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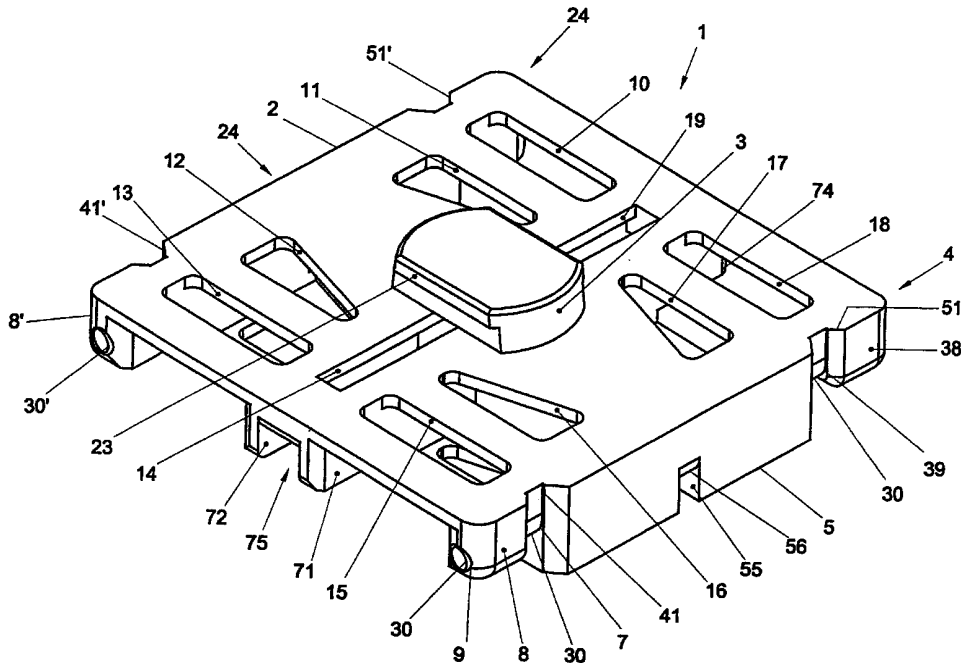
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(54) Title: PALLET FOR COILED STOCK



(57) Abstract: A pallet (1) for coiled stock, comprising an upper side for supporting, in the operating condition, a vertically placed roll, with a plastic top deck (2) having a plastic supporting structure (5, 8, 25, 38, 38') located below the top deck and connected with the top deck, which supporting structure comprises at least two elongated frame parts (30, 30') located on both sides of the pallet, wherein the top deck is provided near an edge portion with recesses (41, 41', 51, 51'), which at least partly expose the frame parts.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Title: Pallet for coiled stock

The invention relates to a pallet for coiled stock, comprising an upper side for supporting, in the operating condition, a vertically placed roll, with a plastic top deck having a plastic supporting structure located below the top deck and connected with the top deck, which supporting structure
5 comprises at least two elongated frame parts located on both sides of the pallet.

Such pallets are known from practice and are used during the transport of rolls of steel. Conventionally, a pallet of this type is made of wood and provided with a flat wooden top deck, on which a roll of steel can
10 be placed perpendicularly.

Such a pallet is also known from US 5,868,080; the pallet shown therein is made of plastic and has frame parts located at the surface of the pallet and providing a rough surface.

A drawback of the known pallets is that they are often damaged
15 during transport, which may cause damage to the roll placed on the pallet and disturb the handling process. The reuse of a pallet already used is seldom possible. A further drawback is that when moving the wooden pallets wood splinters often separate from the pallets very soon. Such a pollution of the environment by wood splinters can be undesirable or even
20 dangerous.

It is an object of the invention to remove these drawbacks by providing a pallet which is strong enough to support a roll of steel, is resistant to the handling process and can be used several times.

To this end, the invention provides a pallet of the type indicated
25 above, characterized in that the top deck is provided near an edge portion with recesses, which at least partly expose the frame parts.

