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(54) **Single-piece platform for sale units, with at least a central foot.**

(57) The platform can be realized in a single piece made of suitable plastic material and comprises: an upper, approximately rectangular, grating structured plane (53) for bearing the goods; below the plane, four main feet (55) developed perpendicular to the fork-mounting direction and two central U-shaped feet (57) with the U's base being coplanar with the bases of the main feet, said central feet being longitudinally oriented and symmetrically disposed at close distance from each other to be included within the interspace of a pair of opposite main feet, the base ends of the central feet being at or very close to the transverse line on which the ends of the main feet are on a given side thereof, thereby achieving a bearing continuity of the platform for the rolling.

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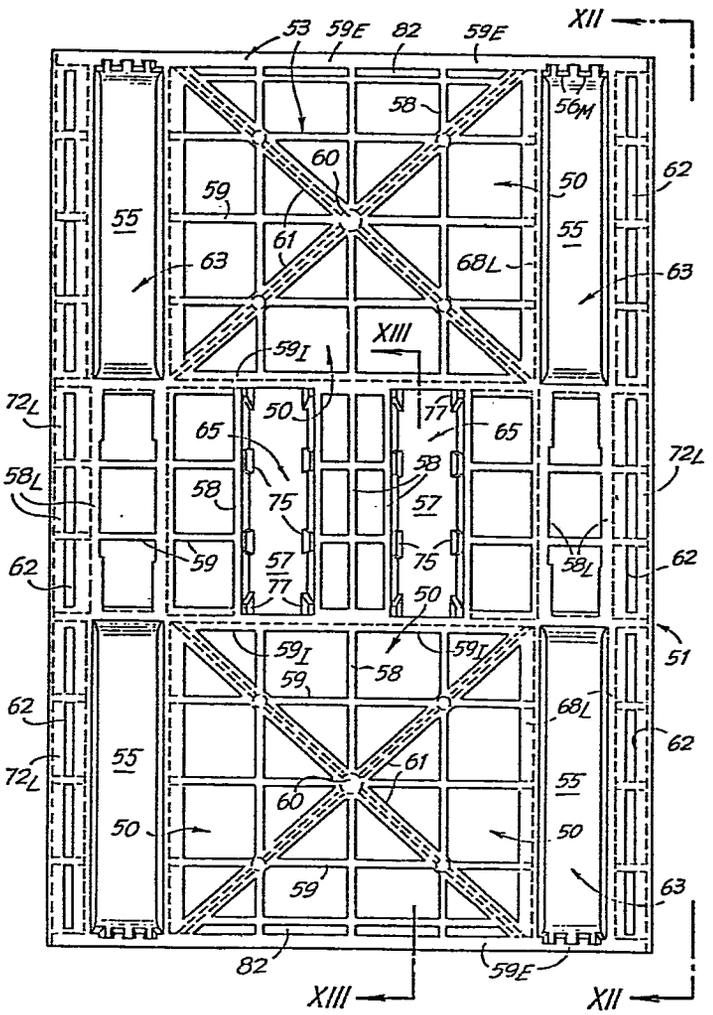
Fig. 10


XII
53
59E
82
59E
58
56M
60
59
50
62
55
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63
68L
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DESCRIPTION

The invention has the object to provide a platform for sale units and for handling goods on automatic packaging lines and from the lines to palletized and/or automated stores. Such platform - that can be realized in a single piece made of suitable plastic material - is able to be engaged by common fork lift trucks or truck means and is superimposable. It comprises: an upper, approximately rectangular, grating structured plane for bearing the goods; below the plane, four main feet developed perpendicular to the fork-mounting direction and at least one central foot or pillar. The four main feet are located in the vicinity of the vertexes of the rectangle, with a center distance suitable for the engagement or fork-mounting by standardized "transpallet" trolleys or trucks, and they are shaped as a widened "U" with its posts being connected with the upper bearing plane and having a flat base; inside the "U" above the base of said feet, the transit of the forks of the trucks or trolleys is provided for the lifting.

According to an embodiment of the invention, the platform comprises two central U-shaped feet or pillars with the U's base being coplanar with the bases of the main feet, said central feet being longitudinally oriented and symmetrically disposed at close distance from each

other to be included within the interspace of a pair of opposite main feet, the base ends of the central feet being at or very close to the transverse line on which the ends of the main feet are on a given side thereof, thereby achieving a bearing continuity of the platform for the rolling.

In the drawing:

Fig. 1 shows a plan view of the platform for sale units according to the invention;

Figs. 2, 3 and 4 show respective section views on lines II-II, III-III and IV-IV of Fig. 1;

Fig. 5 shows two matched platforms;

Fig. 6 shows an enlarged plan view of a cross-joint in the matching condition;

Figs. 7 and 8 show respective section views on lines VII-VII and VIII-VIII of Fig. 6; and

Fig. 9 shows a bottom view of a cross-joint used in the matching;

Figs. 10 and 11 show respective top and bottom views of the platform according to the invention;

Figs. 12 and 13 show a view according to line III-III with cutaway parts, and a section view according to line IV-IV of Fig. 10, respectively;

Fig. 14 shows two superimposed platforms in overturned relationship:

Fig. 15 shows two platforms in side-by-side arrangement; and

Fig. 16 is an enlarged section view according to line VII-VII of Fig. 15.

As shown in the Figs. 1 to 9, the platform for sale units according to the invention can be realized in a single-piece by the injection-moulding of a suitable plastic material. The platform, generally indicated by 1, comprises: in the upper part, a plane 3 having a grating structure for bearing the goods; in the lower part, four main feet 5 for bearing the plane 3 and transferring the load down on the floor, on a shelving or on the top surface of an underlying sale unit; in the middle, at least a central foot or pillar 7 transversally oriented (in the drawing) and having a fender-waling function; owing to the presence of the foot 7, the platform according to the invention is characterized by a high-loading capacity. The grating structure of the plane 3 is realized by straight rods 8, 9 and 11, the rods 8 and 9 being parallel, respectively to the long and short sides - orthogonal to each other - of the platform and the rods 11 being instead convergent and (in the drawing) inclined at 45° to the rods 8 and 9. The rods 8, 9 and 11 have rectangular cross-section with the longer sides vertically disposed, that is, laid

on edge, with the result of a remarkable stiffness of plane 3. The grating structure of the plane 3 is realized through square meshes except for the meshes 12 adjacent to the longitudinal sides of the platform which are instead rectangular. The rods 11 divide the square meshes into pairs of triangles by crossing same meshes according to their diagonals. However, the grating structure may be also different from the one shown in the drawing by presenting different meshes with wider or narrower shapes also in relation to the kind of goods that must be placed on the platform. According to Fig. 1, the grating structure of the plane 3 has four apertures 13, that is, zones in which the rods 9 are missing, located two-by-two close and parallel to the longitudinal sides of the platform inside the meshes 12 and above the feet 5, and a similar transverse aperture 15 above the central foot or pillar 7. The apertures 13 are delimited by the bars 9E outlining the small sides of the plane 3 from which they develop towards the transverse center line of said plane but without reaching it.

