the other side.

In Fig. 20, we can see the metal fitting (26) with its wings (28), and its slot (27), with its rounded upper area (29) and its lower elongated narrow vertical portion (30).

Fig. 21 shows the metal fitting (25), also with its wings (28), with the cylindrical projection (32) fixed to its base by welding and the prong (31) or catch at the end of the projection. The shape of this prong (31) is shown in an enlarged form in Fig. 22, based on the cy-

linder (32) whose upper generatrix extends to the upper part of the end prong or catch (31). This upper part (33) of the prong forms a surface which prevents any problems when it is being extracted or withdrawn from its housing at the top of the upper part (29) of the slot (27).

The assembly of the two half-pallets is illustrated in Fig. 23, where the two half-pallets (E) and (D) are shown, with the outer sides of the metal fittings (25) and (26) facing each other and with their sides (21) and (22) aligned parallel to each other. The projection or male (32) has already become housed in the slot (27) wth the end prong or catch (31) directed downwards.

The surface contact between each two pairs of metal fittings and the action of the prongs (31) against the inner sides of the metal fittings (26) mean that the formation of the 1,200 x 800 pallet is fast, safe and perfectly stable.

As regards Fig. 24, a half-pallet (34) is shown, with its front and rear sides having dimensions of 600 mm., and its left and right sides measuring 800 mm. The left side is known as having "facing wings" (G, G', G") and the right side (H) is known as having "outer wings".

The half-pallet is organized by means of combining the three wings (36, 37), each separated by internal (38) and end (39) blocks. Boards (35) are placed over these wings (36), situated crosswise to them, with precisely the intention of joining together the above-mentioned sides (G, G', G") and (H) in order to form a complete pallet.

In accordance with Fig. 25, the connection of two half-pallets (34, 34') can be observed, with the intention of joining them together. A gap (46) is formed between the internal blocks (38, 38') of each half-pallet, while the end blocks (39, 39') are situated distant from each other.

Figs. 26 and 27 allow us to understand the shape of the assembler (40) to be used in this case, with a central area (41) and wings at each side which are bent (42, 43) at their free ends, protruding out from one of its longitudinal faces. The central portion (41) has a section which in size corresponds to the dimensions of the gap (46) formed between the two half-pallets (34, 34'), so that it can be housed in it. The length of the wings is equal to that of the blocks (38, 38') and that of the bent sections of the wings is somewhat shorter.

The part (40) becomes housed by the exterior of the two side sections, as can be seen in Fig. 28, which illustrates approximately the cross section view through I-I in Figs. 25 and 29. The insertion of the central portion (40) into the gap (46) is checked, as well as the position of the wings with their bent sections (42, 43) on the outer faces and the most distant walls (44, 45) of the blocks (38, 38'). With the two assemblers arranged in this manner, and given that the portion (46) of these assemblers is hollow, the parts (40) are then secured by means of strips (47, 48) in the way shown or by any other method, all of which will also depend on the load to be borne by the assembly and taking into account the requirements of the drive-in type racking system, according to which the only support for the complete pallet is established at the outer blocks (39, 39'), with all the stress of the load resting upon the area where the two half-pallets meet.

As stated previously, the assemblers are usually metallic and their central portion (41) is hollow, with which the complete pallet formed in this way has the highest resistance capacity. However, for the appropriate purposes, it is pointed out that these parts could also be made of wood, plastic, etc., and those that would be used in these cases would be as shown marked by position (I) in Fig. 31.

The blocks (38, 38') can incorporate notches or rebates so as to make it easier for the strip to pass through, and angle-beads can also be used to prevent them from becoming deteriorated due to continuous use.

The insertion and securing of the assemblers can be carried out with the half-pallets facing each other, either loaded or unloaded, so that depending on the load in question, the necessary fixing required can be carried out, as well as the choice of the type of assembler as regards the material of which it is made.

The complete pallet unit which is thus formed can be transported, stored, travel along roller conveyors, etc. completely normally, while carrying the correspondig load. At the end of these operations, and when the use of the half-pallet is necessary, the strip can be cut with a knife or other tool and the two halves separated.

The separation is carried out while loaded, for which, and after cutting the strip, one of the halves is pulled for istance with a fork-lift truck, using a sideward shifting device, etc. so that it becomes separated from the other and ready for siting in the place required. At the same time, the assemblers are removed and stored for later use.

The assembly part (49) illustrated in Fig. 30 represents an assembly variant, according to which there is a central portion (50) with a hollow interior (51) to be arranged in the gap between the half-pallets, and two pairs of wings (52, 53) that protrude out from both sides and which are parallel. In this case, these wings are without bent ends and the assembly part is placed by moving the two half-pallets towards the sides (47, 48), as indicated by (M), until the blocks (38, 38') make contact with the walls (54, 55) of the central portion (50), while at the same time the blocks (38, 38') are received between the wings.

Figure 33 shows a view, more precisely in the left (M) direction, of how the assembler would become arranged with regard to a half-pallet, of which only one

corner has been illustrated. This half-pallet, represented here by its portions (35, 36, 37) has already been housed in the rear portion of the assembler, which is prepared to receive the other half-pallet between the wings (52, 53) in its front portion.

A side view of the union, such as that shown in Fig. 34, represents the ends of two half-pallets, facing each other and with the assembler (50) housed in the gap between the blocks (38, 38'), which in turn are controlled by the wings (52, 53) of the said assembler. Fig. 35 also shows a side view of the assembler (50) close to a half-pallet, on its right. This view corresponds to a side view of Fig. 33.

Fig. 32 represents an assembler (J), a variant of the one described, made of wood and which logically has shorter wings than those of the assembler (50) due to the different quality of the material.

These assemblers, both the metallic one (50) and the wooden one (J) mentioned, are situated at the sides (G, G') of the half-pallets and, when necessary, also in the middle (G").

