Industria y Comercio
SUPERINTENDENCIA

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
No. 11-050303- -00004-0000
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Tra. 2 PATENTES Eve: 1 REGDEPOSITO
Act. 400 OPOSIOBSERVTER Folios: 93/94

DIRECCIÓN DE NUEVAS CREACIONES
PRESENTACIÓN DE OPOSICIÓN

1. Oposición a solicitud de:

[X] Patente de invención
[ ] Registro de Diseño Industrial
[ ] Patente de Modelo de Utilidad
[ ] Esquema de Trazado de Circuitos Integrados

Número de expediente: 11-050303
Solicitante: REHRIG PACIFIC COMPANY
Apoderado DILIA MARIA RODRIGUEZ D´ALEMAN
Título de la Nueva Creación: ESTIBA
Gaceta: 655 del 31 de octubre de 2012

2. Datos del Opositor

[ ] Persona Natural [X] Persona Jurídica

SCHOELLER ARCA SYSTEMS GmbH
Nombre o denominación /Razón social completa

Nombre del representante legal

Documento de identificación: C.C. [ ] C.E [ ] NIT [ ] Otro [ ] Cuál _____

Número_____

Dirección Sacktannen 1 Ciudad 19057- Schwerin, Alemania

Teléfono_____ Fax: _____ Correo electrónico_____

[ ] **Autorizo expresamente a la Superintendencia de Industria y Comercio para que todas las comunicaciones sean enviadas a través de la dirección de correo electrónico**

3. Datos del representante o apoderado:

GERMAN MARIN RUALES	79.155.665	64.239
Apellidos y Nombre	**Documento de identificación**	**Tarjeta profesional**

Dirección del representante		
Carrera 13 A No. 89-38 Oficina 328 Bogotá, D.C. Colombia		
Dirección electrónica	No. Fax	Número telefónico
marinsantacruz@marinsantacruz.com	57 1-2575386	57 1-6163199

En caso de haber presentado poder general para asuntos que se adelanten ante la Delegatura de Propiedad Industrial, sírvase indicar el número de su radicación o protocolo de poder general: _____

4. Fundamentos de la oposición

Causal:
Falta de novedad y nivel inventivo según lo estipulado en los artículos 14, 16 y 18 de la Decisión 486

Justificación Adjunto escrito con la justificación de la oposición.

Prórroga: **SI** ☐ **NO** ☐

5. Anexos

- ☒ Comprobante de pago de la tasa. Recibo No. 13-001546
- ☒ Poder, si fuera el caso.
- ☒ Fundamentos de la oposición. Se anexan 8 folios (obligatorios indicar cuántos).
- ☒ Anexo de fundamentos de la oposición. Se anexan 85 folios (obligatorios indicar cuántos)
- ☒ Copias para traslado.
- ☐ Copia de la solicitud y sus anexos en formato magnético.
- ☐

6. Firma	
GERMAN MARIN RUALES	Germán H. Marín R.
Nombre del Firmante	Firma
79.155.665	64.239
C.C	Tarjeta Profesional

MARIN SANTACRUZ & ASOCIADOS SAS

Nit. 900343639-2

CONTINUACION DE LOS FUNDAMENTOS DE LA OPOSICIÓN

I. PETICION

1. Que es fundada la oposición presentada por Schoeller Arca Systems GmbH (en adelante Schoeller).
2. Que en consecuencia, se niegue el derecho de patente de invención para la solicitud No. 11-050303 titulada "ESTIBA" radicada por la sociedad Rehrig Pacific Company (en adelante Rehrig).

II. INTERES

A mi representada, le asiste el legítimo interés para oponerse a la solicitud de patente de Rehrig que se menciona en la referencia, por cuanto entre sus actividades principales se encuentra la fabricación de una variedad de contendores y estibas para el trasporte de carga, las cuales están compuestas de plataformas y rieles que permiten su desplazamiento. Como empresa con experiencia en el área de fabricación de medios de embalaje y transporte a gran escala de estos medios de embalaje, considera que la solicitud de patente bajo el número 11-050303 contraviene las disposiciones y regulaciones colombianas relacionadas con Propiedad Industrial.

III. FUNDAMENTOS DE LA OPOSICIÓN

Con el fin de continuar con lo mencionado en el Formulario Único de Oposición presento el desarrollo de las causales sobre las cuales se fundamenta la presente oposición:

3.1. Objeto de la solicitud de patente de invención número 11-050303 de Rehrig

La solicitud de patente de invención número 11-050303 de Rehrig radicada el 25 de abril de 2011 se relaciona con una estiba que comprende una parte superior que tiene una plataforma superior; una parte inferior y una pluralidad de columnas formadas entre la plataforma superior y la parte inferior.

3.2. Requisitos de patentabilidad

La Decisión 486 establece en su Artículo 14 que se otorgarán patentes para "*las invenciones, sean de producto o de procedimiento, en todos los campos de la tecnología, siempre que sean **nuevas, tengan nivel inventivo y sean susceptibles de aplicación industrial.***"

De esta manera, para que se pueda ostentar el título de patente para una invención se requiere que la invención: sea nueva, tenga nivel inventivo y sea aplicable industrialmente. Ante la falta de uno de estos requisitos la invención no podrá obtener el título de patente.

La invención desarrollada por Rehrig no cumple con el requisito de novedad, ni con el requisito de nivel inventivo, tal y como se demostrará a continuación.

3.3. Estado de la técnica.

La fecha de prioridad de la solicitud de patente de Rehrig es 22 de abril de 2010.

Antes de la fecha de prioridad del 22 de abril de 2010, se encontraron las siguientes publicaciones que afectan la patentabilidad de la solicitud de patente No. 11-050303:

a. D1. Publicación de patente MX 2008/005625 de fecha 02 de marzo de 2009, solicitante: SCHOELLER ARCA SYSTEMS GMBH, titulada: "*Tarima formada por múltiples piezas*".

b. D2. Publicación de patente US2003/0061974 de fecha 03 de abril de 2003, solicitante: REHRIG PACIFIC CO, titulada: "*Pallet*".

c. D3. Publicación de patente US2008/236454 de fecha 02 de octubre de 2008, solicitante: CHEP TECHNOLOGY PTY LTD, titulada: "*Plastic pallet with sleeved reinforcing rods and associated method for making the same*".

d. D4. Publicación de patente US2008/0141912 de fecha 19 de junio de 2008, solicitante: ANDERS L. VALENTINSSON, titulada: "*Transport Pallet*".

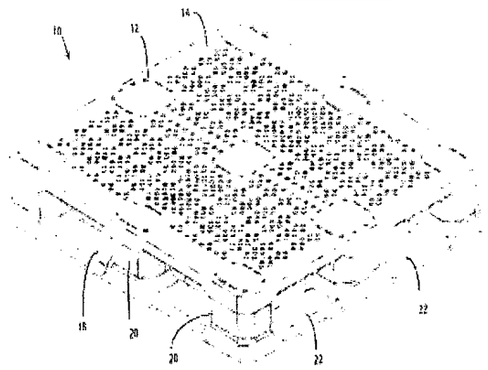
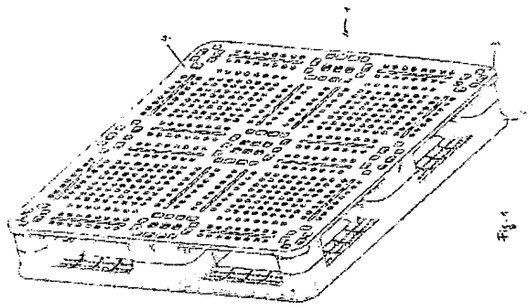
3.3.1. La reivindicación 1 de la solicitud de patente No. 11-050303 no es novedosa, ni tampoco cuenta con nivel inventivo.

La publicación de patente D1 divulga una tarima (1) que comprende una parte superior (3) que tiene una superficie de carga (4) y está unida con cuando menos una pieza inferior (2) y una pluralidad de columnas formadas entre la parte superior y la pieza inferior (ver figura 1).

Cada una de la pluralidad de columnas incluye una porción de columna interior formada integralmente con la porción superior y la porción inferior; y una porción de columna exterior formada integralmente con la otra porción superior y la porción inferior, en donde las porciones

de columna interiores se reciben dentro de las porciones de columna exteriores (ver página 2, líneas 12 a 25; página 7, líneas 20 a 25 y pagina 8, líneas 9 a 13, así como las figuras 1 a 7).

Si se comparan las figuras aportadas por cada uno de los documentos estudiados tenemos:

Solicitud de patente colombiana	**D1. MX 2008005625**
 FIGURE 1	

Todas las características que pretende reclamar Rehrig en la solicitud número 11-050303 ya se encuentran anticipadas por la publicación MX 2008005625. De esta manera, el objeto reclamado en la reivindicación 1 de la solicitud de patente No. 11-050303 no es nuevo frente a lo divulgado por D1.

De igual manera, el documento D2 muestra la plataforma que reclama Rehrig en su reivindicación 1, cuando revela una plataforma que incluye una superficie superior e inferior espaciadas, que además cuenta con una pluralidad de soportes que se proyectan de la parte inferior a la parte superior (ver parágrafo [0009] y [0010]).

Adicionalmente, el documento D3 en el parágrafo [0010] y [0011] divulga una plataforma con una pluralidad de segundos miembros de unión que se pueden proyectar hacia arriba de la plataforma inferior, con cada segundo miembro de unión incluyendo una manga interior; y en la última frase en el párrafo [0033] se muestra que la plataforma de este documento D3 cuenta con bloques (18) de soporte para las partes superior e inferior. Las figuras 1, 3, 4 y 7 también son evidencia de que lo que pretende reclamar Rehrig ya se encontraba dentro del estado de la técnica.

Por lo tanto, la materia reclamada en la reivindicación 1 de la solicitud número 11-050303 colombiana no es novedosa, ni cuenta con nivel inventivo debido a los documentos D1 a D3.

A continuación presento un análisis de los requisitos de patentabilidad para cada una de las reivindicaciones 2 a 18 de la solicitud de patente No. 11-050303:

a- Reivindicación 2

La reivindicación 2 adiciona a la materia de la reivindicación 1 que las partes de columna interna incluyen cada una pluralidad de partes sobresalientes que se desfasan hacia adentro desde una periferia de la parte de columna interna para formar un hombro alrededor de la periferia de un borde superior de la parte de columna interna.

Esta característica de la reivindicación 2 ya había sido divulgada en el documento D1 en las figuras 2 a 6, en el documento D2 en las figuras 7, 9, 9a y 10 y en el documento D3 en la figura 4.

En consecuencia, la materia objeto de la reivindicación 2 no es novedosa ni cuenta con nivel inventivo a partir de los documentos del arte previo D1 a D3.

b- Reivindicación 3

En la reivindicación 3 se pretende proteger que las partes sobresalientes que se mencionan en la reivindicación 2 se separan para proporcionar un canal y la estiba incluye adicionalmente por lo menos un miembro de refuerzo recibido en el canal.

Esta característica es obvia para una persona versada en la materia técnica basándose en las divulgaciones de D3 cuando establece que la plataforma divulgada en dicho documento cuenta con elementos de refuerzo como los refuerzos de Rehrig (ver parágrafo [0005]) y en las primeras líneas del parágrafo [0049] del mismo documento D3 se muestra la manera de mejorar la durabilidad de la plataforma por medio de insertar barras de refuerzo y en la figura 8 del documento D3 también se puede comprobar que la materia objeto de la reivindicación 3 no es novedosa.

El documento D4 enseña el uso de perfiles rígidos los cuales se posicionan dentro del perfil receptor (ver parágrafo [0052], líneas 6 a 11 y 17 a 22, también ver las figuras 3 y 18).

c- Reivindicación 4

La característica contenida en la reivindicación 4 es obvia para una persona experta en la materia con fundamento en las figuras 23 y 24 del documento D4 y la figura 8 del documento D3.

En el documento D4 se puede observar que se forman canales para los miembros de refuerzo 107a y 107b. Así, la persona experta en la materia técnica podría partir de las enseñanzas de D4 para formar los canales en las porciones de la columna externa cuando usa los miembros de refuerzo de D4 en una plataforma de acuerdo con cualquiera de los documentos D1 o D2.

Por lo tanto, la materia objeto de la reivindicación dependiente 4 es obvia para una persona versada en la materia basado en la combinación de las enseñanzas de los documentos D1 a D3 con el documento D4.

d- Reivindicaciones 5, 6 y 7

Las características adicionales adicionadas en las reivindicaciones 5 a 7 son características puramente de construcción que son obvias para una persona versada en esta materia técnica y puede haberlas desarrollado basándose en su conocimiento general sobre el tema.

Por lo tanto, la materia objeto de las reivindicaciones 5 a 7 es obvia a partir de los conocimientos generales de una persona versada en la técnica de construcción de plataformas.

e- Reivindicaciones 8 y 9

Con respecto a la característica adicional que se reclama en la reivindicación 8 relacionada con que las partes de la estiba se forman integralmente, el documento D1 muestra en las figuras 1, 2 y 4 que las porciones de columna respectivas se forman integralmente tanto en la porción inferior o en la porción superior. Adicionalmente, esta característica también se encuentra publicada en el documento D2, figuras 1 y 7 y en el Documento D3 en el párrafo [0035] cuando establece que "*los bloques de soporte 18, 18a se forman por las mangas exteriores e interiores 40, 42 que se extienden desde las plataformas superior e inferior 12, 14 respectivas. Las mangas exterior e interior 40, 42 se moldean como parte de sus plataformas superior e inferior 12, 14.*" y de igual manera, esta característica es palpable a partir de las figuras 3 y 4 de D3.

La característica contenida en la reivindicación 9 referida a los rieles de la estiba, se muestra previamente en el documento D1 en la figura 2, en el documento D2 en la figura 7 y 9 y en el documento D3 en la figura 4.

Por tal razón, las características de las reivindicaciones 8 y 9 no son novedosas ni cuentan con nivel inventivo debida a las divulgaciones de D1, D2 y D3.

f- Reivindicación 10

Con respecto a la característica adicional que se reclama en la reivindicación 10, esta constituye un característica de construcción básica que puede haber sido desarrolla de manera evidente por una persona con conocimientos en el campo de construcción de plataformas para transporte como la estiba de la invención.

g- Reivindicaciones 11 y 12

Las características de las reivindicaciones 11 y 12 se muestran en el documento D1, figura 4, 6 y 7 y en el documento D2 en parágrafo [0014] and in figuras 10 y 11. En consecuencia, no son novedosas.

h- Reivindicación 13

La reivindicación 13 es una combinación de las características de las reivindicaciones 1 y las reivindicaciones 2 y 4 dependientes; por tal razón, lo argumentos ya ofrecidos para estas reivindicaciones son igualmente aplicables a esta reivindicación 13, por lo que no puede reconocérsele ni novedad ni nivel inventivo.

i- Las reivindicaciones 14 a 16

Las reivindicaciones 14 a 16 corresponden a las características de las reivindicaciones 5 a 7 y por lo tanto, no puede atribuirse ni novedad ni actividad inventiva para estas reivindicaciones con fundamento en los argumentos esgrimidos para las reivindicaciones 5 a 7.

j- Las reivindicaciones 17 a 18

Las reivindicaciones 17 y 18 contienen características simplemente de construcción para la porción superior los cuales son obvios para una persona versada en la materia técnica correspondiente.

El artículo 16 de la Decisión 486 establece que:

> *"Artículo 16.- Una invención se* ***considerará nueva cuando no está comprendida en el estado de la técnica****.*
> *El* ***estado de la técnica comprenderá todo lo que haya sido accesible al público*** *por una descripción escrita u oral, utilización, comercialización o cualquier otro medio antes de la fecha de presentación de la solicitud de patente o, en su caso, de la prioridad reconocida.*
> *Sólo para el efecto de la determinación de la novedad, también se considerará dentro del estado de la técnica, el contenido de una solicitud de patente en trámite ante la oficina nacional competente, cuya fecha de presentación o de prioridad fuese anterior a la fecha de presentación o de prioridad de la solicitud de patente que se estuviese examinando, siempre que dicho contenido esté incluido en la solicitud de fecha anterior cuando ella se publique o hubiese transcurrido el plazo previsto en el artículo 40."* (Negrita fuera de texto)

El artículo 18 establece:

> *"Artículo 18.- Se considerará que una invención tiene nivel inventivo, si para una persona del oficio normalmente versada en la materia técnica correspondiente,* ***esa invención no hubiese resultado obvia*** *ni se hubiese derivado de manera evidente del estado de la técnica." (resaltado fuera de texto)*

La Guía de Patentes[1] desarrollada por la Superintendencia de Industria y Comercio -SIC- ofrece una definición más concreta sobre el termino obvio: "*El término "obvio" significa que algo no va más allá del progreso de la tecnología, sino que sigue simplemente o de forma lógica el progreso normal de la técnica, por ejemplo, algo que no implica el ejercicio de ninguna habilidad más allá de la que se esperaría de la persona del oficio normalmente versada en la materia.*" (Subrayado fuera de texto)

Después de haber realizado el análisis de cada una de las reivindicaciones de la solicitud número 11-050303 de Rehrig frente a lo ya publicado en D1, D2, D3 y D4 se puede concluir que la invención en ella invocada por Rehrig no es nueva por cuanto **ya está comprendida en el estado de la técnica y ha sido accesible al público** en los documentos D1 a D4 mencionados.

En esta misma línea de análisis, con las divulgaciones de D1 a D4 que se adjuntan a este escrito, y los conocimientos medios de una persona versada en la materia técnica de la fabricación de estibas y plataformas, **era posible llegar de una manera obvia** a desarrollar la estiba de Rehrig contenida en la solicitud de patente No. 11-050303, por lo que la estiba de Rehrig no cumple con el requisito de nivel inventivo.

[1] Guía Para Examen De Solicitudes De Patente De Invención Y Modelo De Utilidad. Superintendencia de Industria y Comercio -SIC-, Diciembre 2011.

Es así como se ha demostrado que ninguna de las reivindicaciones independientes 1, 13 y 17, y sus reivindicaciones dependientes 2 a 12, 14 a 16 y 18, contenidas en el capítulo reivindicatorio de la presente solicitud podría ser patentable a la luz de la Decisión 486 -Régimen Común sobre Propiedad Industrial-.

IV. PRUEBAS

5.1. ANEXO A. Copia de la publicación de patente MX 2008/005625 D1.
5.2. ANEXO B. Copia de la publicación de patente US2003/0061974 D2.
5.3. ANEXO C. Copia de la publicación de patente US2008/236454 D3.
5.4. ANEXO D. Copia de la publicación de patente US2008/0141912 D4.

V. DERECHOS

Adjunto el formulario único de presentación de oposición y recibo No. 13-001546 correspondiente al pago de la tasa para la tramitación de la presente observación.

VI. TRASLADO

Presento copia del presente escrito de observaciones para su traslado al solicitante.

VII. NOTIFICACIONES

Mi representada y yo recibiremos notificaciones en la Secretaría de la División de Propiedad Industrial, y en mi oficina situada en la Carrera 13 A No. 89-38 Oficina 328 Bogotá, D.C. Colombia. La sociedad demandada y su apoderada las recibirán en la dirección indicada en la solicitud inicial.

Atentamente,

GERMAN MARIN RUALES
C.C. No. 79.155.665
T.P. No. 64.239

MARIN SANTACRUZ & ASOCIADOS SAS

REPRESENTATION AND POWER OF ATTORNEY

REPRESENTACION Y PODER

I (we), the undersigned / *Yo (nosotros), abajo firmante (s)*

Schoeller Arca Systems GmbH

With domicile in / *Con domicilio en*

Sacktannen 1,
19057-Schwerin,
Germany (Alemania)

COMO NOTARIO SEXTO(E) DEL CIRCULO DE BOGOTÁ, D.C. HAGO CONSTAR QUE LA FOTOCOPIA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA.
25 ABR 2012
NOTARIO ENCARGADO

REPUBLICA DE COLOMBIA
Mabel Andrea Rodriguez
NOTARIA
NOTARIA SEXTA DE BOGOTA

hereby appoint **GERMAN MARIN RUALES,** with tpa. No. 64.239, and identity No. 79.155.665 and **ROSA MARGARITA SANTACRUZ CHAVES** with tpa. No 49434 and identity No. 35.501.911, with domicile in Carrera 7 No. 74 – 21 ,5th floor of Bogotá D.C., Colombia as per the provisions of paragraph 1st. of article 543 of the Commercial Code, the first as principal and the later as substitute, as my (our) representative for all industrial property matters with faculty to receive notifications and to appoint attorneys in and out of Court. The substitute shall replace the principal in case of his absence or his temporal or definitive impediment. In all cases of absolute or temporal absence or impediments of the principal this Power of Attorney shall be substituted to the substituted by the mere exercise she does of the same and with the same powers of representation and empowerment which later will be identified. In addition I (we) grant a Power of Attorney in favor of the above named attorneys-at-law so that they may obtain the protection of my (our) intellectual and industrial property and against the unfair competition, for which purpose I (we) authorize the said attorneys to represent me (us) before any authorities or persons, with or without jurisdiction, especially those administrative, administrative contentious and judicial, as well as before national and/or international arbitration tribunals in all matters concerning the following: a) Obtainment of patents, utility models, layout–designs of integrated circuits, industrial designs; registration of marks, registration of commercial slogans, deposit of commercial names and trade emblems, obtainment of the declaration and authorization of denominations of origin; renewal, assignment, change or name or domicile, payment of the annuity fees, registration of licenses of use, voluntary cancellation; protection of trade secrets. b) Unfair competition actions, procedures and actions for consumers protection, writ of mandamus and popular actions, oppositions and observations, cancellations, nullity, nullity and restoration of rights, preventive injunctions, criminal actions, border measures, infringement actions whether I (we) promote them or are promoted against me (us); and in general for civil, commercial, penal and administrative suits direct or indirectly related to those rights, that I (we) promote or are promoted against me (us). c) Obtainment of plant variety protection, and the exercise of every action for the protection of the same. d) Obtainment of health registration, obtainment of licenses and permits for sale and functioning and any other petition before the sanitary or administrative authorities. e) Actions against restrictive commercial practices and competence promotion. f) Obtainment copy right registrations and the exercise of civil and criminal actions for the protection of my (our) rights. g) Registration of domain names, their renewal, assignment, change of name, change of domicile, cancellation and any other acts related with

the same. The designated representatives and attorneys here have the right to substitute this mandate, compromise, conciliate, admit the facts of the case, desist, cancel, receive, resign, and ratify acts done by representatives without a Power of Attorney, file extraordinary remedies of appeal to the Supreme Court and revision and any other extraordinary remedy that Colombian law may establish.

SPANISH TRANSLATION/TRADUCCION AL ESPAÑOL

por el presente designo (designamos) a: GERMAN HUMBERTO MARIN RUALES con tpa. No. 64.239 y c.c. No. 79.155.665 y ROSA MARGARITA SANTACRUZ CHAVES con tpa. No. 49434 y c.c 35.501.911, con domicilio en la Carrera 7 No. 74 – 21, piso 5º, de Bogotá D.C., Colombia, de conformidad con lo dispuesto en el parágrafo 1ro. del Artículo 543 del Código de Comercio, el primero como principal y la que sigue como sustituta, como mis (nuestros) representantes en todos los asuntos de propiedad industrial, con facultad para recibir notificaciones y nombrar apoderados judiciales o extrajudiciales. La representante sustituta reemplazará al principal en caso de ausencia o impedimento temporal o definitivo de aquel. En todos los eventos de ausencia absoluta o temporal o impedimentos del principal, el presente poder se sustituye en cabeza de la apoderada sustituta por el simple ejercicio que ella haga de él, con las mismas facultades de representación y apoderamiento que más adelante se identifican. Además, confiero (conferimos) poder a los abogados arriba nombrados para obtener la protección de mi (nuestra) propiedad intelectual e industrial y contra la competencia desleal, para lo cual autorizo(amos) a los mencionados apoderados para que me (nos) representen ante cualesquiera entidades o personas, ejerzan o no jurisdicción, especialmente ante las del orden administrativo, contencioso-administrativo y judicial, así como ante tribunales de arbitramento nacionales y/o internacionales en todo lo concerniente a los siguientes asuntos: a) Obtención de patentes de invención, modelos de utilidad, de los esquemas de trazado de circuitos integrados, diseños industriales; registro de marcas, registro de lemas comerciales, depósito de nombres y enseñas comerciales, obtención de denominaciones de origen, su renovación, traspaso, cambio de nombre o domicilio, pago de anualidades de mantenimiento, registro de licencias de uso, cancelación voluntaria; la protección de nuestros secretos empresariales. b) Acciones de competencia desleal, procedimientos o acciones de protección al consumidor, acciones de tutela y populares, oposiciones u observaciones, cancelaciones, nulidad y nulidad y restablecimiento del derecho, medidas cautelares, penales, en frontera, acciones por infracción que promueva (promovamos) o se me promuevan (se nos promuevan); y en general para todos los juicios civiles, comerciales, penales, administrativos o contencioso administrativos relacionados directa o indirectamente con esos derechos, que promueva (promovamos) o se me promuevan (se nos promuevan). c) Obtención de variedades vegetales y el ejercicio de toda acción para la protección de las mismas. d) Obtención de registros sanitarios, licencias y permisos de venta y funcionamiento, y cualquier otra petición ante las autoridades sanitarias o administrativas. e) Acciones por prácticas comerciales restrictivas y promoción de la competencia. f) Obtención del registro de derechos de autor, y el ejercicio de las acciones civiles y penales para la protección de mis (nuestros) derechos de autor. g) Registro de nombres de dominio, su renovación, traspaso, cambio de nombre, cambio de domicilio, cancelación y demás actos relacionados a los mismos. Los representantes y apoderados designados tendrán las facultades de sustituir este mandato, transigir, conciliar, aceptar los hechos del proceso, desistir, cancelar, recibir, renunciar y ratificar actos

REPÚBLICA DE COLOMBIA NOTARÍA SEXTA DE BOGOTÁ Mabel Andrea Rodríguez NOTARIA

EL NOTARIO SEXTO(E) DEL CIRCULO DE BOGOTÁ, D.C. HAGO CONSTAR QUE LA FOTOCOPIA COINCIDE CON EL ORIGINAL QUE TUVE A LA VISTA

25 ABR 2012

NOTARIO ENCARGADO

oficiosos, presentar recursos extraordinarios de casación y revisión y cualquier otro recurso extraordinario que la ley colombiana establezca.

Given and signed this / *Dado y firmado hoy* _____

In / *En* _____

By / *Por* _____

Signature / *Firma* _____

COMO NOTARIO SEXTO(E) DEL CIRCULO DE BOGOTÁ, D.C. HAGO CONSTAR QUE LA FOTOCOPIA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA.

25 ABR 2012

NOTARIO ENCARGADO

REPÚBLICA DE COLOMBIA

Mabel Andrea Rodríguez D.

NOTARIA

NOTARIA SEXTA DE BOGOTÁ

Doc. Roll No. 992/2012

Notarial Certificate

I, Joseph Hönle, Notary Public in D-80331 Munich, Neuhauser Straße 15, Germany, hereby certify the authenticity of the foregoing signature, acknowledged by the following individual:

Mr. Richard **Kellerer**, born 20.05.1969,
the business address is D-82049 Pullach, Zugspitzstr. 15,
personally known,
acting for the Schoeller Arca Systems GmbH, having its registered office in Schwerin.

Munich, dated the 13.04.2012

(Joseph Hönle)
Notary Public
Neuhauser Straße 15
D-80331 Munich

COMO NOTARIO SEXTO(E) DEL CIRCULO DE BOGOTÁ, D.C. HAGO CONSTAR QUE LA FOTOCOPIA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA
25 ABR 2012
NOTARIO(E) SEXTO(E)
REPÚBLICA DE COLOMBIA
Mabel Andrea R...
NOTARIA SEXTA DE BOGOTÁ

DOKID

APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Land: Bundesrepublik Deutschland

   Diese öffentliche Urkunde
2. ist unterschrieben von **Joseph Hönle**
3. in seiner Eigenschaft als **Notar**
4. Sie ist versehen mit dem Siegel des **Notars Joseph Hönle in München**

Bestätigt

5. in München 6. am 16. April 2012
7. durch den Präsidenten des Landgerichts München I
8. unter Nr. 910 a- 3301/2012
9. Siegel 10. Unterschrift
   Im Auftrag:

Christine Köppl
Justizverwaltungsinspektorin

BAYERN · DER PRÄSIDENT DES LANDGERICHTS MÜNCHEN I · 2

COMO NOTARIO SEXTO(E) DEL CIRCULO DE BOGOTA, D.C. HAGO CONSTAR QUE LA FOTOCOPIA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA.
25 ABR 2012
NOTARIO ENCARGADO

REPÚBLICA DE COLOMBIA
Mabel Andrea R... NOTARI...
NOTARÍA SEXTA DE BOGOTÁ

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
NIT : 800.176.089-2
- / -

Industria y Comercio
SUPERINTENDENCIA

RECIBO DE CAJA

No. 13 - 001546

Bogotá D.C., Enero 08 de 2013 - 16:08:13

RECIBIDO DE : MARIN SANTACRUZ & ASOCIADOS NI 900.343.639

*** Soporte del Pago ***

TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	VR.PAGO
CONSIGNACION	BANCO DE BOGOTA	062754387	157691634	08/01/2013	1.178.000.00

*** Conceptos Pagados ***

CANT.	RENTISTICO	CONCEPTO	Vr.UNDITARIO	Vr.CONCEPTO
1	50005-01-04 PRESENTACION DE OBSERVACIONES A SOLICITUDES	1632 OPOSICION NUEVA CRACION / PRESENTACION	325.000.00	325.000.00
				$325.000.00

SON: **TRESCIENTOS VEINTICINCO MIL PESOS MONEDA CORRIENTE***

Responsable: _____
-******-

Recibo de Caja Aplicado al Expediente No. _____

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
No. 11-050303- -00004-0000
Fecha: 2013-01-29 14:31:03 Dep. 2020 DIR.NUEVASCR
Tra. 2 PATENTES Eve: 1 REGDEPOSITO
Act. 400 OPOSIOBSERVTER Folios: ~~93~~ 94

ANEXO A

GACETA DE LA PROPIEDAD INDUSTRIAL

MÉXICO

SOLICITUDES DE PATENTE

MARZO | 2009

SIGA gaceta

Disponible para su consulta electrónica en:

http://siga.impi.gob.mx

Sitio que fomenta y promueve la sustentabilidad ambiental.

