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(54) **METAL SHELVING FOR DISPLAYING MERCHANDISE**

METALLREGAL ZUR WARENPRÄSENTATION

RAYONNAGE MÉTALLIQUE POUR PRÉSENTER DES MARCHANDISES

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Description

[0001] The invention relates to metal shelving for displaying merchandise for sale, according to the preamble of claim 1.

[0002] Document US2010/0077781 discloses a metal shelving.

[0003] Also document DE10306834 discloses a metal shelving. Currently the thinnest sheet metal shelves produced by the applicant for the above mentioned shelving have a thickness of about 25 mm and with plan dimensions of about 50x133 cm they have a maximum load capacity of about 240 kg per shelf, e.g. as measured according to the technical regulations UNI 11262. Currently for example it is possible to arrange seven shelves with said thickness one on the other one, the first one being placed at about 10 cm from the ground, they are spaced from each other by about 25-27 cm, such to form a shelving whose last upper shelf is about 1900-2000 mm from the ground. This height is difficult to be reached by elder people and young people.

[0004] In addition to this there is the fact that merchandise to be displayed has often a reduced weight, such as for example breakfast products, jams, pasta and other ones that can be supported by shelves with a load capacity lower than the above mentioned one.

[0005] In conventional shelving the shelves usually have a thickness equal to the distance between the slots of the upright.

[0006] In this case, let p be the distance or pitch between the slots, it has to be noted that between two shelves spaced from each other heightwise by m pitches p , the space available heightwise for displaying the products is equal to $(m \cdot p - p)$, that is the space between two shelves spaced heightwise $m \cdot p$ is equal to $m \cdot p$ minus p , that is the thickness of a shelf itself.

[0007] In conventional shelving, a product with a height H_i can be placed between two shelves spaced heightwise by $m \cdot p$ with

$$m \cdot p - 2 \cdot p \leq H_i < m \cdot p - p$$

[0008] The arrangement of all the shelves for receiving the products can cause the upper shelf to have an overall height from the ground that is too much for people of short stature.

[0009] Therefore when manufacturing metal shelving the dimensioning of three contrasting magnitudes has to be faced, which have to be optimized in order to ideally meet the user needs: the display area of each shelf has to be wide enough, the overall height of the shelving has to be sufficiently reduced and contemporaneously it is necessary to guarantee a sufficient mechanical strength to the shelves, so to provide a good payload, and to the structure as a whole for supporting merchandise.

[0010] The present invention aims at overcoming

these drawbacks of currently known shelving and at optimizing the three magnitudes mentioned above, by providing a metal shelving for displaying merchandise, comprising at least two uprights to which a plurality of shelves is fastened, each upright being provided with slots for fastening the shelves, which slots are spaced from each other by a predetermined distance, wherein each shelf has a thickness lower than said predetermined distance between the slots.

[0011] The present invention achieves the above aims with a metal shelving for displaying merchandise for sale according to claim 1.

[0012] Thus the shelves have a thickness N lower than p and the space between two shelves spaced heightwise by m pitches p is greater, since the thickness of the shelf is reduced, and therefore the space is equal $M \cdot p - N$.

[0013] In a preferred example the shelves are rested on adjustable brackets, fastened to the uprights by means of the slots for the insertion of brackets at pitch $p = 25$ mm.

[0014] Therefore the shelving is such that it makes it possible to place the shelves at a height from the ground lower than the corresponding case wherein the shelves have a thickness coinciding with the pitch of the slots p .

[0015] It is the interest of the exhibitor to maintain the level of the upper shelves as low as possible, such to allow the users, even not tall ones, to willingly buy the products displayed on the upper shelves. For this reason usually the arrangement of the shelves is designed such to guarantee a level of the uppermost shelf sufficiently reachable by the users. The workers of the store have to select the lowest level where the brackets are inserted in the upright, such to place the shelves for properly displaying merchandise and to allow the smallest overall height of the shelving.

[0016] Therefore the shelving of the new type is able to arrange under the shelf the products having a height H_i ranging

$$m \cdot p - 2 \cdot p \leq H_i < m \cdot p - p,$$

but also the products having H_j such that

$$m \cdot p - 2 \cdot p \leq H_j < m \cdot p - N,$$

which on the contrary in a conventional shelving would require to be arranged between two shelves spaced heightwise by $(m+1) \cdot p$.

[0017] The new type of shelving allows therefore to allocate the products having a height H_j even between two shelves $m \cdot p$ apart from each other, which on the contrary in the state of the art would require to be placed between two shelves with a distance in height from each other of $(m+1) \cdot p$ (in other words, with a height increased of one pace p more with respect to $m \cdot p$). Thus the shelv-

ing is able to earn one pace p in height for all those products which have a height with the features of H_j .