In Figs. 36 and 37 we can appreciate the other possibility offered by the invention for joining together half-pallets by their ends (H) or with outer wings. We can observe here the meeting of the two half-pallets with their top boards arranged crosswise (35, 35'), the blocks (39, 39') facing each other and the inner blocks (38, 38') together with the gaps (54, 54') formed between these blocks.

In this case, the assembly part is provided with two portions (56, 57) which are inserted into the gaps (54, 54') as well as a central area (58) that connects both portions (56, 57) and is the same length as the sum of the lengths of the two blocks (39, 39'). The binding with strip and other features of this solution would be similar to those in the case of the parts shown in Figs. 25 to 29.

These assemblers are inserted sideways into the two sides of the meeting point of the two half-pallets. The complete pallet which is formed in this way is designed for use in silo-type racking systems, in which the said pallet rests on its central area.

Claims

1.- An assembler-adapter for pallets, characterized in that a modification of the surface area of the pallet (1) is established, thanks to the provision of an assembler or assembly piece (2) which, when connected to the said pallet, increases its usable surface and in that the assembler or adapter can be withdrawn or removed from the pallet for reuse in successive operations, based on two equal bodies which establish a continuation of the upper or top surface of the pallet on facing sides, with these bodies having projections (3) which jut out from their lower sides and become housed inside the pallet through the gaps in its sides.

2.- An assembler-adapter for pallets, in accordance with claim 1, characterized in that it is composed of two equal bodies (4) that establish a continuation of the top surface of the pallet on facing sides, with these two bodies each being provided with pairs of L-shaped metal fittings (5) fixed to their upper surface and with their ends jutting out towards the sides of the pallet and these ends being bent downwards and by means of which they are fitted onto the longitudinal ends of the pallets.

3.- An assembler-adapter for pallets, in accordance with claim 1, characterized in that it is composed of one single body (6), greater in size than the pallet itself, and which is situated onto its top surface, provided on the bottom side with longitudinal ribs (7), which become housed in the also longitudinal gaps or recesses in the top surface of the pallet.

4.- An assembler-adapter for pallets, in accordance with claims 1 and 3, characterized in that the one single body (8) that covers the top surface of the pallet, is applied to two pallets joined together (1', 1") by their sides, with the particularity that the single body is provided with lugs (9, 9') jutting out from its lower sides and towards the sides of the pallets, with these lugs being situated on one side when the pallets are joined together by their shorter sides and on two sides when the pallets are joined together by their longer sides.

5.- An assembler-adapter for pallets, in accordance with claim 4, characterized in that in order to join together two single pallets without an increase in the surface area of the assembly, metal bars (11, 12) of variable length are used, provided with ends in the shape of hooks, by means of which the single pallets are connected together.

6.- An assembler-adapter for pallets, in accordance with claim 1, characterized in that the crosswise projections are connected to the horizontal portion by means of hinges (17), which allow them to be folded back when the adapter is not being used.

7.- An assembler-adapter for pallets, in accordance with claim 1, characterized in that another portion (19) is arranged parallel to the upper or top portion (18), thus increasing the support of the unit on the ground.

8.- An assembler-adapter for pallets, applicable to half-pallets of the type known as DUSSEL pallets, which are articulated based on units (D, E) with surface measurements of 600 x 800 mm. and fitted with three U-shaped profiles (25, 26) arranged on each 800 mm. side, with two at the ends and one in the centre, with the outer bases of these profiles also arranged towards the exterior of the pallet and flush with the outer side surface, with it being these half-pallets which have to be joined together by their 800 mm. sides in order to form a complete pallet measuring 1,200 x 800 mm., characterized in that the three

bases of the U-shaped profiles (25) on one of the 800 mm. sides are provided with projections (32) that jut outwards and are finished in prongs or catches (31) of a greater cross-section than that of the projections themselves and situated a certain distance from the base of the profiles, whereas the bases of the other three profiles (26), situated on the other 800 mm. side, are provided with holes or slots (27) which each have a wider upper portion (29) and another 15 narrower lower portion (30), so that the upper portions of these slots allow the prongs or catches on the projections of the other half-pallet to be inserted without difficulty, with the projections themselves then being inserted into the lower portion of the slots, allowing the said prongs or catches to be supported on the inner faces of the U-shaped profiles on both sides of their above-mentioned lower portions.

9.- An assembler-adapter for pallets, in accordance with claim 8, characterized in that the projections on one side of the half-pallet are preferably cylindrical and approximately equal in length to the thickness of the base of the U-shaped profiles, whereas the prongs on the projections (31) are also cylindrical and of a greater diameter than the projections themselves, with the upper ends of these prongs being flattened horizontally and aligned with the projections, in order to make it easier for them to be inserted into and withdrawn from the upper portion of the slots in the profiles of the other half-pallet.

10.- An assembler-adater for pallets, in accordance with claim 8, characterized in that the holes or slots cut in the U-shaped profiles have a circular-shaped upper portion (29) and a vertical lower portion (30) starting from the lowest part of the upper portion, with the lower portion being narrower than the width of the prongs on the projections of the facing U-shaped profiles.

11.- An assembler-adapter for pallets, particularly for assembling together two half-pallets in order to form a normal pallet, with these pallets usually being made of wood, and the connection being carried out, depending on the case, by the longer sides of the said half-pallets, either when these are arranged with their wings facing each other or with their outer wings, which is characterized by:

- a part (40), usually provided with a hollow central portion (41) and open at its ends, whose cross-section corresponds in dimensions to that of the space or gap formed between the blocks (38, 38') of the two half-pallets facing each other with their wings and the wings themselves, fitting into this gap, in that from at least one of the longer faces of the said hollow central portion, pairs of wings of the same height as the said portion jut outwards and extend over the outer faces of the blocks included between the wings and nearer to their free ends, as well as also partially covering the inner faces of these same blocks which are farthest from each other, which are taken in between the wings, by means of bends (42, 43) at the ends of these wings, in that the parts are secured to the half-pallets by strips or bands (47, 48) which fasten them to the outer sides of the meeting point of the two half-pallets.
- a part (55) provided with two side portions (56, 57), usually hollow and open at their ends, whose cross-sectional dimensions correspond to those of the gaps between the blocks of the connected half-pallets, with their outer wings, with these portions fitting into these gaps, in that the longer faces of one side of both hollow portions is connected by another portion of the same height as the said portions and whose length is equal to the total length of the facing blocks (39, 39') of the two half-pallets, in that the parts are secured to the half-pallets by strips or bands which fasten them to the outer sides of the meeting point of the two half-pallets.