Because the pallet according to the invention has a supporting structure reinforced with frame parts, which supports a plastic top deck, a pallet is obtained which is light, strong and durable, in particular because during raising the pallet hoisting loops engage the exposed frame parts and thus do not cause wear on the pallet.

The pallet according to the invention can advantageously consist of two parts similar in shape, which ensures that the mold costs for the manufacture of the pallet are substantially reduced.

The invention will be explained in more detail on the basis of an extensive description of an exemplary embodiment of the invention with reference to the drawing, in which:

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

Fig. 2 is a perspective bottom view of a pallet according to the invention,

Fig. 3 is a perspective top view of another pallet according to the invention,

Fig. 4 is a perspective top view of a section of the pallet of Fig. 3, and

Fig. 5 is a perspective view of a pallet according to the invention in the operating condition.

Figs. 1 and 2 show an example of an embodiment of a pallet 1 according to the invention. The pallet 1 has a top deck 2, which, in top view, is of substantially square shape. The surface of the top deck 2 is substantially flat to support, in the operating condition, an axial end of a roll of steel. The top deck 2 is provided with a plurality of openings 10 through 19, which reduce the weight of the pallet 1 without negatively affecting the strength of the pallet 1. Located in a central part of the top deck 2 is an engaging block 3, which projects above the surface of the top deck 2. The engaging block 3 is provided with a projecting engaging edge 23, located along a portion of the circumferential edge of the engaging block 3.

On a first side 4 of the pallet 1, the top deck 2 is provided on the underside with a central side part 5. Located on the opposite side 24 of the pallet 1 is a second central side part 25, designed so as to be similar to the side part 5. The description of the side part 5 therefore also applies *mutatis*
5 *mutandis* to the side part 25. The side part 5 extends from the top deck 2 downward and extends in a longitudinal direction over a central part of the side 4 of the top deck 2. The underside 6 of the side part 5, facing away from the top deck 2, is substantially flat, so that the side part 5 forms a foot for the top deck 2. The side part 5 is provided with a continuous round
10 opening 7, of which an axial axis extends at a distance from and parallel to the top deck 2.

On the underside of the top deck 2, the corners of the side 4 of the pallet 1 are each provided with respective head pieces 8 and 38. The head pieces 8 and 38 are similar in shape but of mutually mirrored design. The
15 head piece 8 is provided with a continuous opening 9, which is in line with the opening 7 of the side part 5. The head piece 8 is connected with the side part 5 by means of an intermediate piece 40, which intermediate piece 40 leaves the line of the openings 7 and 9 clear. In a manner similar to the head piece 8, the head piece 38 is provided with a continuous opening 39,
20 which is in line with the opening 7 of the side part 5. The head piece 38 is connected with the side part 5 with an intermediate piece 50, which intermediate piece 50 leaves the line of the openings 7 and 9 clear.

Placed in the continuous openings 9, 7 and 39 of the pallet 1 is a round tube 30. The tube 30 is fixed in the openings 9, 7 and 39 by fixation
25 means, for instance in the form of fixation bolts, not shown. The tube 30 may, for instance, be made of steel. The tube 30 reinforces the pallet 1 considerably, so that the pallet 1 can resist high loads. The invention is not limited to the metal design of the elongated frame part 30 mentioned herein; the invention may also be used with other materials, such as
30 reinforced or non-reinforced plastics and composites, with which a sufficient

reinforcement of the pallet 1 can be obtained. Nor is the invention limited to the round cross-section of the elongated frame part shown in the exemplary embodiment; thus the elongated frame part may also be designed with another cross-sectional shape, such as, for instance, an oval, a rectangle with rounded or non-rounded corners, and I-shaped.

In top view, the top deck 2, on an edge portion of the side 4 at the level of the intermediate pieces 40 and 50, is provided with respective recesses 41, 51. These recesses 41, 51 extend so far from the edge of the top deck 2 inward that the tube 30 is exposed. In operation, the recesses 41, 51 can receive a hoisting loop, which hoisting loop rests on the exposed parts of the tube 30.