[0018] Therefore the shelving offers an increased versatility in mounting the products, because it allows to place between two shelves $m \cdot p$ apart from each other, all those products of height H_k such that

$$m \cdot p - 2 \cdot p \leq H_k < m \cdot p - N,$$

where H_k can represent either the products having a height H_i such that

$$m \cdot p - 2 \cdot p \leq H_i < m \cdot p - p,$$

or the products having a height H_j such that

$$m \cdot p - p \leq H_j < m \cdot p - N.$$

[0019] From all the above it appears clearly that every time it is possible to place the products between two shelves spaced heightwise by $m \cdot p$ with a height H_i and also those with a height H_j , then it is possible to gain a pitch to the bottom for positioning the shelves and the brackets.

[0020] Since in a store there are many displayed products, according to the law of large numbers, the number of cases when it is possible to reduce by a pitch p the positioning heightwise between adjacent shelves is considerable, and this makes it possible to gain several pitches p to the bottom on one upright.

[0021] For example in the case of a shelving with 8 shelves, if it is possible for 50% of the cases to lower by a pitch p the height of the bracket supporting the shelf, then on average the height of the uppermost shelf is reduced by 8 shelves $\cdot$ 50% $\cdot$ $p = 8 \cdot 0.5 \cdot 25 \text{ mm} = 100 \text{ mm}$, which denotes the gain in height of the shelving, with respect to conventional shelving. According to the invention, the top shelf has a distance from the ground ranging from 1500 to 1900 mm, preferably ranging from 1600 mm to 1800 mm.

[0022] The lower shelf has a distance from the ground ranging from 110 mm to 160 mm.

[0023] In one preferred embodiment there are provided seven shelves, but it is possible to provide also six or eight shelves or similar numbers. According to the invention, the shelf has a thickness lower than 20 mm, preferably of about 18 mm, and it is obtained from a sheet metal with a thickness of 0.7 mm, by means of subsequent shearing and bending operations.

[0024] The shelves have the same plan dimensions as the conventional shelves and are reinforced such to have a load capacity per shelf slightly less than 200 kg.

[0025] With these shelves having a reduced thickness, it is possible to make shelving with the same number of

shelves as those with a thickness of 25 mm, as in the above example, spaced from each other by an equal or slightly lower distance, wherein the seventh upper shelf has a distance from the ground of about 1800 mm, unlike the previous about 2000 mm, with the intuitable advantages deriving from this condition. According to the invention, each shelf has a payload greater than 100 Kg, preferably comprised between 160 and 200 Kg, in particular corresponding to 180 Kg. According to the invention, the front side of the shelf and the rear one are ribbed and profiled by downward and inward bends, and the shelf at the ends is equipped with down-fold lips that are side by side to supporting brackets. The supporting brackets are obtained from a metal plate and are hooked in a projecting manner to the upright of the shelving. The ends of the sheet metal forming said shelf rest on the brackets. Said profiled parts of the front side and of the rear side of the same shelf, as well as the ends of metal stiffeners with an inverted omega profile, also obtained by shearing and bending sheet metal, parallel to said front and rear ribbed sides and that with their lips are fastened on the lower face of the same shelf by means of spot welds rest on such brackets.

[0026] The stiffeners are obtained from a sheet metal with a thickness of 1 mm.

[0027] Further characteristics of the invention and the advantages deriving therefrom will be more clear from the following description made with reference to the figures of the four annexed drawing tables, wherein:

Figs. 1 and 2 are partial and perspective views, from the top and from the bottom and observing at one end, of a portion of the shelf of interest;

Fig. 3 is the plan view from the bottom;

Figs. 4 and 5 are front views of the front and rear sides respectively of the shelf of interest;

Fig. 6 is the details according to the cross-sectional line VI-VI of figure 3;

Figs. 7 and 8 are side and enlarged views of the parts with the front side and the part with the rear side of the shelf of figure 6, denoted by K1 and K2 respectively;

Fig. 9 is a front view of a double metal shelving with on the left of the same upright the known shelves with a thickness of 25 mm hooked thereto and on the right of the upright it has the shelves with the thickness reduced to 18 mm.