12.- An assembler-adapter for pallets, in accordance with claim 11, characterized in that the assembly parts used for connecting the half-pallets by their facing wings, with their hollow central area open at its ends which fits into the space or gap between the wings, have two pairs of wings (52, 53) jutting out from their longer sides, which clasp the side faces of the blocks, with these parts fitting into the half-pallets by their being moved towards each other onto the said parts.

13.- An assembler-adapter for pallets, in accordance with claim 12, characterized in that two assembly parts are fitted, one at each end of the connection between the two half-pallets.

14.- An assembler-adapter for pallets, in accordance with claim 12, characterized in that three assembly parts are fitted, two at the sides and one in the centre of the connection area between the two half-pallets.

15.- An assembler-adapter for pallets, in accordance with claim 11, characterized in that the bent sections at the ends of the wings of the assembly part are, preferably, shorter than the central portion of these parts.

16.- An assembler-adapter for pallets, in accordance with claims 11 and 12, characterized in that the central portions of the assembly parts, instead of being hollow, are solid.

17.- An assembler-adapter for pallets, in accordance with claims 11 and 12, characterized in that the assembly parts are made of metal.

18.- An assembler-adapter for pallets, in accordance with claims 11 and 12, characterized in that the assembly parts are made of plastic.

19.- An assembler-adapter for pallets, in accordance with claims 11 and 12, characterized in that the assembly parts are made of wood.

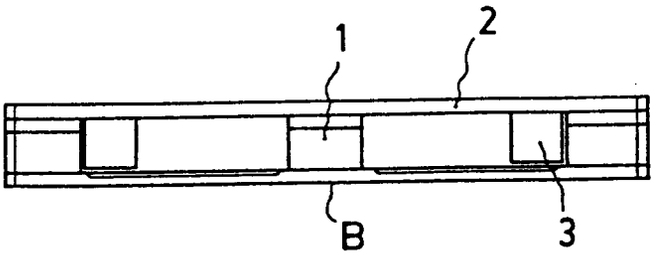


Fig.: 1

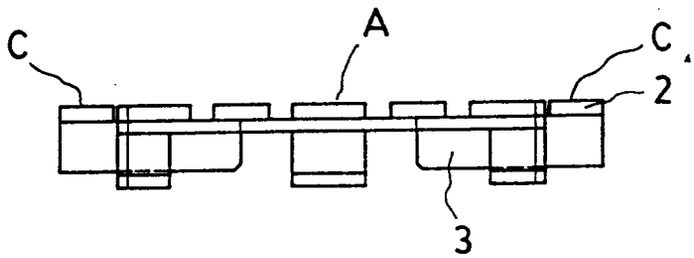


Fig.: 3

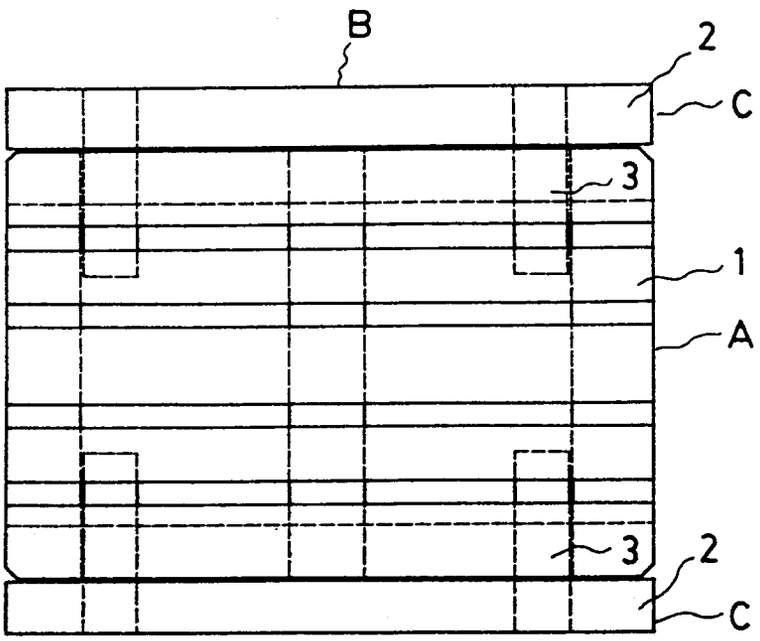


Fig.: 2

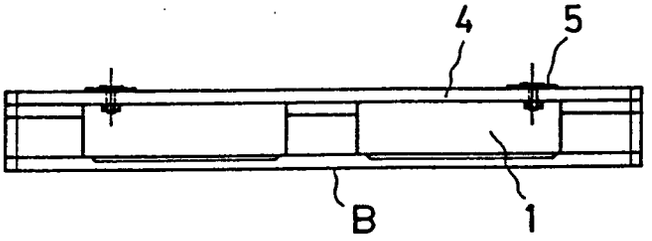
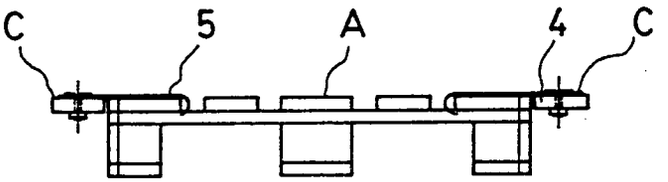