In a central part near the underside 6, the side part 5 is provided with a recess 55. This recess 55 extends over the full depth of the side part 5 and is rounded outward by means of a rounding 56. In operation, the recess 55 can receive a tightening strap, which is used for fixing a roll placed on the pallet 1.

In this example, the side part 5 is of partly hollow design through recesses 58, 59, which are provided on both sides of the recess 55 in a direction transverse to the top deck 2. Through the hollow design of the side part 5, a reduction of the weight of the pallet 1 is obtained without affecting the strength of the pallet 1.

On the side facing away from the top deck 2, the side part 5 is connected with a bottom deck 60, which is substantially flat on the underside facing outward. Provided in a central part of the bottom deck 60 is an opening 20, which is so large that, if two pallets 1 are stacked, the engaging block 3 of the subjacent pallet is received by the opening 20, so that the bottom deck of the upper pallet rests on the top deck of the lower pallet. This ensures that the pallets 1 can be stacked in a compact manner. The bottom deck 60 is further provided with a plurality of openings 81

through 84, which limits the weight of the pallet 1 without negatively affecting the strength of the pallet 1.

A center line of the pallet is located between and parallel to the side parts 5 and 25. Located on both sides of this center line are two connecting parts 71, 72. The connecting part 71 is located near the center line on the side of the side part 5 and extends from the edge of the pallet 1 parallel to the center line in the direction of the center of the pallet 1 as far as substantially the level of the engaging block 3. The connecting part 71 also extends from the bottom deck 60 to the top deck 2. The connecting part 72 is located near the center line on the side of the side part 25 and extends from the edge of the pallet 1 parallel to the center line in the direction of the center of the pallet 1 as far as substantially the level of the engaging block 3. The connecting part 71 also extends from the bottom deck 60 to the top deck 2.

Correspondingly located on the opposite side of the pallet 1 are connecting parts 73, 74. The connecting part 74 is in line with the connecting part 71, and the connecting part 73 is in line with the connecting part 72. The connecting parts 71 through 74 are in line such that the connecting parts 71 through 74 with the top deck 2 and the bottom deck 60 define a tunnel 75, which extends in a central part of the pallet 1 between the top deck 2 and the bottom deck 60 parallel to the two side parts 5, 25. Through this tunnel-shaped structure 75, a light and strong connection is obtained between the top deck 2 and the bottom deck 60, which substantially increases the strength of the pallet 1 with only a slight increase in weight. Besides, it is possible to lead a tightening strap through the tunnel 75 to fix a roll placed on the pallet 1 in the operating condition.

As already described before, the side part 25 is of similar design as the side part 5. Indicated in Figs. 2 and 3 are, for brevity's sake, the head pieces 8', 38', the recesses 41', 51', 55' and the tube 30'.

In the example described, the pallet 1 is of one-piece design, because, except the metal frame parts 30, 30', the pallet 1 is made of continuous plastic. This has the advantage that the manufacture of the pallet 1 can take place in a simple manner, for instance by manufacturing the pallet 1 in a mold and then mounting the metal frame parts 30, 30'.

In use, an empty pallet 1 is raised by means of a crane with a grab, which grab clutches the edge 23 of the engaging block 3. The edge 23 provides a better hold for the grab. Subsequently, the pallet 1 is moved to a desired position and put down.

Fig. 5 shows a pallet according to the invention, on which a roll of steel R is placed on the top deck of the pallet 1. The central opening of the roll falls over the engaging block 3. The roll placed on the pallet 1 is fixed on the pallet by two crossing bands, of which the first crossing band 110 extends over the roll R via the passages 55, 55' in the side parts 5 and 25 of the pallet 1, and of which the second crossing band 120 extends over the roll R via the tunnel 75, transversely to the first crossing band 110. Both crossing band 110, 120 are tightened and secured with tightening means, not shown, so that the roll R is firmly connected with the pallet 1.