IMPI

SIGA gaceta

MARZO | 2009

GACETA DE LA PROPIEDAD INDUSTRIAL

MÉXICO

SOLICITUDES DE PATENTE

TOMO I

13 de Mayo de 2009

Puesta en circulación

Responsable de la fecha de publicación y contenido:
Dirección Divisional de Patentes

[21] Número de solicitud: MX/a/2008/005608 [22] Fecha de presentación: 30/04/2008
[71] Solicitante(s): KOMAX HOLDING AG; Industriestrasse 6, CH-6036, Dierikon, SUIZA
[72] Inventor(es): Daniel FISCHER; Beat ESTERMANN; Rodteggstrasse 10, CH-6005, Lucerna, SUIZA
[74] Agente: JOSE B. DUMONT*; Av. Insurgentes Sur 1698, Piso 21, Col. Florida, 01030, ALVARO OBREGON, Distrito Federal
[30] Prioridad (es): EP07107577.4 04/05/2007
[51] Clasificación: *B21F11/00* (2006-01) *H01F7/06* (2006-01)
[54] Título: MAQUINA PARA PROCESAR CABLES Y METODO PARA PRODUCIR Y PROCESAR UNA SECCION DE CABLE.
[57] Resumen: En esta máquina (10) giratoria para el procesamiento de cables se dispone una devanadera (17) entre una unidad (18) de corte/aislamiento y un segundo brazo (19) giratorio. La sección de cable procesada en el extremo de cable adelantado se arrolla mediante un plato de devanadera de la devanadera (17). El extremo de cable adelantado de la sección de cable es tomado por la devanadera (17) después del procesamiento. Luego un transportador (11) de banda hace avanzar el cable (13) por la longitud deseada de la sección de cable, y la devanadera arrolla simultáneamente el cable avanzado para fc3rmar un arrollamiento. Después del proceso de arrollado una unidad (23) de distribución de movimiento lineal agarra el arrollamiento, y el plato de la devanadera suelta el arrollamiento. Después del procesamiento del extremo de cable atrasado la unidad (23) de distribución se sigue moviendo en la dirección de avance del cable hacia el depósito (24). Durante el procesamiento del extremo de cable atrasado y en el camino al depósito (24) se le proporciona un amarre al arrollamiento.

[21] Número de solicitud: MX/a/2008/005619 [22] Fecha de presentación: 30/04/2008
[71] Solicitante(s): ALCON MANUFACTURING, LTD.*; 6201 South Freeway, 76134, Fort Worth, Texas, E.U.A.
[72] Inventor(es): DREW MORGAN; 4320 Bellaire Drive, Suite 110, 76109, Forth Worth, Texas, E.U.A.
[74] Agente: MARTIN MICHAUS ROMERO.*; Paseo de los Tamarindos 400 - A, Piso 9, Col. Bosques de las Lomas, 05120, Distrito Federal
[30] Prioridad (es): US11/862,244 27/09/2007
[51] Clasificación: *A61F2/16* (2006-01)
[54] Título: LENTE INTRAOCULAR.
[57] Resumen: Un IOL teniendo un área óptica interna reducida y un filo o borde externo periférico espesado o elevado integralmente formado con el óptico. Dicho diseño reduce la masa del IOL, haciendo al lente más fácil de insertar en una incisión muy pequeña, sin dañar el óptico o comprometiendo la estabilidad del IOL.

[21] Número de solicitud: MX/a/2008/005625 [22] Fecha de presentación: 30/04/2008
[71] Solicitante(s): SCHOELLER ARCA SYSTEMS GMBH; Zugspitzstrabe 15, 82049, Pullach, ALEMANIA
[72] Inventor(es): Jochen BRUNSMANN; Michael RINDERLE; Schusterstrabe 12, 81477, München, ALEMANIA
[74] Agente: BAUDELIO HERNANDEZ DOMINGUEZ; Cerro de la Estrella 375, Col. Campestre Churubusco, 04200, Distrito Federal
[30] Prioridad (es): DE102007020277.8 30/04/2007
[51] Clasificación: *B65D19/06* (2006-01) *B65D19/18* (2006-01) *B65D19/26* (2006-01) *B65D19/32* (2006-01)
[54] Título: TARIMA FORMADA POR MULTIPLES PIEZAS.
[57] Resumen: La invención se refiere a una tarima de material sintético (1) formada por varias piezas con una parte superior (3) que tiene una superficie de carga (4) y está unida con cuando menos una pieza inferior (2), de acuerdo con la invención se prevé que la pieza superior (3) y la o las piezas inferiores (2) estén unidas entre sí por medio de acoplamiento de forma, preferentemente con la ayuda de elementos de sujeción, y en espacial estén unidas entre sí de forma permanente.

[21] Número de solicitud: MX/a/2008/005635 [22] Fecha de presentación: 30/04/2008
[71] Solicitante(s): FMC CORPORATION.*; 1735 Market Street, 19103, Philadelphia, Pennsylvania, E.U.A.
[72] Inventor(es): Henry Pfeffer; William C. Copenhafer; 6 Hollyhock Way, 08619, Mercerville, New Jersey, E.U.A.
[74] Agente: CESAR RAMOS DE MIGUEL*; Pedro Luis Ogazón 17, Col. San Angel, 01000, ALVARO OBREGON, Distrito Federal
[30] Prioridad (es): US60/926,877 30/04/2007
[51] Clasificación: *B01D53/50* (2006-01)
[54] Título: PROCESO DE DESULFURACION DE GAS COMBUSTIBLE UTILIZANDO PEROXIDO DE HIDROGENO.
[57] Resumen: Un proceso de desulfuración en el cual el flujo de gas de combustión que contiene SO_3 es contactado con un flujo de recirculación de un medio acuoso que contiene ácido sulfúrico concentrado y peroxido de hidrógeno, para rendir un flujo de gas de combustión y producir ácido sulfúrico adicional en el medio acuoso. Una porción del flujo de ácido sulfúrico acuoso es dividido para recuperar el ácido sulfúrico adicional como yeso en un paso de neutralización, y los parámetros de proceso son ajustados de manera que el calor de reacción generado durante el paso de neutralización es suficiente para evaporar el agua libre que está presente y resulta en un producto de yeso que está sustancialmente seco.

[21] Número de solicitud: MX/a/2008/005652 [22] Fecha de presentación: 29/04/2008
[71] Solicitante(s): CORDIS CORPORATION; 14201 N.W. 60th Avenue, 33014., Miami Lakes, Florida, E.U.A.
[72] Inventor(es): ZHAO, Jonathon Z.; 12 Briar Hill Court, 08502, Belle Mead, New Jersey, E.U.A.
[74] Agente: HERIBERTO RAUL LOPEZ PADILLA.*; Thiers 251 Piso 10, Col. Anzures, 11590, MIGUEL HIDALGO, Distrito Federal
[30] Prioridad (es): US11/741,997 30/04/2007
[51] Clasificación: *A61K33/10* (2006-01) *A61F2/06* (2006-01) *A61F2/82* (2006-01) *A61K31/337* (2006-01) *A61K31/436* (2006-01)
A61K31/727 (2006-01) *A61K47/32* (2006-01) *A61K47/34* (2006-01) *A61K47/48* (2006-01) *A61K9/14* (2006-01)
A61L31/00 (2006-01) *A61L33/00* (2006-01) *A61P35/00* (2006-01) *A61P37/06* (2006-01) *A61P43/00* (2006-01)
[54] Título: UN RECUBRIMIENTO PARA UN DISPOSITIVO MEDICO QUE TIENE UN CONJUGADO ANTI-TROMBOTICO.
[57] Resumen: Métodos para la elaboración de un conjugado antitrombótico tipo peine en donde sustancialmente todas las cadenas laterales de poli(vinil alcohol) (PVA) soluble en agua están extendidas por la polimerización de apertura del anillo para formar un copolímero en donde sustancialmente todos los terminales están conjugados con una molécula antitrombótica; además, se provee un método para la aplicación de un recubrimiento que comprende un conjugado antitrombótico tipo peine a al menos una porción de un dispositivo implantable para prevenir o reducir la formación de trombosis en la superficie del dispositivo; una primera capa o subcapa de recubrimiento se prepara mediante la mezcla de un material polimérico y un agente biológicamente activo con un solvente, formando así una solución homogénea; se puede aplicar una segunda capa o capa más externa que comprende un conjugado antitrombótico tipo peine sobre las capas internas que contienen el fármaco utilizando, por ejemplo, un procedimiento de recubrimiento por sumergido o un procedimiento de recubrimiento por aspersión; alternativamente el conjugado antitrombótico tipo peine se puede utilizar como un material de matriz para encapsular un agente farmacéutico para formar microesferas o nanoesferas antes de depositar las microesferas o nanoesferas sobre un dispositivo médico.

[21] Número de solicitud: MX/a/2008/005663 [22] Fecha de presentación: 30/04/2008
[71] Solicitante(s): GRENZEBACH MASCHINENBAU GMBH; Albanusstrasse 1, 86663, Asbach-Bäumenheim, ALEMANIA
[72] Inventor(es): WOLFGANG FRIEDL; Haidwang 29, 86687, Kaisheim, ALEMANIA
[74] Agente: FRANCISCO JAVIER UHTHOFF ORIVE.*; Hamburgo No. 260, Col. Juarez, 06600, Distrito Federal
[30] Prioridad (es): EP07009423.0 10/05/2007
[51] Clasificación: *B23K26/40* (2006-01) *B28D1/22* (2006-01)
[54] Título: METODO PARA LA SEPARACION TERMICA INDUCIDA POR LASER DE MATERIAL DE PLACA DE CERAMICA U OTRO MATERIAL DE PLACA QUEBRADIZO.
[57] Resumen: Se describe un método para la separación térmica inducida por láser de material de placa quebradizo de cerámica u otro material de placa quebradizo, la placa (7) es explorada múltiplemente a lo largo de una línea de separación proporcionada (6) por medio de un haz de láser (2) todo el tiempo en la misma dirección y con pausas entre las exploraciones individuales que pueden ser seleccionadas y ajustadas de acuerdo con el material a ser separado en cada caso.

[21] Número de solicitud: MX/a/2008/005682 [22] Fecha de presentación: 30/04/2008
[71] Solicitante(s): ROHM AND HAAS COMPANY; 100 Independence Mall West, 19106-2399, Philadelphia, Pennsylvania, E.U.A.
[72] Inventor(es): TERRY MICHAEL WILLIAMS; 1340 East Meetinghouse Road, 19002, Lower Gwynedd, Pennsylvania, E.U.A.
[74] Agente: MIGUEL A. ESTEVA*; Av. Revolución No. 1392, Segundo Piso, Col. Guadalupe Inn, 01020, Distrito Federal
[30] Prioridad (es): US60/928,230 08/05/2007
[51] Clasificación: *C10M169/04* (2006-01) *C07D275/00* (2006-01)
[54] Título: FLUIDOS ESTABILIZADOS.
[57] Resumen: Se proporciona una composición fluida, la cual comprende: (a) una o más 3-isotiazolonas no cloradas; (b) del 0.7% al 10% en peso, con base en el peso de dicha composición fluida, de una o más aminas primarias; (c) del 2% al 30% en peso, con base en el peso de dicha composición fluida de una o más alcanolaminas terciarias; (d) uno o más estabilizadores, seleccionados del grupo que consta de estabilizadores que contienen yodo, mercaptobenzotiazoles, y sus mezclas, en que la relación en peso de dicho estabilizador o dicha isotiazolona no clorada es de 0.2: 1 hasta 5:1.

[21] Número de solicitud: MX/a/2008/005691 [22] Fecha de presentación: 30/04/2008
[71] Solicitante(s): AIR PRODUCTS AND CHEMICALS, INC.*; 7201 Hamilton Boulevard, 18195-1501, Allentown, Pennsylvania, E.U.A.
[72] Inventor(es): Mark Daniel D'Agostini; 200 West Homer Street, 15931, Ebensburg, Pennsylvania, E.U.A.
[74] Agente: JUAN CARLOS SUAREZ RAMIREZ *; Paseo de la Reforma 265, Mezzanine 2, Col. Cuauhtémoc, 06500, CUAUHTEMOC, Distrito Federal
[30] Prioridad (es): US11/743,217 02/05/2007
[51] Clasificación: *F27D7/02* (2006-01) *C03B5/00* (2006-01) *C03B5/235* (2006-01) *F23D1/00* (2006-01) *F27B3/02* (2006-01)
[54] Título: COMBUSTION DE COMBUSTIBLE SOLIDO PARA FUSION INDUSTRIAL CON UN COMBUSTOR DE ESCORIAS.
[57] Resumen: Un método para suministrar calor a un horno de fusión para formar un producto fundido utilizando combustibles que contienen cenizas. Un combustible que tiene un componente de ceniza se introduce en una cámara de escorias de un combustor de escorias y se quema por lo menos parcialmente con una primera mezcla oxidante y una segunda mezcla oxidante con la cámara de escorias. El componente de ceniza se recoge como una capa de escoria fundida en la cámara de escorias. El gas efluente del combustor de escorias se pasa desde la cámara de escorias del combustor de escorias hacia el espacio de combustión del horno de fusión al alta temperatura para suministrar calor para formar el producto fundido. La escoria fundida se extrae de la cámara de escorias y puede introducirse selectivamente en el horno de fusión o puede no introducirse en el horno de fusión.

[21] Número de solicitud: MX/a/2008/005693 [22] Fecha de presentación: 30/04/2008
[71] Solicitante(s): BALTIMORE AIRCOIL COMPANY, INC.; 7600 Dorsey Run Road, 20794, Jessup, Maryland, E.U.A.
[72] Inventor(es): Joseph C. LaGasse; 2011 Sherlock Holmes Street, 21784, Eldersburg, Maryland, E.U.A.
[74] Agente: JUAN CARLOS SUAREZ RAMIREZ *; Paseo de la Reforma 265, Mezzanine 2, Col. Cuauhtémoc, 06500, CUAUHTEMOC, Distrito Federal
[30] Prioridad (es): US11/800,307 04/05/2007
[51] Clasificación: *F28C1/00* (2006-01) *E04H5/12* (2006-01) *F28F25/00* (2006-01)
[54] Título: JUNTA HERMETICA DE TORRE DE ENFRIAMIENTO.
[57] Resumen: Se proporciona un ensamble para conectar dos módulos de torre de enfriamiento verticalmente alineados El ensamble incluye un módulo inferior con un borde estructural superior y un módulo superior con un borde estructural inferior. El borde estructural superior el módulo inferior incluye un componente estructural exterior y un componente de sellado interior. El borde estructural inferior del módulo superior incluye un componente estructural exterior y un componente de sellado interior. El componente estructural exterior del módulo inferior tiene una superficie generalmente plana que soporta la superficie generalmente plana inferior del componente estructural exterior del módulo superior. El componente de sellado interior del borde estructural superior del modulo inferior incluye una superficie generalmente plana que empalma la superficie generalmente plana interior del componente estructural exterior del borde estructural superior del módulo inferior. La superficie generalmente plana inferior del componente de sellado interior del borde estructural inferior del módulo superior está adyacente a la superficie generalmente plana superior del componente de sellado interior del borde estructural superior del módulo inferior y un componente de sellado se extiende entre superficies planas opuestas.

[21] Número de solicitud: MX/a/2008/005723 [22] Fecha de presentación: 02/05/2008
[71] Solicitante(s): INVENTIO AG.*; Seestrasse 55, CH-6052, Postfach, Hergiswil, SUIZA
[72] Inventor(es): Daniel FISCHER; Chemin de Villarsel 37, 1723, Villarsel-sur-Marly, SUIZA
[74] Agente: JOSE B. DUMONT*; Av. Insurgentes Sur 1898, Piso 21, Col. Florida, 01030, Distrito Federal
[30] Prioridad (es): EP07107468.6 03/05/2007
[51] Clasificación: *B66B7/06* (2006-01) *B66B1/14* (2006-01) *B66B1/24* (2006-01)
[54] Título: INSTALACION DE ASCENSOR CON UNA CABINA, UN RODILLO DE DEFLEXION PARA UNA INSTALACION DE ASCENSOR Y UN METODO PARA DISPONER UN DETECTOR DE CARGA EN UNA CABINA DE ASCENSOR.
[57] Resumen: La presente invención se relaciona con una instalación de ascensor (1) que comprende una cabina (3), un medio de soporte 7) para soportar la cabina (3) y un detector de carga (17), con una unidad de rodillo de deflexión (10) para una instalación de ascensor (1) y con un método para disponer un detector de carga (17) en una instalación de ascensor (1). La unidad de rodillo de deflexión (10) está dispuesta en la cabina (3) y comprende al menos dos rodillos de deflexión (9) que son giratorios alrededor de un eje común (11). De acuerdo con la invención el detector de carga (17) está dispuesto sobre el eje común (11) entre los dos rodillos de deflexión (9).

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P 8773 7 MX)

TARIMA FORMADA POR MÚLTIPLES PIEZAS

CAMPO DE LA INVENCIÓN

La invención se refiere a una tarima de material sintético formada por múltiples partes con una superficie de carga y una superficie de apoyo de acuerdo con las características de la idea general de la reivindicación 1.

ANTECEDENTES DE LA INVENCIÓN

Las tarimas, por ejemplo las tarimas Europool, se utilizan en diferentes aplicaciones para el transporte y el apilamiento de artículos. Además de las tarimas de madera cada vez se utilizan más las tarimas de material sintético, el cual es mucho más fácil de limpiar y con una mayor rigidez y resistencia a la deformación, presentan un peso reducido. Por el estado de la técnica se conocen tarimas las cuales presentan una parte superior, una parte de marco y una parte de fondo, que en un proceso de soldadura de material sintético se unen permanentemente entre sí por adherencia de materiales.

Aquí lo desventajoso es que la soldadura de las partes individuales representa una etapa de trabajo complicada.

SUMARIO DE LA INVENCIÓN

La tarea de la presente invención es producir una tarima de material sintético formada por varias piezas, que por un lado presente estabilidad y resistencia a la deformación, así como una elevada capacidad de carga y además que pueda producirse con un reducido gasto.

Esta tarea se resuelve de acuerdo con la invención por medio de una tarima de material sintético de acuerdo con la reivindicación 1. Las modalidades preferidas y ventajosas son objeto de las reivindicaciones dependientes.

La tarima de acuerdo con la invención incluye una parte superior y cuando menos una parte inferior unida por acoplamiento de forma. Preferentemente se realiza la unión de las partes exclusivamente a través de ese acoplamiento de forma. En especial las partes están unidas permanentemente entre sí, esto es que no pueden separarse. Esto es las piezas que se van a unir se fijan entre sí esencialmente sin el uso de adhesivos, soldadura, tornillos o similares. Así puede omitirse esa etapa del proceso, con lo cual se ahorra trabajo de producción y costos.

Unido por acoplamiento de forma en el sentido de esta solicitud se refiere a que cuando menos se proveen dos piezas que se unen entre sí debido a su conformación geométrica (formación), evitando la separación de la unión.

De acuerdo con otra modalidad especialmente preferida se prevé que el acoplamiento de forma se logra por medio de protuberancias de fijación (clips de fijación) provistas en la parte inferior y/o en la parte superior, que colaboran con elementos de fijación correspondientes provistos en la parte superior y/o inferior, formando en conjunto una unión de enclavamiento o sujeción por su acoplamiento de formas.

Otra modalidad prevé que las protuberancias de fijación estén conformados como miembros de fijación en forma de pasarela que se extienden esencialmente de forma paralela a la superficie de carga o a la superficie de soporte de la tarima de acuerdo con la invención. Esto incluye el caso de que los miembros de fijación en forma de pasarelas presenten en su extremo libre una protuberancia en forma de aleta.

De acuerdo con una modalidad especialmente ventajosa, los elementos de acoplamiento que colaboran con los miembros de acoplamiento están rodeados, cuando menos por un lado, por una nervadura de refuerzo que al mismo tiempo funciona como nervadura guía. Con ésta se guía a la protuberancia (16) o al miembro de acoplamiento (10) para unir las piezas, lo que facilita el proceso de enclavamiento. Además al encontrarse unidas las piezas pueden transferirse ventajosamente las fuerzas de

introducción laterales.

Además se provee que los miembros de fijación y los elementos de fijación estén provistos en pilares distanciadores resaltados, que en especial separan a la superficie de carga y a la superficie de soporte de la tarima y forman un espacio hueco para la introducción de las uñas del montacargas (en forma de tenedor), las cuales están colocadas a lo largo de la periferia de las superficies frontales de los pilares distanciadores. En especial se provee que los pilares distanciadores presenten una superficie frontal esencialmente paralela a la superficie de carga o a la superficie de soporte, la cual es interrumpida parcialmente por superficies oblicuas, formando un ángulo con la superficie frontal de 10° a 45°, preferentemente de aproximadamente 15-°-25°, y este ángulo se mide en un plano obtenido en uno de los ejes medios de los pilares distanciadores. Así al encontrarse montadas las superficies de carga y soporte, o sea al encontrarse en un estado armado, a través de esas superficies oblicuas pueden transferirse las fuerzas de soporte lateral por medio del acoplamiento en forma dentada.

De acuerdo con una modalidad muy preferida se prevé que la zona de los miembros o los elementos de fijación cuando menos presenten una parte inferir de cuando menos un elemento guía plano y la parte superior

cuando menos presente un elemento guía plano correspondiente, en donde esos elementos guía se deslizan entre sí al unir las piezas. Aquí parece ser especialmente ventajoso que las superficies guía correspondientes de los elementos guía presenten cuando menos una nervadura longitudinal o una ranura longitudinal (o similares), de tal forma de constituir una acoplamiento dentado, a través del cual pueden transferirse las fuerzas de soporte lateral no sólo durante la unión de las piezas.

Una modalidad especialmente ventajosa y económica prevé que la tarima de acuerdo con la invención este formada en dos partes, en donde cada parte conjuntamente con los elementos de unión formados en ella preferentemente se produzcan por medio de un procedimiento de moldeo por inyección.

BREVE DESCRIPCIÓN DE LOS DIBUJOS O FIGURAS

Otras ventajas de la invención se desprenden de la siguiente descripción de una modalidad preferida con ayuda de las figuras. Las figuras muestran:

La figura 1: una tarima de acuerdo con la invención en una vista en perspectiva;

La figura 2: la parte inferior de una tarima de acuerdo con la invención en una vista superior en perspectiva;

La figura 3: la parte superior de una tarima de acuerdo con la invención en una vista superior en perspectiva;

La figura 4: la parte superior de una tarima de acuerdo con la invención en una vista inferior en perspectiva;

La figura 5: una vista detallada en perspectiva de la parte inferior en la región en donde se encuentra un distanciador;

La figura 6: una vista detallada en perspectiva de la parte superior en la región en donde se encuentra un distanciador;

La figura 7: un corte en perspectiva a través de un pilar distanciador de dos partes superior e inferior unidas entre sí.

DESCRIPCIÓN DETALLADA DE LA INVENCIÓN

La figura 1 muestra de forma tridimensional la tarima de material sintético de acuerdo con la invención 1, la cual incluye la parte inferior 2 y una parte superior 3, que se unen entre sí por acoplamiento de forma. En la figura 1 se muestra adelante a la derecha, la superficie de carga 4 de la parte superior 3. La parte superior 3 presenta una pluralidad de orificios redondos, los cuales están formados para reducir el peso general de la tarima de

material sintético. No se representa la superficie de apoyo o la superficie de soporte, las cuales están provistas en el lado contrario de la superficie de carga 4 de la tarima de material sintético 1. Habitualmente se utiliza una tarima de material sintético con una superficie de soporte colocada sobre preferentemente una base plana y horizontal que recibe a los artículos en la superficie de carga 4 horizontal. A continuación se tomará como referencia esta definición de horizontal y vertical. Los pilares distanciadores 5 definen así un espacio entre la zona de la superficie de carga y la zona de la superficie de apoyo, espacio que se utiliza para el transporte de la tarima por medio de un montacargas o de un vehículo elevador. Por medio del pilar distanciador están desplazados los cuerpos base entre sí en dirección vertical. Los cuerpos base están conformados ventajosamente de forma plana.

La parte inferior representada en la figura 2 está unida con la parte superior 2 representada en las figuras 3 y 4 en la zona donde se encuentra el pilar distanciador 5. Para esto, la parte superior como también la parte inferior están provistas con pilares distanciadores 5 que se encuentran en las esquinas, en las partes medias de los cantos exteriores y en el centro, y al estar montados quedan dirigidos uno hacia el otro y su altura esencialmente es idéntica. Las figuras 5 y 6

muestran como vista detallada un pilar distanciador de la parte inferior y de la parte superior 3. Los pilares distanciadores presentan una forma básica rectangular con esquinas redondeadas y una superficie frontal, que limita al pilar distanciador en dirección vertical. Esta superficie frontal tiene la forma de un borde anular periférico con un grosor de material del pilar distanciador de cuando menos 3 mm y máximo 18 mm. Preferentemente el borde tiene una anchura de 6 mm a 10 mm. Dentro de ese anillo están colocadas estructuras de unión, entre ellas pueden mencionarse ganchos de sujeción o miembros de acoplamiento 10, los elementos de refuerzo 11, los elementos 20 y las nervaduras de compresión 12. En la figura 7 se puede ver claramente cómo los ganchos de sujeción o el miembro de acoplamiento en forma de pasarela 10 con una aleta de acoplamiento 16 formada en el extremo libre se introduce en el elemento de acoplamiento 30 y con esto se engancha por medio de acoplamiento de forma. Durante le proceso de montaje ambas piezas se juntan de arriba hacia abajo (verticalmente). Aquí se mueve el gancho de sujeción 10 hacia la derecha y al final del proceso de unión el gancho de sujeción retrocede elásticamente a su posición inicial o posición de sujeción, de tal forma que las partes superior e inferior ya no pueden separarse entre sí.

El elemento de refuerzo o de guía 11 en forma de nervadura de acuerdo con la figura 7 es una parte de la parte superior 3 representada arriba y en él está fijo el elemento de fijación 30. El elemento de refuerzo 11 está adyacente a la pata del gancho de sujeción 10, con el cual el gancho de sujeción está unido a la parte inferior 2. Cuando sobre la parte superior actúan fuerzas, las cuales (de acuerdo con la figura 7) actúan hacia delante, así la parte superior se desplaza ligeramente con referencia a la parte inferior, hasta que el elemento de refuerzo 11 entra en contacto con la pata del gancho de sujeción 10 y así se transfieren las fuerzas a la parte inferior 2. La anchura del gancho de sujeción es claramente mayor que su grosor, con lo cual en la dirección de sujeción (en la dirección en la cual se mueve la aleta de acoplamiento 16) se obtiene una mayor elasticidad que en la dirección horizontal que es perpendicular a ésta. En esta sección no se muestra otro elemento de refuerzo, el cual según la figura 7 se asienta antes del gancho de sujeción 10, y con el elemento de refuerzo representado 11 forma un espacio, dentro del cual puede moverse el gancho de sujeción con una determinada holgura. Esta holgura es necesaria para que el gancho de sujeción después del montaje pueda recuperar su forma gracias a la tensión o fuerza de retroceso elástica, y pueda actuar sobre el elemento de acoplamiento 30.

La figura 5 muestra cuatro elementos guía 20 de un pilar distanciador 4 de la pieza inferior 2, que están acoplados con los cuatro elementos guía 20' de la pieza superior representados en la figura 6. En los elementos guía se definen superficies de contacto provistas aquí con tres nervaduras longitudinales o ranuras longitudinales (21). Dos de esos pares de elementos guía tienen superficies de contacto paralelas que forman un ángulo de 90° con las superficies de contacto de los otros dos pares de elementos guía. Con esto se evita un desplazamiento en todas las direcciones del plano horizontal.

Además, las nervaduras longitudinales o ranuras longitudinales 21 sirven para posicionar ambas partes sin holgura. Su altura tiene una dimensión mayor que la separación nominal entre los elementos guía que interactúan entre sí. Por ejemplo la separación nominal puede ser 0.5 mm y la altura de las nervaduras longitudinales puede ser de 2 mm, de tal forma que las tres nervaduras longitudinales 21 al unir las piezas superior e inferior se deforman plástica y elásticamente aproximadamente 1.5 mm.

Además la figura 5 muestra una nervadura de compresión 12 colocada de tal forma que al unir las partes superior e inferior se deforma esencialmente de forma elástica, y después de que el gancho de sujeción 10 que atrapado en su posición de sujeción también puede retraerse

elásticamente. Ya que la orientación de la nervadura de compresión 12 es contraria a la dirección del orificio del gancho de sujeción 10, por medio de la nervadura se produce una sujeción firme del gancho en su posición de sujeción.

La figura 6 muestra que el borde frontal periférico 14 del pilar distanciador 4 está interrumpido por zonas de superficies oblicuas 15a y 15b. Mientras que las zonas del borde 14, que se extienden paralelas a la superficie de carga, son muy adecuadas para recibir las fuerzas del peso de los productos que se encuentran sobre la tarima, el efecto de la fuerza sirve para que la parte superior 3 pueda centrarse por medio del desplazamiento sobre las superficies oblicuas 15a y 15b en sentido contrario a las manecillas del reloj. Las superficies oblicuas se inclinan aproximadamente 20° de hacia arriba y abajo de la superficie frontal. Dicho de otra manera: cuando actúan fuerzas laterales perturbadoras entre la parte superior e inferior, la fuerza de gravedad actúa sobre la carga que se encuentra sobre la tarima, de tal forma que la parte superior 3 con la carga no se mueve en contra de la dirección de la gravedad en las superficies oblicuas 15a o 15b y permanecen centradas entre sí las partes superior e inferior, y se absorben cuando menos parcialmente las fuerzas dañinas que pueden actuar sobre los ganchos de sujeción.