The apertures 13 and the aperture 15 are necessary for the transit, upon the moulding operation, of the male elements of the mould which are to form the feet 5 and the pillar 7. The apertures 13 and 15 are of rectangular shape; it will be appreciated that they do not constitute

a weakening of the plane 3; in fact, the apertures 13 are very close to its longitudinal sides so that most of the load on the platform will surely weigh - on one side or the other - upon the spacing between two opposite apertures 13, in which spacing the grating structure of the plane 3 is made more rigid owing to the presence of the diagonal bars 11. Moreover, between the vertexes of the aperture 15 and those of apertures 13, a sufficiently wide zone of the grating structure is interposed to contrast undesirable bending deformations of the plane 3 in the vicinity of the major sides of the aperture 15 and the minor sides of the apertures 13.

The feet 5 which develop below the apertures 13 have a top-closed U configuration with posts 5M and a base 5B substantially flat, being joined to the posts by the fillets 5R. As shown in Fig. 4, the base 5B is of considerable thickness to account for the possibility of being stressed - rather than by a reaction distributed in correspondence of the load weighing upon a foot 5 - by more or less concentrated reactions due to irregularities of the plane on which the platform 1 rests, to the bearing action on packaging chain lines, or to other causes. The posts 5M are slightly inclined, diverging between them upwards, and are reinforced by a pair of external ribs 17 having vertical development and which extend as far

as to result flush with the lower plane of the base 5B. The pairs of ribs 17 - besides providing a stiffening of posts 5M - contribute as well to discharge the load on each foot 5 onto the platform bearing plane. Each foot 5 has - in the direction transverse to the platform - a "U" section with a width slightly decreasing towards the base 5B. The feet 5 are joined to the plane 3 - besides through the portions 19 of the bars 9 from which the posts 5M develop - also by stiffening gussets 21, mostly shaped at right angles and being parallel to the bars 9. The gussets 21, four for each foot 5, are connected, respectively, with the bar 9E and with the one parallel and opposite thereto in respect to the foot 5, the portions 19 making part of said bars. The gussets 21, thus connected, prevent the feet 5 from possible bendings in the direction of the "fork-mounting" of the platform. The distance of the base 5B from the plane 3 is such as to consent an easy fork-mounting of the platform by means of the suitable lift trucks (the so-called mules) or by the "transpallet" trucks. As shown in Fig. 4, each base 5B is provided with front and back bevels 23 to ease the introduction, inside the approximately trapezoidal ring of the foot 5, of the wheel-mounted end of the transpallet forks; obviously, the development of the base 5M is also greater, with a certain margin,

than the width of each fork of the normalized transpallets. Because of its central position, the foot or pillar 7 does not interfere with the passage, into the feet 5, of the forks of the trolleys upon the fork-mounting. The foot 7, oriented (in the drawing) parallel to the smaller side of the platform, develop downwards in central position, with the posts 7M branching off (in the drawing) from additional bars 27. The foot 7, shown in details through a section view in Fig. 3, is also substantially U-shaped, but the longer sides of its bottom flat base 7B are connected with the inside of the upper bars 9 - which delimit the aperture 15 along with the bars 27 - by means of listels 25. Since the posts 7M are mostly divergent upwards, the foot 7 presents a "cup", that is, more or less truncated-pyramid configuration which contributes to the possibility of supporting loads of relevant magnitude. Thanks to the elasticity and limited flexibility provided by the plastic material by which the platform is made of, and since the foot 7, along with each pair of feet 5, finds itself at the vertexes of a triangle, all the feet of the platform will surely come into contact with the bearing plane (floor, underlying platform or other) even if this does not result perfectly flat. In other words, the platform, when loaded with a remarkable weight, although being

relatively stiff, is able to deform itself to a limited extent at which all its feet come into contact with the bearing plane (even if this exhibits surface irregularities) so that each foot bears its share of load. The presence of the foot 7 consents also to superimpose onto a platform 1 - which makes up a sale unit and is pressed by a certain load - a second and even a third or possibly other similar sale units, the group formed by a plurality of superimposed and possibly strap-tied units, is supported by the platform located at the lower level and may be lifted as a whole by a single lifting operation.

The plan dimensions of the platform may be anyone, but, as the platform must be able to make up a sale unit, such dimensions usually (but not necessarily) correspond to those of a quarter of a standardized platform (or pallet) whose plane has a length of 1.20 m and a width of 0.80 m. In this way, the plane of the platform 1 may have dimensions of 0.60 x 0.40 m. For specific purposes or goods requiring a considerable bearing surface, the platform may also be realized with a plane having dimensions of 0.80 x 0.60 m, that is, half of the ones of a standardized platform. In any way, in order to realize platforms of greater dimensions, the platform 1 may be matched along each of its four sides with other identical platforms by using cross-joints 29. Fig. 5 shows an example

of two platforms matched along the respective longer sides and thus fork-mountable by a single lifting manoeuvre. It is evident from Fig. 5 that a platform obtained by matching two platforms 1, exhibits a very high load capacity, owing to the presence of the feet 5 of the two platforms which are close to each other at the center of the plane resulting from the matching. Fig. 6 shows an enlarged view of the arrangement of a cross-joint 29 and, from the sectional views of Figs. 7 and 8, it is clear that the cross-joints 29 are included in the thickness of the bars of plane 3 so that they do not project above the surfaces of the matched platforms. Substantially, the external bars 8E of plane 3 and those indicated by 9 perpendicular thereto at the point in which a cross-joint 29 is applied, are provided with respective recesses 31 and 33 of a depth approximately equal to the thickness of the upper base 29B of said cross-joint. On the other hand, the joint 29 is cross-shaped as shown in Figs. 6 and 9. Accordingly, said cross-joint - besides keeping the external bars 8E connected to each other - by engaging also the perpendicular bars 9, cooperates as well to avoid a mutual sliding of the matched platforms. Although the legs of the U sections of the respective arms 29M of the cross-joint 29 extend up to the point of completely overlap the bars

which they embrace, it is evident that the matching of the platforms according to the invention by means of said cross-joints establishes only the continuity of the adjacent planes. However, when the matched platforms are pressed by a remarkable load and, moreover, the latter is tied to the platforms through a suitable strapping, they behave on use like a single platform.

It is clear from the foregoing description that the platform according to the invention offers many advantages: in addition to the outstanding loading capacities stemming from the described configuration and to its lightness due to the possibility of producing it with plastic material having light specific gravity, it also results suitable for use on more or less automatic packaging lines. In this case, the feet 5 come to rest upon the advancing members (chains) of said lines and the platform, being packed at the end of the line, is able to be transferred to the store of the sale units. Besides, the platform is not subject to mildew or to be attacked by micro-organisms and it is therefore suitable for the stocking of goods outdoor or in damp sites. It may be re-used several times but, because of its low cost, it may be, instead, supplied as a "disposable" packaging unit. Moreover, owing to the possibility of easily making it in different colours, it has the

further advantage to provide a means for detecting - through a particular colouring - which product is being loaded thereon, or as an alternative, the expiry month (especially for foodstuff). It is then easy to build up a palletized store in which the goods (or their expiry date) are identified by the platform colour. The matching possibility provided by the cross-joints 29 - besides allowing to make up platforms of greater dimensions - permits also to make foot boards formed by a plurality of longitudinally matched platforms for a variety of uses, even for insulating foot boards for electrical cabins.