[0028] From figures 1, 2 and 3 it is clear that the shelf 1 according to the invention has a rectangular plan shape and it is obtained by subsequent operations shearing and bending sheet metal with a thickness S of about 0.7 mm (fig. 8) and it has a depth A of about 504.5 mm and a width B of about 1328 mm. With reference also to figures 5, 6 and 7 it is noted that the rear side of the shelf 1 has a square bend 101 with a thickness of about 16.3 mm and it has a lower recessed part 201 with a corrugated profile, with a width D of about 25 mm. The front side of

the shelf 1 has also the thickness C of about 16.3 mm, it has a bend 301 with a hook-like profile so that label holders or price holders can be snap fitted, it has a height E of about 13.8 mm and even this side ends by a lower and recessed bend 201' with a corrugated profile, similar to the rear one and having a width D' of about 25-26 mm. On the intermediate portion of said lower and corrugated profiles 201, 201' rows of holes 2 are formed (figs. 2, 3, 6, 7) corresponding holes 2' of the top face of the shelf 1 (figs. 1, 6, 7) are aligned thereto and all these holes have a diameter of about 7 mm and are intended to receive small known guards, not shown, useful for confining the products displayed on the shelf 1 at the front and at the back.

[0029] From figures 1 to 3 it is noted that the rear side of the shelf 1 is smaller than the front one since the shelf at the rear corners is provided with recesses 3 having a width E of about 26 mm and a depth F of about 50 mm, useful for housing the uprights of the shelving.

[0030] On the lower face of the shelf 1 three stiffeners 4 obtained by sheet metal with a thickness S' (fig. 8) of about 1 mm are fastened by a proper number of spot welds Z on their lips 104, spaced from each other by a distance decreasing towards the middle of the shelf 1 and arranged on lines parallel to the front and rear sides of the shelf 1. Good results have been achieved by providing two welds Z close to each other at each end of each lip 104 and by providing thirteen spot welds Z for each stiffener 4. The stiffeners 4 have an intermediate isosceles trapezoidal profile and have the lips 104 bent outwardly and coplanar with each other, and as a whole they have a profile that reminds of the inverted Omega letter of the Greek alphabet. The stiffeners 4 have a width G of the their smallest base 5 of about 71.4 mm, they are characterized by a distance between centers H of about 162 mm and the outer stiffeners are spaced from the front side of the shelf 1 by a distance L1 of about 50 mm and from the rear side of the same shelf 1 by a distance L2 of about 64.2 mm.

[0031] The thickness M of the stiffeners 4 is about 17.3 mm that once it is summed to the thickness of the sheet metal forming the shelf 1 (0.7 mm) gives to the shelf 1 an overall thickness N of 18 mm.

[0032] The shelf 1 is completed by fold-down lips 6 on the short sides, having rounded corners 106, having a height Q of 12 mm, which are spaced from the rear side and from the front side of the shelf 1 by a distance R1 of about 7 mm and by a distance R2 of about 50 mm respectively, which on the whole have an extension T of about 440 mm, which are spaced from the ends of the stiffeners 4 by a distance V of about 4.5 mm (figs. 4, 5) and at the ends they are provided with holes 7 with a diameter of 5 mm, wherein known appendages of said brackets supporting the shelf 1 can be inserted which are equipped on the top side with small slots also of known type for housing small lugs 8 of about 4 mm obtained by shearing and inwardly bending the lips 6.

[0033] By making a shelf 1 with the described charac-

teristics, it is possible to guarantee a load capacity of about 180 kg and to arrange it with a front side as in figure 7 with a profile remarkably articulate such that it can support the same label holders or price holders that can be fit in the shelves of known type made with a metal wire. In the state of the art, it is known that the shelves made with a metal wire are obtained combining in the superior part a circular metal wire with diameter of about 4 mm, in the inferior part a circular metal wire with diameter of about 8 mm, with interposed between them a mesh of transversal wire with diameter of about 2-3 mm, so that the frontal part has a total thickness of about 13,5-14 mm.

[0034] In the embodiment of figure 7, it can be seen the shelf 1, whose front side 301 is formed by a sheet metal profile, such that it superiorly has a superior coupling rib 12 and inferiorly an inferior coupling rib 13.

[0035] The superior coupling rib 12 is constituted by a tooth-like profile, which is provided posteriorly with a recess.

[0036] The inferior coupling rib 13 is constituted by a further tooth-like profile, which is provided posteriorly with a coupling wall.

[0037] In this way, the front side 301 is suitable to couple with a label holding element with a C-like profile, being the two ends of the C-like profile suitable to couple respectively with the superior rib 12 and with the inferior rib 13.

[0038] In an embodiment the C-like profile has preferably two radiuses of curvature which are different from each other.

[0039] The said superior coupling rib 12 has a profile which can be comprised in an emicircle 120 with diameter of approximately 4 mm and the said inferior rib 13 has a profile which can be comprised in an emicircle 130 with diameter of approximately 8 mm.

[0040] The front side 301 has a thickness of approximately 13,8 mm and with its shape can carry the same label holders or price holders mountable to the known shelves made with metal wire.