La figura 6 muestra que periféricamente a una superficie dirigida hacia adentro del pilar distanciador 5 están provistos tres ganchos de sujeción 10 así como tres elementos de acoplamiento 30, para recibir a los correspondientes ganchos de sujeción de la pieza que se va a unir. Con esto, en la zona de esos pilares distanciadores de las piezas superior e inferior se unen con seis ganchos en total. Los pilares distanciadores que se encuentran en la esquina de las tarimas, están provistos con el mismo número de ganchos de sujeción. Sin embargo todos los separadores que se encuentran en el canto lateral de la tarima son más anchos y presentan 8 pilares distanciadores. En los pilares distanciadores en el centro de la tarima están provistos seis ganchos de sujeción. Correspondientemente también están adaptados los elementos guía 20 a las dimensiones de los pilares distanciadores en cuestión.

Esencialmente la parte superior 3 es simétrica la parte inferior 2, pero la pieza superior presenta cuatro aberturas amplias para recibir a los rodillos de un vehículo elevador durante el transporte. En una modalidad alternativa de una tarima también es posible una forma de realización en la cual la parte inferior es idéntica a la parte superior, o sea carece de las amplias aberturas.

La figura 4 muestra una vista inferior de la

parte superior 3, que incluye un cuerpo base del cual se extienden los pilares distanciadores 4. El cuerpo base se extiende sobre toda la superficie de la tarima con un grosor preferentemente de 30 mm +/- 3 mm, pero de cuando menos 15 mm y máximo 45 mm. Para reducir el peso del cuerpo base, éste se forma con una estructura de barras que se extienden paralelas y que se cruzan entre sí para definir una pluralidad de cavidades o depresiones. Para reducir adicionalmente el peso se han proviso orificios redondos en las bases de las depresiones, las cuales de acuerdo con la figura 1 pueden observarse desde arriba de la tarima, o sea desde la superficie de carga 4. Estos orificios permiten también eliminar la humedad que se encuentra sobre la tarima por medio de goteo o flujo hacia abajo. Además en la superficie de la tarima en la zona de los pilares distanciadores 5 están visibles orificios rectangulares, los cuales se producen por medio de técnicas de inyección de material sintético desde los núcleos que forman los ganchos de sujeción 20 y los elementos de acoplamiento 30.

La parte inferior 2 está realizada de forma correspondiente a la parte superior 3, en la cual, debido a los extensos orificios, la superficie base se reduce a pasarelas que unen a los pilares distanciadores 5.

En los cantos exteriores laterales de la tarima, o sea en los lados en los cuales se introducen las uñas de

un vehículo elevador o montacargas, el grosor del material de la tarima aumenta para elevar la protección contra los daños.

Como material para la tarima puede utilizarse cualquier material sintético termoplástico, preferentemente se utiliza polietileno o polipropileno. Para reducir adicionalmente el peso, ventajosamente se utiliza un material sintético espumoso, cuyo material forma espuma en la herramienta de inyección durante el proceso de inyección. Tanto la parte superior como también la parte inferior son de una sola pieza. Esto es que los mencionados ganchos de sujeción 10 están formados directamente con aletas de sujeción 16, elementos de refuerzo 11 o elemento guía 20 directamente durante el proceso de inyección. Por medio de la aplicación adecuada de temperatura y presión dentro de la herramienta de inyección se logra que la superficie de la tarima se encuentra al mayor grado posible libre de poros, pero se reduce la densidad del material dentro de las zonas con mayores grosores de pared. La aplicación de presión puede ser apoyada por medio de núcleos móviles, que después de llenar la herramienta pueden retraerse en una segunda etapa en una determinada cantidad y así liberar el volumen para hacer espumoso al material sintético. Gracias a esa técnica puede por ejemplo lograrse que la parte superior y la parte inferior de la

región de los ganchos de sujeción presenten una densidad claramente mayor, y con esto una mayor rigidez que en la zona de los cantos laterales.

REIVINDICACIONES:

1. Una tarima de material sintético (1) con una parte superior (3) que tiene una superficie de carga (4), y cuando menos una parte inferior (2) unida a la parte superior (3); la parte inferior sirve como superficie de apoyo para la tarima de material sintético (1), en donde la parte superior (3) y la cuando menos una parte inferior (2) preferentemente están unidas entre sí exclusivamente por acoplamiento de forma y particularmente de manera inseparable.

2. La tarima de material sintético (1) según la reivindicación 1, en donde el acoplamiento de forma entre la parte superior (3) y la cuando menos una parte inferior (2) se forma por medio de aletas de sujeción (16) que están colocadas en la parte inferior (2) y/o en la parte superior (3) y colaboran con elementos de acoplamiento (30) correspondientes que se encuentran en la parte superior (3) y/o en la parte inferior (2).

3. La tarima de material sintético (1), según la reivindicación 2, en donde las aletas de acoplamiento están formadas como miembros de acoplamiento (10) en forma de pasarelas que se extienden esencialmente de forma perpendicular a la superficie de carga (4) o la superficie de soporte.

4. La tarima de material sintético (1), según

la reivindicación 2 o 3, en donde los elementos de acoplamiento (30) están rodeados por una nervadura guía (11), que durante la unión conduce a la aleta de sujeción (16) o al miembro de acoplamiento (10) y también al estar unidas transmiten las fuerzas laterales.

5. La tarima de material sintético (1), según la reivindicación 3 o 4, en donde los miembros de acoplamiento (10) y los elementos de acoplamiento (30) están colocados en pilares distanciadores (5) sobresalientes, y estando colocados en las superficies frontales de esos pilares distanciadores (5) periféricamente a lo largo de su perímetro.

6. La tarima de material sintético (1), según la reivindicación 5, en donde los pilares distanciadores (5) presentan una superficie frontal (14) esencialmente paralela a la superficie de carga (4) o la superficie de soporte, la cual es interrumpida parcialmente por superficies oblicuas (15a, 15b), formando un ángulo con la superficie frontal de 10° a 45°, preferentemente de aproximadamente 15° a 25°, y este ángulo se mide en un plano obtenido en uno de los ejes medios de los pilares distanciadores (5), de tal forma que al encontrarse montados los pilares distanciadores, a través de esas superficies oblicuas (15a, 15b) pueden transferirse las fuerzas de soporte lateral por medio del acoplamiento en

forma dentada.

7. La tarima de material sintético (1), según las reivindicaciones 3 a 6, en donde los miembros de acoplamiento (10) están formados de tal forma que pueden moverse elásticamente en dirección horizontal y presentan una fuerza de recuperación definida.

8. La tarima de material sintético (1), según las reivindicaciones 3 a 7, en donde en la región los miembros de acoplamiento (10) o los elementos de acoplamiento (3), la cuando menos una parte inferior (2) presenta cuando menos un elemento guía plano (20) y la parte superior (3) cuando menos presenta un correspondiente elemento guía plano (20'), los cuales durante la unión se deslizan entre sí.

9. La tarima de material sintético (1), según la reivindicación 8, en donde las superficies de guía correspondientes de los elementos guía (20, 20') presentan cuando menos una nervadura longitudinal (21), de tal forma que constituye un acoplamiento dentado, a través del cual pueden transferirse también las fuerzas laterales.

10. La tarima de material sintético (1), según las reivindicaciones anteriores, en donde esta tarima está formada por dos partes.

RESUMEN DE LA INVENCIÓN

La invención se refiere a una tarima de material sintético (1) formada por varias piezas con una parte superior (3) que tiene una superficie de carga (4) y está unida con cuando menos una pieza inferior (2), de acuerdo con la invención se prevé que la pieza superior (3) y la o las piezas inferiores (2) estén unidas entre sí por medio de acoplamiento de forma, preferentemente con la ayuda de elementos de sujeción, y en espacial estén unidas entre sí de forma permanente.

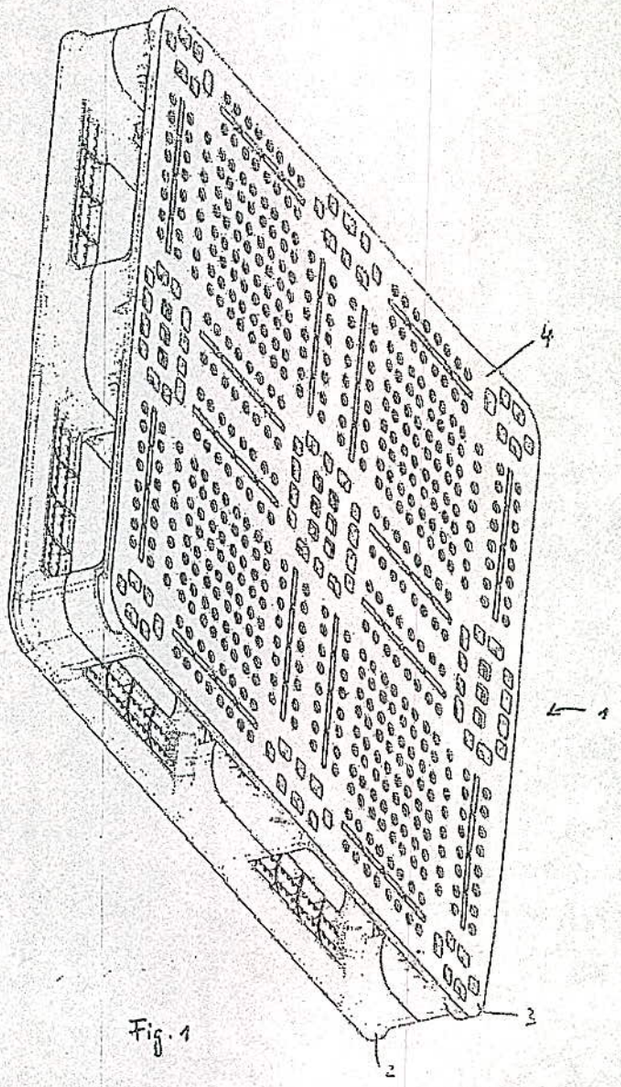


Fig. 1

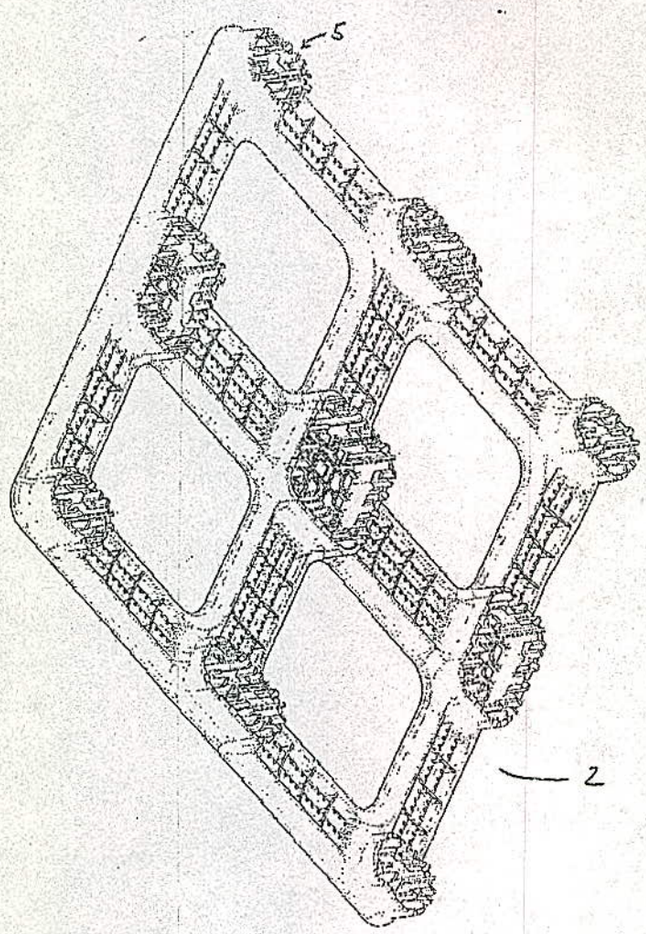


Fig. 2

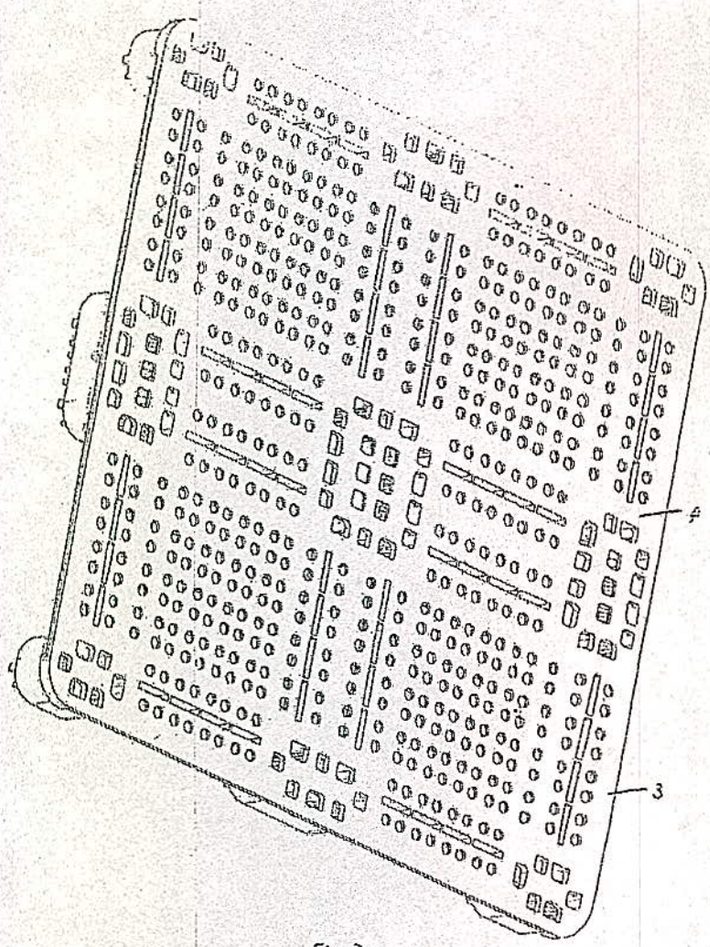


Fig. 3

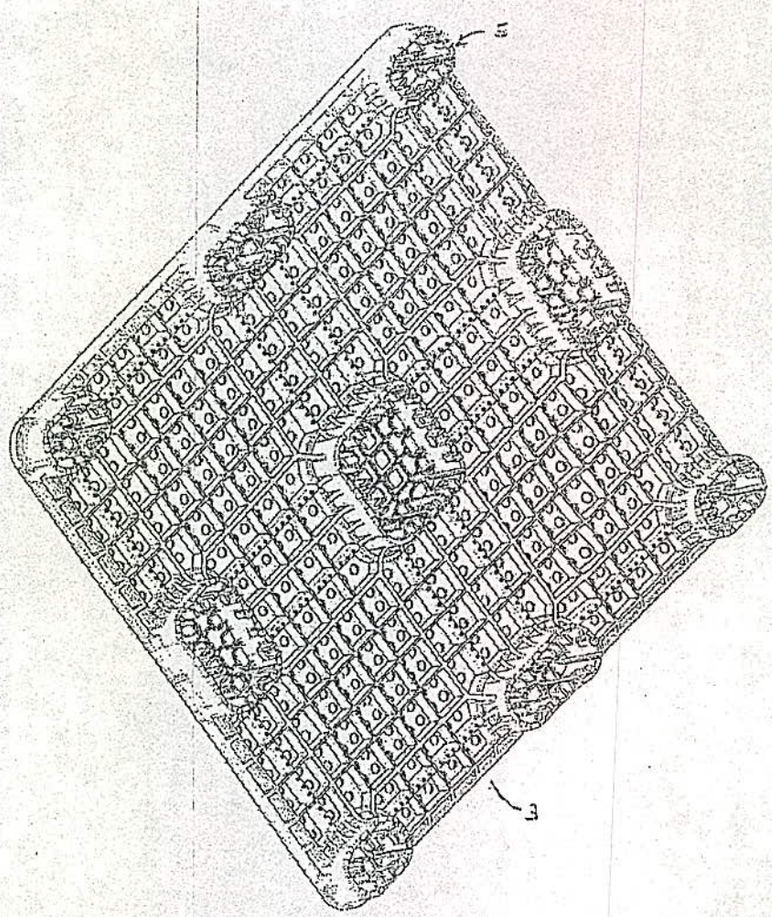


Fig 4

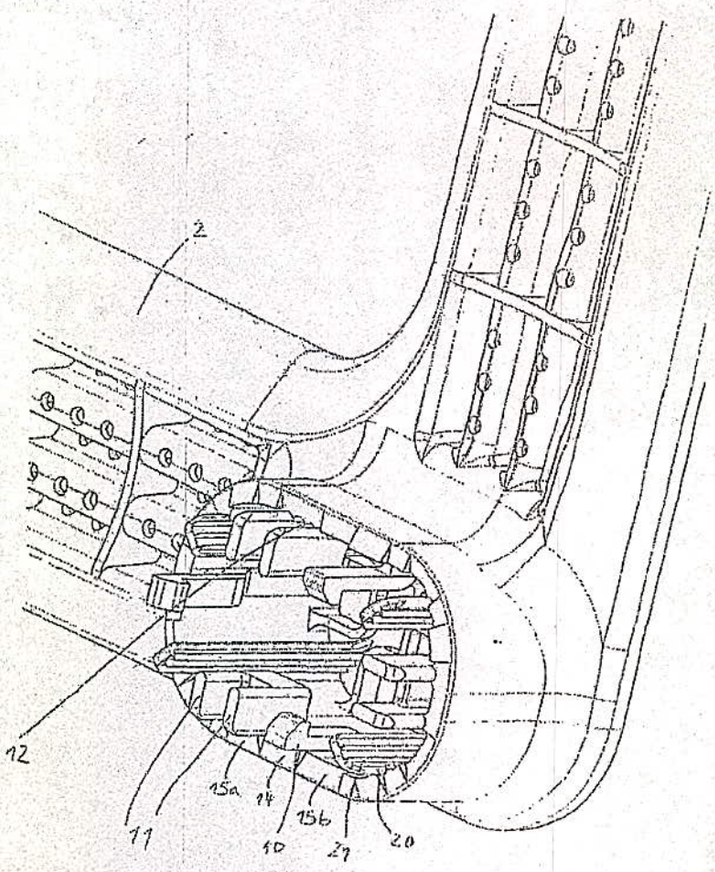


Fig. 5

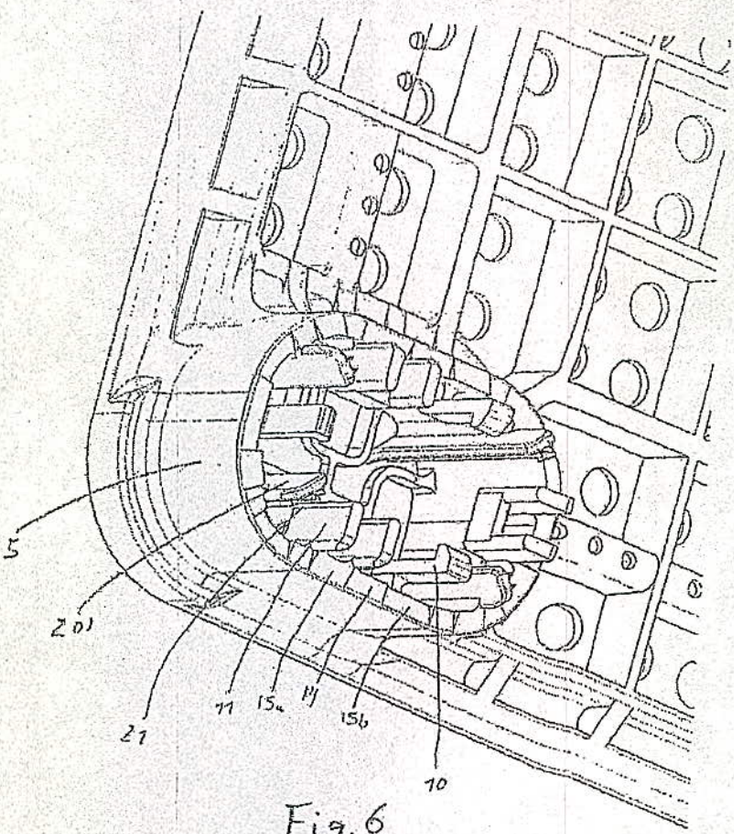


Fig. 6

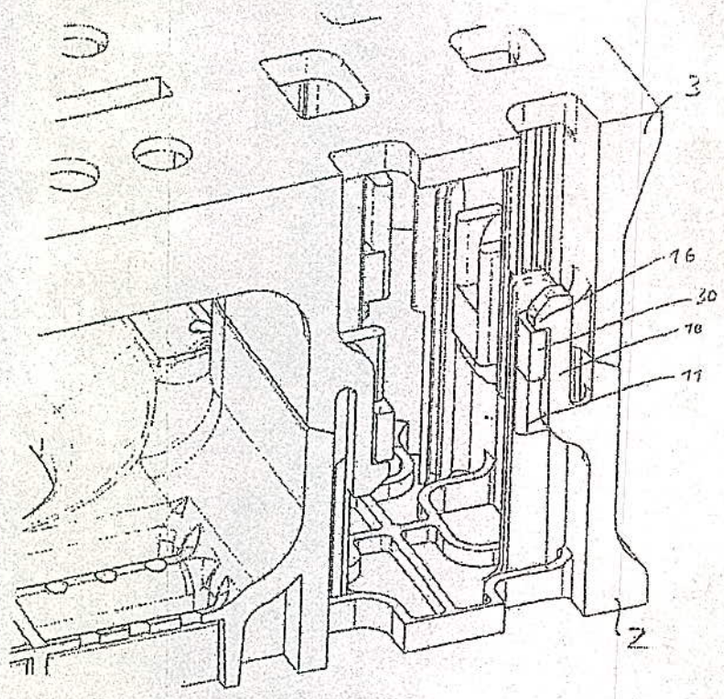


Fig 7

ANEXO B

102

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(54) PALLET

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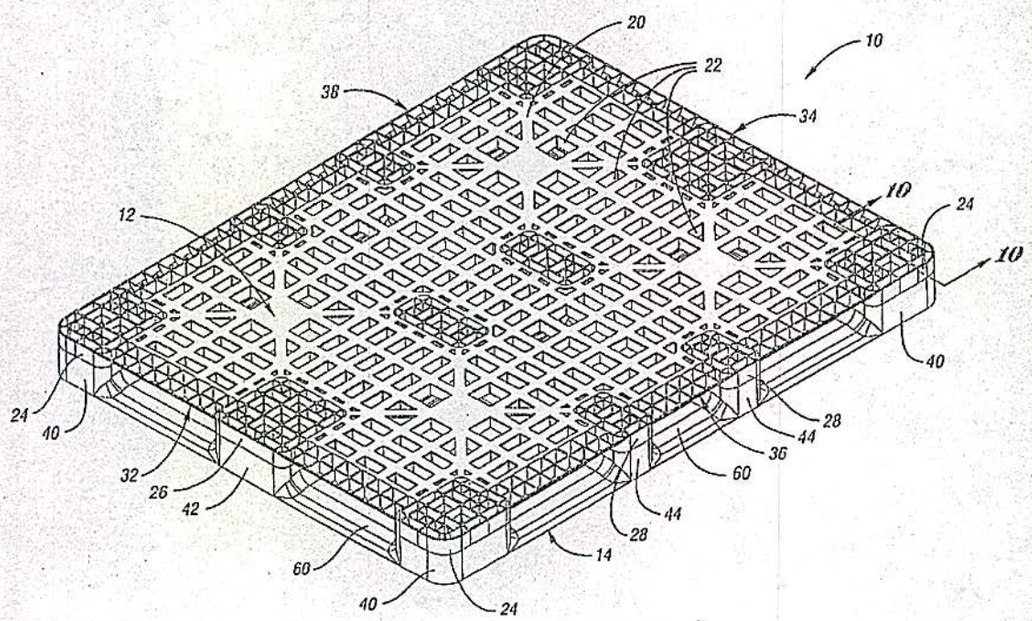
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(57) ABSTRACT

A pallet is provided which includes spaced upper and lower decks. A plurality of receiving areas are formed in one of the upper and lower decks, where each receiving area includes at least one latch member extending therefrom. A plurality of corresponding supports extend from the other of the upper and lower decks, where each support includes at least one latch receiver extending therefrom, each latch receiver having a plurality of spring arms. The latch receiver is adapted to receive the latch member such that engagement of the receiving areas and corresponding supports securely joins the upper and lower decks in an assembled configuration.



PALLET

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to pallets for supporting freight, goods, or other materials.

[0003] 2. Background Art

[0004] Current plastic pallets have upper and lower decks that are optimally designed to serve their diverse purposes. Equally important to the specific structure of the upper and lower decks is the latching mechanism which secures the decks together in an assembled configuration. During handling, lateral movement of the upper and lower decks with respect to one another can cause the two decks to become disengaged. Therefore, a need exists for a pallet which provides a more secure latching feature as well as sufficient lateral constraint for the latching feature to enhance the attachment of the upper and lower decks so that they cannot be separated during use.

SUMMARY OF THE INVENTION

[0005] Therefore, it is an object according to the present invention to provide a pallet which includes more secure latching of the upper and lower decks in the assembled configuration.

[0006] It is another object according to the present invention to provide a pallet having improved lateral stability of the top and bottom decks with respect to each other.

[0007] It is another object according to the present invention to provide a pallet having guide features which improve alignment of the upper and lower decks for assembly.

[0008] It is still another object according to the present invention to provide a plastic pallet which is lightweight, strong, and durable.

[0009] Accordingly, a pallet is provided which includes spaced upper and lower decks. A plurality of receiving areas are formed in one of the upper and lower decks, where each receiving area includes at least one latch member extending therefrom. A plurality of corresponding supports extend from the other of the upper and lower decks, where each support includes at least one latch receiver extending therefrom, the latch receiver having a plurality of spring arms. The latch receiver is adapted to receive the latch member such that engagement of the receiving areas and corresponding supports securely joins the upper and lower decks in an assembled configuration.

[0010] In accordance with a preferred embodiment of the present invention, the receiving areas are integrally formed within a bottom surface of the upper deck, and the supports are integrally formed with and project upwardly from a top surface of the lower deck. Each receiving area includes a plurality of ribs, and each latch member extends outwardly from one of the ribs at a lower end thereof. In addition, each latch member preferably tapers upwardly and outwardly from the lower end of the rib and terminates in a generally horizontal shoulder portion.

[0011] Correspondingly, each support includes a plurality of ribs, and the plurality of spring arms includes two arms attached to one of the ribs at an upper end thereof. The arms are connected by a receiving face or bridge portion such that the latch receiver has a generally U-shaped appearance, where the bridge portion is adapted to receive the shoulder portion of the latch member thereunder. The latch receivers are preferably flexible, such that engagement of the receiving areas and corresponding supports causes the latch member to contact the receiving face and deflect the latch receiver outwardly from its resting position, and passage of the shoulder portion past the bridge portion allows the latch receiver to return to its rest position and securely retain the latch member therewithin.

[0012] In further accordance with a preferred embodiment of the present invention, guide members at least partially surrounding each latch receiver. Each guide member includes a wall structure having a first portion extending generally parallel to at least one latch receiver and a second portion extending along at least one side of one latch receiver. Guide members located at the corners of the pallet each include a curved wall which at least partially surrounds two adjacent latch receivers. The guide members are preferably tapered with the lower end of each guide member being wider than the upper end thereof. Correspondingly, each receiving area includes compartments which are sized to receive the individual guide members, where each compartment preferably includes one latch member. Engagement of the guide members with the receiving area compartments provides lateral stability for the assembled upper and lower decks.

[0013] The pallet according to the present invention is generally rectangular and includes twelve supports and twelve corresponding receiving areas. The lower deck includes a generally rectangular perimeter portion, an integrally formed longitudinal rail joined to the perimeter portion and extending along a longitudinal axis of the pallet, and two integrally formed transverse rails joined to the perimeter portion and the longitudinal rail and extending parallel to a transverse axis of the pallet. Together, the perimeter portion, the longitudinal rail, and the transverse rails define six large openings in the lower deck. Corner supports project from the four corners of the perimeter portion, medial supports project from each end of the longitudinal rail, and transverse supports project from the ends and midpoint of each transverse rail. In a preferred embodiment, the corner supports and medial supports each include eight spaced latch receivers, and the transverse supports each include six spaced latch receivers.

[0014] In addition, a pallet according to the present invention is provided having an upper deck including a plurality of receiving areas formed therein, each receiving area including at least one latch member extending therefrom. The pallet further includes a lower deck including a plurality of supports extending upwardly therefrom, each support including at least one latch receiver extending therefrom, where the latch receiver includes a plurality of spring supports. The latch receiver is adapted to receive the latch member such that engagement of the receiving areas and corresponding supports securely joins the upper and lower decks in an assembled configuration.

[0015] Still further, a latch assembly is provided according to the present invention for securely joining the upper and lower decks in an assembled configuration. The latch assembly includes at least one latch member disposed within each

receiving area, the latch members each including a generally horizontal shoulder portion which tapers downwardly and inwardly toward a bottom surface of the receiving area. The latch assembly further includes at least one flexible latch receiver extending upwardly from each support, the latch receivers each having a plurality of spring arms connected to the support and a receiving face attached to the arms, wherein the receiving face is adapted to receive the shoulder portion of the latch member thereunder. In operation, engagement of the receiving areas and corresponding supports causes the latch member to contact the receiving face and deflect the latch receiver outwardly from its resting position, and passage of the shoulder portion past the receiving face allows the latch receiver to return to its rest position and securely retain the latch member therewithin, thereby securing the upper and lower decks in the assembled configuration.