The platform of Figs. 10 to 13, generally indicated by 51, is apt to be realized in a single piece through injection-moulding of a suitable plastic material, is substantially rectangular and is mostly symmetrical in respect to two mean planes being perpendicular to each other. It comprises: a reinforced grating structured plane 53 for bearing the goods; four main feet 55 longitudinally oriented to support the plane and transfer its load to an underlying bearing plane; a pair of central longitudinally oriented feet or pillars 57 having a fender waling function, which give rise to a high loading capacity. The grating structure of the plane 53 comprises a certain number of straight rods 58 and 59 -

which are parallel to the long and short sides of the platform respectively and are orthogonal between them to form squares 50 - and four straight rods 61, more or less inclined at 45° (in the drawing) to the rods 58 and 59, and which intersect at 60. The cross-section of the rods 58 and 59 is rectangular, with the long side in vertical arrangement, that is, laid on edge. The rods 58 and 59 originate from main rods 58L, 68L, 72L, as for rods 59 are concerned, and from main rods 59E and 59I, for rods 58, having L-shaped cross-section. Individual portions of the rods 68L, 59E and 59I form the squares 50 whose diagonals are made up of the rods 61 having T cross-section. The plane 53, thus realized, exhibits a high rigidity. The grating structure of the plane 3 is formed by approximately square meshes, except for the meshes 62 and 82 adjacent to the platform sides, which are instead rectangular and extend parallel to the same sides. As shown in Fig. 10, the plane 53 has four longitudinal apertures 63, arranged two-by-two in the vicinity of the corners of platform 51 above the feet 55. Said plane 53 has also two similar longitudinal apertures 65 above the central feet or pillars 57. The apertures are delimited by the rods 59E outlining the minor sides of the plane 53 and the inner rods 59I, and develop towards the transverse center line of said plane without,

nevertheless, reaching it. Between two longitudinally aligned apertures 63, in fact, a set of approximately square meshes is interposed whose total longitudinal development is more or less equal to the length of the apertures 65. The apertures 63 and 65 are necessary for the passage of the mould male elements which are to form the feet 55 and 57.

The feet 55, which develop below the apertures 63 have a "U" configuration with posts 55M and a base 55B jointed thereto at 55R. Both the posts 55M and the base 55B are reinforced by ribs 56B and 56M. The base 55B has also longitudinal corners, beveled at 76S, to ease the passage of the end wheels of the "transpallet" trolleys or trucks, which are to enter the transverse spaces defined by feet 55 below the plane 53. The feet 55 are steadily united to the plane 53 as the posts, reaching the lower part thereof and being connected therewith, form a single piece together with the crosspieces 64, 66 for the cross-stiffening of the same plane; said crosspieces are of rectangular cross-section and are disposed perpendicular to the plane 53. The crosspieces 64 and 66 extend at 64M and 66M outside the feet 55, bracket-like supporting the plane portions which form the meshes 62. As shown in Fig. 12, the inner opposite posts 55M - of each pair of the aligned feet

55 - are connected with the plane 53 and also with each other by an assembly 70 of stiffening gussets including side portions 70L - which are connected at about 45° with the lower end of the respective post - and a more or less rectangular central joining portion 70C provided with sturdy vertical ribs 74, whose upper end joins the overhanging rod 58L of the plane 53 having an L shaped section. Owing to the presence of the crospieces 64 and 66 and of the gussets assembly 70, the feet 55 are subject to limited bendings both in the "fork-mounting" direction and in the longitudinal direction. The gussets 70 (two for each pair of longitudinally aligned feet 55) contribute also to give the maximum rigidity to the central portion of the plane 53 and to discharge the weight, weighing on said central portion, onto the feet.

Because of their position, the feet or pillars 57 do not interfere with the passage of the trolley forks inside the feet 55 for the fork-mounting. The feet 57, longitudinally arranged, develop downwards starting from the apertures 65 and they too are of a substantially U shape, with posts 57M and a more or less rectangular base 57B. The long sides of said base 57B are connected with the inside of the rods 58 which delimit the aperture 65 by listels 75, and the posts 57M are joined to

the base 57B by triangular gussets 77; as a consequence, the feet 57 take up an approximately truncated pyramid configuration. This configuration determines the possibility of supporting heavy loads as well as a high rigidity against bending forces both in longitudinal and transversal direction. Moreover, the bases 57B are stiffened on their lower face by ribs 79.

Owing to the "L" cross-section of the rods 72L, 58L, 68L, 59I and 59E and to the presence of the crosspieces 64 and 66 and of the assemblies of gussets 70, the platform 51 result exceptionally robust, although it is very light; it is also quite rigid but - owing to the limited flexibility of the plastics material from which it is made - is also apt to deform itself to such an extent as to bring its feet into contact with the bearing plane (which may also exhibit surface irregularities), each foot supporting its share of load. The platform 51, with a load placed onto the plane 53, may be handled by the forks of "transpallet" trucks and may constitute a sale unit that is superimposable on other units in which other platforms 51 are used. A group, possibly strap-tied, made up of a number of superimposed sale units, is supported by the platform placed at the lowest level and may be lifted as a whole through a single fork-mounting operation. Since the bases of the pair of

central feet or pillars 57 occupy lengthwise the spacing between the bases of the two side-by-side pairs of main feet 55, the platform 51 is able to slide on roll-sliding planes.

The transverse overall dimensions of the feet 57 results less than their interspace and less than the spacing between the external rods 75 and the corresponding internal group of stiffening gussets 70. Moreover, the width of the main feet 55 differs slightly from that of the central feet. Therefore, a platform 51 may be arranged (see Fig.14) so as to face a like but overturned platform, by letting - through a slight offset shift in the transverse direction - the feet 57 of the first platform go into recesses formed by said spacings of the second platform, and the main feet 55 resulting also side-by-side arranged. A pair of facing and opposite platforms that rest on each other (with their planes outside) as above described, takes up, therefore, a very limited space, that is advantageous for an economical return travel of the same platforms and for their storage.

The plan dimensions of the platform according to the invention may be anyone; they usually (but not necessarily) correspond to those of a "quarter" of a standardized platform (the so-called "Euro pallet") whose plane is 1.20 m long and 0.80 m wide. In this way, the plane

of the platform takes up the dimensions of 0.60 x 0.40 m. For specific purposes and goods, which demand a remarkable bearing surface, the platform may also be made with a plane having twice such dimensions, that is, corresponding to half the dimensions of a standardized platform.

In order to make platforms of greater dimensions, a platform 51 may be matched (see Fig. 15) - along anyone of its sides or along two opposite sides - with other identical platforms. To this end, the meshes 62 and/or 82 are used, with the aid of snap or clamp or other types of drawhorses that is cross-joints like that indicated by 95 in Figs. 6 and 7, apt to steadily engage the rods 59E and/or 72L of the perimeter of the planes of the platforms to be matched as they elastically snap into the meshes 62 and/or 82. The drawhorses 95 may be received into notches of the plane 53 in order not to project from the surface thereof.

The meshes 62 and 82 may also be utilized to engage banks to hold the load weighing upon the plane 53.