[0041] By means of metal shelves with a thickness of 18 mm as in the present invention, it is possible also to achieve the advantages of the non limitative example of figure 9, where 10' shows conventional metal shelving using shelves 1' with the known thickness of 25 mm, spaced from each other by about 25 mm and hooked by their supporting brackets 11' to the left of an upright 9 with an height Y of about 2000-2100 mm, at the right thereof shelves 1 according to the invention with a thickness of 18 mm are hooked by their brackets 11, such to form a second shelving 10 whose shelves 1 are spaced from each other such to easily support, both for the insertion and for the removal, the same products X with an height of about 23-24 cm which are supported with a higher vertical allowance in the known shelving 10'. In the known shelving 10' the seventh upper shelf 1' is at a distance Y1 from the ground of about 1900-2000 mm, while in the shelving 10 on the right with the shelves 1 reduced to 18 mm, the seventh upper shelf 1 is at a dis-

tance Y2 from the ground of about 1700 mm, with the intuitive ergonomic advantages deriving therefrom.

[0042] It is clear that all the technical equivalents and the proportional dimensioning deducible from what disclosed and described herein fall within the scope of the invention, therefore the scope of protection of the invention has to be intended as covering all those shelf designs with plan dimensions different than the example considered herein, which will be proportionally dimensioned such to achieve the same utility, by using the same innovative concept, all this without departing from the teaching principle of the present invention as described, shown and claimed below. In the claims, the references in the brackets are merely as an indication and not a limitation of the scope of protection of the claims themselves.

Claims

1. Metal shelving for displaying merchandise, comprising at least two uprights (9) to which a plurality of shelves (1) is fastened, each upright (9) being provided with slots for fastening the shelves (1), which slots are arranged at a predetermined distance from each other, wherein each shelf (1) has a thickness (N) lower than said predetermined distance between the slots;
the upper shelf has a distance from the ground ranging from 1500 mm to 1900 mm, preferably ranging from 1600 mm to 1800 mm;
the lower shelf has a distance from the ground ranging from 110 mm to 160 mm, preferably ranging from 150 mm to 180 mm;
the shelf (1) has a thickness (N) lower than 20 mm; each shelf (1) has a payload greater than 100 Kg, preferably comprised between 160 and 200 Kg, in particular corresponding to 180 Kg;
each shelf (1) obtained from a sheet metal by subsequent shearing and bending operations, whose front side (301, 201') and rear one (101, 201) are ribbed and profiled with downward and inward bends, at the ends it is provided with down-fold lips (6) which are side by side to supporting brackets (11) obtained from a metal plate and are hooked in a projecting manner to the upright (9) of the shelving, the ends of the sheet metal forming said shelf (1) rest on such brackets and said profiled parts of the front side and of the rear side of the same shelf (1), as well as the ends of metal stiffeners (4) with an inverted omega profile, obtained also by means of shearing and bending operations from sheet metal, parallel to said front and rear ribbed sides of the shelf (1) and that with their lips are fastened on the lower face of the same shelf (1) by means of spot welds (Z) rest on such brackets;
and wherein each lip of the stiffeners (4) is provided with a central spot weld (Z) located at half its longitudinal extension, the said lips being further provided with an arrangement of two first sets of four spot welds, the first sets being symmetrically arranged with respect to the central spot weld and wherein the spot welds of each first set are spaced from each other by a distance, decreasing towards the middle of the shelf, each lip being further provided with a second set of two spot welds provided at each end of each lip, the said second sets being symmetrically arranged with respect to the central spot and wherein the spot welds of each second sets are spaced from each other by a distance smaller than the distance between the spot welds of the first two sets.

tudinal extension, the said lips being further provided with an arrangement of two first sets of four spot welds, the first sets being symmetrically arranged with respect to the central spot weld and wherein the spot welds of each first set are spaced from each other by a distance, decreasing towards the middle of the shelf, each lip being further provided with a second set of two spot welds provided at each end of each lip, the said second sets being symmetrically arranged with respect to the central spot and wherein the spot welds of each second sets are spaced from each other by a distance smaller than the distance between the spot welds of the first two sets.