[0016] The above objects and other objects, features, and advantages of the present invention are readily apparent from the following detailed description of the best mode for carrying out the invention when taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. 1 is a top perspective view of an assembled pallet according to the present invention;

[0018] FIG. 2 is a bottom perspective view of the pallet of FIG. 1;

[0019] FIG. 3 is a top plan view of the pallet of FIG. 1;

[0020] FIG. 4 is a bottom plan view of the pallet of FIG. 1;

[0021] FIG. 4*a* is an enlarged bottom plan view of a corner portion of the pallet shown in FIG. 4;

[0022] FIG. 5 is a front elevational view of the pallet of FIG. 1, the rear elevational view being a mirror image thereof;

[0023] FIG. 6 is a left side elevational view of the pallet of FIG. 1, the right side elevational view being a mirror image thereof;

[0024] FIG. 7 is a top perspective, exploded view of the pallet of FIG. 1, showing the upper and lower decks aligned for assembly;

[0025] FIG. 8 is a bottom perspective view of the upper deck of the pallet of FIG. 7;

[0026] FIG. 8*a* is an enlarged perspective view of a corner portion of the upper deck of FIG. 8;

[0027] FIG. 9 is a top perspective view of the lower deck of the pallet of FIG. 7;

[0028] FIG. 9*a* is an enlarged perspective view of a corner portion of the lower deck of FIG. 9, wherein the lower deck corner portion is adapted to engage the corresponding upper deck corner portion shown in FIG. 8*a*;

[0029] FIG. 10 is a cross-sectional view taken along line 10-10 of FIG. 1 showing the upper and lower decks prior to assembly; and

[0030] FIG. 11 is a cross-sectional view taken along line 11-11 of FIG. 7 showing the upper and lower decks in an assembled configuration.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

[0031] Referring first to FIGS. 1-6, a pallet according to the present invention is illustrated and designated generally by reference numeral 10. Pallet 10 includes two separately molded parts, namely an upper deck 12 and a lower deck 14. Upper deck 12 and lower deck 14 are injection molded of a suitable plastic material, such as high density polyethylene, polypropylene, or filled polypropylene. In plan view (FIGS. 3 and 4), pallet 10 is generally rectangular in shape with rounded corners and has symmetry about a longitudinal axis 16 and a transverse axis 18 thereof. The symmetrical two-piece injection molded plastic construction of pallet 10 affords substantial strength and durability, simplicity, and easy assembly. As explained below, upper and lower decks 12, 14 are adapted to be easily snapped together to form the assembled pallet illustrated in FIGS. 1-6.

[0032] Referring now to FIGS. 1, 3, and 7-8, upper deck 12 has a solid top surface 20 interrupted by a series of apertures 22 which reduce the weight of upper deck 12 and allow for drainage in the event that pallet 10 becomes wet. As shown in FIG. 8, a plurality of receiving areas 24, 26, 28 are integrally formed within the bottom surface 30 of upper deck 12. More specifically, at each of the four corners of the upper deck 12, a generally rectangular corner receiving area 24 is formed. At the mid-point of the left side 32 and right side 34 of the pallet 10, generally square medial receiving areas 26 are formed. In addition, on either side of transverse axis 18, generally rectangular transverse receiving areas 28 are formed. Transverse receiving areas 28 are located along front side 36 of pallet 10, rear side 38 of pallet 10, and centrally intersecting with longitudinal axis 16. As shown in FIG. 8, receiving areas 24, 26, 28 all preferably have rounded corners. Of course, other shapes and configurations of receiving areas 24, 26, 28 are fully contemplated in accordance with the present invention. These twelve receiving areas 24, 26, 28 are adapted to receive twelve corresponding supports 40, 42, 44 which are integrally molded with lower deck 14, as described below with reference to FIGS. 7 and 9-11.

[0033] As shown in FIG. 8, ribs 46 on the bottom surface 30 of upper deck 12 form an orthogonal pattern which runs parallel and perpendicular to the sides 32, 34, 36, 38 while still other ribs 48 form another orthogonal pattern that is set at 45° to the first pattern. Ribs 46, 48 collectively form interconnected grid-like structures which span the spaces between receiving areas 24, 26, 28. As can be seen in FIG. 8, the bottom surface 30 of upper deck 12 is substantially planar in that receiving areas 24, 26, 28 and ribs 46, 48 generally lie in a common plane.

[0034] In each of the receiving areas 24, 26, 28, there are a number of depending latch members or tabs 50, details of which are best shown in the enlarged view of FIG. 8*a* and the cross-sectional views of FIGS. 10 and 11. Each receiving area 24, 26, 28 includes a plurality of ribs 52, and each latch tab 50 is integrally and rigidly formed with one of the ribs 52 and extends outwardly therefrom at a lower end 54 thereof. Each latch tab 50 preferably has a tapered portion 56

which tapers upwardly and outwardly from the rib lower end 54 and terminates in a generally horizontal shoulder portion 58 which is received by components of the mating support 40, 42, 44 of lower deck 14 as described below. By way of example, in the embodiment shown each corner receiving area 24 and medial receiving area 26 includes eight latch tabs 50, with two latch tabs 50 disposed on each side thereof. Each transverse receiving area 28 includes six latch tabs 50, with two tabs 50 disposed on each of the sides disposed parallel to transverse axis 18 and one tab 50 disposed on each of the sides disposed parallel to longitudinal axis 16. Of course, other numbers and placements of latch tabs 50 within receiving areas 24, 26, 28 may be utilized in practicing the present invention.

[0035] Referring next to FIGS. 7 and 9, lower deck 14 has a footprint which substantially matches that of upper deck 12, but differs substantially in structure. Lower deck 14 includes a generally rectangular perimeter portion 60, an integrally formed longitudinal member or rail 62 joined to the perimeter portion 60 along the left side 32 and right side 34 of pallet 10 and extending along longitudinal axis 16. In addition, two integrally formed transverse members or rails 64 are joined to the perimeter portion 60 along the front side 36 and rear side 38 of pallet 10. Transverse rails 64 are also joined with the longitudinal rail 62 and extend parallel to transverse axis 18 on either side thereof. Together, perimeter portion 60, longitudinal rail 62, and transverse rails 64 define six relatively large openings 66 in lower deck 14. Perimeter portion 60 and rails 62, 64 preferably have beveled edges, and may optionally include apertures formed therein (not shown). The substantial amount of open area strategically placed within lower deck 14 minimizes the amount of material required without compromising structural rigidity.

[0036] As shown in FIGS. 7 and 9, twelve supports 40, 42, 44 corresponding respectively to receiving areas 24, 26, 28 are integrally formed with and project upwardly from a top surface 68 of lower deck 14. Corner supports 40 project from the four corners of perimeter portion 60, medial supports 42 project from each end of longitudinal rail 62, and transverse supports 64 project from the ends and midpoint of each transverse rail 64. In the embodiment depicted herein, corner supports 40 and transverse supports 44 are generally rectangular in cross-section, while medial supports 42 are generally square in cross-section. Supports 40, 42, 44 preferably have smooth, rounded outside surfaces to prevent damage from the forks of a fork lift and, as with recesses 24, 26, 28, can have shapes other than those illustrated herein. With reference to the assembled pallet views of FIGS. 1-2 and 5-6, the areas between supports 40, 42, 44 are fork-receiving regions which are intended to rest on the forks of a fork lift that can engage pallet 10 from any side 32, 34, 36, 38 thereof.

[0037] As best shown in the enlarged view of FIG. 9*a* and the cross-sectional views of FIGS. 10 and 11, each support 40, 42, 44 includes at least one latch receiver 70 extending therefrom. Latch receiver 70 is spring-loaded, having a plurality of spring supports or arms 74 which attach the latch receiver 70 to the support 40, 42, 44. In the embodiment shown herein, each support 40, 42, 44 includes a plurality of ribs 72, and each latch receiver 70 includes two spaced arms 74 attached to one of the ribs 72 at an upper end 76 thereof. Arms 74 are connected by a receiving face or bridge portion 78 disposed therebetween, such that latch receiver 70 has a generally U-shaped appearance. Of course, latch receiver 70 can include any number of spring arms 74 in accordance with the present invention.

[0038] As described below, latch receivers 70 are flexible, leaf springs that are adapted to receive latch tabs 50 of upper deck 12 to form a latch assembly 79 (see FIG. 11), such that engagement of the receiving areas 24, 26, 28 and corresponding supports 40, 42, 44 securely joins the upper and lower decks 12, 14 in an assembled configuration. Advantageously, having two spring supports 74 provides a twice greater holding force compared with a single arm 74 without increasing the stress upon the material. In the embodiment shown herein, corner supports 40 and medial supports 42 each include eight spaced latch receivers 70 and transverse supports 44 each include six spaced latch receivers 70, wherein the placement of latch receivers correspond in position to the placement of latch tabs 50 formed on opposed receiving areas 24, 26, 28.

[0039] In further accordance with the present invention, guide members 80 are provided which at least partially surround each latch receiver 70 (FIGS. 9 and 9*a*). Each guide member 80 includes a wall structure having a first portion 82 extending generally parallel to latch receiver 70 and second portions 84 extending along the sides of latch receiver 70. Guide members 80 located at the corners of pallet 10 additionally include a curved wall 86 which at least partially surrounds two adjacent latch receivers 70 and includes a support rib 87 extending inwardly therefrom at the corner of pallet 10. Referring again to FIG. 8*a*, ribs 52 within each receiving area 24, 26, 28 form compartments 53 which are sized to receive the individual guide members 80, where each compartment 53 preferably houses one latch member 50. Guide members 80 are inset from lower portion 88 of each support 40, 42, 44 for easier insertion into compartments 53 of corresponding receiving areas 24, 26, 28. In addition, guide members 80 are preferably tapered with the lower end 90 of each guide member 80 being wider than the upper end 92 thereof.

[0040] Advantageously, guide members 80 provide locating capability and alignment for engagement of supports 40, 42, 44 with corresponding receiving areas 24, 26, 28 during assembly of the upper and lower decks 12, 14 of pallet 10. Once the upper and lower decks 12, 14 are fully seated in an assembled position, the engagement of guide members 80 with receiving area compartments 53 provides lateral constraint preventing upper and lower decks 12, 14 from transverse movement with respect to one another which could cause the disengagement of the latch tabs 50 and latch receivers 70. The configuration of pallet 10 according to the present invention wherein many guide members 80 are provided to at least partially surround each individual latch receiver 70 greatly improves the lateral stability of the assembled pallet 10. Furthermore, guide members 80 protect the latch assembly 79 (FIG. 11) and limit the relative freedom of movement and reduce the forces that each latch assembly 79 will encounter.

[0041] FIGS. 7, 8*a*, and 10 depict how the two pallet decks 12, 14 are aligned for assembly. In FIGS. 8*a* and 10, corner support 40 and receiving area 24 are shown for exemplary purposes to illustrate the engagement of the upper and lower decks 12, 14, wherein their engagement is

representative of the engagement between other receiving areas 24, 26, 28 and corresponding supports 40, 42, 44.

[0042] With reference now to FIGS. 4*a*, 8*a*, 9*a*, and the cross-sectional views of FIGS. 10-11, bridge portion 78 of latch receiver 70 is adapted to receive shoulder portion 58 of latch tab 50 thereunder. Engagement of receiving area 24 and corresponding support 40 causes tapered portion 56 of latch tab 50 to contact bridge portion 78 and deflect latch receiver 70 outwardly (to the left in FIG. 10) from its resting position. As decks 12, 14 are further advanced toward each other, passage of shoulder portion 58 past bridge portion 78 allows latch receiver 70 to spring inwardly to return to its rest position and securely capture latch tab 50 therewithin (FIGS. 4*a* and 11).

[0043] In operation, therefore, latch receiver 70 acts like a leaf spring. Due to the configuration of latch receiver 70 wherein two arms 74 are attached to each support rib 72, the force required to deflect latch receiver 70 is distributed over a large area, thereby decreasing the stress imparted to the plastic material.

[0044] Engagement of each of the twelve receiving areas 24, 26, 28 and corresponding supports 40, 42, 44 is accomplished simultaneously in the manner described above. Since each engaged receiving area 24, 26, 28 and support 40, 42, 44 includes multiple latch assemblies 79, a very secure connection between upper and lower decks 12, 14 is provided. Additionally, upper deck 12 completely covers the supports 40, 42, 44, thereby preventing debris from collecting therein.

[0045] As shown in FIGS. 2 and 4, the bottom surface 94 of lower deck 14 has several series of reinforcing ribs 96 which provide structural rigidity for the deck 14 and properly distribute the load carried by the upper deck 12 and the supports 40, 42, 44.

[0046] While a rectangular pallet 10 has been illustrated and described in the preferred embodiment, other shapes, e.g., square, are fully capable of embodying the features of the invention. The cross-sectional shapes of the receiving areas 24, 26, 28 and the supports 40, 42, 44 also may vary somewhat from those shown.

[0047] While embodiments of the invention have been illustrated and described, it is not intended that these embodiments illustrate and describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A pallet, comprising:

spaced upper and lower decks;

a plurality of receiving areas formed in one of the upper and lower decks, each receiving area including at least one latch member extending therefrom; and

a plurality of corresponding supports extending from the other of the upper and lower decks, each support including at least one latch receiver extending therefrom, the at least one latch receiver having a plurality of spring arms,

wherein the at least one latch receiver is adapted to receive the at least one latch member such that engagement of the receiving areas and corresponding supports securely joins the upper and lower decks in an assembled configuration.

2. The pallet according to claim 1, wherein the receiving areas are integrally formed within a bottom surface of the upper deck, and the supports are integrally formed with and project upwardly from a top surface of the lower deck.

3. The pallet according to claim 1, wherein each receiving area includes a plurality of ribs, and the at least one latch member extends outwardly from one of the ribs at a lower end thereof.

4. The pallet according to claim 3, wherein the latch member tapers upwardly and outwardly from the lower end of the rib and terminates in a generally horizontal shoulder portion.

5. The pallet according to claim 1, wherein each support includes a plurality of ribs, and the plurality of spring arms includes two arms attached to one of the ribs at an upper end thereof, the arms being connected by a bridge portion which is adapted to receive the shoulder portion of the latch member thereunder.

6. The pallet according to claim 5, wherein the latch receiver is flexible, such that engagement of the receiving areas and corresponding supports causes the latch member to contact the bridge portion and deflect the latch receiver outwardly from its resting position, and passage of the shoulder portion past the bridge portion allows the latch receiver to return to its rest position and securely retain the latch member therewithin.

7. The pallet according to claim 1, further including guide members at least partially surrounding each latch receiver.

8. The pallet according to claim 7, wherein each guide member includes a wall structure having a first portion extending generally parallel to at least one latch receiver and a second portion extending along at least one side of one latch receiver.

9. The pallet according to claim 7, wherein guide members located at the corners of the pallet each include a curved wall which at least partially surrounds two adjacent latch receivers.

10. The pallet according to claim 7, wherein the guide members are tapered with the lower end of each guide member being wider than the upper end thereof.

11. The pallet according to claim 7, wherein each receiving area includes compartments which are sized to receive the individual guide members.

12. The pallet according to claim 11, wherein the at least one latch member is disposed in one of the compartments.

13. The pallet according to claim 1, wherein the pallet is generally rectangular and includes twelve supports and twelve corresponding receiving areas.

14. The pallet according to claim 13, wherein corner supports project from the four corners of the perimeter portion, medial supports project from each end of the longitudinal rail, and transverse supports project from the ends and midpoint of each transverse rail.

15. The pallet according to claim 14, wherein the corner supports and medial supports each include eight spaced latch receivers, and the transverse supports each include six spaced latch receivers.

16. The pallet according to claim 1, wherein the at least one latch receiver is generally U-shaped.

17. A pallet, comprising:

a first deck including a plurality of receiving areas formed therein, each receiving area including at least one latch member extending therefrom; and

a second deck including a plurality of supports extending therefrom, each support including at least one latch receiver extending therefrom, the at least one latch receiver including a plurality of flexible spring supports;

wherein the at least one latch receiver is adapted to receive the at least one latch member such that engagement of the receiving areas and corresponding supports securely joins the first and second decks in an assembled configuration.

18. The pallet according to claim 17, wherein the plurality of flexible spring supports includes two arms, wherein the arms are connected by a receiving face such that the latch receiver is generally U-shaped.

19. The pallet according to claim 18, wherein the at least one latch member includes a generally horizontal shoulder portion adapted to be received by the receiving face of the at least one latch receiver.

20. The pallet according to claim 19, wherein engagement of the receiving areas and the corresponding supports causes the at least one latch member to contact the receiving face and deflect the at least one latch receiver outwardly from its resting position, and passage of the shoulder portion past the receiving face allows the at least one latch receiver to return to its rest position and securely retain the at least one latch member therewithin.

21. The pallet according to claim 17, further including guide members at least partially surrounding each latch receiver.

22. The pallet according to claim 21, wherein each receiving area includes compartments which are sized to receive the individual guide members.

23. A two-piece plastic pallet, comprising:

a first deck including a plurality of receiving areas formed in a first mating surface, wherein each receiving area includes a plurality of outwardly projecting latch tabs; and

a second deck including a plurality of supports formed in a second mating surface, each support including a plurality of projecting latch receivers and guide wall structures that at least partially surround each latch receiver,

wherein the latch receivers are adapted to receive the latch tabs such that engagement of the receiving areas and corresponding supports securely joins the first and second decks in an assembled configuration, and engagement of the guide wall structures with the receiving areas provides lateral stability for the assembled first and second decks.

24. The pallet according to claim 23, wherein each receiving area includes a plurality of ribs, and the latch tabs taper upwardly and outwardly from lower ends of the ribs and terminate in generally horizontal shoulder portions.

25. The pallet according to claim 24, wherein each support includes a plurality of ribs, and the latch receivers each include two arms attached to one of the ribs at an upper end thereof, the arms being connected by a bridge portion such that each latch receiver has a generally U-shaped appearance, wherein the bridge portion is adapted to receive the shoulder portion of the latch tab thereunder.

26. The pallet according to claim 25, wherein the latch receiver is flexible, such that engagement of the receiving areas and corresponding supports causes the latch tab to contact the bridge portion and deflect the latch receiver outwardly from its resting position, and passage of the shoulder portion past the bridge portion allows the latch receiver to return to its rest position and securely retain the latch tab therewithin.

27. The pallet according to claim 23, wherein the guide wall structures are tapered with the lower end of each guide wall structure being wider than the upper end thereof, and wherein each receiving area includes a plurality of compartments which are sized to receive the individual guide wall structures.

28. The pallet according to claim 23, wherein the pallet is generally rectangular and includes twelve supports and twelve corresponding receiving areas, the second deck having a perimeter portion and cross rails connected thereto to define large openings in the second deck, the cross rails including a longitudinal rail joined to the perimeter portion and extending along a longitudinal axis of the pallet, and two transverse rails joined to the perimeter portion and the longitudinal rail and extending parallel to a transverse axis of the pallet, wherein corner supports project from the four corners of the perimeter portion, medial supports project from each end of the longitudinal rail, and transverse supports project from the ends and midpoint of each transverse rail.

29. In a pallet comprising upper and lower decks spaced apart by a plurality of supports, wherein the supports project upwardly from the lower deck and are adapted to be received in receiving areas formed in a bottom surface of the upper deck, a latch assembly for securely joining the upper and lower decks in an assembled configuration, the latch assembly comprising:

at least one latch member disposed within each receiving area, the latch members each including a generally horizontal shoulder portion which tapers downwardly and inwardly toward a bottom surface of the receiving area; and

at least one flexible latch receiver extending upwardly from each support, the latch receivers each having a plurality of spring arms connected to the support and a receiving face attached to the arms, wherein the receiving face is adapted to receive the shoulder portion of the latch member thereunder,

wherein engagement of the receiving areas and corresponding supports causes the latch member to contact the receiving face and deflect the latch receiver outwardly from its resting position, and passage of the shoulder portion past the receiving face allows the latch receiver to return to its rest position and securely retain the latch member therewithin, thereby securing the upper and lower decks in the assembled configuration.

30. The latch assembly according to claim 29, further including guide members at least partially surrounding each latch receiver.

31. The latch assembly according to claim 30, wherein each guide member includes a wall structure having a first portion extending generally parallel to at least one latch receiver and a second portion extending along at least one side of one latch receiver.

32. The latch assembly according to claim 30, wherein the guide members are tapered with the lower end of each guide member being wider than the upper end thereof.

33. The latch assembly according to claim 32, wherein the individual guide members are adapted to be received in corresponding compartments formed in each receiving area to provide lateral stability for the assembled upper and lower decks.

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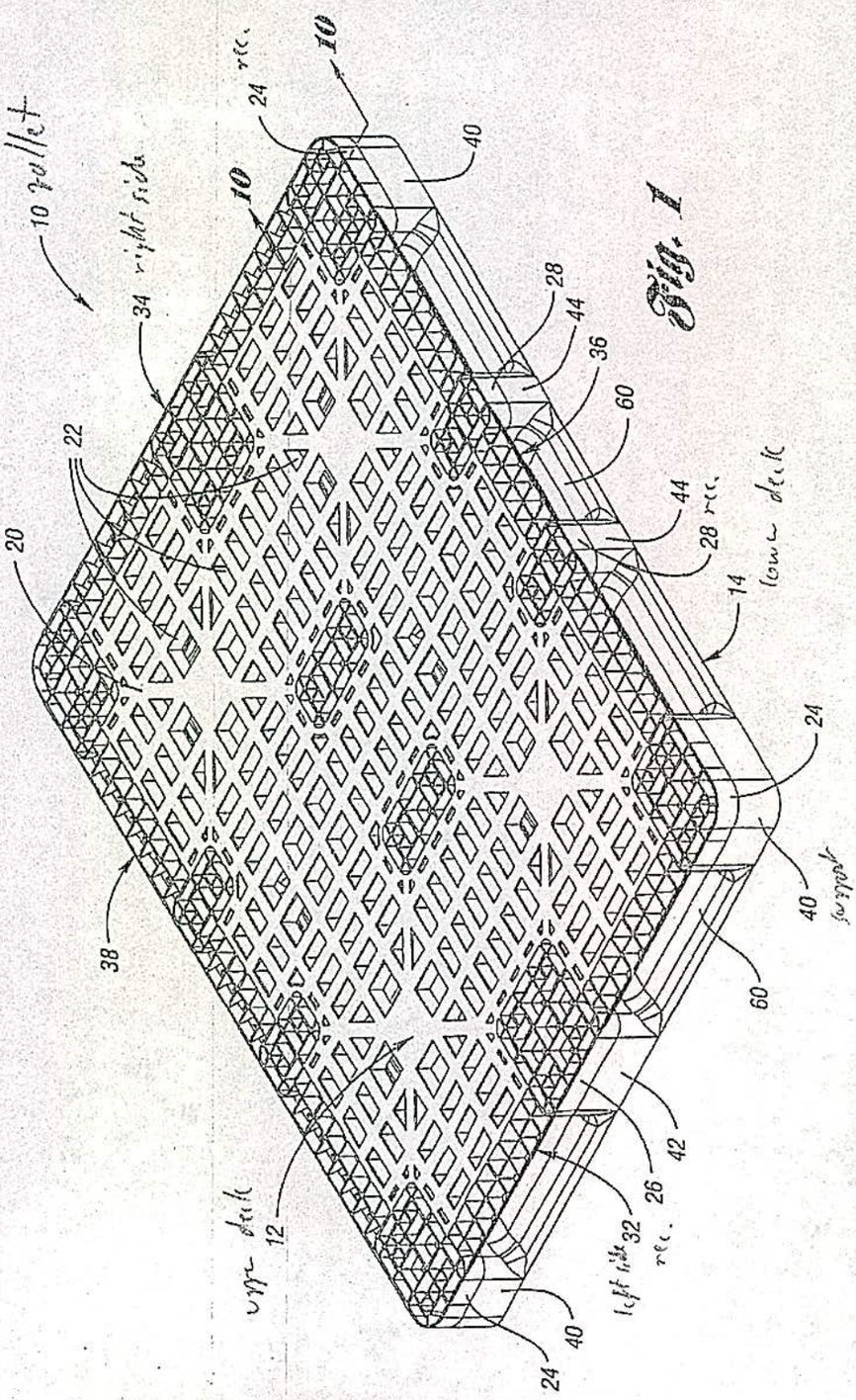