In addition to the already mentioned advantages, the platform according to the invention is apt to be utilized on automatic packaging lines. Besides, as it is not subject to mildew or attacked by micro-organisms, the platform is adapted for the stocking of goods outdoor

or in damp sites. Since it is light, of low cost and able to be matched with an overturned platform yet taking up a limited space, said platform can be re-used a number of times or, desirably, supplied as a disposable package. As it can be realized in different colours, it gives also the possibility of utilizing such different colourings for distinguishing, at a first glance, goods of different features in a store.

C L A I M S

1) A platform for sale units and for the handling of goods on automatic packaging lines and from the lines to palletized and/or automated stores, characterized in that it can be realized in a single piece made of suitable plastic material, of being able to be engaged by a fork lift truck, that is fork-mountable, and superimposable and of comprising: an upper approximately rectangular grating structured plane for bearing the goods; below said plane four main feet developed perpendicular to the fork-mounting direction and at least one central foot or pillar; the four feet being disposed in the vicinity of the vertexes of the rectangle, with a center distance suitable for the fork-mounting by standardized "transpallet" trolleys or trucks and being realized in the form of a widened "U" with the posts connected with the overhanging plane and having a flat base; and inside the "U", above the base, the passage of the forks of the transpallet or of the fork lift truck (mule) being provided for the lifting.

2) Platform according to claim 1, characterized in that the four main feet are disposed in the longitudinal direction and only one central foot is disposed in the transverse direction, the platform being able to be

fork-mounted perpendicularly to its long side.

3) Platform according to claim 1, characterized in that the four main feet are disposed in the longitudinal direction and two central feet are oriented in the longitudinal direction, staggered in respect to the main feet and symmetrically about the longitudinal symmetry axis of the platform, which is able to be fork-mounted perpendicularly to its long side.

4) Platform according to claim 1, characterized in that it comprises - at the junction of the main feet with the upper plane - triangular stiffening gussets parallel to the fork-mounting direction and reinforcing ribs along the U's posts.

5) Platform according to claim 1, characterized in that the flat base of the U-shaped main feet has invitation bevels on both sides to favour the admittance of the front wheels or pairs of wheels of the transpallet trolley into the U's cavity.

6) Platform according to claim 1, characterized in that the central foot or each of the central feet is realized in the form of a wide U with flat base, said base being connected with the upper plane by the U's posts and by listels orthogonal to the long sides thereof, the central foot or feet taking up a truncated pyramid configuration.

7) Platform according to claim 1, characterized in that the grating structure of the upper plane is provided with openings for the passage of the male elements of the mould intended to form the main feet and the central foot or feet being U developed.

8) Platform according to claim 7, characterized in that the grating structure of the upper plane comprises polygonal meshes, even different among them, the listels making up the sides of the meshes having a more or less rectangular section with the longer side arranged perpendicularly to the plane.

9) Platform according to claim 8, characterized in that the grating structure of the upper plane is made up of rectangular meshes.

10) Platform according to claim 9, characterized in that the grating structure of the upper plane comprises square meshes, some of them divided into two triangular meshes by diagonal listels being of reinforcement of the portion of plane between two opposite feet.

11) Platform according to claim 1, characterized in that it comprises - along the platform edges - slot meshes to engage load holding banks and to be matched with adjacent platforms - for the formation of platforms having multiple dimensions or of foot boards - by means of U-shaped cross-joints which embrace the opposite

listels surrounding the upper planes of the platforms to be matched, said cross-joints being housed into said slot meshes.

12) Platform according to claim 11 characterized in that it comprises, along the plane edges, recesses formed in the thickness of the listels in order to receive the cross-joints that result flush with the upper plane of the matched platforms.

13) Platform according to claim 11, characterized in that the matching cross-joints are cross-shaped so as to engage also the listels perpendicular to the outline listels on the matching zone.

14) Platform according to claim 1, further comprising two central U-shaped feet, that is, pillars with the U's base being co-planar with the bases of the main feet, said central feet being longitudinally oriented and symmetrically disposed at close distance to each other to be included within the interspace of a pair of opposite main feet, the ends of the bases of the central feet being on or very close to the transverse line on which the ends of the main feet find themselves on a given side thereof, thereby obtaining a bearing continuity of the platform for the rolling.

15) Platform according to claim 14, comprising a loading plane with a grating structure comprising:

main rods parallel to the rectangle sides and having L cross-section; auxiliary rods, parallel to the main rods, having rectangular cross-section, laid on edge and forming squares; as well as rods diagonally disposed in respect to the squares formed by the main and auxiliary rods.

16) Platform according to claim 14, wherein said grating structure of the plane is reinforced in its lower part by four transversal rods having rectangular cross-section and laid on edge, the posts of the U shaped main feet and the posts of the central feet downwardly developing from the edges of said rods, and the end portions of said transversal rods breacket-wise reinforcing the plane portions being outside of the main feet.

17) Platform according to claim 14 wherein the bases and the posts of the feet are reinforced by means of ribs and wherein the inner posts of the main longitudinally aligned feet are connected between them by assemblies of stiffening gussets.

18) Platform according to claim 17, in which each assembly of gussets is made up of: side gussets which join to the lower ends of the inner posts of said main longitudinally aligned feet; and a central gusset included within the two preceding ones, having a shorter

vertical development.

19) Platform according to claim 14, wherein the central U-shaped feet or pillars have a configuration of a down wardly directed truncated pyramid owing to the presence of rods which connect the long sides of the U base with the rods of the plane, and owing to the presence of side more or less triangular gussets for the stiffening of the U's posts.

20) Platform according to claim 14, wherein the dimensions of the main feet and of the central feet, along with their mutual positioning, are such as to consent the matching of the platform with another opposite and overturned platform, the overall dimensions of the two opposite matched platforms thereby corresponding to the height of a platform plus the thickness of the plane of the other.