Fig.: 4



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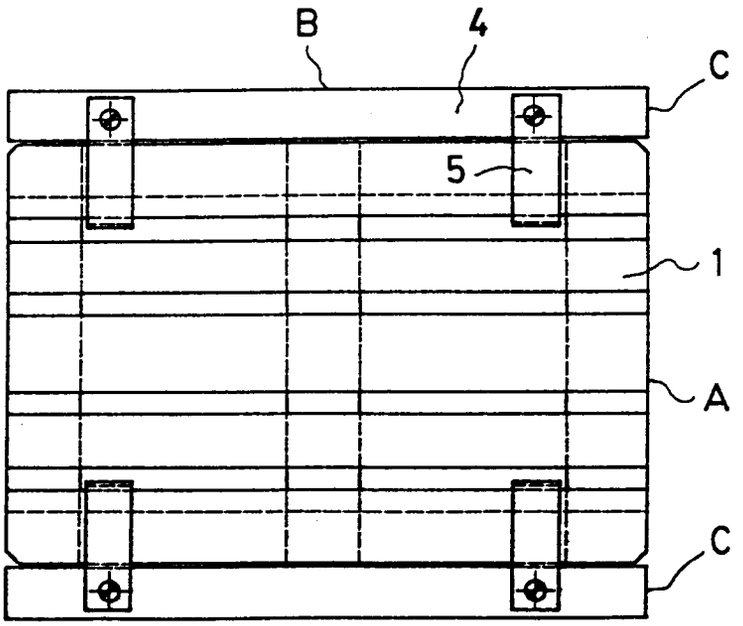

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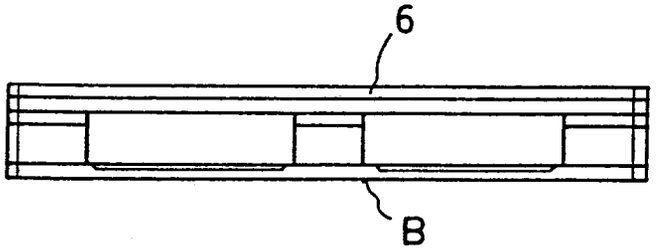

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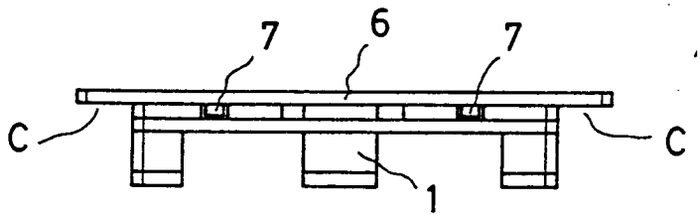
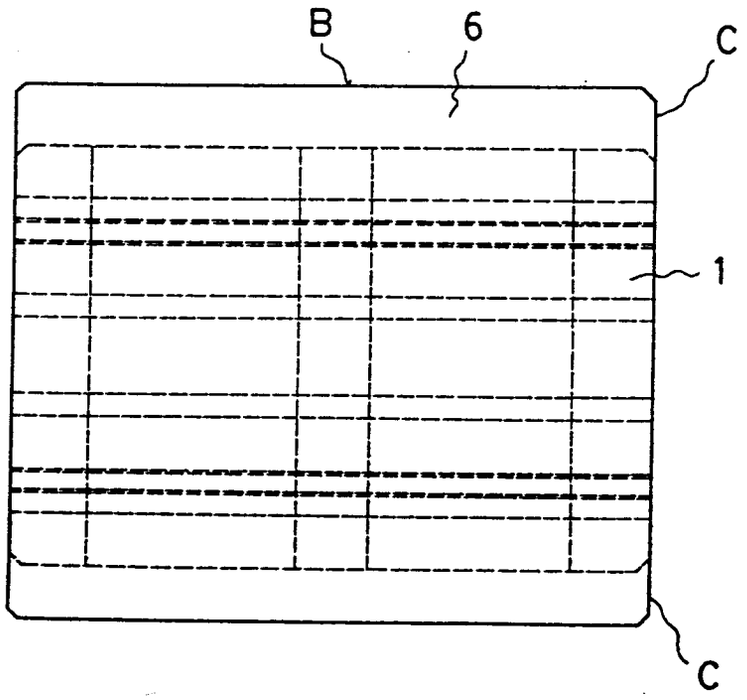


Fig.: 9



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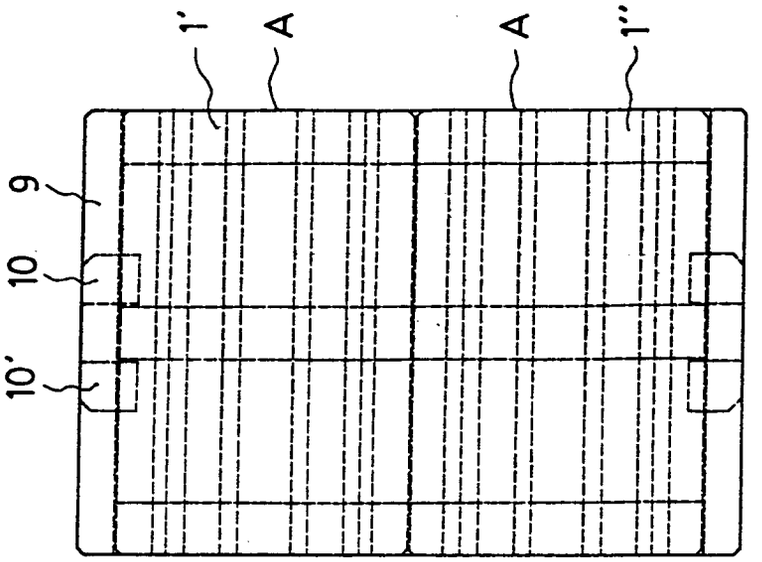
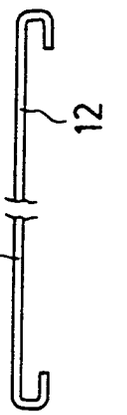