Fig. 1

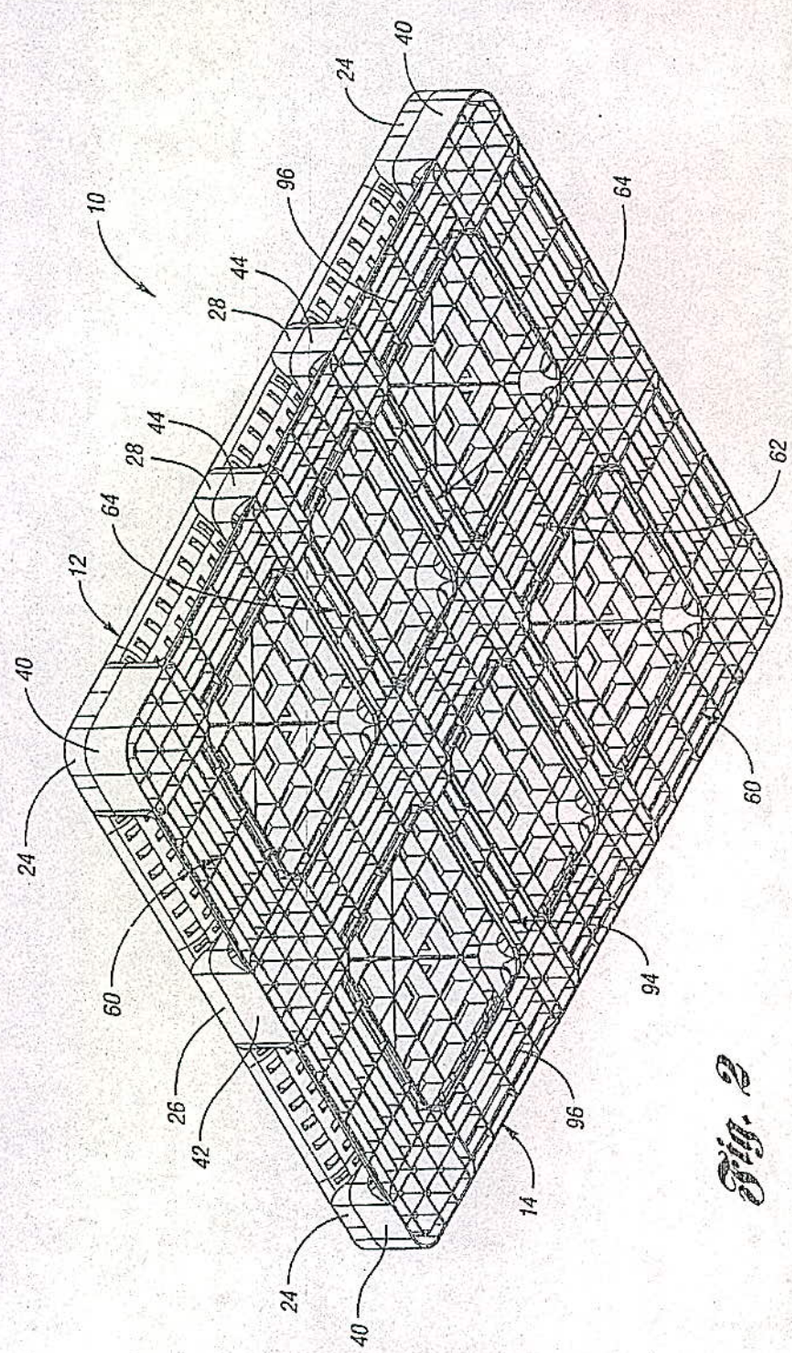


Fig. 2

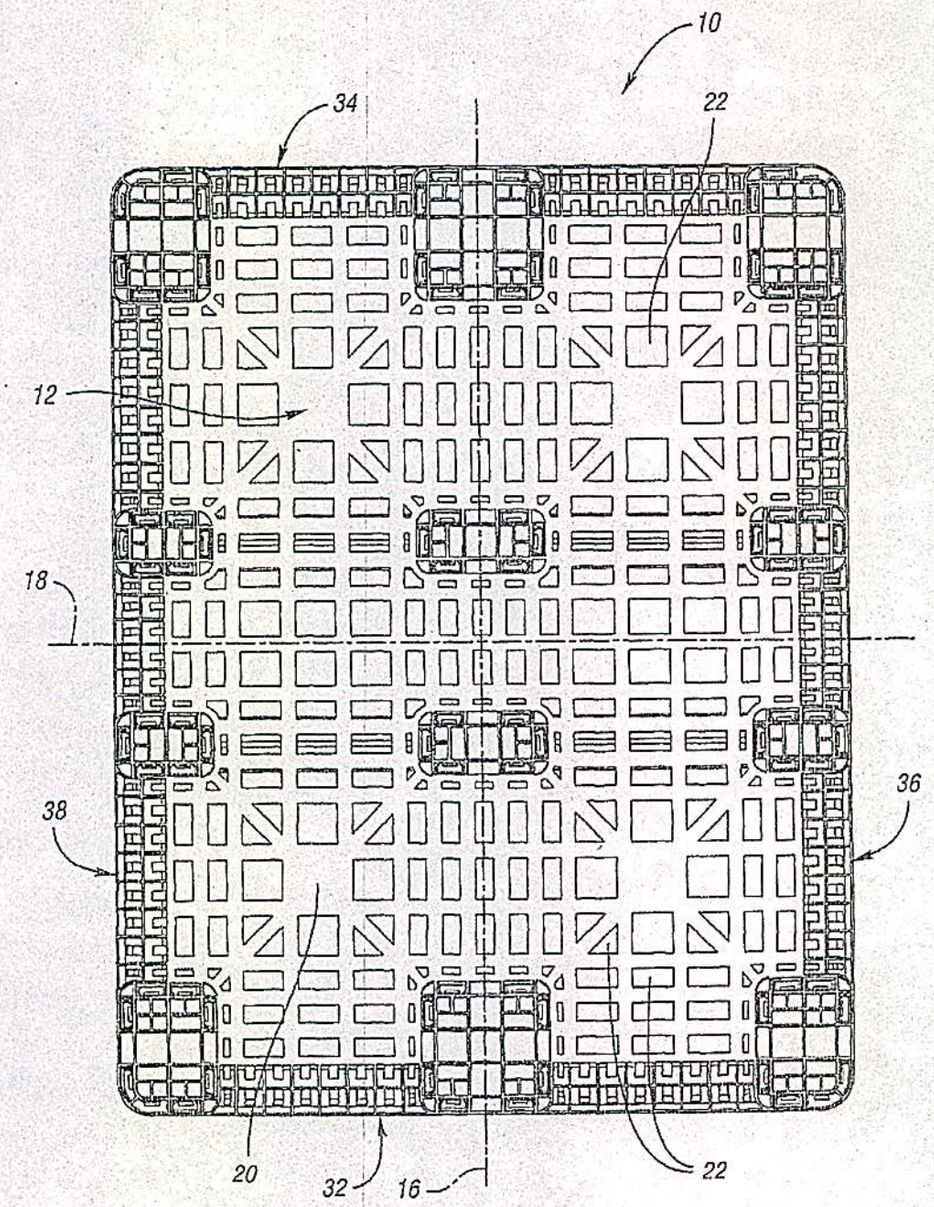


Fig. 3

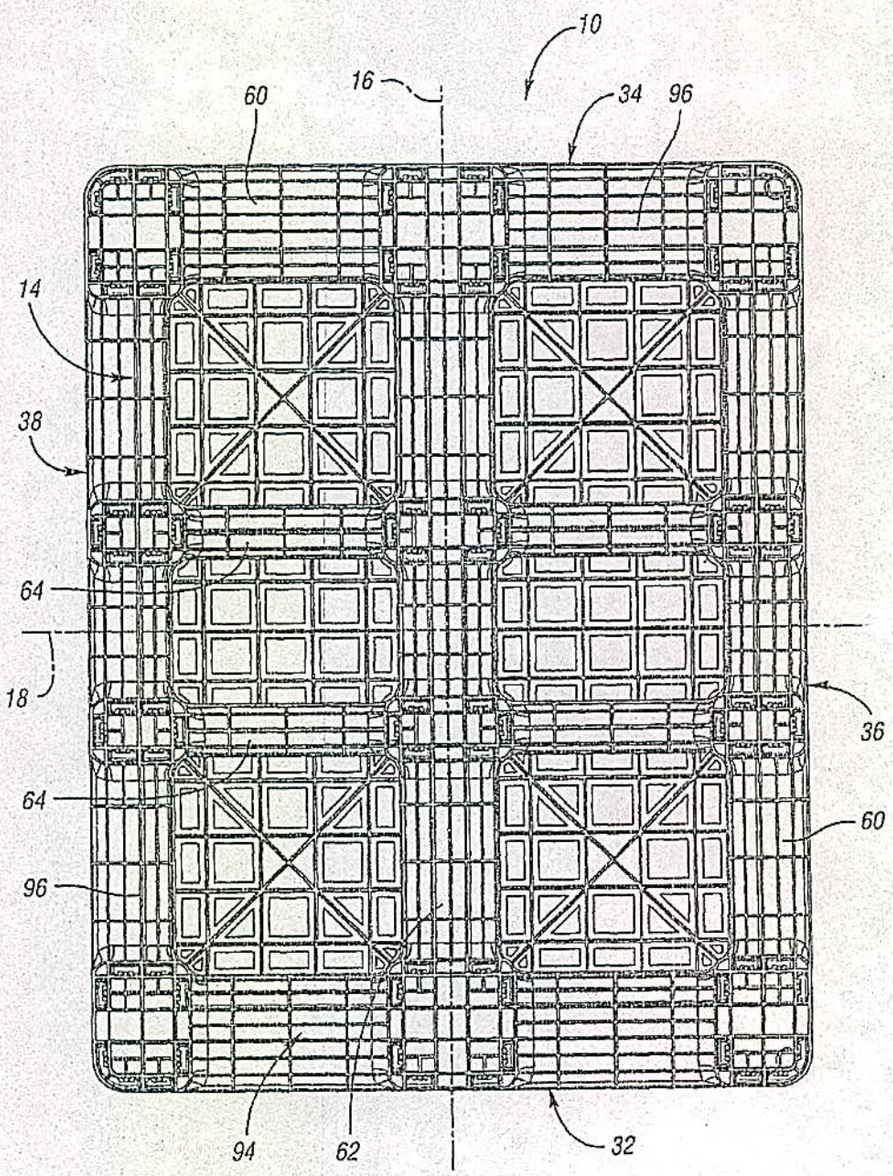


Fig. 4

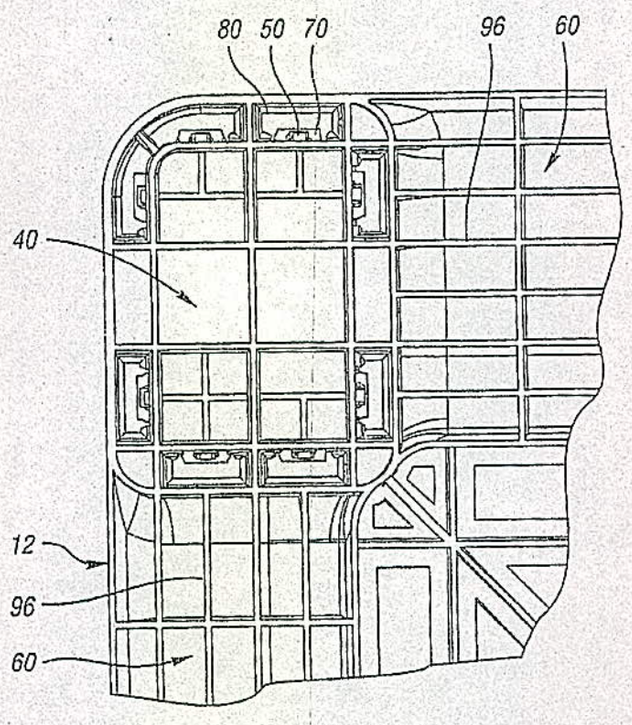


Fig. 4a

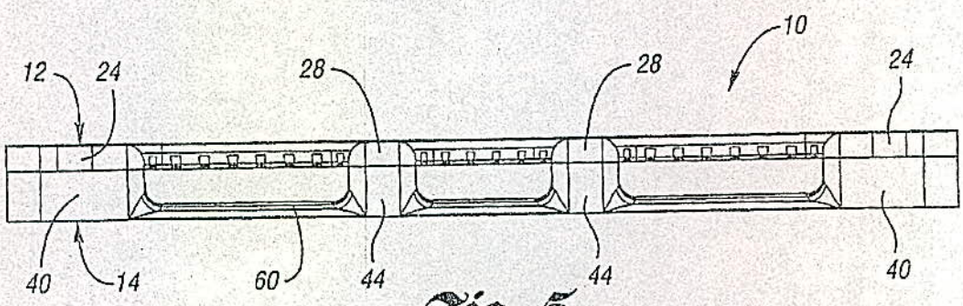


Fig. 5

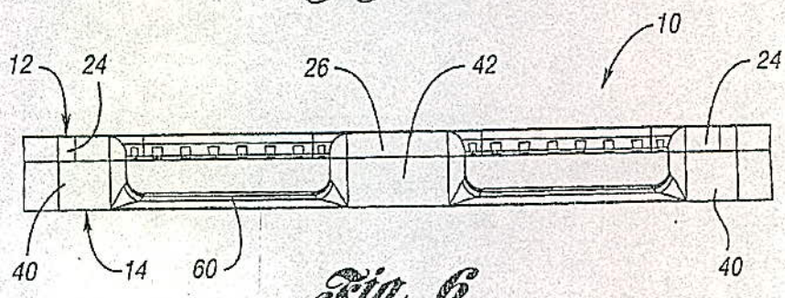


Fig. 6

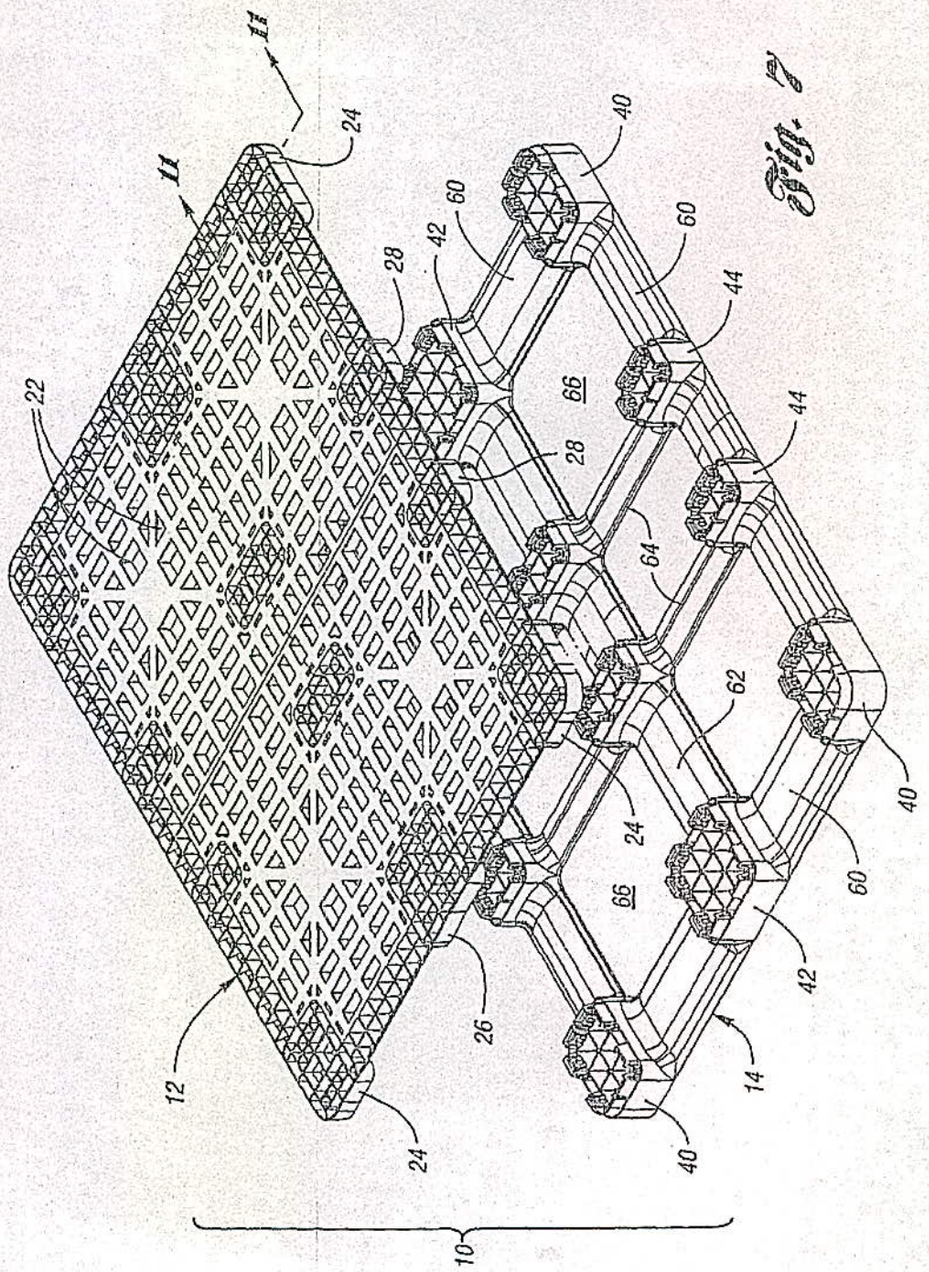

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Fig. 6

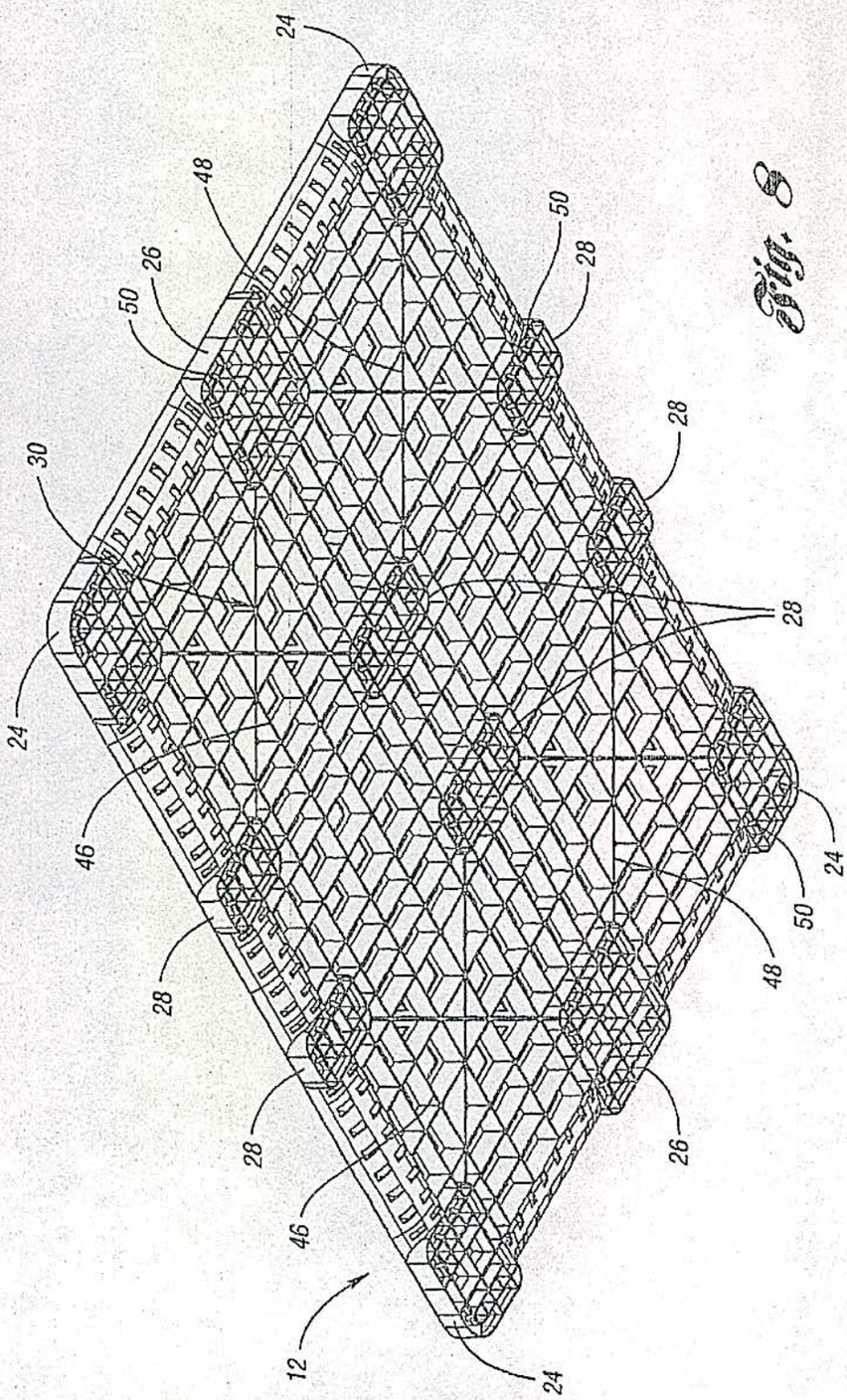


Fig. 8

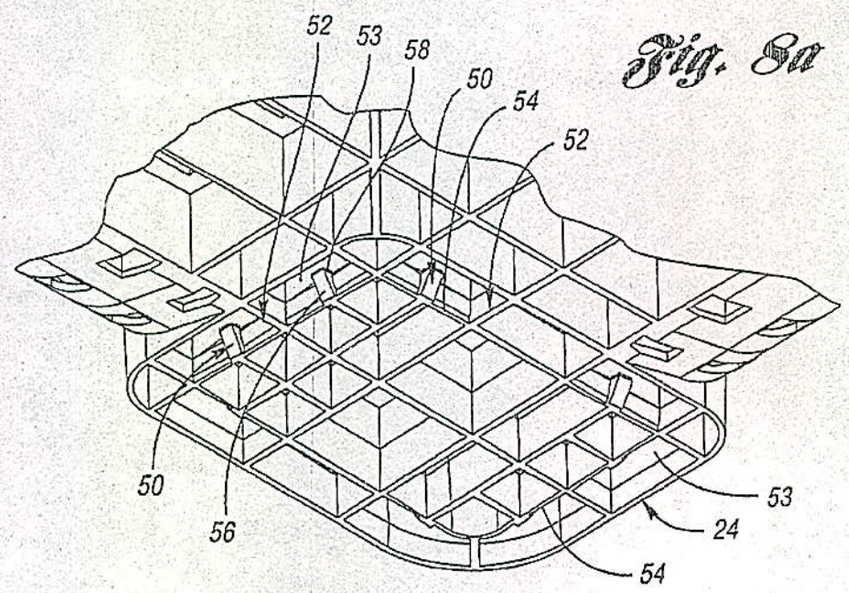

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Fig. 8a

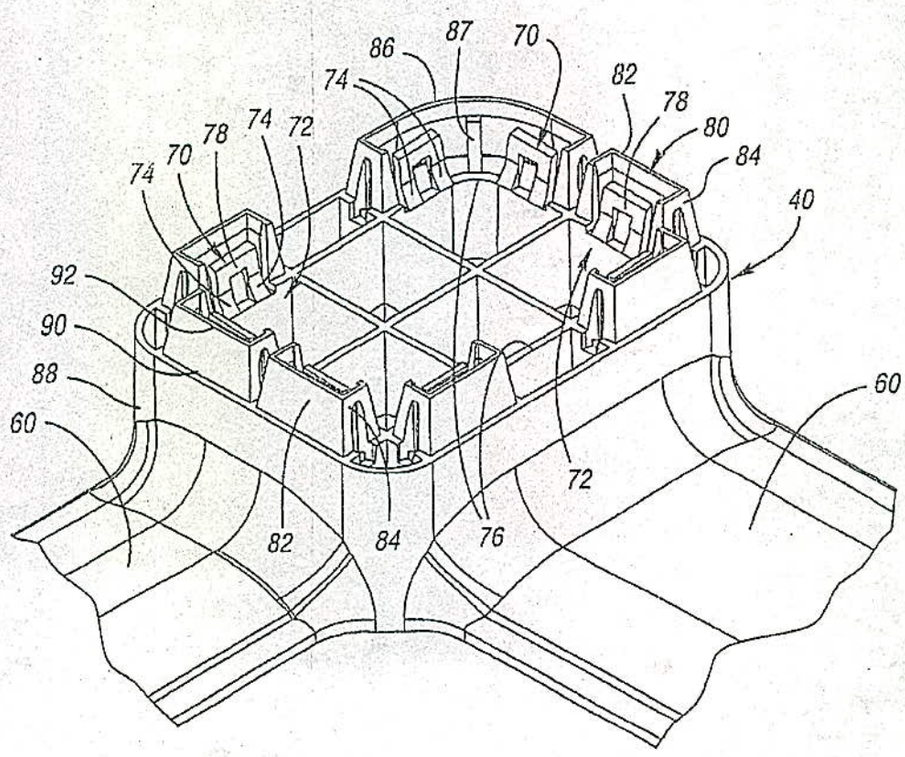

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Fig. 8b

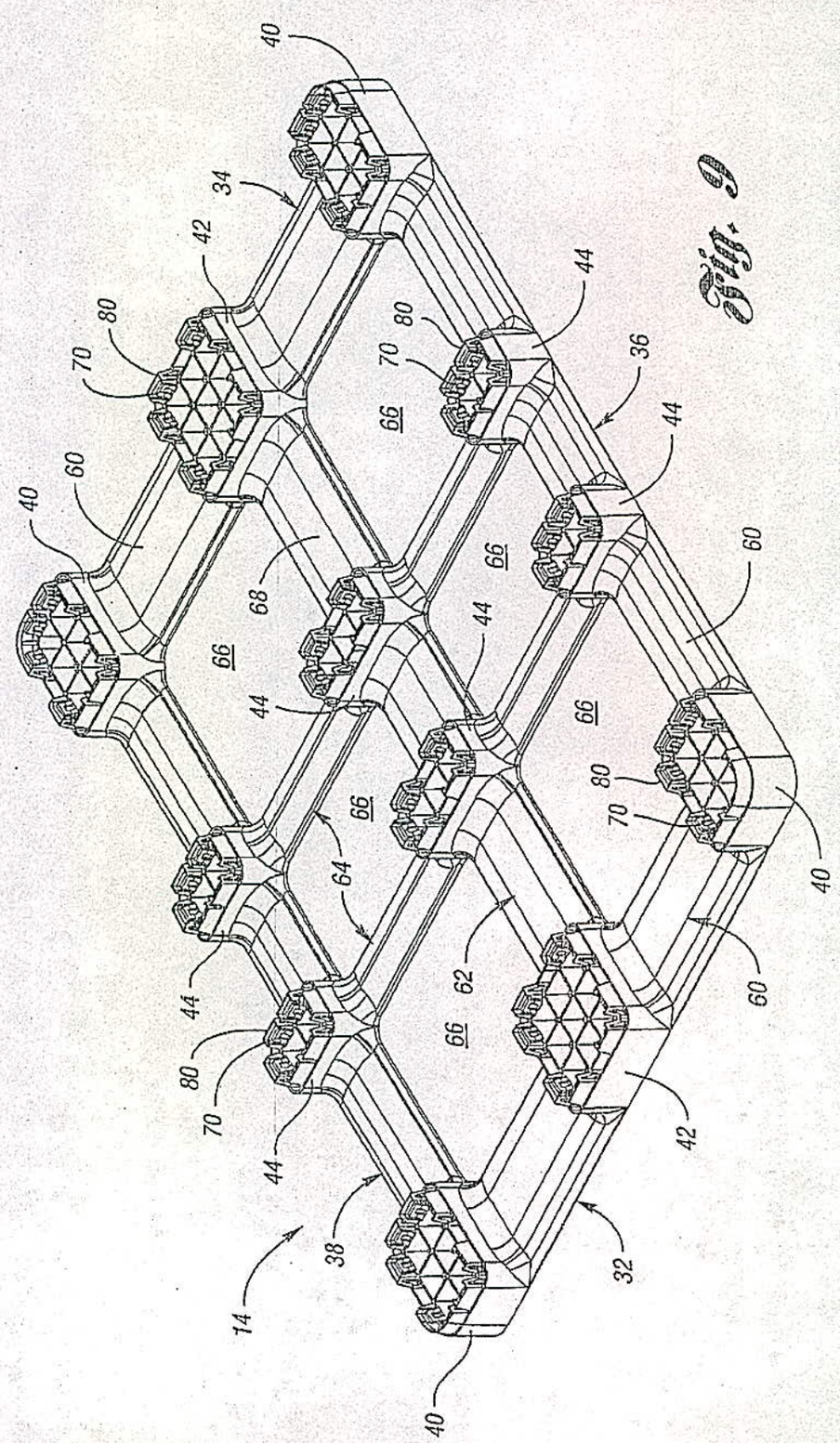


Fig. 9

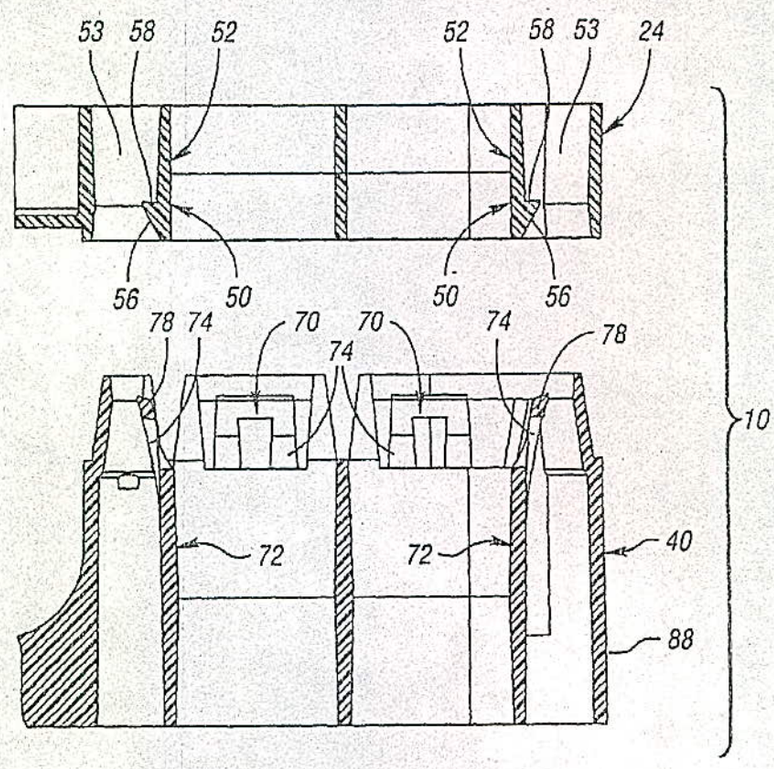

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Fig. 10

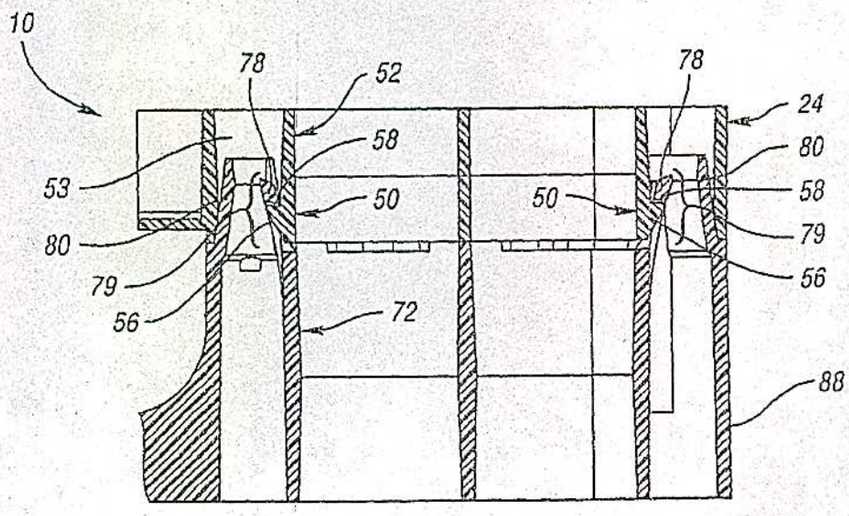

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Fig. 11

ANEXO C

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D3

US 20080236454A1

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(54) PLASTIC PALLET WITH SLEEVED REINFORCING RODS AND ASSOCIATED METHOD FOR MAKING THE SAME

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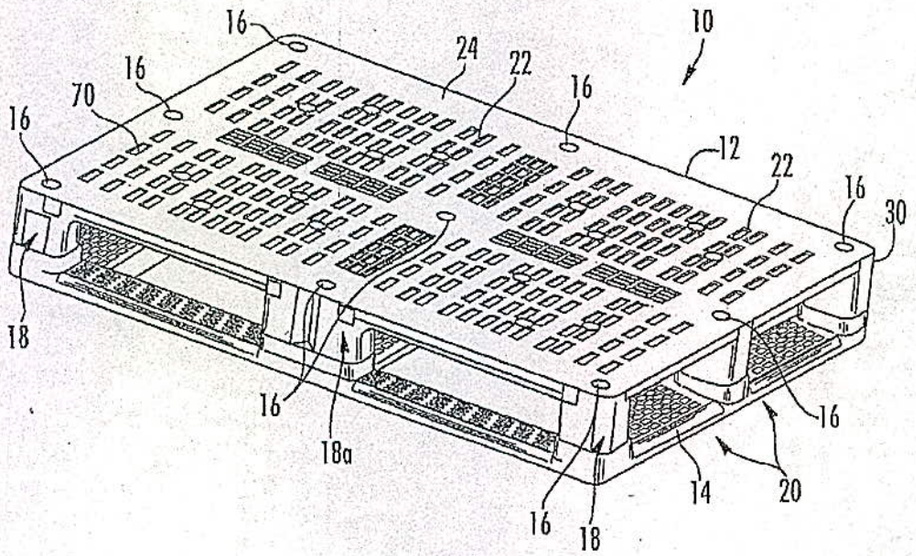
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B65D 19/18	(2006.01)
F16B 19/00	(2006.01)
B23P 19/04	(2006.01)

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(57) ABSTRACT

A pallet includes an upper and lower deck. The upper deck includes first joining members that project downwardly from the upper deck, with each first joining member including an outer sleeve. The lower deck includes second joining members that project upwardly from the lower deck, with second joining member including an inner sleeve. At least one of the upper and lower decks includes channels between top and bottom surfaces thereof, with each channel extending from a side edge to an opposing side edge of the corresponding deck. Sleeved reinforcing rods are in the channels. Each sleeved reinforcing rod includes a reinforcing rod having opposing ends and side surfaces therebetween, and a sleeve enclosing the side surfaces of the reinforcing rod, with there being relative movement between the sleeve and the reinforcing rod. The inner sleeves of the second joining members receive the outer sleeves of the first joining members to define a plurality of support blocks joining the upper and lower decks.