2. Shelving according to claim 1, wherein there are provided seven shelves.
3. Shelving according to claim 1, wherein said thickness (N) of the shelf is about of 18 mm.
4. Shelving according to one or more of the preceding claims, wherein the front side (301) is formed by a sheet metal profile, such that it superiorly has a superior coupling rib (12), constituted by a tooth-like profile which is provided posteriorly with a recess, and inferiorly an inferior coupling rib (13) constituted by a further tooth-like profile which is provided posteriorly with a coupling wall, such that the front side (301) is suitable to couple with a label holding element with a C-like profile.
5. Shelving according to claim 4, wherein the said superior coupling rib (12) has a profile which can be comprised in an emicircle (120) with diameter of approximately 4 mm, the said inferior rib (13) has a profile which can be comprised in an emicircle (130) with diameter of approximately 8 mm, and the front side (301) has a bend with thickness of approximately 13,8 mm.
6. Shelving according to one or more of the preceding claims, wherein the shelf (1) is obtained from sheet metal with a thickness of 0.7 mm, while said stiffeners (4) are obtained from sheet metal with a thickness of 1 mm.
7. Shelving according to one or more of the preceding claims, wherein the shelf (1) has a width (B) and a depth (A) of about 1300 mm and about 504.5 mm respectively, **characterized by** using three of said stiffeners (4) with a isosceles trapezoidal median profile, with the smallest base having a width (G) ranging from 70 to 72 mm, for example of about 71.4 mm, as well as a distance between centers (H) ranging from 160 to 165 mm for example of about 162 mm and by the fact that such stiffener (4) is spaced from the front side of the shelf (1) by a distance (L1) of about 50 mm, while the opposite stiffener (4) is

spaced from the rear side of the shelf (1) by a distance (L2) ranging from 60 to 65 mm, for example about of 64.2 mm.

8. Shelving according to one or more of the preceding claims, wherein the thickness (C) of the rear ribbed and bent sides of the shelf (1) ranges from 16 to 16.5 mm and for example it is of about 16.3 mm.

Patentansprüche

1. Metallregal zur Warenpräsentation, umfassend mindestens zwei Ständer (9), an denen eine Mehrzahl von Ablagen (1) befestigt ist, wobei jeder Ständer (9) mit Schlitten zum Befestigen der Ablagen (1) versehen ist und die Schlitten mit einem vorbestimmten Abstand zueinander angeordnet sind, wobei jede Ablage (1) eine Dicke (N) aufweist, die kleiner als der vorbestimmte Abstand zwischen den Schlitten ist;
die obere Ablage einen Abstand zum Fußboden in einem Bereich von 1500 mm bis 1900 mm, bevorzugt von 1600 mm bis 1800 mm aufweist;
die untere Ablage einen Abstand zum Fußboden in einem Bereich von 110 mm bis 160 mm, bevorzugt von 150 mm bis 180 mm aufweist;
die Ablage (1) eine Dicke (N) aufweist, die kleiner als 20 mm ist;
jede Ablage (1) eine Ladefähigkeit, die größer als 100 Kg ist und bevorzugt zwischen 160 und 200 Kg liegt und insbesondere 180 Kg entspricht;
jede Ablage (1) durch aufeinanderfolgende Stanz- und Biegeprozesse aus einem Metallblech erhalten wird, dessen Vorderseite (301, 201') und Rückseite (101, 201) mit nach unten und nach innen gerichteten Biegungen gesickt und profiliert sind und an den Enden mit nach unten gefalteten Flügeln (6) versehen ist, welche Seite an Seite an Stütztkonsolen (11) angeordnet sind, die aus einem Flachmetall ausgeformt und am Ständer (9) des Regals freitragend eingehakt sind, wobei auf diesen Konsolen die Enden des die Ablage (1) bildenden Metallbleches aufliegen und an den Konsolen jeweils die Profileile der Vorderseite und der Rückseite derselben Ablage (1) sowie die Enden der Metallversteifungen (4) mit umgekehrten Omega-Profil anliegen, die ebenfalls durch Stanz- und Biegeprozesse aus einem Metallblech erhalten sind, parallel zu den gesickten Vorder- und Rückseiten der Ablage (1) liegen und mit deren Flügeln an der Unterseite derselben Ablage (1) durch Schweißpunkten (Z) befestigt sind;
und wobei jeder Flügel der Versteifungen (4) mit einem zentralen Schweißpunkt (Z), der in der Hälfte seiner Längserstreckung liegt, versehen ist, und die Flügeln mit einer Anordnung von zwei ersten Gruppen von vier Schweißpunkten versehen sind, wobei

die ersten Gruppen symmetrisch zu dem zentralen Schweißpunkt angeordnet sind und die Schweißpunkte von jeder ersten Gruppe mit einem Abstand voneinander distanziert sind, der sich zur Mitte der Ablage hin verringert, und jeder Flügel weiter mit einer zweiten Gruppe von zwei Schweißpunkten versehen ist, die an jedem Ende jedes Flügels vorgesehen ist, wobei die zweiten Gruppen symmetrisch zu dem zentralen Schweißpunkt angeordnet sind und wobei die Schweißpunkte jeder zweiten Gruppe mit einem Abstand voneinander distanziert sind, der kleiner ist als der Abstand zwischen den Schweißpunkten der ersten beiden Gruppen.