To hoist a pallet with a roll placed thereon, two hoisting loops are used. The first hoisting loop 130 is introduced into the hoisting openings 41, 41' on one side of the pallet 1, which hoisting loop 130 lies on the exposed parts of the tube 30, 30'. The second hoisting loop 140 is correspondingly arranged in the hoisting openings 51, 51' on the opposite side of the pallet 1, which hoisting loop 140 lies on the exposed parts of the tube 30, 30'. With the hoisting loops 130, 140 thus arranged, the pallet 1 with the roll R can be hoisted and moved. It is advantageous that the hoisting loops 130, 140 only engage the tubes 30, 30', so that no wear on the pallet 1 occurs owing to possible chafing of the hoisting loops. The hoisting loops are properly enclosed in the hoisting openings 41, 41', 51, 51' and cannot shift. Because the tubes 30, 30' take up the hoisting forces and distribute them over the

whole pallet 1 via the side parts 5, 25 and via the tunnel structure 75, it is ensured that the pallet does not break down during use.

To move the pallet with the roll placed thereon, a fork-lift truck may also be used. The fork of the fork-lift truck is placed between the top deck
5 and the bottom deck, with the fork legs on both sides of the tunnel 75.

Because the pallet according to the invention is made of plastic with metal frame parts, the risk that during use particles may separate from the pallet is substantially reduced. This ensures that the pallet according to the invention can also be used in environments where the occurrence of
10 pollution by foreign particles should be avoided.

Figs. 3 and 4 show a structural variant of a pallet according to the invention. In the operating condition as shown in Fig. 3, the pallet 100 is quite similar to the pallet 1 as described above. The pallet 100, however, comprises two parts, that is to say a first part 200 and a second part 300,
15 which, in the mounted condition as shown in Fig. 3, are provided with metal frame parts 250, 350. Both parts 200, 300 are identical. Basically, the pallet as shown in the first exemplary embodiment is divided into two equal halves, in a direction transverse to the metal frame parts. The thus exposed ends of the half side parts 5', 25' of part 200 are provided with respective
20 coupling elements 230, 240. The coupling elements 230, 240 are of such design that these coupling elements can engage similarly shaped coupling elements of a similar pallet part. Correspondingly, the now halved engaging block 3' is provided with two coupling elements 210, 220, which are also of such design that these coupling elements can engage similarly shaped
25 coupling elements of a similar pallet part. This enables coupling of the two identical parts 200, 300 to form a pallet 100. Subsequently, the metal tubes 250, 350 or differently shaped frame parts can be introduced into the appropriate openings and fixed to the parts 200, 300. This results in a strong pallet 100.

The parts 200, 300 are each made of plastic in one piece. Preferably, the plastic used therefor is completely or partly recycled plastic.

Because the two halves 200, 300 are of equal shape, it is ensured that the same mold can be used for the manufacture of both halves. This reduces
5 the manufacturing costs. On the other hand, the invention is not limited to a pallet of one- or two-piece design; the invention also provides the use of a pallet of multipart design.

In another structural variant of the invention, not shown, the coupling elements of the part 200 are designed as positive coupling
10 elements, for instance by means of interlocking dovetail joints. This ensures an extra reliable joint between the two parts.

CLAIMS

1. A pallet for coiled stock, comprising an upper side for supporting, in the operating condition, a vertically placed roll, with a plastic top deck (2) having a plastic supporting structure (5, 8, 8', 25, 38, 38') located below the top deck and connected with the top deck, which supporting structure
5 comprises at least two elongated frame parts (30, 30', 250, 350) located on both sides of the pallet, **characterized** in that the top deck (2) is provided near an edge portion with recesses (41, 41', 51, 51'), which at least partly expose the frame parts (30, 30', 250, 350).
2. A device according to claim 1, **characterized** by a plastic bottom
10 deck (60) located at a distance from and parallel to the top deck (2).
3. A device according to claim 2, **characterized** by a plastic connecting structure (71-74) located between the top deck (2) and the bottom deck (60).
4. A device according to claim 3, **characterized** in that the connecting structure (71-74) comprises a tunnel (75).
- 15 5. A device according to any one of the preceding claims, **characterized** by passage means (55, 55', 56, 75) arranged to pass tightening straps under the top deck (2).
6. A device according to any one of the preceding claims, **characterized** in that the top deck (2) is provided in a central part with an engaging
20 block (3) projecting above the top deck.
7. A device according to claim 6, **characterized** in that the engaging block (3) is provided with a flange (23) extending substantially parallel to the top deck.
8. A device according to any one of the preceding claims, **characterized**
25 in that the pallet comprises at least two parts (200, 300), which are connected by the elongated frame parts.