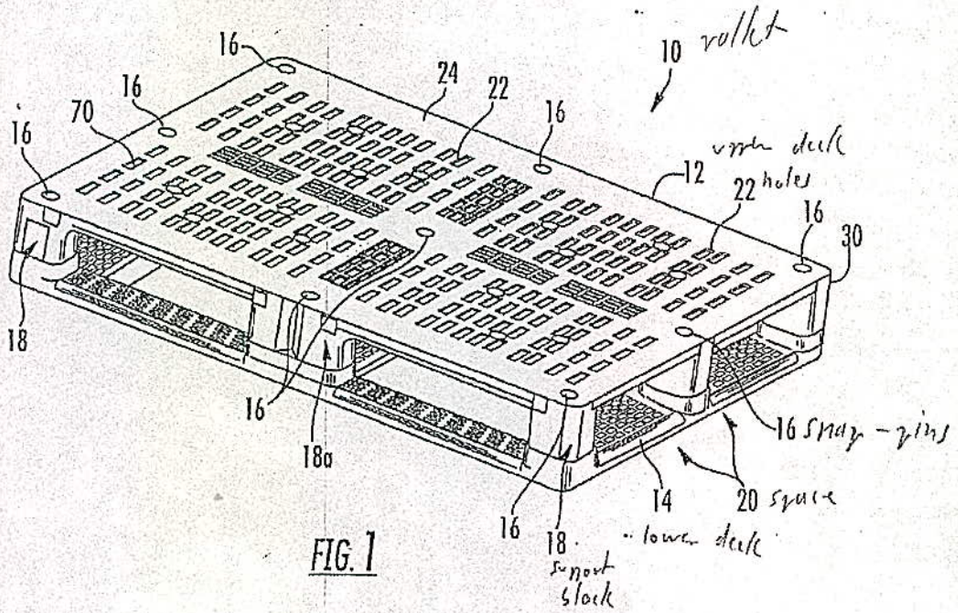


FIG. 1

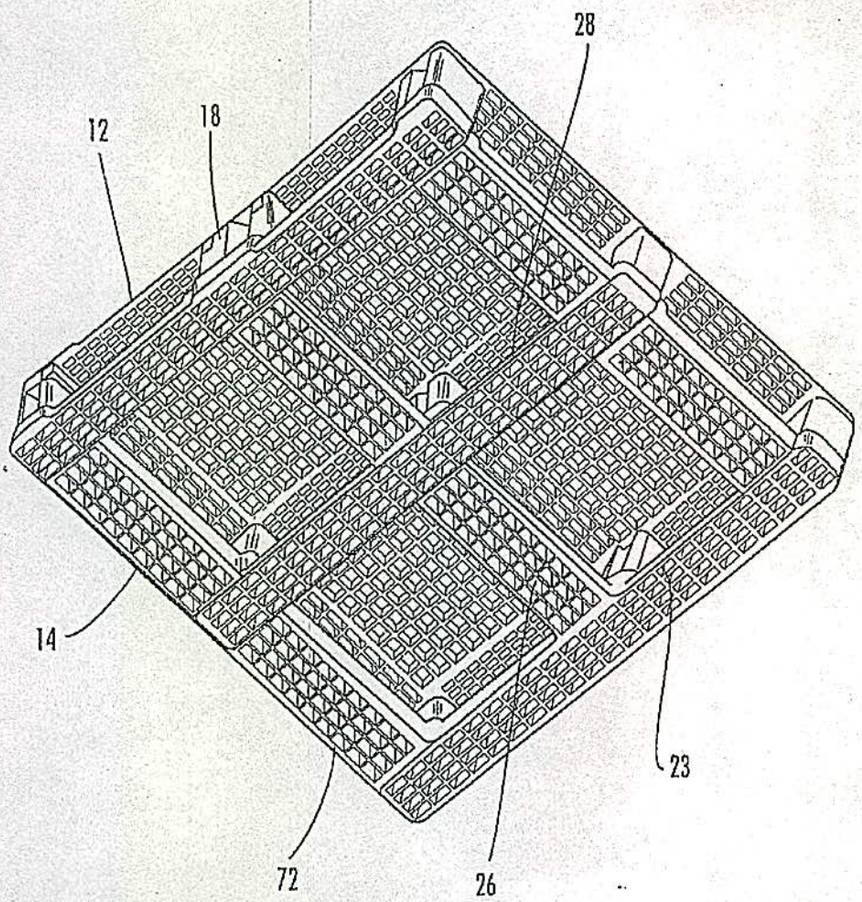


FIG. 2

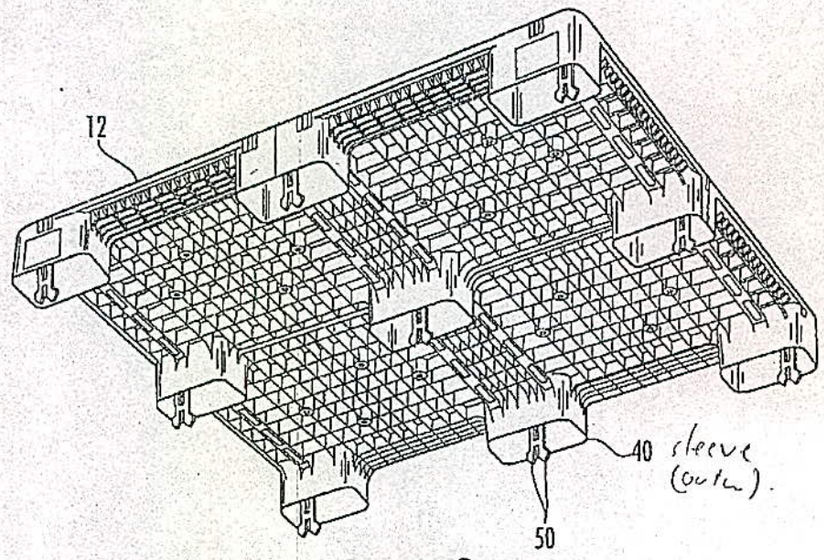


FIG. 3

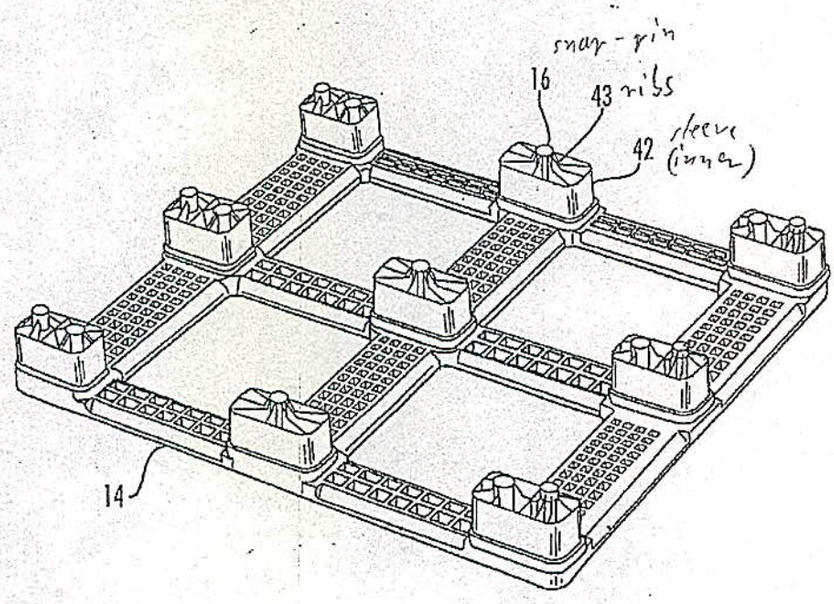


FIG. 4

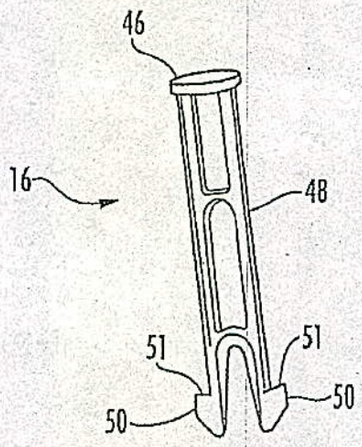


FIG. 5

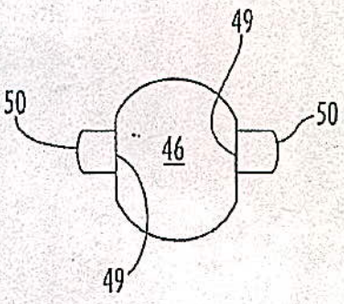


FIG. 6

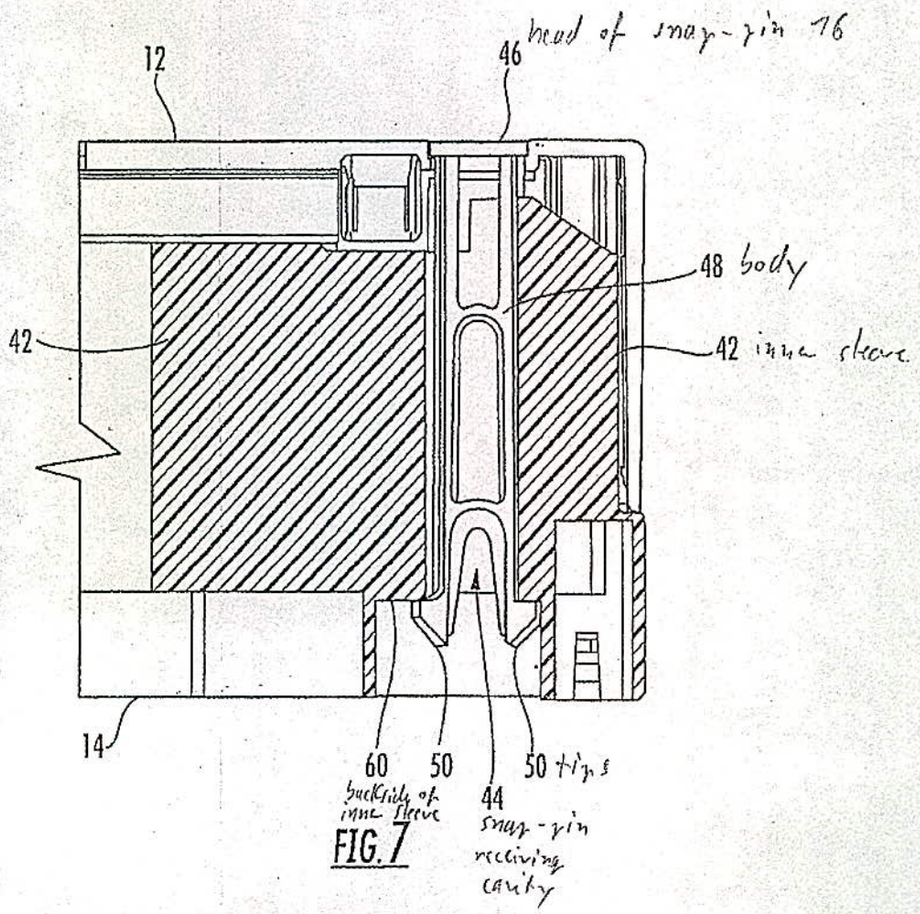


FIG. 7

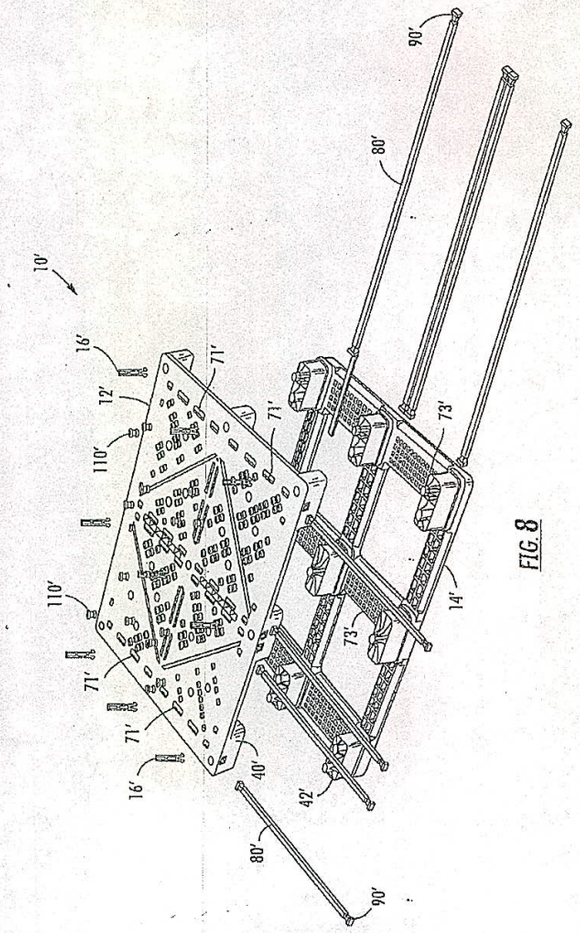


FIG. 8

FIG. 9

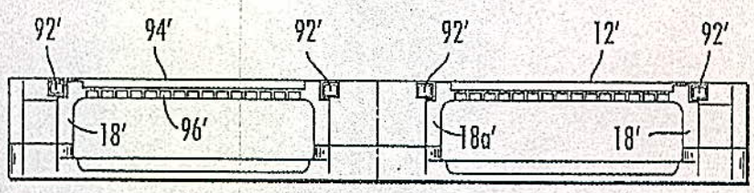


FIG. 10

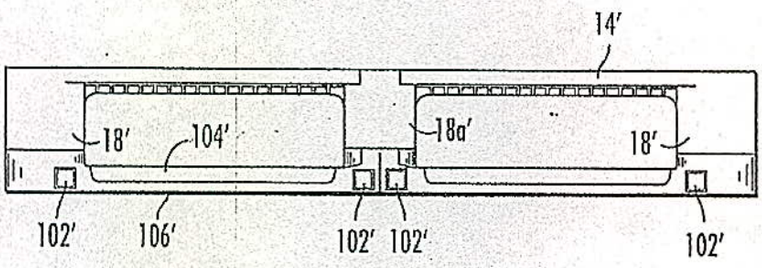


FIG. 11

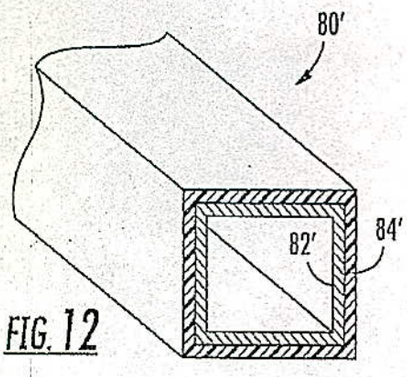


FIG. 12

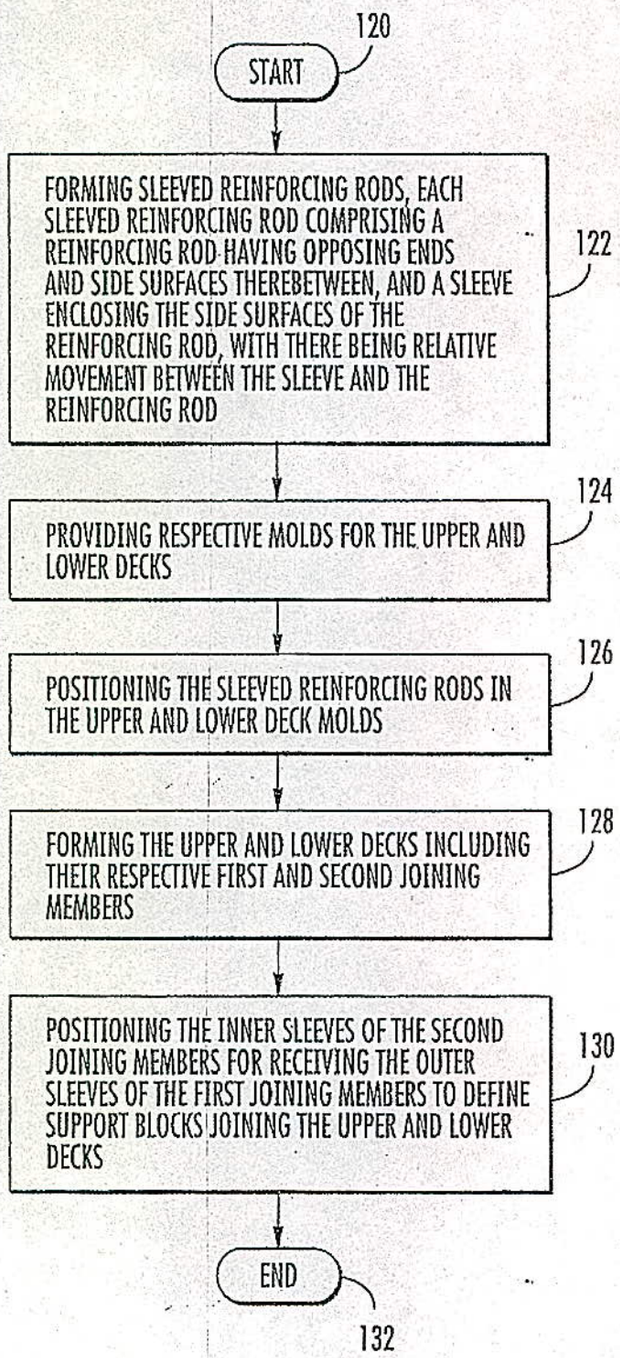

120
START
FORMING SLEEVED REINFORCING RODS, EACH SLEEVED REINFORCING ROD COMPRISING A REINFORCING ROD HAVING OPPOSING ENDS AND SIDE SURFACES THEREBETWEEN, AND A SLEEVE ENCLOSING THE SIDE SURFACES OF THE REINFORCING ROD, WITH THERE BEING RELATIVE MOVEMENT BETWEEN THE SLEEVE AND THE REINFORCING ROD
122
PROVIDING RESPECTIVE MOLDS FOR THE UPPER AND LOWER DECKS
124
POSITIONING THE SLEEVED REINFORCING RODS IN THE UPPER AND LOWER DECK MOLDS
126
FORMING THE UPPER AND LOWER DECKS INCLUDING THEIR RESPECTIVE FIRST AND SECOND JOINING MEMBERS
128
POSITIONING THE INNER SLEEVES OF THE SECOND JOINING MEMBERS FOR RECEIVING THE OUTER SLEEVES OF THE FIRST JOINING MEMBERS TO DEFINE SUPPORT BLOCKS JOINING THE UPPER AND LOWER DECKS
130
END
132

FIG. 13

PLASTIC PALLET WITH SLEEVED REINFORCING RODS AND ASSOCIATED METHOD FOR MAKING THE SAME

RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Application 60/909,094 filed Mar. 30, 2007, the entire contents of which are incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to the field of pallets useful in material handling, and more particularly, to a multi-piece plastic pallet designed for use with forklift equipment.

BACKGROUND OF THE INVENTION

[0003] Pallets are customarily used to transport and store goods. A pallet typically includes an upper deck and a lower deck separated by support blocks. Pallets have traditionally been formed of wood. While advantageous in terms of cost, wood pallets have many disadvantages. For example, they are subject to breakage and are therefore reusable only over a short period of time. Wooden pallets are also difficult to maintain in a sanitary condition, thereby limiting their usability in applications where sanitation is important, such as in food handling applications.

[0004] With the growth of the plastics industry a wide variety of plastics have been investigated to determine their suitability for use in producing pallets. Plastic pallets can easily be molded and are stronger and lighter weight than wooden pallets. They can also be made with recyclable materials. Furthermore, plastic pallets are more durable than wooden pallets.

[0005] To increase the durability of plastic pallets, reinforcing elements or rods have been used. For example, U.S. Pat. No. 6,199,488 discloses a reinforced plastic pallet comprising an upper deck formed of a plastic material having a first coefficient of thermal expansion, and a lower deck formed of a plastic material having substantially the first coefficient of thermal expansion. The lower deck includes a plurality of channels formed in its upper surface, and a plurality of reinforcing elements having a second coefficient of thermal expansion different from the first degree of expansion are in the plurality of channels. The channels are provided with retainers to retain the reinforcing elements therein.

[0006] U.S. Pat. No. 5,868,080 discloses a reinforced plastic pallet with reinforcing rods. At least some of the reinforcing rods have an exposed surface at a top surface of the pallet. In addition to functioning as a reinforcing member, the exposed surfaces of the reinforcing rods comprise an anti-skid surface for maintaining positioning of a payload on the pallet.

[0007] Yet another approach to increase the durability of plastic pallets is disclosed in U.S. Pat. No. 4,735,154. The '154 patent provides a reinforced loading pallet comprising two essentially rectangular matching panels one superposed over the other, with each panel having a rigid frame including ties equipped with hollow, polygonal feet arranged at four outer corners of the frame. At least some of the ties in at least one of the frames are provided with channels, with at least some of the channels intersecting in a single plane. Rods are inserted into the channels for reinforcing the pallet.

[0008] While plastic pallets offer several advantages over wood pallets, there is still a demand to increase durability and strength of plastic pallets.

SUMMARY OF THE INVENTION

[0009] In view of the foregoing background, an object of the present invention is to increase the durability of plastic pallets.

[0010] This and other objects, advantages and features in accordance with the present invention are to provide a plastic pallet comprising an upper and lower deck. A plurality of first joining members may project downwardly from the upper deck, with each first joining member including an outer sleeve. A plurality of second joining members may project upwardly from the lower deck, with each second joining member including an inner sleeve. At least one of the upper and lower decks may include a plurality of channels between top and bottom surfaces thereof, with each channel extending from a side edge to an opposing side edge of the corresponding deck.

[0011] A plurality of sleeved reinforcing rods may be in the plurality of channels. Each sleeved reinforcing rod may comprise a reinforcing rod having opposing ends and side surfaces therebetween, and a sleeve enclosing the side surfaces of the reinforcing rod. There is preferably relative movement between the sleeve and the reinforcing rod. The inner sleeves of the second joining may members receive the outer sleeves of the first joining members to define support blocks joining the upper and lower decks.

[0012] The channels may be in the lower deck only, in the upper deck only, or in both the upper and lower decks. When the sleeved reinforcing rods are in both decks, the sleeved reinforcing rods in the upper deck may be orthogonal to the sleeved reinforcing rods in the lower deck. All of the sleeved reinforcing rods in a same deck may be co-planar and parallel to one another.

[0013] The sleeved reinforcing rods are inserted into upper and/or lower deck molds before the upper and lower decks are formed. The sleeved reinforcing rods are thus insert molded. Plastic pallet manufacturers typically add reinforcing rods to a pallet after the pallet is formed. This requires the pallet to be molded first, and then add the reinforcing rods. In accordance with the present invention, the sleeved reinforcing rods are inserted into the pallet mold.

[0014] The plastic of the sleeve may have a melting point that is slightly higher than the melting point of the plastic used to form the upper and lower decks. As a result, the outside surface of the sleeves will partially melt or bond to the plastic of the upper and lower decks while still allowing movement of the reinforcing rods therein. Alternatively, the melting point of the sleeve may be the same as the melting point of the upper and lower decks, but cooling characteristics of the molten plastic during manufacturing may still result in the outside surface of the sleeves partially melting or bonding to the plastic of the upper and lower decks layers without melting down to the reinforcing rods.

[0015] Each reinforcing rod may be hollow so that an opening extends between the opposing open ends thereof. The plastic pallet may further comprise a plurality of end caps inserted into the open ends of the reinforcing rods. Each reinforcing rod may comprise fluorine-containing polymers to assist with the relative movement with its sleeve.

[0016] The upper deck may further include a plurality of snap-pin openings, with each outer sleeve projecting down-

wardly from the upper deck surrounding a respective snap-pin opening. Each second joining member projecting upwardly from the lower deck may include a snap-pin receiving cavity positioned therein. Snap-pins may be inserted may be into the snap-pin openings in the upper deck, with each snap-pin extending through the snap-pin receiving cavity for engaging a backside of the inner sleeve associated therewith.

[0017] Another aspect is directed to a method for making a pallet as described above. The method may comprise forming a plurality of sleeved reinforcing rods, with each sleeved reinforcing rod comprising a reinforcing rod having opposing ends and side surfaces therebetween, and a sleeve enclosing the side surfaces of the reinforcing rod. There is relative movement between the sleeve and the reinforcing rod. The method may further comprise providing respective molds for the upper and lower decks, and positioning the sleeved reinforcing rods in the respective decks. The upper and lower decks including their respective first and second joining members are formed. The inner sleeves of the second joining members may be positioned for receiving the outer sleeves of the first joining members to define the support blocks joining the upper and lower decks.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] FIG. 1 is a top perspective view of an assembled pallet in accordance with the present invention.

[0019] FIG. 2 is a bottom perspective view of the pallet shown in FIG. 1.

[0020] FIG. 3 is a bottom perspective view of the upper deck of the pallet shown in FIG. 1.

[0021] FIG. 4 is a top perspective view of the lower deck of the pallet shown in FIG. 1.

[0022] FIG. 5 is a perspective view of a snap-pin used within each support block in accordance with the present invention.

[0023] FIG. 6 is a top view of the snap-pin shown in FIG. 5.

[0024] FIG. 7 is a partial cross-sectional side view of a pallet illustrating a snap-pin within a support block in accordance with the present invention.

[0025] FIG. 8 is a perspective view of the pallet unassembled in accordance with the present invention.

[0026] FIG. 9 is a perspective view of the pallet shown in FIG. 8 assembled.

[0027] FIG. 10 is a side view of the pallet illustrating positioning of the channels in the upper deck in accordance with the present invention.

[0028] FIG. 11 is a side view of the pallet illustrating positioning of the channels in the lower upper deck in accordance with the present invention.

[0029] FIG. 12 is a cross-sectional view of a sleeved reinforcing rod in accordance with the present invention.

[0030] FIG. 13 is a flow chart illustrating a method for making a pallet in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0031] The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout, and prime notation is used to indicate similar elements in alternative embodiments.

[0032] FIGS. 1-4 illustrate top and bottom perspective views of a pallet 10 having upper and lower decks 12, 14 that are held together using snap-pins 16. The upper deck 12 is also known as the cargo layer, and the lower deck 14 is also known as the base layer.

[0033] The upper deck 12 includes a plurality of first joining members that project downwardly from the upper deck, with each first joining member including an outer sleeve 40. The lower deck 14 includes a plurality of second joining members that project upwardly from the lower deck, with each second joining member including an inner sleeve 42. The inner sleeves 42 of the second joining members receive the outer sleeves 40 of the first joining members to define support blocks 18, 18*a* joining the upper and lower decks 12, 14.

[0034] The support blocks 18, 18*a* define a space 20 between the upper and lower decks 12, 14 for receiving at least one lifting member, such as a tine of a pallet jack. An advantage of the snap-pins 16 is that they act as fusible links in the event a separation force is applied between the upper and lower decks 12, 14 of the pallet 10. This separation force may result when the wheels of the pallet jack are resting on the lower layer 14, and the tines extending from the pallet jack are lifted upwards. This causes the upper deck 12 to become separated from the support blocks 18, 18*a*. The tabs 50 on the fusible links 16 will snap or break when the separation force becomes too excessive. Consequently, instead of replacing the entire upper deck 12, the snap-pins 16 with the broken tabs 50 are replaced.

[0035] As will be discussed in greater detail below, the support blocks 18, 18*a* are formed by the outer and inner sleeves 40, 42 extending from the respective upper and lower decks 12, 14. The outer and inner sleeves 40, 42 are molded as part of their respective upper and lower decks 12, 14. However, the upper and lower decks 12, 14 are separately molded.

[0036] The upper deck 12 includes a generally flat, planar surface having a plurality of holes 22 extending therethrough. Likewise, the lower deck 14 includes a generally flat, planar surface having a plurality of holes 23 extending therethrough. The holes 22, 23 provide several benefits including a reduced surface area of the upper and lower decks 12, 14, increased air circulation for items placed on the upper deck, and a reduced weight of the pallet, for example. An example plastic pallet with upper and lower decks is disclosed in U.S. published patent application number 2007/0256609. This patent is assigned to the current assignee of the present invention, and is incorporated herein by reference in its entirety.

[0037] The upper deck 12 may include an outer perimeter 24 of the planar surface that does not include any holes 12. This area may be about 3 to 5 inches wide, for example. The lower deck 14 has a perimeter shape that substantially matches the perimeter shape of the upper deck 12. The lower deck 14 may include a rectangular perimeter shape having cross members 26, 28 that intersect a center portion of each side of the rectangular perimeter, midway between the corners of the pallet 10.

[0038] The upper and lower decks 12, 14 may be molded from thermoplastic or other polymer materials, including high density polyethylene (HDPE), polypropylene (PP), among other polymer materials. As may be appreciated by

those skilled in the art, the polymer materials may be filled or unfilled and/or may include particulate or fibrous, natural or synthetic materials, among other features. For example, unfilled HDPE may provide improved impact strength, PP having strengtheners (i.e., long glass fibers) may provide improved structural properties, and unfilled PP with random copolymers may provide improved reinforcement qualities.

[0039] The upper and lower decks 12, 14 may be molded from different thermoplastics or polymer materials. For example, the upper deck 12 may be molded from a first type of thermoplastic or polymer material, while the lower deck 12 may be molded from a second type of thermoplastic or polymer material. According to alternative embodiments, all or a portion of the upper and lower decks 12, 14 may be constructed from materials other than plastic, such as wood and/or metal, for example.

[0040] The illustrated pallet 10 is substantially square-shaped. An example size of the pallet 10 is 48 inches by 48 inches, for example. As readily appreciated by those skilled in the art, the pallet 10 may also be formed with other rectangular shapes, such as 40 inches by 48 inches, for example. The pallet 10 may include rounded corners/edges 30 along the perimeter thereof. Rounded corners/edges 30 help to reduce and/or deflect damage during impact with the tines of a forklift, as well as providing an improved aesthetic appearance.

[0041] The illustrated pallet 10 includes a plurality of support blocks 18, 18*a* that are provided to join the upper and lower decks 12, 14 together as well as providing separation so that the tines of a pallet jack can be inserted therebetween. For example, the illustrated pallet 10 includes nine support blocks 18, 18*a* that are located at the corners of the pallet, as well as between the corners of the pallet along the outer edges of the pallet. A support block 18*a* is also provided in a center of the pallet 10 at the intersection of cross members 26, 28 in the lower deck 14.

[0042] Each support block 18, 18*a* is defined by an outer sleeve 40 projecting downwardly from the upper deck 12 and an inner sleeve 42 projecting upwardly from the lower deck 14. The outer and inner sleeves 40, 42 are molded with their respective upper and lower decks 12, 14. The outer and inner sleeves 40, 42 are sized so that they overlap one another when joined together. The shapes of the outer and inner sleeves 40, 42 are not limited to any particular shape. The outer and inner sleeves 40, 42 may be square-shaped, triangular-shaped, oval-shaped or cross-shaped, for example. The edges of the outer sleeves 40 may be rounded.

[0043] The upper deck 12 includes a plurality of snap-pin openings for receiving the snap-pins 16. Each outer sleeve 40 surrounds a respective snap-pin opening. The lower deck 14 includes a snap-pin receiving cavity 44 positioned within each inner sleeve 42. A plurality of radial ribs 43 extending between the snap-pin receiving cavity 44 and the inner sleeve 42.

[0044] An advantage of the support blocks 18, 18*a* is that the impact energy from contact with the tines of the forklift can be dissipated among the following elements: the outer sleeve 40, the inner sleeve 42, the radial ribs 43 and the cylindrical core defined by the snap-pin receiving cavity 44 in the inner sleeve. The fork tines strike the outer sleeve 40 first, which absorbs most of the impact energy. The impact energy may then be transmitted to the inner sleeve 42, which also absorbs some of the impact energy. More absorption of the impact energy takes place at the radial ribs 43. The remaining impact energy reaches the snap-pin receiving cavity 44 for dissipation.

[0045] Each snap-pin 16 includes a head 46, a body 48 and spaced apart tips 50, as best illustrated in FIG. 5. The head 46 is for engaging a snap-pin opening in the upper deck 12. The head 46 of each snap-pin 16 may be shaped to include spaced apart straight edges 49, as illustrated in FIG. 6. Each snap-pin opening in the upper deck 12 is correspondingly shaped the same. This helps to hold the snap-pins 16 in place. The snap-pins 16 are typically inserted into the pallet 10 after the upper and lower decks 12, 14 have been joined together to form the support blocks 18, 18*a*.