2. Regal nach Anspruch 1, wobei sieben Ablagen vorgesehen sind.
3. Regal nach Anspruch 1, wobei die Dicke (N) der Ablage in etwa 18 mm beträgt.
4. Regal nach einem oder mehreren der vorhergehenden Ansprüche, wobei die Vorderseite (301) aus einem Metallblechprofil derart ausgeformt ist, dass es oberhalb eine obere Kupplungssicke (12) aufweist, die aus einem zahnartigen Profil besteht, welches nach hinten mit einer Ausnehmung versehen ist, und unterhalb eine untere Kupplungssicke (13) aufweist, die aus einem weiteren zahnartigen Profil besteht, welches nach hinten mit einer Kupplungswand derart versehen ist, dass die Vorderseite (301) zur Verbindung mit einem Etikettenhalterelement mit einem C-förmigen Profil geeignet ist.
5. Regal nach Anspruch 4, wobei die obere Kupplungssicke (12) ein Profil aufweist, das in einem Halbkreis (120) mit einem Durchmesser von näherungsweise 4 mm einpassbar ist, und die untere Kupplungssicke (13) ein Profil aufweist, das in einem Halbkreis (130) mit einem Durchmesser von näherungsweise 8 mm einpassbar ist, und die Vorderseite (301) eine Biegung mit einer Dicke von etwa 13,8 mm aufweist.
6. Regal nach einem oder mehreren der vorhergehenden Ansprüche, wobei die Ablage (1) aus Metallblech mit einer Dicke von 0,7 mm, während die Versteifungen (4) aus Metallblech mit einer Dicke von 1 mm gewonnen wird.
7. Regal nach einem oder mehreren der vorhergehenden Ansprüche, wobei die Ablage (1) eine Breite (B) und eine Tiefe (A) von jeweils etwa 1300 mm und etwa 504,5 mm aufweist, **gekennzeichnet durch** die Verwendung der Versteifungen (4) mit einem gleichschenkligen trapezförmigen Median-Profil, wobei die kleinere Basis eine Breite (G) im Bereich von 70 bis 72 mm, z. B. von etwa 71.4 mm, durch einen Abstand zwischen den Mittelpunkten (H) im Bereich von 160 bis 165 mm, z. B. von etwa 162

mm, und **dadurch, dass** diese Versteifung (4) in einem Abstand (L1) von etwa 50 mm zu der Vorderseite der Ablage (1) beabstandet ist, während die gegenüberliegende Versteifung (4) in einem Abstand (L2) im Bereich von 60 bis 65 mm und z. B. von etwa 64.2 mm zu der Rückseite der Ablage (1) beabstandet ist.

8. Regal nach einem oder mehreren der vorhergehenden Ansprüche, wobei die Dicke (C) der gesickten und gebogenen Rückseiten der Ablage (1) im Bereich von 16 bis 16.5 mm liegt und z. B. etwa 16.3 mm beträgt.

Revendications

1. Rayonnage métallique pour présenter des marchandises, comprenant au moins deux montants (9) auxquels est fixée une pluralité d'étagères (1), chaque montant (9) étant pourvu de fentes pour fixer les étagères (1), lesquelles fentes sont agencées à une distance prédéterminée l'une de l'autre, dans lequel chaque étagère (1) a une épaisseur (N) inférieure à ladite distance prédéterminée entre les fentes ; l'étagère supérieure est à une distance du sol de 1500 mm à 1900 mm, de préférence de 1600 mm à 1800 mm ; l'étagère inférieure est à une distance du sol de 110 mm à 160 mm, de préférence de 150 mm à 180 mm ; l'étagère (1) a une épaisseur (N) inférieure à 20 mm ; chaque étagère (1) a une charge utile supérieure à 100 kg, de préférence de 160 à 200 kg, notamment de 180 kg ; chaque étagère (1), obtenu à partir d'une tôle par des opérations successives de cisaillement et de cintrage, dont le côté avant (301, 201') et le côté arrière (101, 201) sont nervurés et profilés avec des courbes vers le bas et vers l'intérieur, est pourvue à ses extrémités de lèvres repliées vers le bas (6), contigües à des étriers de support (11) obtenus à partir d'une plaque métallique et accrochées de manière saillante au montant (9) du rayonnage, les extrémités de la tôle formant ladite étagère (1) reposent sur ces étriers et lesdites parties profilées du côté avant et du côté arrière de ladite étagère (1), aussi bien que les extrémités de renforts métalliques (4) ayant un profil en oméga inversé, eux aussi obtenus par des opérations de cisaillement et de cintrage à partir d'une tôle, parallèles auxdits côtés nervurés avant et arrière de l'étagère (1) et fixés par leurs lèvres sur la face inférieure de la même étagère (1) au moyen de points de soudure (Z) reposent sur ses étriers ; et dans lequel chaque lèvre des renforts (4) est pourvue d'un point central (Z) situé au niveau de la moitié de son étendue longitudinale, lesdites lèvres étant par ailleurs pourvues d'une disposition de deux premiers ensembles de quatre points de soudure, les