Fig.: 11



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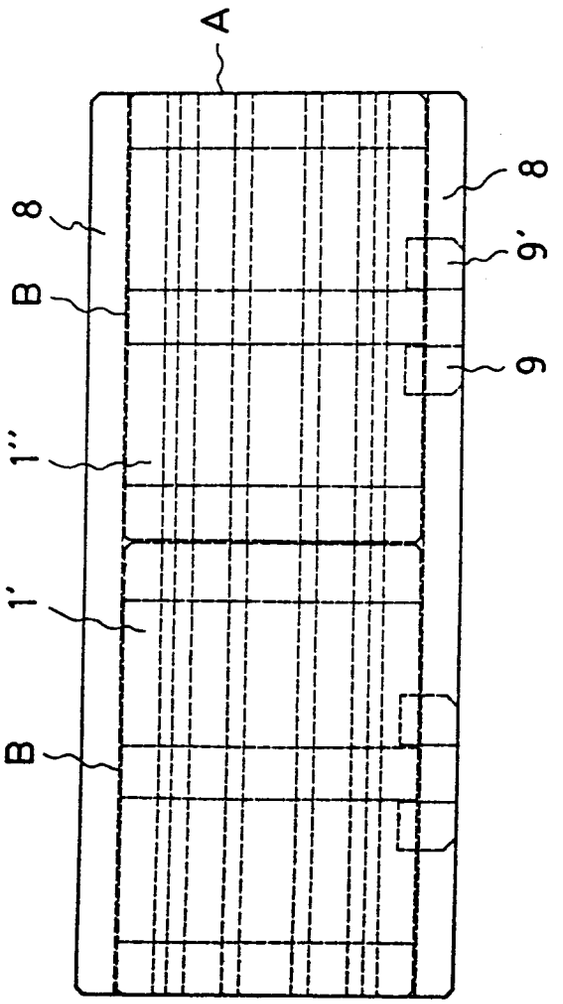


Fig.: 10

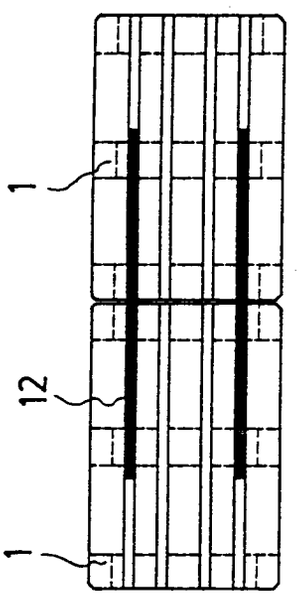
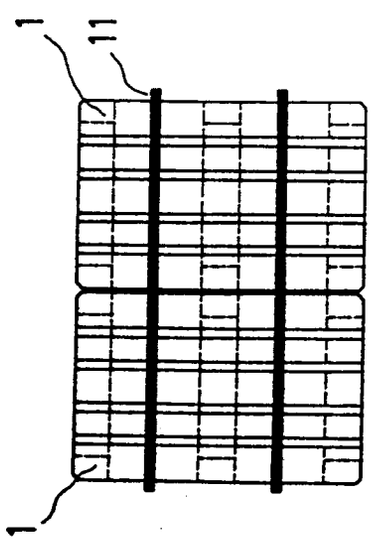


Fig.: 13



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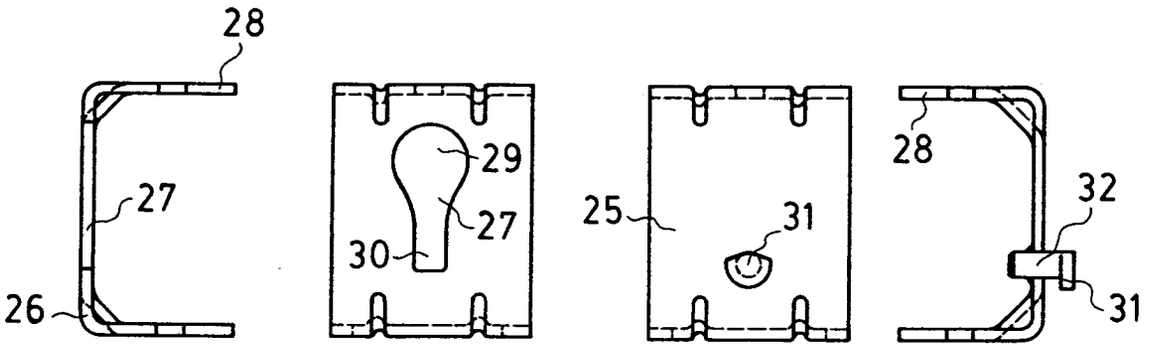
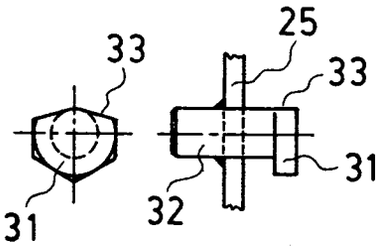


Fig.:20

Fig.:21



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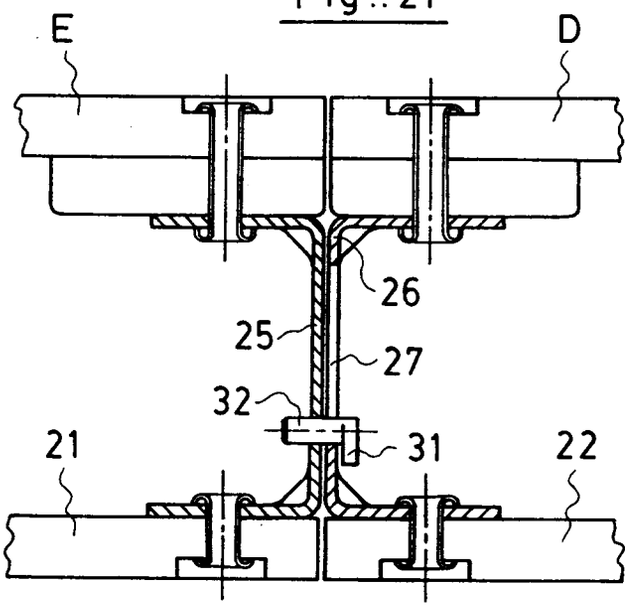