[0046] The spaced apart tips 50 extend through the snap-pin receiving cavity 44 for engaging a backside 50 of the inner sleeve, as best illustrated in FIG. 7. The snap-pin receiving cavity 44 does not extend all the way from the top of the inner sleeve 42 to the bottom of the lower deck 14. This is to allow room for the tabs 50 on the snap-pin 16 to clear and engage the backside 60 of the inner sleeve 42.

[0047] Even though the upper and lower decks 12, 14 are separated in FIGS. 3 and 4, the snap-pins 16 are positioned accordingly for illustration purposes. As illustrated in FIG. 3, the snap-pins 16 extend within and past the outer sleeves 40. As illustrated in FIG. 4, the heads 46 of the snap-pins 16 are raised above the inner sleeve 42 and the snap-pin receiving cavities 44 without the lower deck 14 in place. This allows clearance for the head 46 of each snap-pin 16 to engage a snap-pin opening in the upper deck 12, while the spaced apart tips 50 extend through the snap-pin receiving cavity 44 for engaging a backside 60 of the inner sleeve 42 associated therewith.

[0048] The spaced apart tips 50 of each snap-pin 16 resiliently extend outwards from the body 48 after having passed through the snap-pin receiving cavity 44 for engaging the backside 50 of the inner sleeve 42 associated therewith. The spaced apart tips 50 of each snap-pin 16 may be angled to facilitate insertion thereof through the snap-pin receiving cavity 44. The spaced apart tips 50 of each snap-pin comprise a respective lip 51 for engaging the backside of the inner sleeve. The respective lips 51 are configured to break off based on an excessive separation force applied between the upper and lower decks 12, 14. The snap-pins 16 are also formed out of plastic. Alternatively, the snap-pins 16 may be formed out any of the materials used to form the upper and lower decks 12, 14 as discussed in detail above.

[0049] Another aspect is directed to improving the durability of the pallet. This is accomplished by inserting sleeved reinforcing rods 80' into the upper and/or lower molds of the pallet 10' for the respective upper and/or lower decks 12', 14'. As readily appreciated by those skilled in the art, the sleeved reinforcing rods 80' are insert molded.

[0050] As best illustrated by the exploded view of the pallet 10' in FIG. 8, four sleeved reinforcing rods 80' are used in the lower deck 14', and four sleeved reinforcing rods 80' are used in the upper deck 12'. The actual number of sleeved reinforcing rods 80' will vary depending on the size of the pallet 10' and its intended use, as well as on the actual number of support blocks 18', 18*a*'. As noted above, the sleeved reinforcing rods 80' may be in the lower deck 14' only, in the upper deck 12' only, or in both the upper and lower decks. For illustration purposes, both the upper and lower decks 12', 14' include sleeved reinforcing rods 80'. The assembled pallet 10' is illustrated in FIG. 9.

[0051] The upper deck 12' includes channels 92 between its top and bottom surfaces 94', 96', as illustrated in FIG. 10. The upper surface of the sleeved reinforcing rod 80' is below the top surface 94' of the upper deck 12', and is above the bottom surface 96' of the upper deck 12'. Each channel 92' extends from a side edge to an opposing side edge of the upper deck 12'.

[0052] Similarly, the lower deck 14' includes channels 102' between its top and bottom surfaces 104', 106', as illustrated in FIG. 11. The upper surface of the sleeved reinforcing rod 80' is below the top surface 104' of the lower deck 14', and is above the bottom surface 106' of the lower deck 14'. Each channel 102' extends from a side edge to an opposing side edge of the lower deck 12'.

[0053] The illustrated channels 92', 102' are positioned so that they are on top or bottom of the support blocks 18', 18a'. The center support blocks 18a' may be wider than the other support blocks 18' so that the two sleeved reinforcing rods 80' in the channels 92' in the center portion of the upper deck 12' and the two sleeved reinforcing rods 80' in the channels 102' in the center portion of the lower deck 14' can each be supported by a support block yet still provide strength to the upper and lower decks. Alternatively, all of the support blocks 18', 18a' are the same size.

[0054] Referring now to FIG. 12, a sleeved reinforcing rod 80' comprises a reinforcing rod 82' having opposing ends and side surfaces therebetween, and a sleeve 84' enclosing the side surfaces of the reinforcing rod. The ends of the reinforcing rod 82' are exposed. The sleeved reinforcing rod 80' allows relative movement between the sleeve 84' and the reinforcing rod 82'.

[0055] The reinforcing rod 82' is made of metal, for example, and the sleeve 84' is made of plastic, for example. The metal may comprise steel. However, other types of metals may be used. Alternatively, the reinforcing rod 82' may comprise non-metal materials, such as reinforced fiberglass, for example.

[0056] As the pallet 10' is flexed or as the metal contracts, relative movement is needed between the reinforcing rod 82' and the plastic sleeve 84'. Consequently, the reinforcing rod 82' is simply not coated in plastic. Otherwise, the local plastic around the reinforcing rod 82' can be over stressed, resulting in cracks.

[0057] The illustrated reinforcing rod 82' has a rectangular shape, and is hollow so that an opening extends between the opposing ends thereof. In one embodiment, the sleeve 84' is extruded over the reinforcing rod 82' to form the sleeved reinforcing rod 80'. The shape of the reinforcing rod 82' may vary, and may even be filled in other embodiments. To assist with the relative movement between the reinforcing rod 82' and the sleeve 84', the reinforcing rod may comprise fluorine-containing polymers. Fluorine-containing polymers are also known as Teflon®, and includes the following: polytetrafluoroethylene (PTFE), perfluoroalkoxy (PFA) and fluorinated ethylene proplene (FEP).

[0058] Plastic pallet manufacturers typically add reinforcing rods to a pallet after the pallet is formed, as is the case for the prior art patents discussed in the background section. This requires the pallet to be molded first, and then add the reinforcing rods. In sharp contrast, the sleeved reinforcing rods 80' are inserted into the pallet mold before the upper and lower decks 12', 14' are formed therein.

[0059] The plastic of the sleeve 84' has a melting point that is slightly higher than the melting point of the plastic used to form the upper and lower decks 12', 14'. As a result, the outside surface of the sleeves 84' will partially melt or bond to the plastic of the upper and lower decks 12', 14' while still allowing movement of the reinforcing rods 82' therein. Alternatively, the melting point of the sleeve 64' is the same as the melting point of the upper and lower decks 12', 14', but cooling characteristics of the molten plastic during manufacturing still results in the outside surface of the sleeves 84' partially melting or bonding to the plastic of the upper and lower decks 12', 14' without melting down to the reinforcing rods 82'.

[0060] After the upper and lower decks 12', 14' have been formed with the sleeved reinforcing rods 80' therein, end caps 90' are used to enclose the ends of the reinforcing rods 82'. Alternatively, the ends of the sleeved reinforcing rods 80' may be closed as a result of being formed. If a plastic pallet 10' is to be recycled, the ends of the sleeve 84' are punctured or the end caps 90' are removed so that the reinforcing rod 82' can be removed therefrom for use in another pallet.

[0061] The upper and lower decks 12', 14' include additional holes 71', 73' for exposing the sleeved reinforcing rods 80'. This also allows the sleeves 84' to be punctured from the side to help in removing the reinforcing rods 82' therefrom.

[0062] The illustrated pallet 10' further includes friction plugs 110' to prevent a load from sliding over the top surface 94' of the upper deck 12'. The friction plugs 110' are inserted through corresponding openings in the upper deck 12' after the pallet 10' has been formed.

[0063] Another aspect is directed to a method for making a pallet 10' as described above. Referring now to the flow chart illustrated in FIG. 13, the method comprises from the start (Block 120), forming at Block 122 a plurality of sleeved reinforcing rods 80', with each sleeved reinforcing rod comprising a reinforcing rod 82' having opposing ends and side surfaces therebetween, and a sleeve 84' enclosing the side surfaces of the reinforcing rod. There is relative movement between the sleeve 84' and the reinforcing rod 82'.

[0064] The method further comprises providing respective molds for the upper and lower decks 12', 14' at Block 124, and positioning the sleeved reinforcing rods 80' in the respective decks at Block 126. The upper and lower decks 12', 14' including their respective first and second joining members 40', 42' are formed at Block 128. The inner sleeves of the second joining members 42' are positioned at Block 130 for receiving the outer sleeves of the first joining members 40' to define the support blocks 18', 18a' joining the upper and lower decks 12', 14'. The method ends at Block 132.

[0065] Many modifications and other embodiments of the invention will come to the mind of one skilled in the art having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is understood that the invention is not to be limited to the specific embodiments disclosed, and that modifications and embodiments are intended to be included as readily appreciated by those skilled in the art.

That which is claimed:

1. A pallet comprising:

an upper deck;

a plurality of first joining members that project downwardly from said upper deck, each first joining member including an outer sleeve;

a lower deck;

a plurality of second joining members that project upwardly from said lower deck, each second joining member including an inner sleeve;

at least one of said upper and lower decks including a plurality of channels between top and bottom surfaces thereof, each channel extending from a side edge to an opposing side edge of said corresponding deck;

a plurality of sleeved reinforcing rods in the plurality of channels, each sleeved reinforcing rod comprising

a reinforcing rod having opposing ends and side surfaces therebetween and

a sleeve enclosing the side surfaces of said reinforcing rod, with there being relative movement between said sleeve and said reinforcing rod; and

the inner sleeves of said plurality of second joining members receiving the outer sleeves of said plurality of first joining members to define a plurality of support blocks joining said upper and lower decks.

2. The pallet according to claim 1, wherein the plurality of channels is in both of said upper and lower decks.

3. The pallet according to claim 2, wherein said sleeved reinforcing rods in said upper deck are orthogonal to said sleeved reinforcing rods in said lower deck.

4. The pallet according to claim 1, wherein all of said sleeved reinforcing rods in said corresponding deck are coplanar and parallel to one another.

5. The pallet according to claim 1, wherein each reinforcing rod is hollow so that an opening extends between the opposing open ends thereof.

6. The pallet according to claim 5, further comprising a plurality of end caps inserted into the open ends of said plurality of sleeved reinforcing rods.

7. The pallet according to claim 1, wherein each reinforcing rod has a rectangular shape.

8. The pallet according to claim 1, wherein the at least one of said upper and lower decks including the plurality of channels comprises a material having a first melting point; and wherein each sleeve comprises a material having a second melting point higher than the first melting point.

9. The pallet according to claim 1, wherein each reinforcing rod comprises fluorine-containing polymers.

10. The pallet according to claim 1, wherein said upper deck includes a plurality of snap-pin openings, with each outer sleeve projecting downwardly from said upper deck surrounding a respective snap-pin opening; wherein each second joining member projecting upwardly from said lower deck including a snap-pin receiving cavity positioned therein; and further comprising a plurality of snap-pins inserted into the plurality of snap-in openings in said upper deck, with each snap-pin extending through the snap-pin receiving cavity for engaging a backside of the inner sleeve associated therewith.

11. The pallet according to claim 10, wherein each snap-pin comprises a head at one end thereof for engaging a snap-pin opening, and spaced apart tips at an opposite end thereof for extending through the snap-pin receiving cavity for engaging a backside of the inner sleeve associated therewith.

12. The pallet according to claim 11, wherein the spaced apart tips resiliently extend outwards from the snap-pin receiving cavity after having passed therethrough.

13. The pallet according to claim 12, wherein the spaced apart tips of each snap-pin are angled to facilitate insertion thereof through the snap-pin receiving cavity.

14. The pallet according to claim 11, wherein the spaced apart tips of each snap-pin comprise a respective lip for engaging the backside of the inner sleeve; and wherein the respective lips of each snap-pin are configured to break off based on a separation force applied between said upper and lower decks.

15. The pallet according to claim 1, wherein said upper and lower decks, said plurality of first and second joining members, and said sleeves comprise plastic.

16. A plastic pallet comprising:

an upper deck comprising plastic having a first melting point;

a plurality of first joining members that project downwardly from said upper deck, each first joining member including an outer sleeve;

a lower deck comprising plastic having the first melting point;

a plurality of second joining members that project upwardly from said lower deck, each second joining member including an inner sleeve;

at least one of said upper and lower decks including a plurality of channels between top and bottom surfaces thereof;

a plurality of sleeved reinforcing rods in the plurality of channels, each sleeved reinforcing rod comprising

a reinforcing rod having opposing ends and side surfaces therebetween, and

a sleeve enclosing the side surfaces of said reinforcing rod, with there being relative movement between said sleeve and said reinforcing rod, said sleeve comprising plastic having a second melting point higher than the first melting point; and

the inner sleeves of said plurality of second joining members receiving the outer sleeves of said plurality of first joining members to define a plurality of support blocks joining said upper and lower decks.

17. The plastic pallet according to claim 16, wherein the plurality of channels is in both of said upper and lower decks.

18. The plastic pallet according to claim 17, wherein said sleeved reinforcing rods in said upper deck are orthogonal to said sleeved reinforcing rods in said lower deck.

19. The pallet according to claim 16, wherein each reinforcing rod is hollow so that an opening extends between the opposing open ends thereof.

20. The plastic pallet according to claim 19, further comprising a plurality of end caps inserted into the open ends of said plurality of sleeved reinforcing rods.

21. The plastic pallet according to claim 16, wherein each reinforcing rod has a rectangular shape.

22. The plastic pallet according to claim 16, wherein each reinforcing rod comprises fluorine-containing polymers.

23. The plastic pallet according to claim 16, wherein said upper deck includes a plurality of snap-pin openings, with each outer sleeve projecting downwardly from said upper deck surrounding a respective snap-pin opening; wherein each second joining member projecting upwardly from said lower deck including a snap-pin receiving cavity positioned therein; and further comprising a plurality of snap-pins inserted into the plurality of snap-in openings in said upper deck, with each snap-pin extending through the snap-pin receiving cavity for engaging a backside of the inner sleeve associated therewith.

24. The plastic pallet according to claim 23, wherein each snap-pin comprises a head at one end thereof for engaging a snap-pin opening, and spaced apart tips at an opposite end

thereof for extending through the snap-pin receiving cavity for engaging a backside of the inner sleeve associated therewith.

25. A method for making a pallet comprising an upper deck; a plurality of first joining members that project downwardly from the upper deck, each first joining member including an outer sleeve; a lower deck; a plurality of second joining members that project upwardly from the lower deck, each second joining member including an inner sleeve; at least one of the upper and lower decks including a plurality of channels between top and bottom surfaces thereof, the method comprising:

forming a plurality of sleeved reinforcing rods, each sleeved reinforcing rod comprising a reinforcing rod having opposing ends and side surfaces therebetween, and a sleeve enclosing the side surfaces of the reinforcing rod, with there being relative movement between the sleeve and the reinforcing rod;

providing respective molds for the upper and lower decks;

positioning the plurality of sleeved reinforcing rods in at least one of the deck molds corresponding to the at least one upper and lower deck including the plurality of channels;

forming the upper and lower decks including their respective first and second joining members; and

positioning the inner sleeves of the plurality of second joining members for receiving the outer sleeves of the plurality of first joining members to define a plurality of support blocks joining the upper and lower decks.

26. The method according to claim 25, wherein the plurality of channels is in both of the upper and lower decks so that the plurality of sleeved reinforcing rods are positioned in both of the upper and lower deck molds.

27. The method according to claim 26, wherein the sleeved reinforcing rods in the upper deck are orthogonal to the sleeved reinforcing rods in the lower deck.

28. The method according to claim 25, wherein each reinforcing rod is hollow so that an opening extends between the opposing open ends thereof; and further comprising inserting a plurality of end caps into the open ends of the plurality of sleeved reinforcing rods.

29. The method according to claim 25, wherein forming each sleeved reinforcing rod comprises extruding the sleeve over the reinforcing rod.

30. The method according to claim 25, wherein the at least one of the upper and lower decks including the plurality of channels comprises a material having a first melting point; and wherein each sleeve comprises a material having a second melting point higher than the first melting point.

31. The method according to claim 25, wherein each reinforcing rod comprises fluorine-containing polymers.

32. The method according to claim 25, wherein the upper deck includes a plurality of snap-pin openings, with each outer sleeve projecting downwardly from the upper deck surrounding a respective snap-pin opening; wherein each second joining member projecting upwardly from the lower deck including a snap-pin receiving cavity positioned therein; and further comprising inserting a plurality of snap-pins into the plurality of snap-in openings in the upper deck, with each snap-pin extending through the snap-pin receiving cavity for engaging a backside of the inner sleeve associated therewith.

33. The method according to claim 25, wherein the upper and lower decks, the plurality of first and second joining members, and the sleeves comprise plastic.

* * * * *

ANEXO D

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(54) TRANSPORT PALLET

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(52) U.S. Cl. 108/57.33; 108/51.11; 108/57.25

(57) ABSTRACT

Pallet for the movement of goods with several individual parts, which are connected to each other: A loading part 6 comprises a planar slab and the goods to be transported are placed on a loading surface 26 of the loading part. Underneath the loading part are arranged a reinforcement section 5, a frame center section 3 and a frame floor section 4. A flame protection coating of the individual parts of the pallet effects fire resistance in the event of a fire.

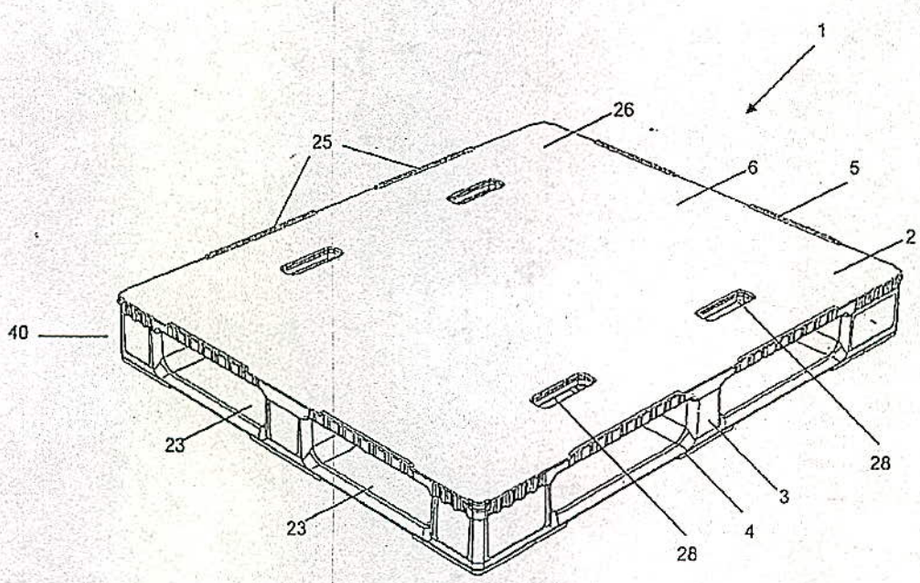


Fig. 1

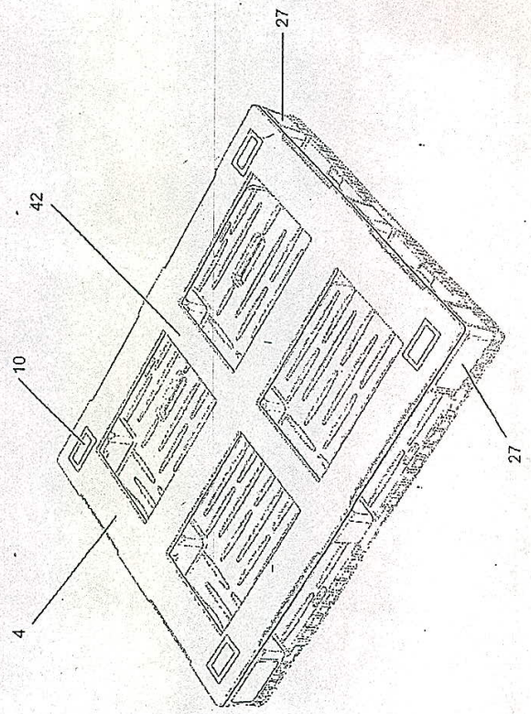


Fig. 2

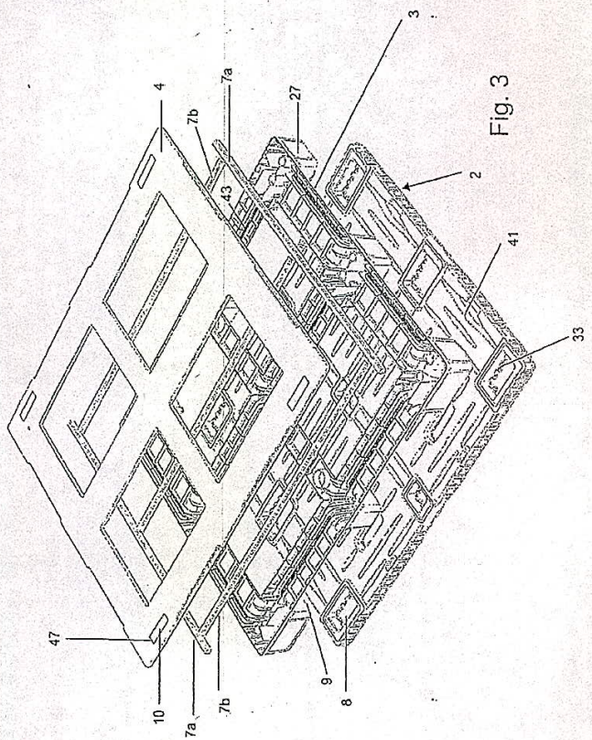


Fig. 3

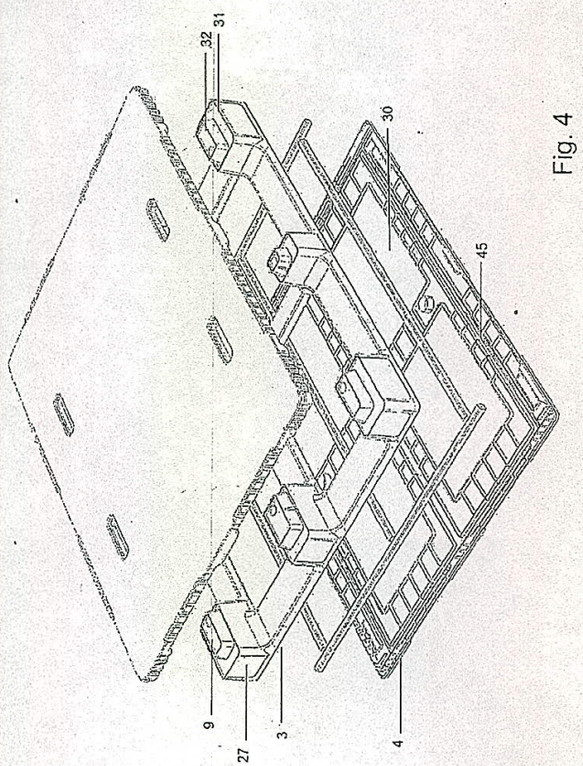


Fig. 4

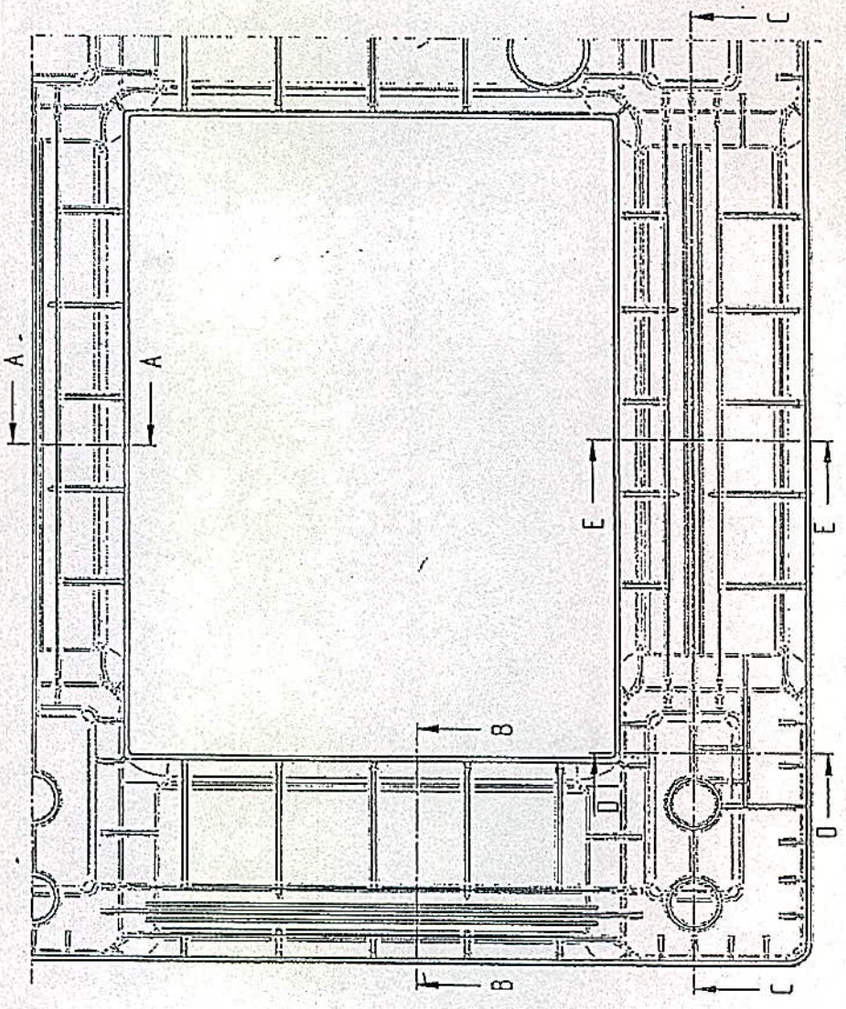


Fig. 5

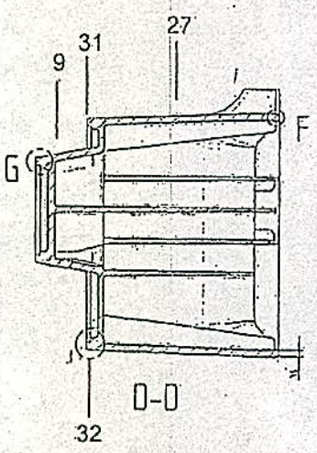
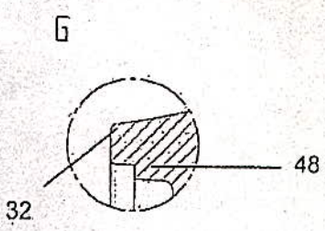


Fig. 6

Fig. 7



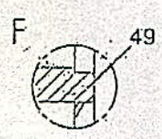


Fig. 8

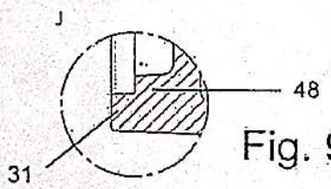


Fig. 9

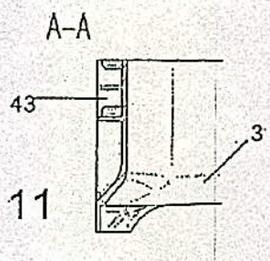


Fig. 11

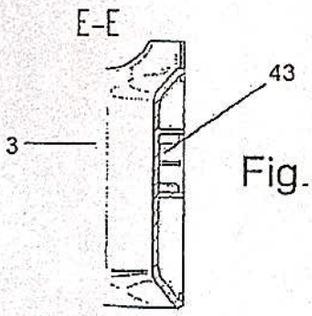


Fig. 10

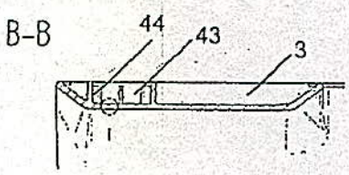


Fig. 12

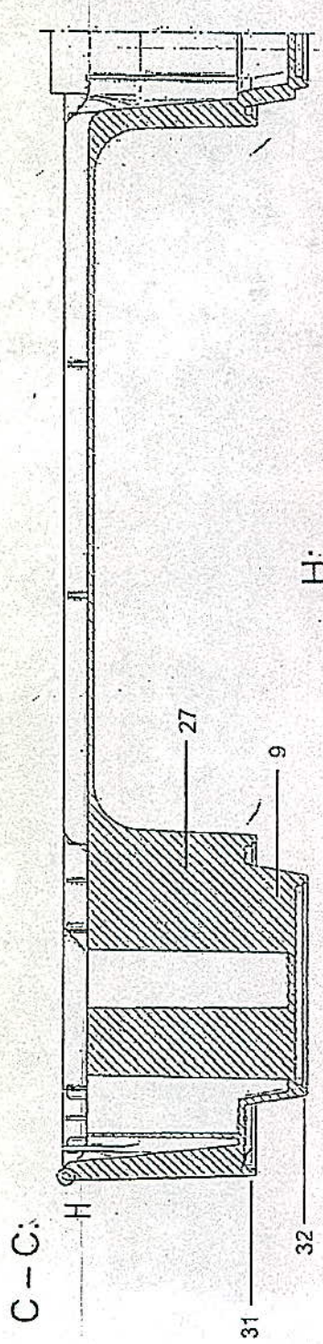


Fig. 13

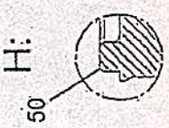


Fig. 14

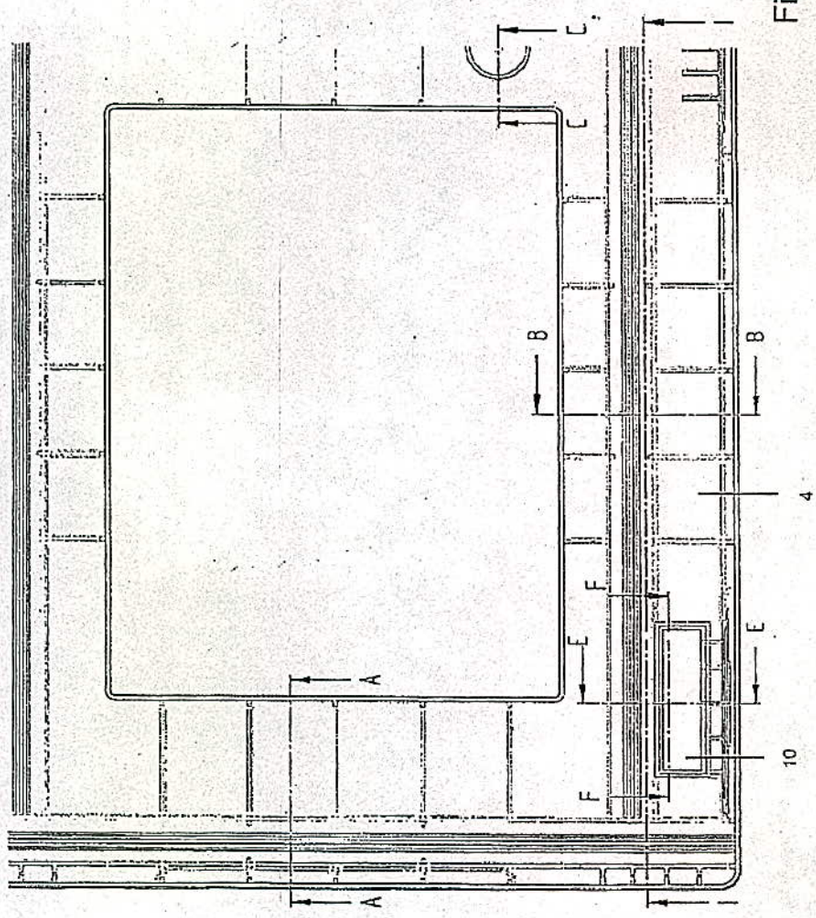


Fig. 15

F-F

Fig. 16

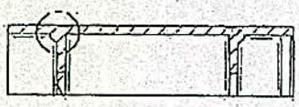




Fig. 17

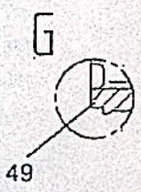


Fig. 19

B-B

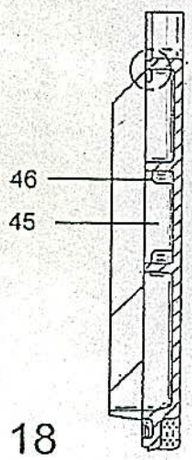


Fig. 18

E-E

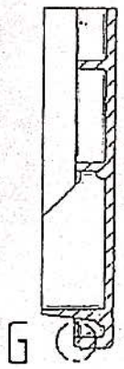


Fig. 20

TRANSPORT PALLET

FIELD OF THE INVENTION

[0001] The present invention relates generally to a pallet for the movement of goods.