premiers ensembles étant agencés de façon symétrique par rapport au point de soudure centrale et dans lequel les points de soudure de chacun des premiers ensembles sont espacés l'un de l'autre par une distance décroissante vers le milieu de l'étagère, chaque lèvre étant par ailleurs pourvue d'un second ensemble de deux points de soudure prévue à chaque extrémité de chaque lèvre, lesdits seconds ensembles étant agencés de façon symétrique par rapport au point central et dans lequel les points de soudure de chacun des seconds ensembles sont espacés l'un de l'autre par une distance inférieure à la distance entre les points de soudure des deux premiers ensembles.

2. Rayonnage selon la revendication 1, dans lequel sept étagères sont prévues.
3. Rayonnage selon la revendication 1, dans lequel ladite épaisseur (N) de l'étagère est d'environ 18 mm.
4. Rayonnage selon l'une ou plusieurs des revendications précédentes, dans lequel le côté avant (301) est constitué d'un profilé en tôle, de manière à comporter en haut une nervure d'accouplement supérieure (12), constituée d'un profil denté pourvu en arrière d'un évidement, et à comporter en bas une nervure d'accouplement inférieur (13), constituée d'un autre profil denté, pourvu un arrière d'une paroi d'accouplement, de façon que le côté avant (301) soit conçu pour s'accoupler avec un élément porte-étiquette en C.
5. Rayonnage selon la revendication 4, dans lequel ladite nervure d'accouplement supérieure (12) possède un profil qui peut être contenu dans un demi-cercle (120) ayant un diamètre d'environ 4 mm, et ladite nervure inférieure (13) possède un profil qui peut être contenu dans un demi-cercle (130) ayant un diamètre d'environ 8 mm, et le côté avant (301) comporte une courbe ayant une épaisseur d'environ 13,8 mm.
6. Rayonnage selon l'une ou plusieurs des revendications précédentes, dans lequel l'étagère (1) est obtenue d'une tôle ayant une épaisseur de 0,7 mm, alors que lesdits renforts (4) sont obtenus d'une tôle ayant une épaisseur d'1 mm.
7. Rayonnage selon l'une ou plusieurs des revendications précédentes, dans lequel l'étagère (1) a une largeur (B) et une profondeur (A) respectivement d'environ 1300 mm et d'environ 504,5 mm, **caractérisé par** l'emploi de trois desdits renforts (4) avec un profil médian en forme de trapèze isocèle, dont la petite base a une largeur (G) de 70 à 72 millimètres, par exemple d'environ 61,4 mm, et une distance entre-axes (H) de 160 à 165 mm, par exemple d'en-

viron 162 mm, et en ce que ledit renfort (4) est espacé du côté avant de l'étagère (1) par une distance (L1) d'environ 50 mm, alors que le renfort opposé (4) est espacé du côté arrière de l'étagère (1) par une distance (L2) de 60 à 65 mm, par exemple d'environ 64,2 mm.

8. Rayonnage selon l'une ou plusieurs des revendications précédentes, dans lequel l'épaisseur (C) des côtés arrière nervurés et cintrés de l'étagère (1) est de 16 à 16,5 mm, par exemple de 16,3 mm.