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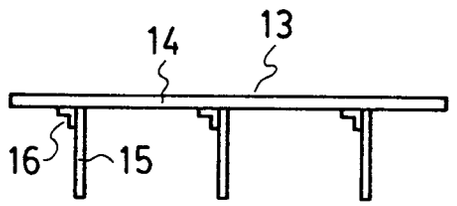

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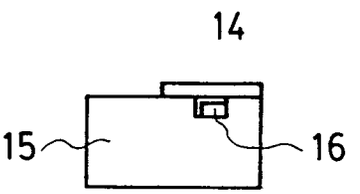

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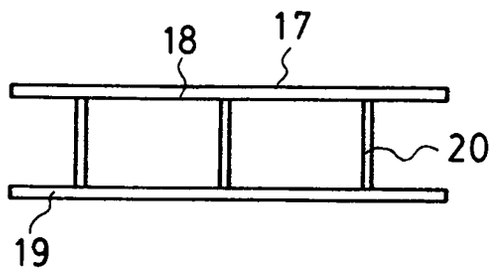

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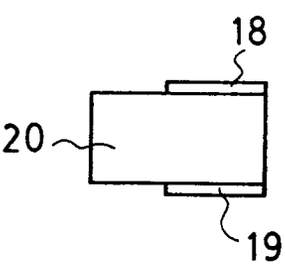

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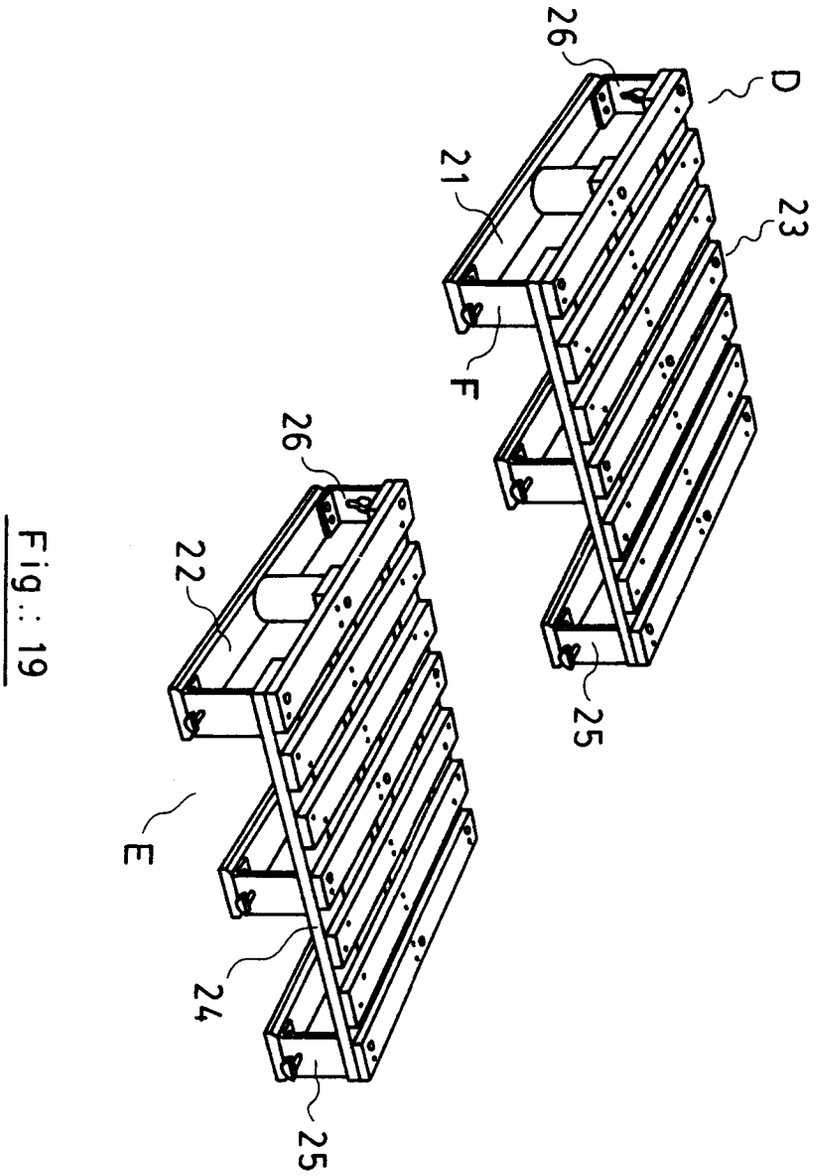

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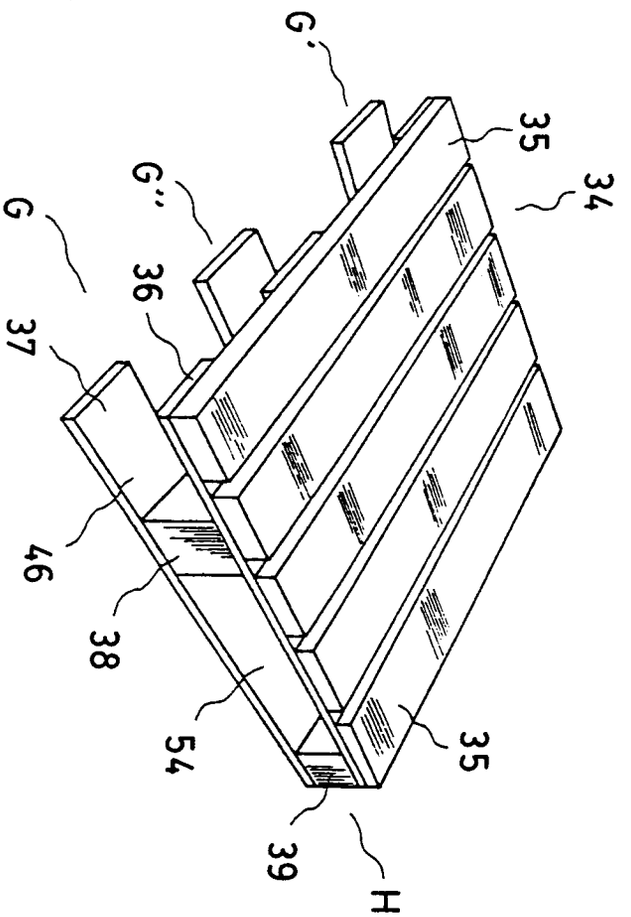