BACKGROUND OF THE INVENTION

[0002] For the transport of goods, transport pallets, especially Euro pallets, are well-known, which are traditionally made of wood. Furthermore, pallets manufactured from plastic are also common, which, in addition to having a low weight, have better resistance to aging and are better to clean in comparison to wood. Many well-known pallets, however, have a relatively low torsional rigidity. They therefore cannot be readily subjected to asymmetric heavy loads. This reduces the scope of application.

[0003] Furthermore, the problem arises in the case of plastic pallets that the plastic is flammable such that, in the event of a fire, toxic gases can develop. This, too, leads to a fundamentally undesirable restriction on the pallet's scope of application.

[0004] The object of the present invention is to create a pallet whose scope of application is increased.

SUMMARY OF THE INVENTION

[0005] The pallet described here has an upper section and a frame section, wherein the upper section has a loading part with loading surface and a reinforcement section that have a material-fit connection to each other. The frame section comprises a frame center section and a frame floor section, which likewise have a material-fit connection to one another. Furthermore, the frame center section corresponds to the size of the loading surface and, at least at its corners, has spacers which point toward the upper section and via which the frame center section is connected to the upper section. At their end faces, the spacers have elevations which are inwardly offset in steps. For accommodating these elevations, the reinforcement section has recesses at its lower surface. The frame center section likewise has a material-fit connection to the reinforcement section in the area of the end-face spacers. Alternatively or additionally, the aforementioned connection can be in the area of the elevations. The pallet in accordance with the invention is substantially torsionally stiffer than well-known pallets, because the upper section and the frame section reinforcing it are much better connected to one another. This increases its scope of application such that it is more economically applicable.

[0006] The loading part, the reinforcement section, the frame center section and the frame floor section are preferably made from plastic, especially an elastomer plastic, with a material such as polypropylene or polyethylene suitable for use. Parts made from such a plastic lend themselves readily to material-fit connections. The aforementioned connections between the parts are of a material-fit type effected by a welding method, with hot-plate welding especially suitable. Hot-plate welding is one of those heating element welding methods in which heating elements heat the contact area to be welded until the material in the areas concerned softens, and then the heating elements are removed from the heated area. The components to be welded are then positioned against each other and aligned with each other under compressive force. Material in the area to be welded deforms fluidly and, in flowing, creates the material connection. Preferably, heating is performed not as far as the melting point of the plastic, but only to above the softening point.

[0007] For the purpose of supporting the welding process, at least a first welding rib is molded on to the spacers at the end face, said rib pointing toward the reinforcement section and serving as welding material during welding of the frame center section to the reinforcement section. The first welding rib of the spacer is advantageously closely molded on at a peripheral outside edge of the spacer and points upward and away from the frame center section. The rigidity of the connection is increased by the outer welding rib.

[0008] Further, at least a second welding rib is molded on advantageously at the end face of the elevations, said rib pointing toward the reinforcement section and serving as welding material during welding of the frame center section and the reinforcement section. The first and second welding ribs both have the same alignment, which is parallel to the loading surface. Thus, the welding planes defined by the first and second welding ribs are accordingly parallel to the loading surface. The second welding rib is thereby arranged closer to the loading surface than the first welding rib. Due to this vertical offset, correspondingly offset welding regions are produced, which, through their different positioning, serve to improve retention of the elevations in the recesses. Furthermore, the lateral gap between the elevation and the recess is advantageously dimensioned, such that a part of the material of the second welding rib flows into this area in order to yield a weld at a side that is not the end face of the elevation.

[0009] In a development in the area of the recesses at the reinforcement section, at least a third welding rib for welding the frame center section to the reinforcement section is provided . Advantageously, this third welding rib is multipart. These third welding ribs are either formed as a rib-like elevations, or alternatively as incremental elevations. These third welding ribs are formed such that, during uniting of the reinforcement section and the frame center section, they press against the softened material of the second welding rib, and so flow of the material around the welding ribs is made possible. A good welded joint can be achieved by this flow around the third welding ribs. Advantageously, the material of the recess, too, and thus the third welding rib is heated, with the material able to connect well to the material of the second welding rib and the elevations. A corresponding welding process is provided for welding of the first welding rib to the reinforcement section, as well for the other aforementioned material-fit connections.

[0010] The loading part has advantageously an essentially flat surface at the upper surface and has especially the shape of a flat slab, such that the loading part can be cut out from an extruded flat slab. Since the material becomes thermoplastic during the extrusion process, clearly better values for strength are attainable than is the case for an injection molded material under given comparable material thicknesses. Thus, the loading surface, which corresponds to the surface of the loading part, has good mechanical properties, such that it is not damaged by transport goods that are placed on the loading surface.

[0011] The reinforcement section is arranged underneath the loading part. It is essentially tub-shaped, with the open side of the tub limited by the loading part. The depth of the tub, that is, the distance in the vertical direction, is a few centimeters and the tub floor forms a plane that is parallel to the loading part. At the reinforcement section in the area of the tub floor, a plurality of rib-like elevations are molded on,

which point toward the loading part and are in contact with it. Furthermore, the recesses at an area of the tub floor are molded on such that the vertical ends of the recesses are in contact with the loading part.

[0012] In this regard, the reinforcement section is preferably designed such that it is manufacturable in a thermoforming process. In the thermoforming process, starting from a plastic slab, the three-dimensional structure is created, which substantially effects the stability of the upper section.

[0013] Preferably, the reinforcement section has a material-fit connection at the aforementioned contact areas with the loading part. By means of reinforcement section ribs, connections from the loading part to the reinforcement section at a plurality of points or areas are produced, which provides a three-dimensional structure, which effects high strength for the upper section of the pallet. The reinforcement section ribs, which are located between two recesses, are aligned such that they point in the longitudinal direction from one recess to the next.

[0014] The upper section preferably has a plurality of handle openings. Expediently, the connection from the loading part to the reinforcement section in the area of the handle openings is a material-fit connection. So that workers do not hurt their hands when handling the pallet, it is advantageous if the handle openings arranged in the upper section are rounded.

[0015] At the pallet, preferably an outwardly sealed transponder cavity is provided for accommodating a transponder in the area of the spacers. Furthermore, at an exterior surface of the transponder cavity, the wall thickness of the pallet is at least locally reduced. The transponder cavity is outwardly sealed in order that no harmful environmental influences, such as damp, may penetrate and damage the electronics of the transponder. Further, at an exterior side of the transponder cavity is provided an area of smaller wall thickness, which advantageously corresponds to the lower surface of the pallet, such that, for example, the material there can be removed with a knife in order that an opening may be created through which the transponder can be replaced. A replacement of this kind may be necessary if, due to technical changes, for example, new transponders or altered specifications, a transponder, which was already inserted into the transponder cavity during production of the pallet, can no longer be used. If a transponder is replaced via the window in the frame floor section, the transponder cavity can be sealed by a plastic molding compound in order that the replaced transponder may be protected from environmental influences.

[0016] Preferably, the reinforcement section in the area of its side wall has an impact reinforcement, areas of which at least are formed so as to be corrugated or ribbed. The impact reinforcement advantageously leads, starting from the floor surface of the tub-shaped form of the reinforcement section, upwardly to as far as the edges of the reinforcement section that are in contact with the loading part. The corrugations lie in a plane that is parallel to the loading surface. The shape of the impact reinforcement ensures that the impact strength is increased, a fact which is essential if the pallet experiences jerky lateral loads, for example, during transport or when grabbed by the tines of a fork-lift truck or a lifting truck.

[0017] Furthermore, handle recesses are provided advantageously at the reinforcement section. These are expediently arranged at the reinforcement section in the area of the transport openings, such that they are arranged at a slight distance from the side wall at which the impact reinforcement is molded on. The handle recesses comprise an indentation, which is at least as wide as a human hand.

[0018] Preferably, the reinforcement section has an anti-slipping rim that projects over the upper surface of the loading part and serves to limit slipping of goods present on the loading surface. The bulk of the reinforcement section is underneath the loading part in the vertical direction. However, some bar-like areas of the reinforcement section preferably are molded on such that they terminate above the loading part at the sides. Thus, for example, an interrupted bar which has a uniform height of, for example, 1 cm, can be created at the outside edge of the loading surface. Goods might slip on the loading area due to transport forces, but this slippage is limited by the anti-slipping rim. Advantageous in this regard is that the anti-slipping rim is easily producible, does not require a separate part and also lends itself to better stacking of several pallets. It is advantageous that the anti-slipping rim is formed as a component of the reinforcement section, since as such it is more readily and economically producible, a fact which would not be obtained if it were a component of the loading part, which is preferably manufactured by extrusion.

[0019] For the purpose of easy stacking of several pallets one above the other, corresponding anti-slipping rim recipients are molded on at the frame floor section, in which the anti-slipping rim of a further pallet may be accommodated. This offers advantages in the stacking of several pallets since alignment and immobilization of pallets lying one on top of the other is achieved.

[0020] The pallet has preferably four bar-like carriers in which stiffening profiles are arranged. These carriers form the framework of the frame section. The frame section has preferably four large-area rectangular floor break-throughs. In the bar-like areas, which limit the floor break-throughs, stiffening profiles can preferably be arranged. These recipient areas for the stiffening profiles are located in the area of the contact surface of the frame center section and frame floor section.

[0021] These stiffening profiles can be rectangular or square hollow sections made from a metal, especially steel, and serve to increase the torsional rigidity of the pallet. A plastic profile resistant to bending is also conceivable.

[0022] Advantageously, the stiffening profiles are provided in the frame of the frame section described by the external form of the pallet, with one profile provided per edge. A further profile can be provided in one of the edges of the central crosspiece of the frame section, as a result of which therefore four or five stiffening profiles result. The stiffening profiles can be economically inserted as individual parts into the frame sections independently of each other. They can, however, also be welded to one another, which further increases the rigidity.

[0023] The pallet has in an advantageous embodiment a coating of flame-retarding material, which is applied at least on areas of the surface of the loading part, the reinforcement section, the frame center section and/or the frame floor section. Pallets, especially plastic pallets, whose plastic material contains a flame-retarding additive, are well-known. However, incorporation of the flame-retarding material into the plastic causes the disadvantage that physical properties such as hardness and breaking strength are adversely affected. Thus it is advantageous, in contravention to convention, for the flame protection to be applied via a coating.

[0024] The pallet has, as described, a plurality of plastic parts, which have in turn a plurality of ribs. The result is a large overall surface, which can be coated accordingly.

Advantageously, especially those surfaces will be provided with the coating which are exposed to little or no mechanical load. The coating can be applied both to the individual parts before welding and to the finished pallet after welding. The coating works on one hand as a direct protection for the coated plastic material since the material cannot be so easily reached,by the fire. On the other, there is an advantage in the fact that, in this manner, the flame-retarding material inhibits the fire overall in the vicinity of the fire. This means that, if, for example, one part of a warehouse with the pallets is on fire, the flame-retarding material causes the fire to be generally inhibited, such that it spreads more slowly and is easier to extinguish. This also applies if interior surfaces are coated, by which is meant the surfaces between the loading part and reinforcement section and between frame center section and the frame lower section. Thus, the pallet is highly suitable in fire-risk areas or for transporting readily flammable materials.

[0025] Further, a flame-retarding material can, for example, be incorporated as a kind of foam, at least in an outwardly sealed space between the loading part and the reinforcement section and between the frame center section and the frame floor section. The aforementioned enclosed space can be between the loading part and the reinforcement section or between the frame center section and the frame floor section. A material with flame-retarding characteristics can be incorporated into both areas before the individual parts of the pallet are welded. If the pallet is in a fire, the plastic material of the pallet melts or burns and the flame-retarding material is released to thus limit burning of the pallet and the fire overall.

[0026] Coatings containing urethane are especially suitable as material for coating the surfaces of the pallet. Also, a foam that contains urethane can be incorporated into an outwardly sealed area of the pallet. Furthermore, the flame protection can also be achieved by means of inorganic flame protection agents, halogenated flame protection agents, such as those based on chromium or bromine, or organophosphorous agents or by means of nitrogen compounds.

[0027] The following drawings show the preferable embodiment, without limiting the inventive idea expressed in the claims. These and other objects, advantages, purposes and features of the present invention will become apparent upon review of the following specification in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] FIG. 1 is a three-dimensional view of the pallet in the position of normal use, wherein the loading surface points upward,

[0029] FIG. 2 is a corresponding three-dimensional lower view of the pallet,

[0030] FIG. 3 is a partly exploded view of the pallet, in which the reinforcement piece and loading part are not exploded toward each other,

[0031] FIG. 4 is a rotated view of the exploded view in accordance with FIG. 3,

[0032] FIG. 5 is a plan view of a quarter of the frame center section, with the lower right corner shown,

[0033] FIG. 6 is a cross-sectional view on the line D-D of FIG. 5 through one of the elevations 9,

[0034] FIG. 7 is a detailed view of FIG. 6 with the representation of the second welding ribs,

[0035] FIG. 8 is a detailed view of FIG. 6 of the welding ribs for welding of frame center section to the frame floor part,

[0036] FIG. 9 is a detailed view of the FIG. 6 of the first welding ribs,

[0037] FIG. 10 is a cross-sectional view on the line E-E of FIG. 5,

[0038] FIG. 11 is a cross-sectional view on the line A-A of FIG. 5,

[0039] FIG. 12 is a cross-sectional view on the line B-B of FIG. 5,

[0040] FIG. 13 is a cross-sectional view on the line C-C of FIG. 5,

[0041] FIG. 14 is a detailed view of FIG. 13 of the welding ribs for welding the frame center section to the frame floor section,

[0042] FIG. 15 is a plan view of a quarter of the frame center section, with the lower right corner shown,

[0043] FIG. 16 is a cross-sectional view on the line F-F of FIG. 15,

[0044] FIG. 17 is a detailed view of FIG. 16,

[0045] FIG. 18 is a cross-sectional view on the line B-B of FIG. 15,

[0046] FIG. 19 is a detailed view of detail G of FIG. 20, and

[0047] FIG. 20 is a cross-sectional view on the line E-E of FIG. 15.

DETAILED DESCRIPTION OF THE DRAWINGS

[0048] FIG. 1 is a three-dimensional view of a pallet in accordance with the invention 1, whose loading surface 26 points upward. In the following, it is this definition of the direction which is referred to. The loading surface 26 is an area of the loading part 6, which, together with the reinforcement section 5, forms the upper section 2 of the pallet 1. Underneath the upper section 2 is arranged the frame section 40, which comprises the frame center section 3 and the frame floor section 4. The frame section 40 has a rectangular basic structure, which corresponds roughly in size to the loading surface 26, and in this basic structure are provided four wide, window-like break-throughs, such that the frame section 40 has essentially four external struts and a central crosspiece 42, as evident in FIG. 2. Underneath the frame center section 3 is the frame floor section 4, which is connected to the frame center section 3 and has a platform for the surface. Stiffening profiles *7a*, *7b* are accommodated in the area between frame center section 3 and frame floor section 4.

[0049] Upper section 2 has four handle openings 28, which are long enough and wide enough for a worker to put in a hand to comfortably lift the unloaded pallet. The alignment of the handle openings 28 in their length corresponds to the longitudinal direction of the rectangular pallet 1. The handle openings are arranged at the edge of the upper section 2.

[0050] As is evident from FIG. 3, the upper section 2 is of uniform thickness, which is created by the distance from the loading part 6 to a parallel arranged base surface of the reinforcement section 5. At the sides of this base surface are provided essentially perpendicularly arranged edges, which point toward the loading part 6 and are connected to this. Viewed in this way, the reinforcement section 5 has a tub-shaped basic structure, with the open side of the tub limited by the loading part 6. At the outer peripheral contact area between reinforcement section 5 and the loading part 6 are provided areas upon which the loading part 6 on the reinforcement section 5 rests. In other words, the contact surface here is horizontally aligned such that gravity forces from goods

present on the loading part 6 are transmitted direct via compressive forces to reinforcement section 5. These areas are arranged at the corners of the pallet and at the center of their sides. On areas located between them are arranged anti-slipping rims 25, which are a component of the reinforcement section 5, arranged such that they terminate above the loading area 26. The contact surface between the reinforcement section 5 and the loading part 6 has a vertical alignment there. The loading surface 26 is limited at each of its sides by two anti-slipping rims 25.

[0051] In FIG. 3, it is clear that the reinforcement section 5 comprises a plurality of reinforcement section ribs 41, which, starting from the base surface of the reinforcement section 5, point toward to the loading part 6, have a longitudinal extension and are in contact with the loading part 6. At the contact areas between the loading part 6 and the reinforcement section 5 is provided a material-fit connection, a fact which means that the material of both parts is welded in these areas. Through the welds, the loading part 6 and the reinforcement section 5 enclose an area, which is designed to be dampproof.

[0052] The view of the lower side of the pallet in FIG. 2 clearly shows the central crosspiece 42 of the frame section 40. It extends centrally in the frame, which is spanned by the four corners of the pallet 1. The central crosspiece 42 as well as the lower area of the frame section 40 are formed from the frame center section 3 and the frame floor section 4. As FIG. 3 shows, in areas between the frame floor section 4 and the frame center section of 3 are arranged two stiffening profiles 7*a* and three stiffening profiles 7*b*, with two each of the profiles 7*a* and 7*b* in the outside edges of the framework and a profile 7*b* in an axis of the central crosspiece 42. The stiffening profiles 7*a* and 7*b* are manufactured from a rectangular steel section. At the lower side at the frame center section 3 are provided center section profile recipients 43, which are U-shaped. As shown in FIGS. 10, 11 and 12, center section profile recipients 43 are roughly the width of the stiffening profiles 7*a* or 7*b* and half their height. Each of the stiffening profiles 7*a* and 7*b* is fitted into the profile recipient 43 such that approximately half of the height projects above the center section profile recipient 43 and is accommodated in a profile recipient 45—see FIG. 18—of the frame floor section 4. Furthermore, for the purpose of lateral guidance of the stiffening profiles 7*a*, 7*b*, ribs 46 are molded on at the frame center section ribs 44 and at the frame floor section, said ribs 46 limiting the lateral mobility of the profiles. Since the ribs 44 deform flexibly when the stiffening profiles 7*a* and 7*b* are joined to the frame center and floor sections, the stiffening profiles are accommodated without any play and so can easily accommodate twisting of the pallet and thus support the rigidity of the pallet. Additionally, the frame center and floor sections are aligned relative to each other via the stiffening profiles 7*a* and 7*b* during joining in the production process.

[0053] At the frame center section 3 are molded on nine spacers 27, which contact its four corners, four centers of its outside edges and the center of its surface. As evident from FIG. 4 or FIG. 6, provided at the spacers 27 are elevations 9, which are present at an end face of the spacers and are inwardly offset stepwise. Both the spacers 27 and the elevations 9 are essentially rectangular, with the length and width of the elevations 9 smaller than those of the spacers 27. FIG. 6 shows that the elevation 9 has a truncated pyramid extension. Reinforcement piece 5 has corresponding recesses 8, in which the elevations 9 are accommodated. Here, the truncated pyramid shape facilitates joining of the frame center section to the reinforcement section in the manufacturing process, since both parts position themselves relative to each other via the diagonal edge.

[0054] FIG. 4 or 6 shows how first welding ribs 31 are molded on at the spacer 27, and second welding ribs 32 are molded on at the end of the elevation 9. Both, the first and second welding ribs, are each molded on at the end-face outside edges of the spacer 27 and the elevations 9. During welding of frame center section 3 to the upper section 2, the ribs 31 and 32 are heated to the softening point, then the two parts are joined to each other. During joining, mechanical pressure is exerted on the first and second welding ribs 31 and 32, such that these ribs deform fluidly, such that this flow creates a material-fit connection between the two parts. This process is supported by third welding ribs 33, which are shown in FIG. 3. The third welding ribs 33 are at the base of the recesses 8 and make contact with the second welding ribs 32 during joining. Since the third welding ribs 33, unlike the second welding ribs 32, are not formed continually around the periphery, but project from area to area, the material of the second welding ribs 32 can flow around the third welding ribs 33 during joining, whereby the strength of the welded joint can be improved.

[0055] FIG. 5 shows a plan view of the lower right corner of the frame center section 3, which shows only one of the four windows of the frame center section 3. In the lower right corner of FIG. 5 is shown a plan view 5 of the spacer 27, which, in cross-sections along lines D-D, in accordance with FIG. 6, and C-C, in accordance with FIG. 5, is shown in detail in both side views.

[0056] FIGS. 7 and 9 show the shape of the welding ribs 32 and 31 in details G and J. At those areas where the ribs at the elevation 9 or the spacer 27 are molded on is provided one each of a material accumulation 48, which has a larger wall thickness than the corresponding welding rib 31 and 32. In the welding method, temperature control ensures that primarily the material of the welding ribs is softened. Since, in the area of the material accumulation 48, the heat supplied is insufficient to soften the material, during welding, this area, and thus also elevations 9 and the spacers 27, remain undeformed as far as possible and material softening is limited to the welding ribs.

[0057] In FIG. 8, a fourth welding rib 49 of the frame center section 3 is shown, which serves for welding to the frame floor section 4. Peripheral fourth welding ribs 49 are each arranged around one of the window-like break-throughs, such that the frame center section 3 and the frame floor section 4 at these welding seams can be connected to each other continuously and thus to be impermeable to damp.

[0058] FIGS. 11 and 12 show the cross-sections along lines A-A and B-B of FIG. 5 with a part of the frame of the frame section 40, the center section profile recipients 43 and corresponding ribs 44, which serve the purpose of guidance of the ribs shown. FIG. 13 shows a section through the frame center section 3, whose detail H in FIG. 14 shows a fourth welding rib 50. This is arranged peripherally at the outside edge of the frame center section 3 and makes for a dampproof weld to the frame floor section 4 in this area.

[0059] FIG. 15 shows a plan view of the lower right quarter of the frame floor section 4, and the section in accordance with FIG. 16 with the detail K in accordance with FIG. 17 shows a groove 47, which is molded on at the lower surface of the frame floor section 4. This groove 47 is rectangular, as shown in FIG. 3, and forms an area in which the wall thick-

ness of the frame floor section 4 is reduced. This groove 47 thus delimits in other words a window 10, behind which extends toward the spacer 27 an inner space as transponder cavity 11, which is suitable for accommodating a transponder. Before the frame center section 3 is welded to the floor section 4, a transponder is inserted into this transponder cavity 11, said transponder being then enclosed by welding so as to be dampproof. Only when, for example, a cut is made with a knife along the groove 47, is the window 10 opened, such that access to the inserted transponder is made possible. In this way, the transponder can be removed and replaced, for example. Then, plastic, such as a plastic foaming compound, can be used to seal the window again in order that harmful environmental influences may be kept at bay from the transponder. At each of the spacers 27, which lie at the corners of the pallet, is provided a transponder cavity.

1. A pallet for the movement of goods, comprising:
an upper section having a loading part with a loading surface and a reinforcement section, wherein the loading surface and the reinforcement section have a material-fit connection to each other;
a frame section comprising a frame center section and a frame floor section, wherein the frame center section and the frame floor section are connected to each other;
wherein the frame center section corresponds to the size of the loading surface and, at least at its corners, has spacers, which point to the upper section and have a material-fit connection via the frame section to the upper section, wherein the spacers have end-face elevations inwardly offset stepwise, and the reinforcement section has, at its lower surface, recesses for accommodating the elevations; and
wherein the frame center section has a material-fit connection to the reinforcement section in the area of at least one of the spacers and the end-face elevations.

2. The pallet in accordance with claim 1, wherein the loading part, the reinforcement section, the frame center section and the frame floor section are formed from plastic.

3. The pallet in accordance with claim 2, wherein at least a first welding rib is molded to the end faces of the spacers, wherein the at least one welding rib points toward the reinforcement section and serves as welding material during welding of the frame center section to the reinforcement section.

4. The pallet in accordance with claim 2, wherein at least a second welding rib is molded to the end faces of the elevations, wherein the at least one welding rib points toward the reinforcement section and serves as welding material during welding of the frame center section to the reinforcement section.

5. The pallet in accordance with claim 4, wherein at least a third welding rib is provided at the reinforcement section in the area of the recesses for welding the frame center section to the reinforcement section.

6. The pallet in accordance with claim 5, wherein the third welding rib is comprised of multiple parts.

7. The pallet in accordance with claim 2, wherein the reinforcement section is adapted to be produced in a thermoforming process.

8. The pallet in accordance with claim 2, wherein the upper surface of the loading part is planar.

9. The pallet in accordance with claim 2, wherein the reinforcement section is tub-shaped and includes a tub floor, wherein the open side of the reinforcement section is limited by the loading part, wherein, in the area of the tub floor, a plurality of rib-like elevations is formed, said plurality of rib-like elevations being in contact with the loading part.

10. The pallet in accordance with claim 1, wherein the upper section has a plurality of handle openings.

11. The pallet in accordance with claim 10, wherein the loading part and the reinforcement section have a material-fit connection in the area of the handle openings.

12. The pallet in accordance with claim 2, wherein an outwardly sealed transponder cavity is provided at the pallet in the area of the spacers for accommodating a transponder, wherein at an exterior surface of the transponder cavity, the wall thickness is reduced at least from area to area.

13. The pallet in accordance with claim 2, wherein the reinforcement section has an impact reinforcement in the area of a side wall of the reinforcement section, wherein said reinforcement section is formed to be corrugated or rib-like at least from area to area.

14. The pallet in accordance with claim 2, wherein handle recesses are provided at the reinforcement section.

15. The pallet in accordance with claim 2, wherein the reinforcement section comprises at least one anti-slipping rim for limiting slipping of goods present on the loading surface, said rim projecting over the upper side of the loading part.

16. The pallet in accordance with claim 15, wherein at least one anti-slipping rim recess is formed in the frame floor section, wherein a further pallet may be received in the recess during stacking of the anti-slipping rim.

17. The pallet in accordance with claim 1, wherein the pallet comprises at least four stiffening profiles made of metal.

18. The pallet in accordance with claim 1, wherein the frame section has at least four bar-like carriers, wherein stiffening profiles are arranged in the bar-like carriers.

19. The pallet in accordance with claim 1, whewrein a coating of a flame-retarding material is applied at least on areas of the surface of the loading part, the reinforcement section and the at leastone of the frame center section and the frame floor section.

20. The pallet in accordance with claim 19, wherein a flame-retarding material is incorporated in at least one outwardly sealed area between the loading part and the reinforcement section and between the frame center section and the frame floor section.

21. The pallet in accordance with claim 2, wherein the reinforcement section is producible in a thermoforming process.

22. The pallet in accordance with claim 2, wherein the upper surface of the loading part is planar.

23. The pallet in accordance with claim 2, wherein the reinforcement section is tub-shaped and includes a tub floor, wherein the open side of the reinforcement section is limited by the loading part, wherein a plurality of rib-like elevations is formed in the area of the tub floor, said plurality of rib-like elevations being in contact with the loading part.

24. The pallet in accordance with claim 3, wherein the reinforcement section is producible in a thermoforming process.

25. The pallet in accordance with claim 3, wherein the upper surface of the loading part is planar.

26. The pallet in accordance with claim 3, wherein the reinforcement section is tub-shaped and includes a tub floor, wherein the open side of the reinforcement section is limited

by the loading part, wherein, in the area of the tub floor, a plurality of rib-like elevations is formed, said plurality of rib-like elevations being in contact with the loading part.

27. The pallet in accordance with claim 4, wherein the reinforcement section is adapted to be produced in a thermoforming process.

28. The pallet in accordance with claim 4, wherein the upper surface of the loading part is planar.

29. The pallet in accordance with claim 4, wherein the reinforcement section is tub-shaped and includes a tub floor, wherein the open side of the reinforcement section is limited by the loading part, wherein, in the area of the tub floor, a plurality of rib-like elevations is formed, said plurality of rib-like elevations being in contact with the loading part.

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