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Fig. 1

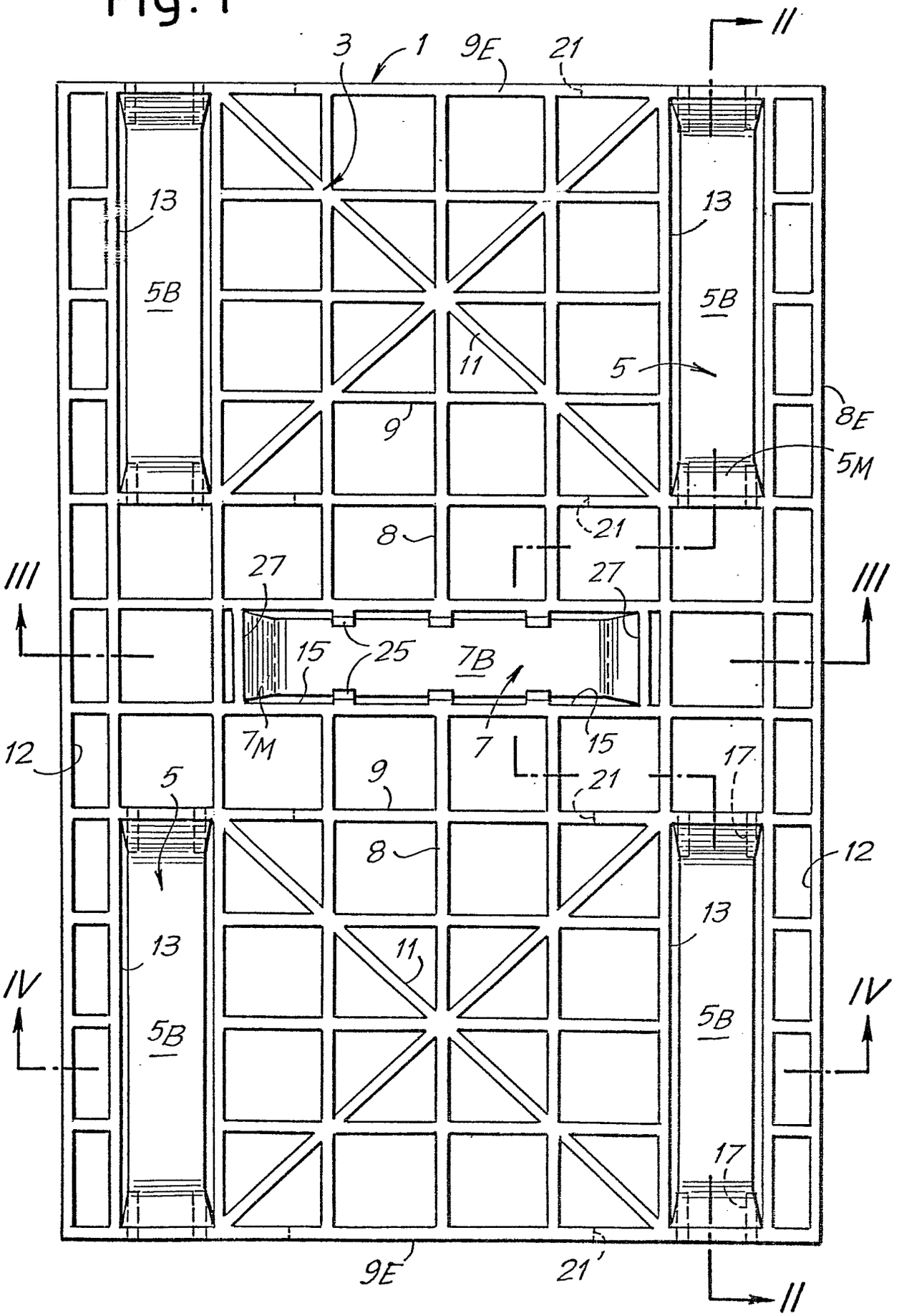

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Fig. 2

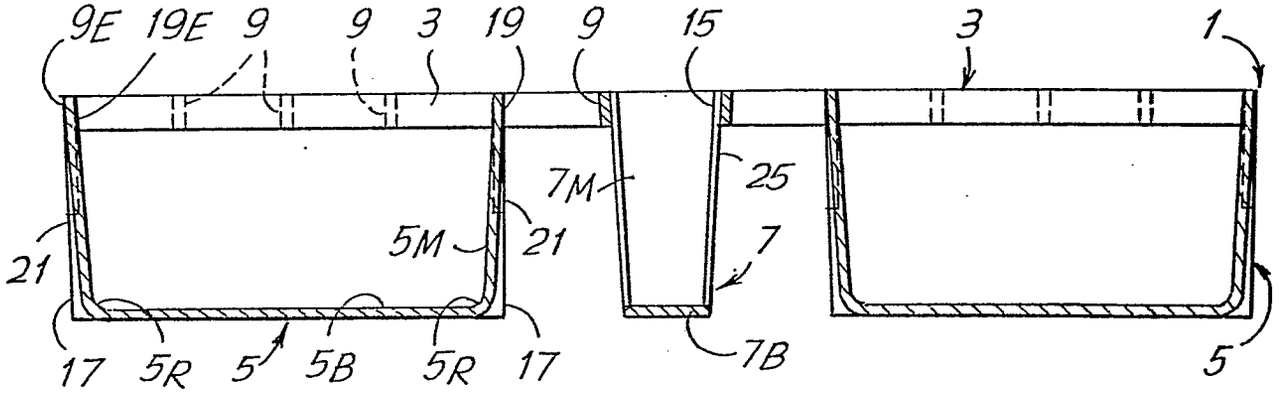

Fig. 3

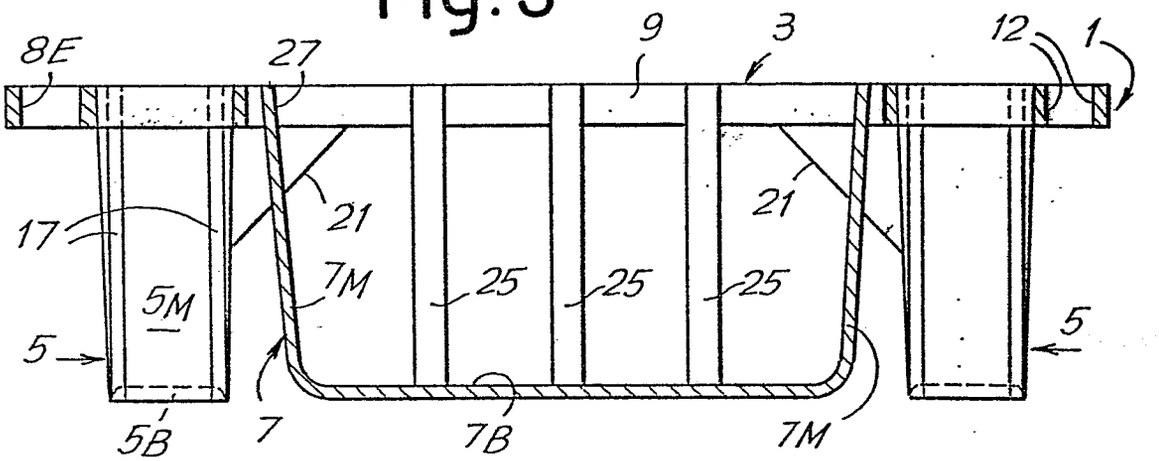

Fig. 4