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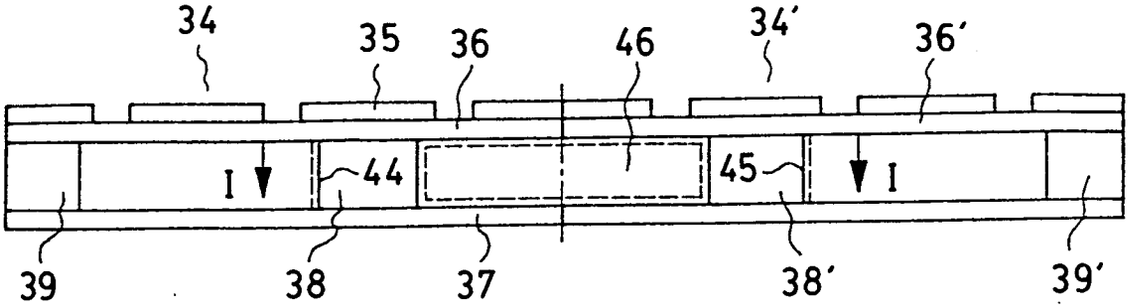


Fig.:25

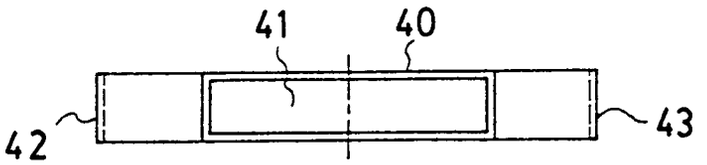


Fig.:26

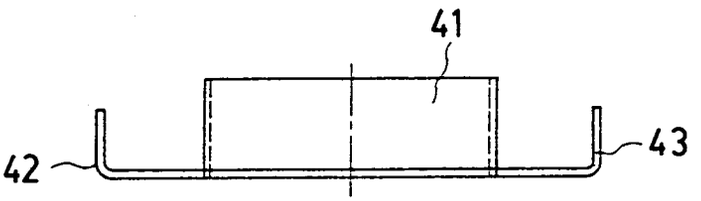
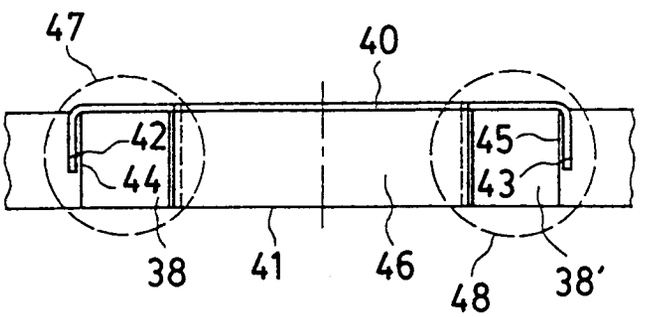


Fig.:27



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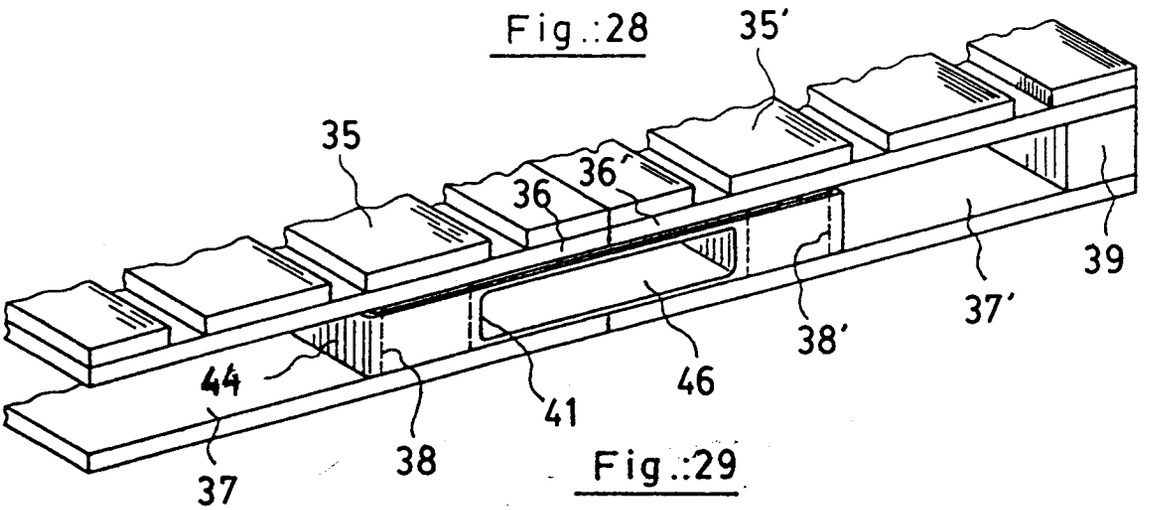
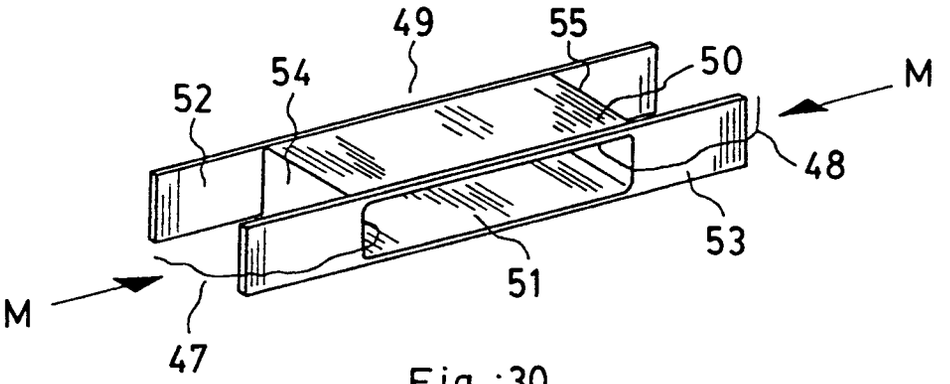