9. A device according to claim 8, **characterized** by a first part (200), comprising a first half of the top deck (2) and the supporting structure (5, 8, 8', 25, 38, 38'), and a second part (300), comprising a second half of the top deck (2) and the supporting structure (5, 8, 8', 25, 38, 38'), which first
5 part (200) and which second part (300) are designed so as to be similar in shape.
10. A device according to claim 9, **characterized** in that the first part (200) and the second part (300) are provided with complementary shaped coupling parts (210, 220, 230, 240).
- 10 11. A device according to any one of the preceding claims, **characterized** in that the plastic consists at least partly of recycled plastic.

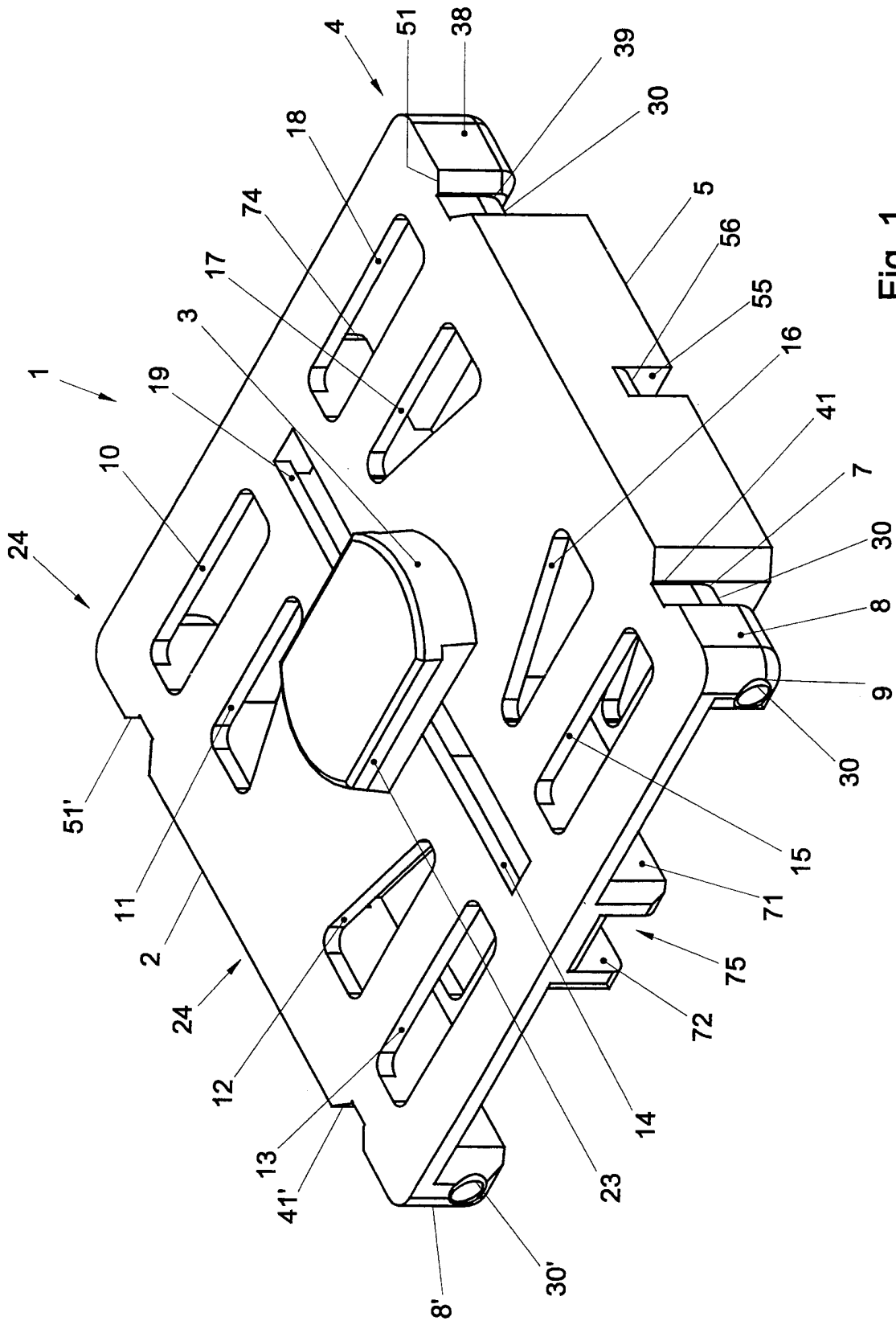


Fig. 1

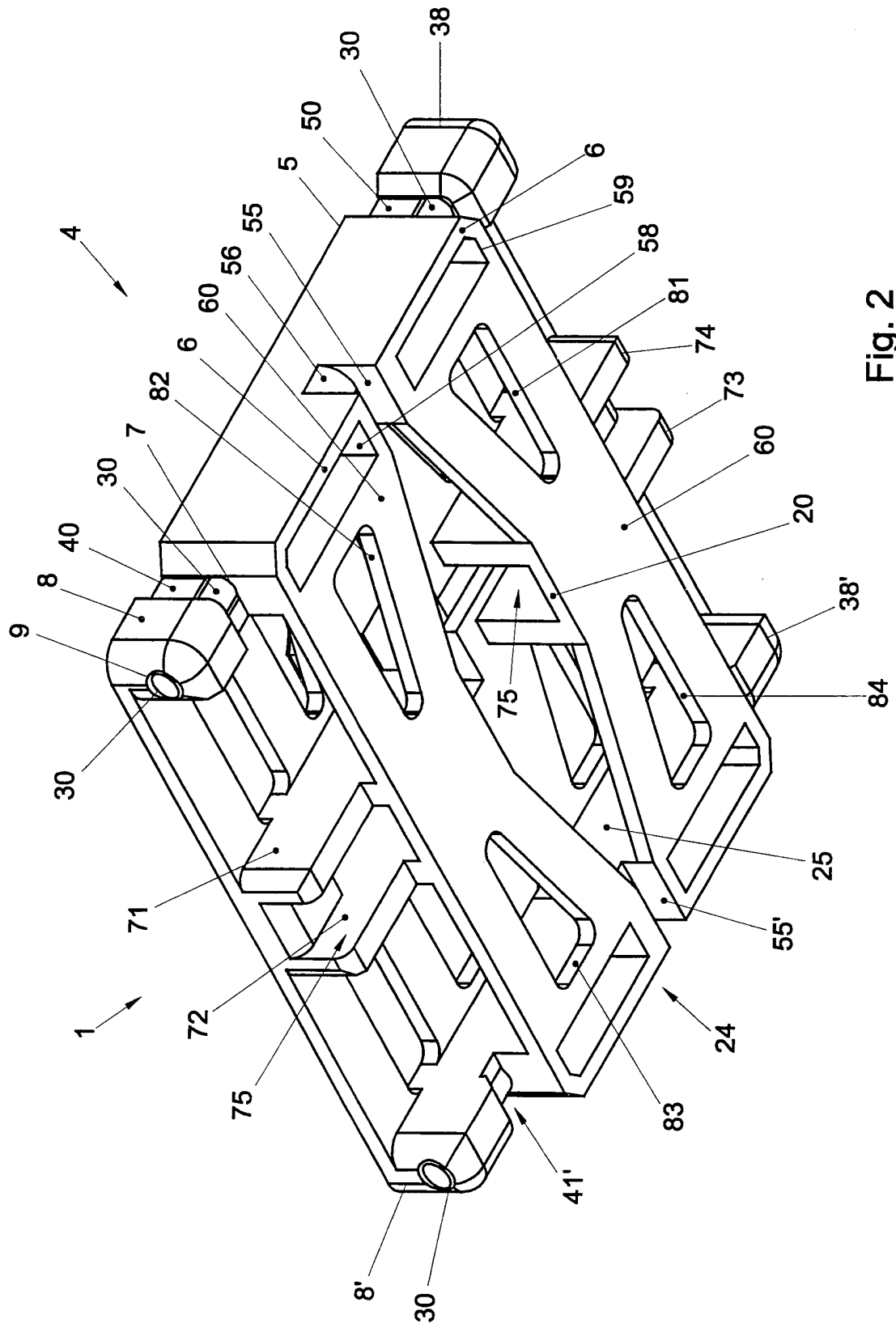


Fig. 2

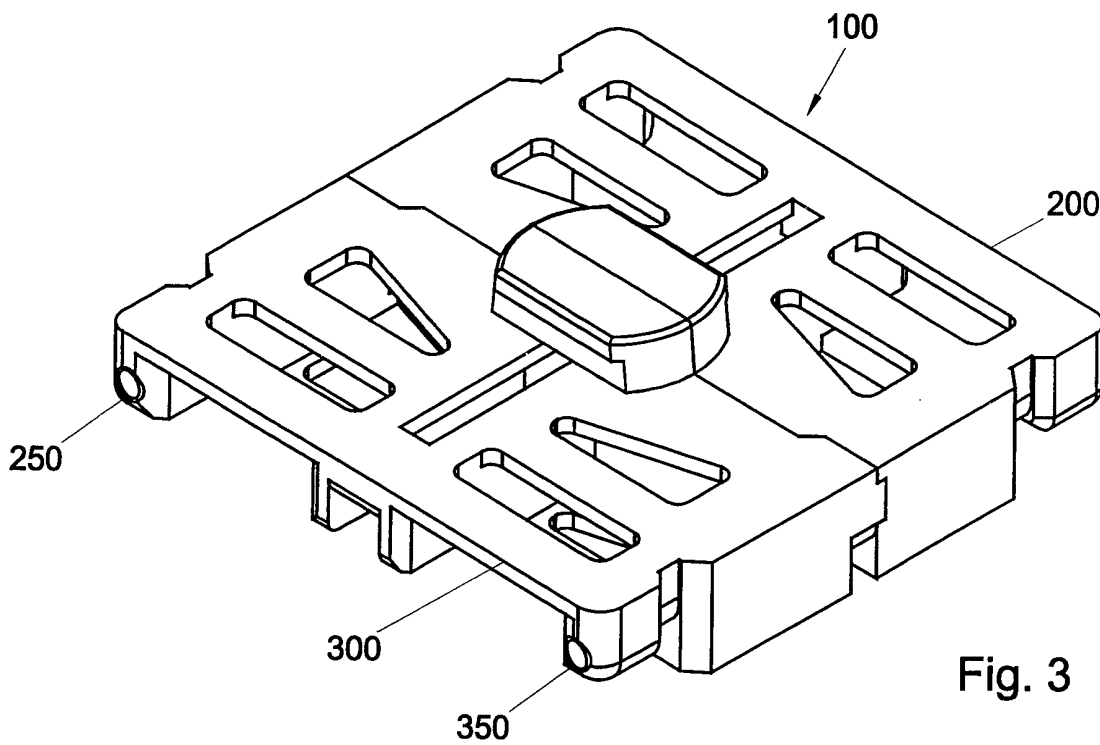