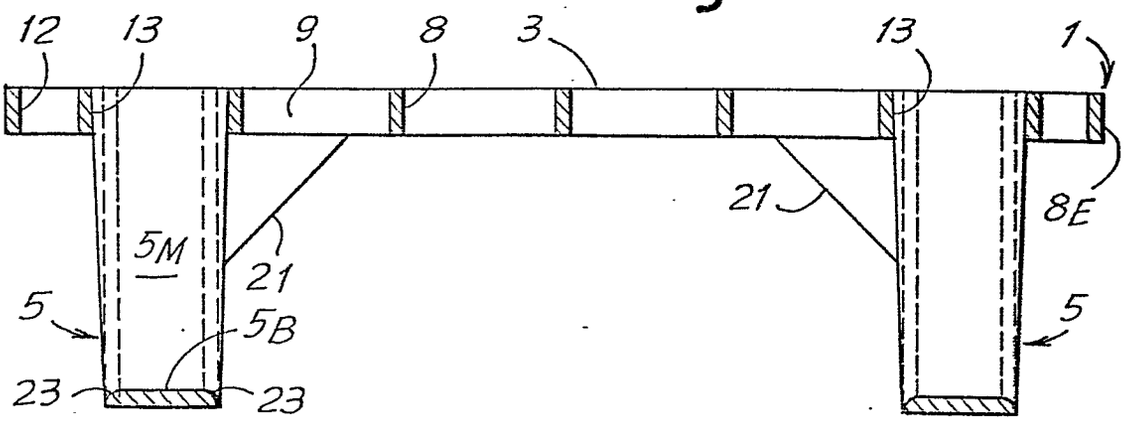

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Fig. 5

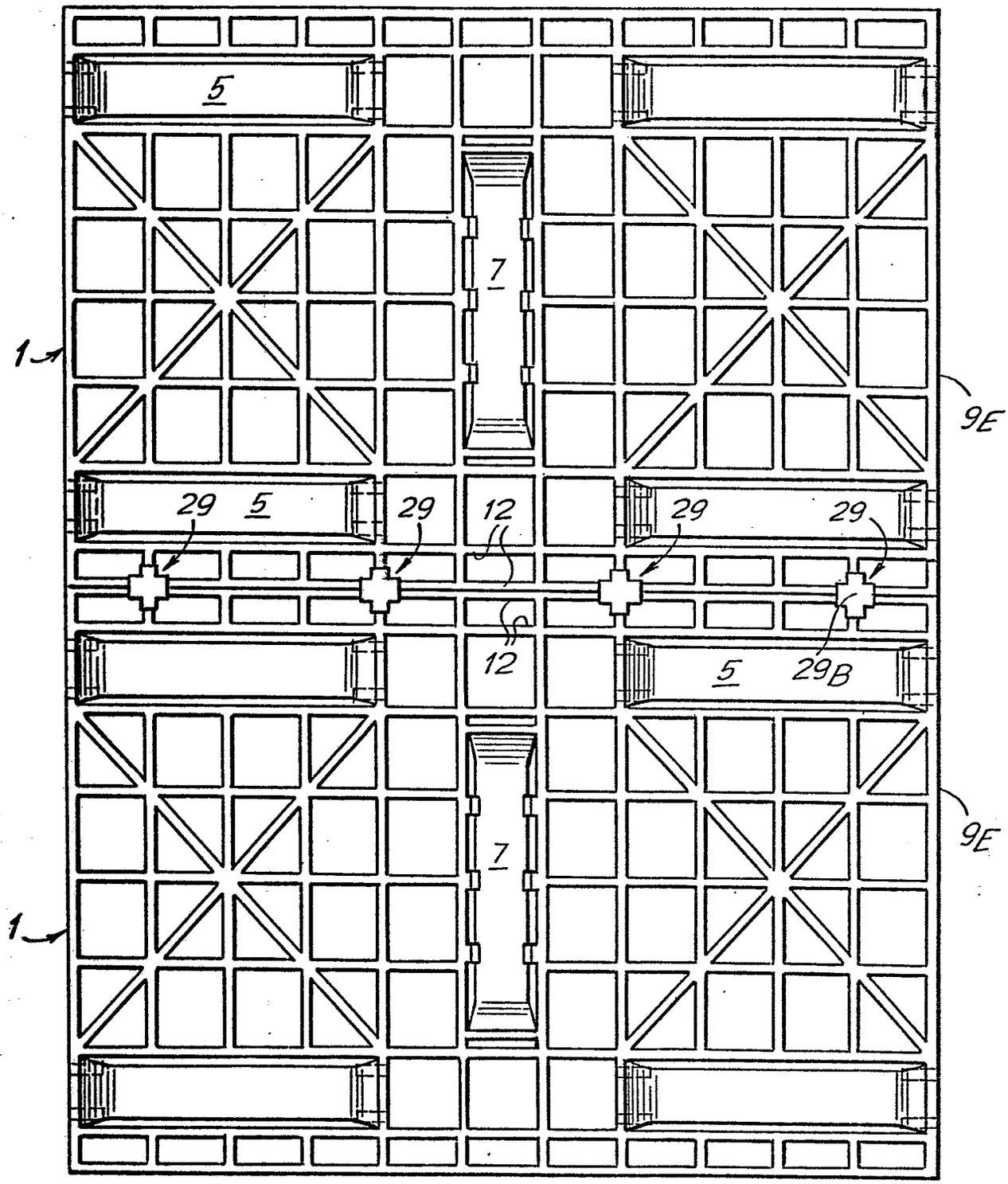

Fig. 7

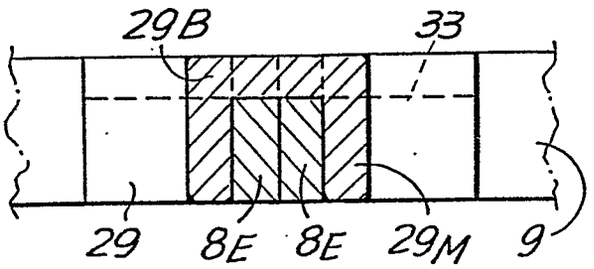

Fig. 8

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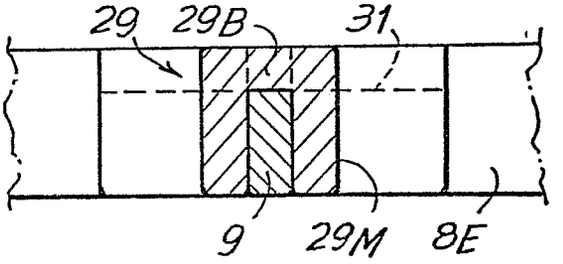