Fig.:29



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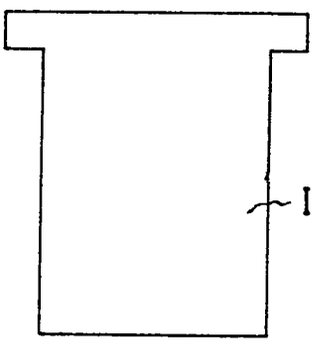

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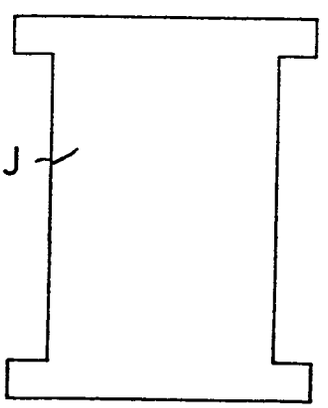

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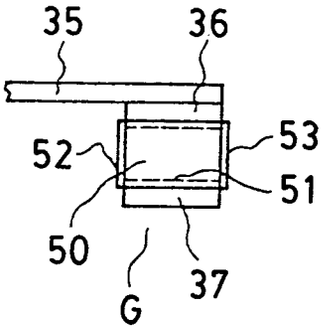

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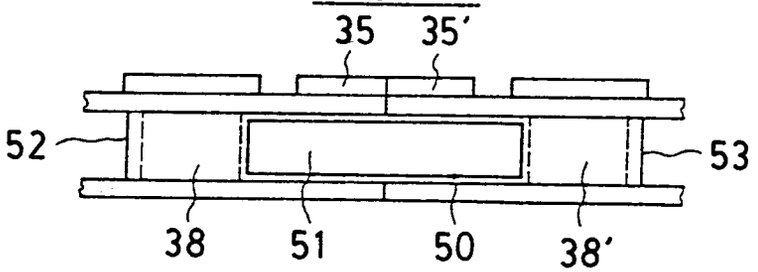

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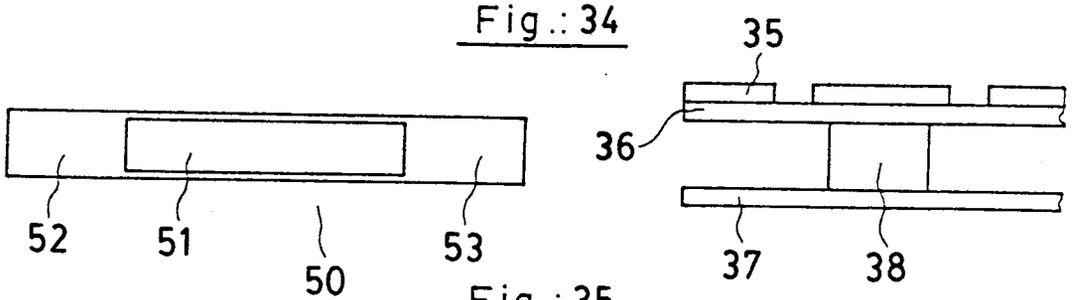

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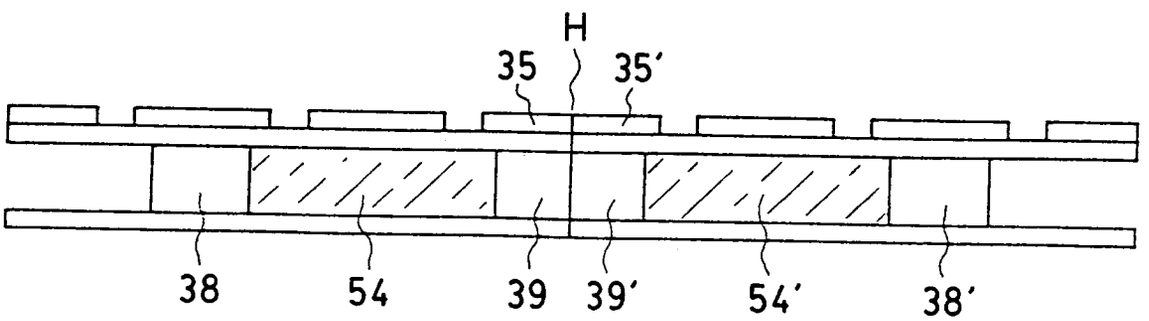

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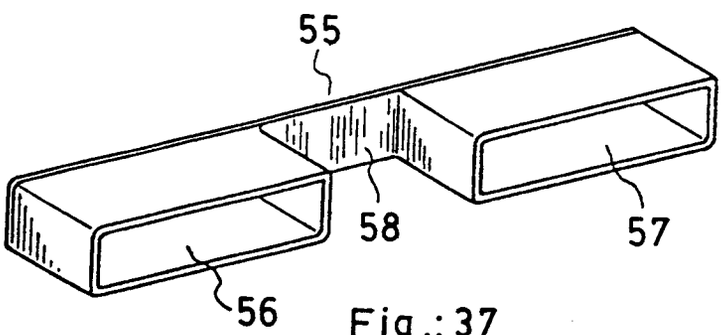

Fig.:37