Fig. 3

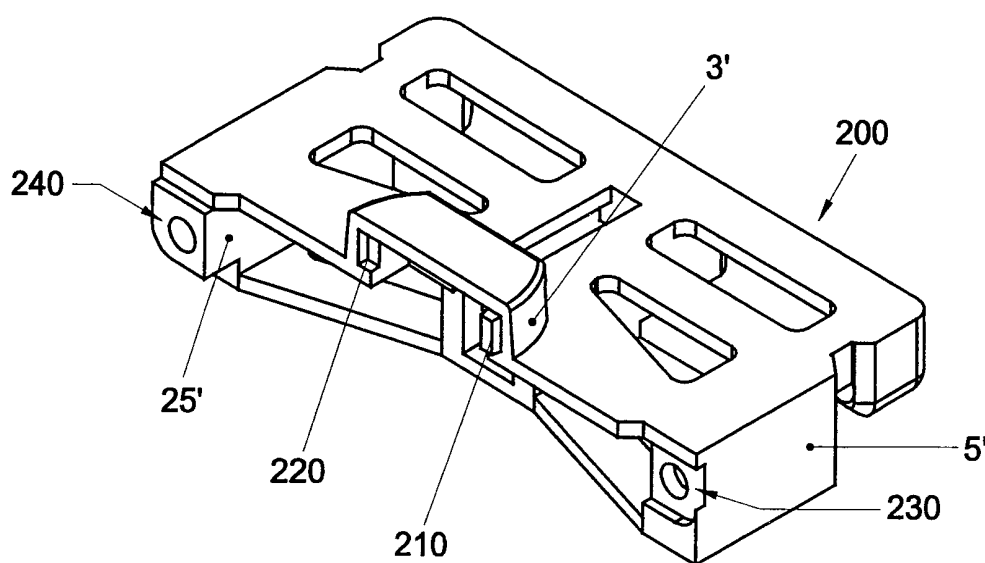


Fig. 4

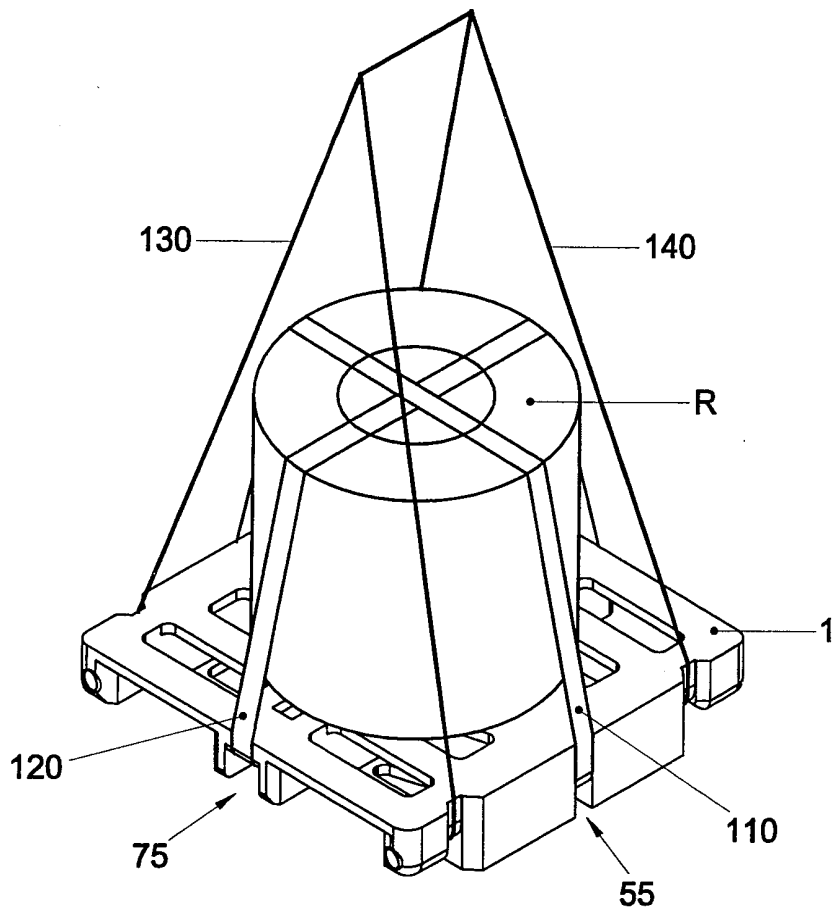


Fig. 5

INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65D19/00 B65D19/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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