Fig. 6

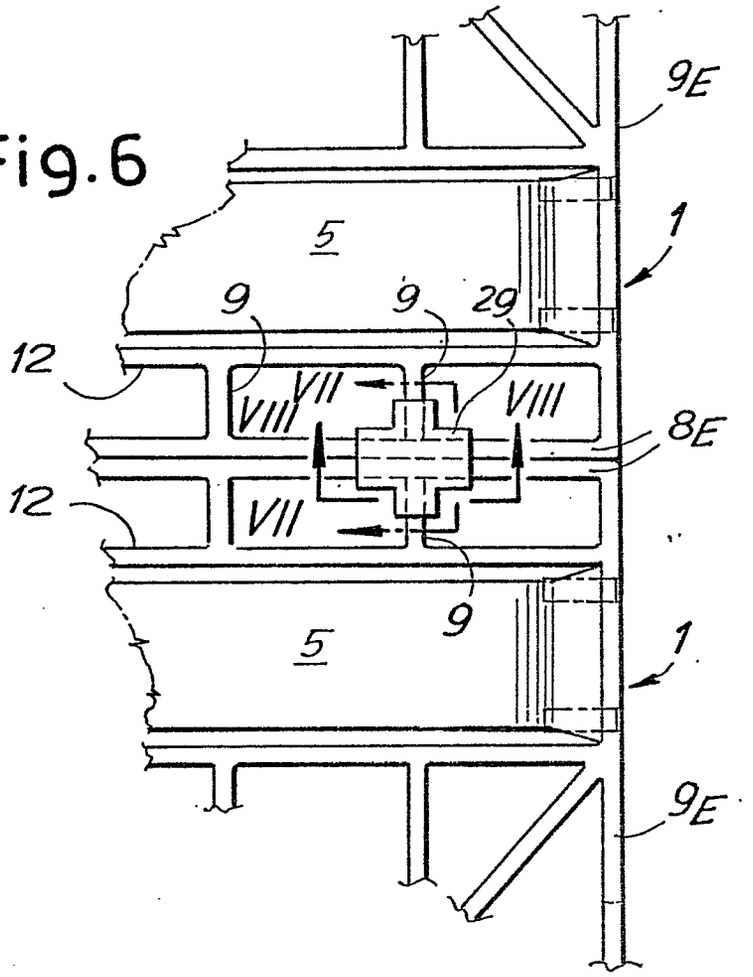


Fig. 9

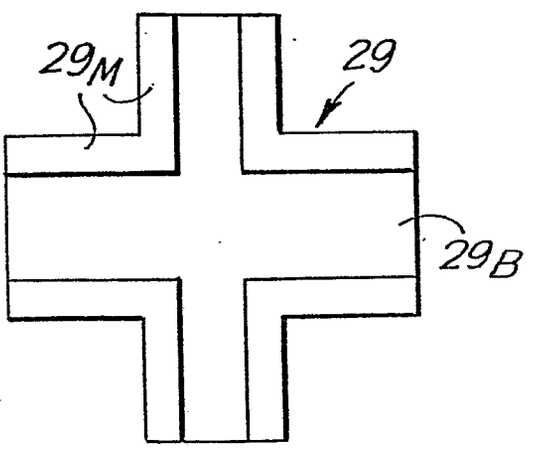
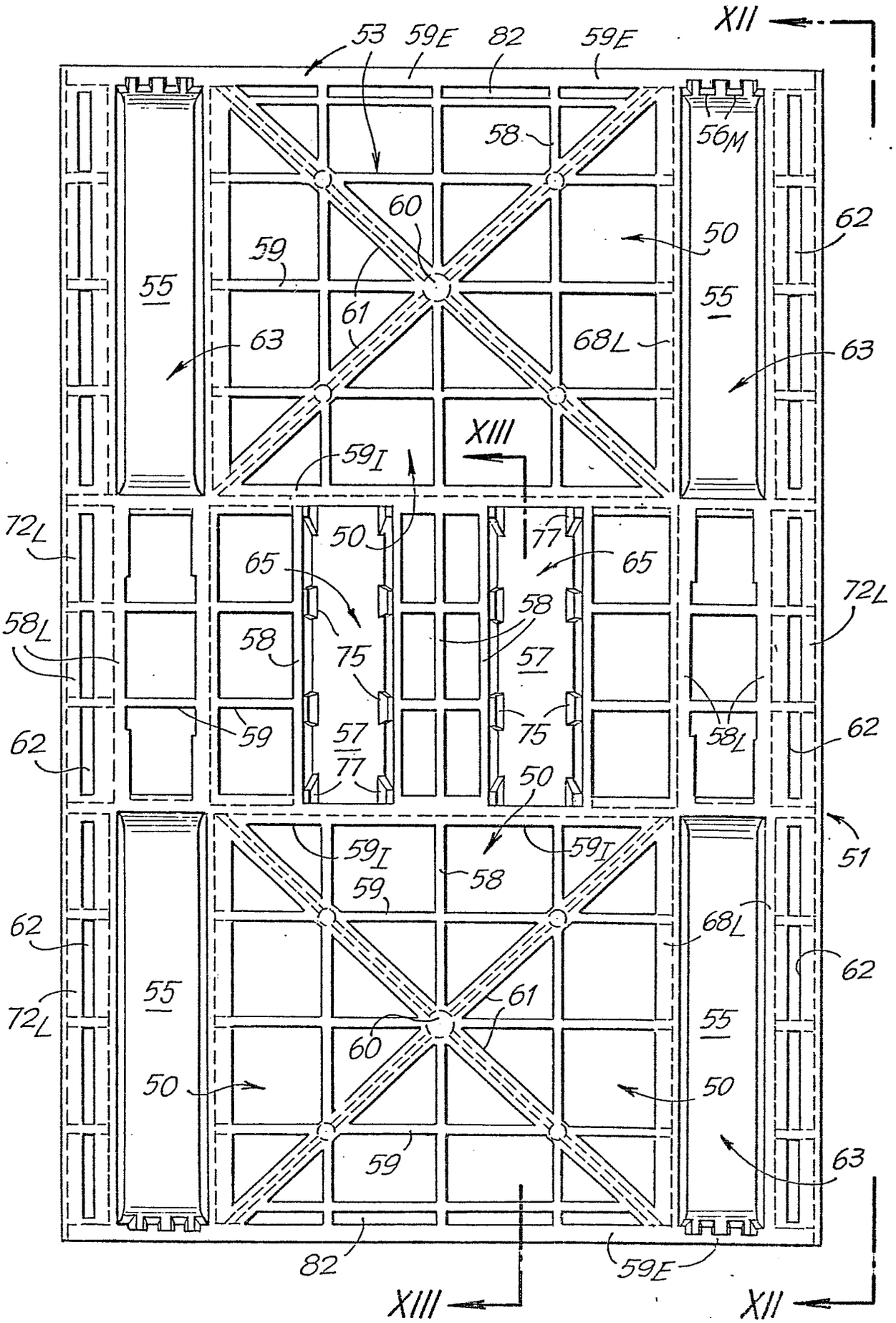


Fig. 10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XIII
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72L
50
77
65
65
58L
58
58
75
57
59
57
75
58L
62
62
77
50
59I
59I
51
59
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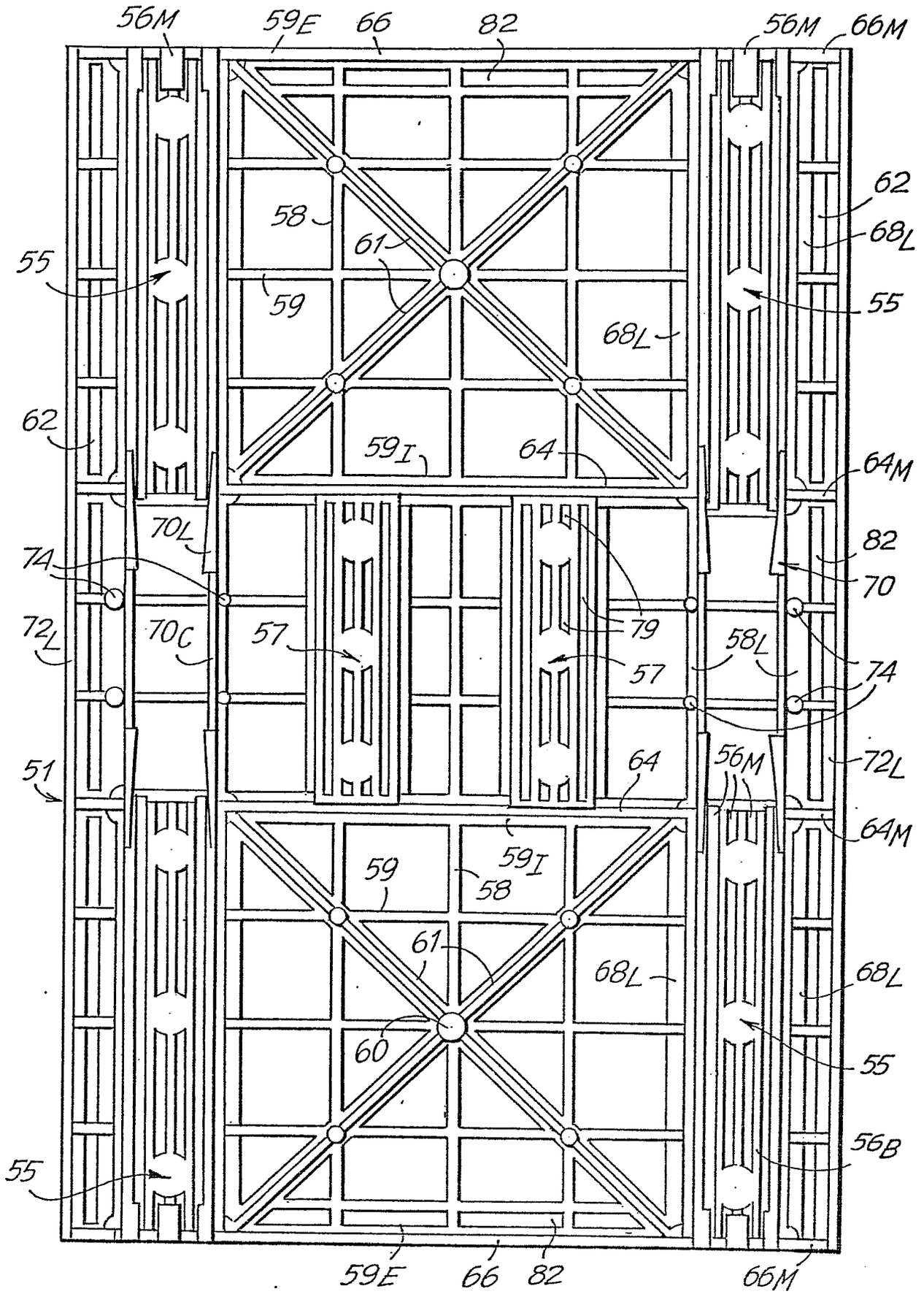
63
82
59E
XIII
XII

Fig.11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82
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66M

Fig.12

0202203

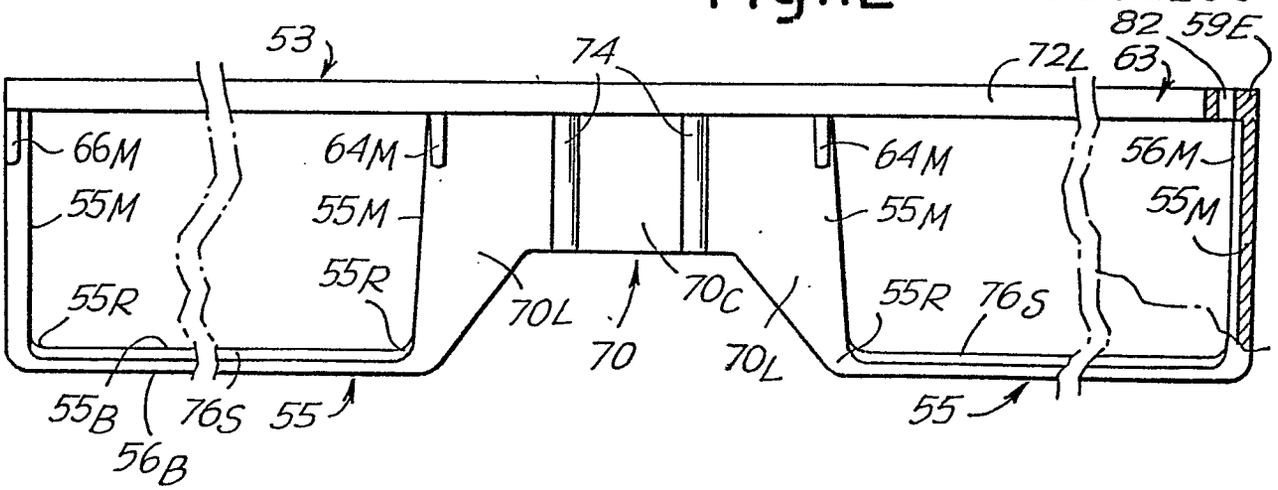

Fig.13

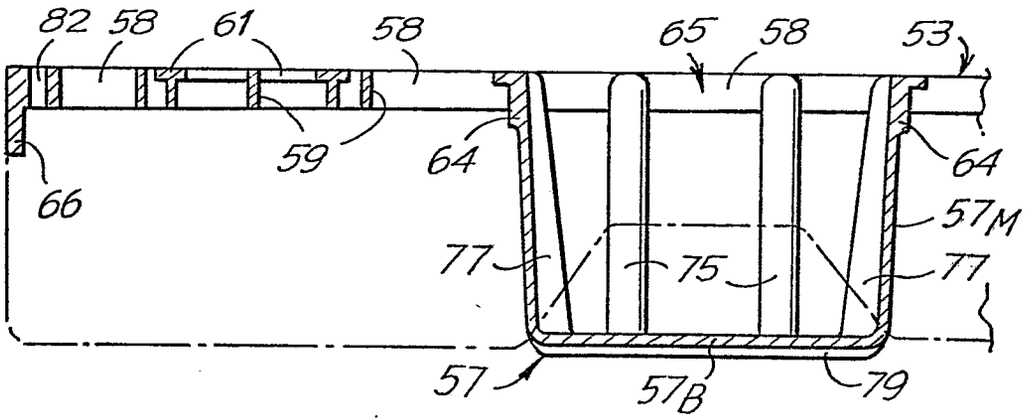

Fig.14

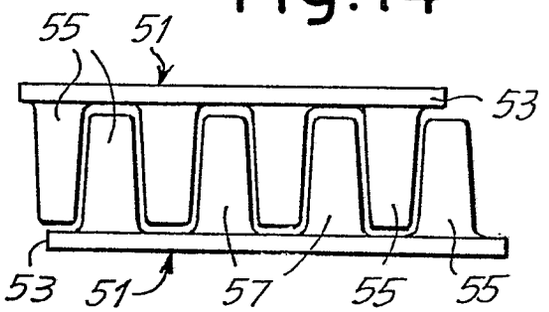

Fig.15

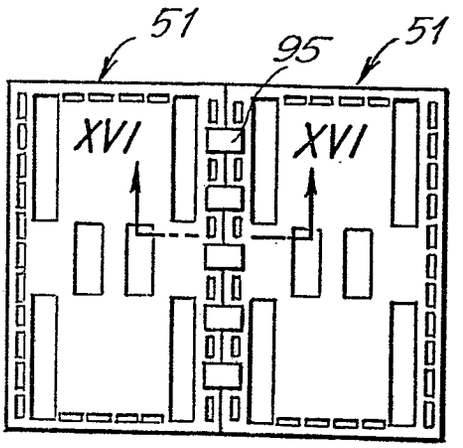

Fig.16