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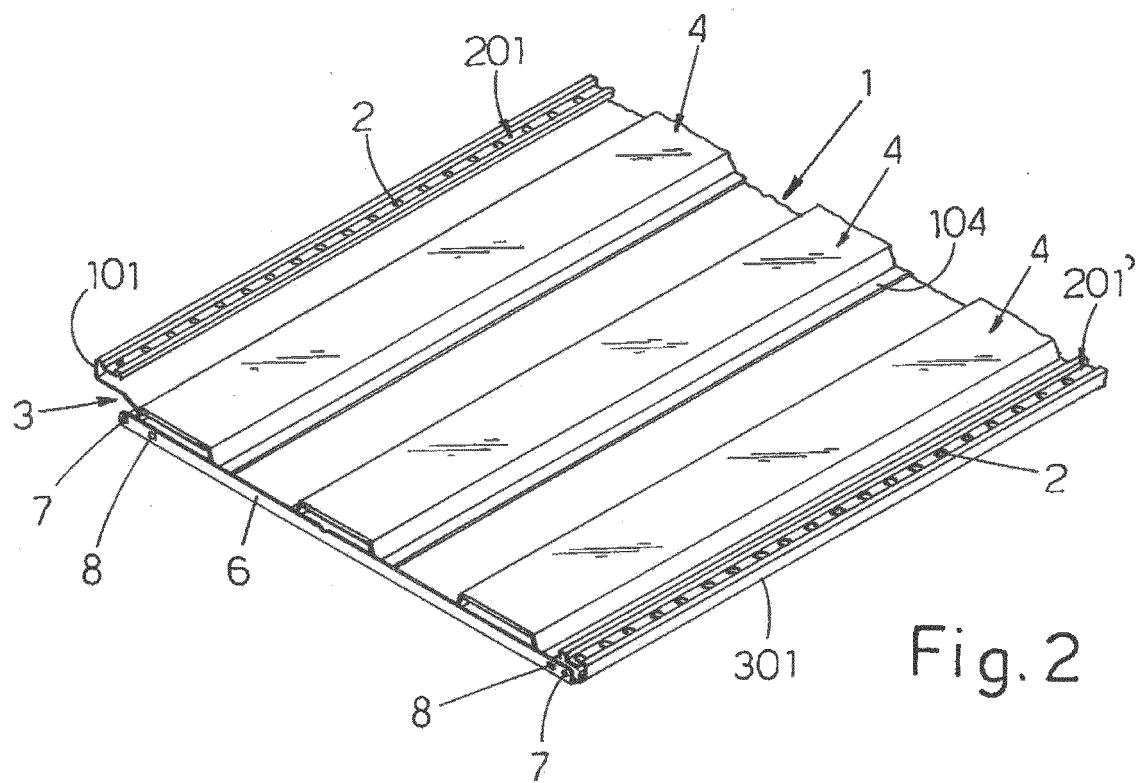
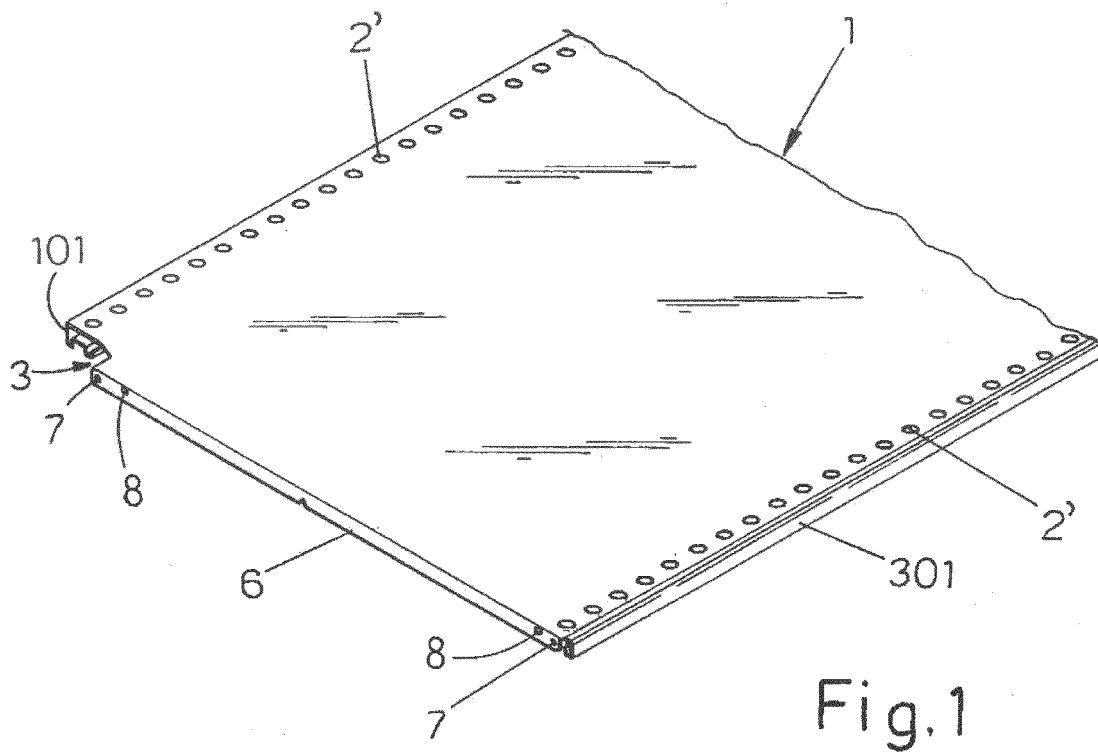
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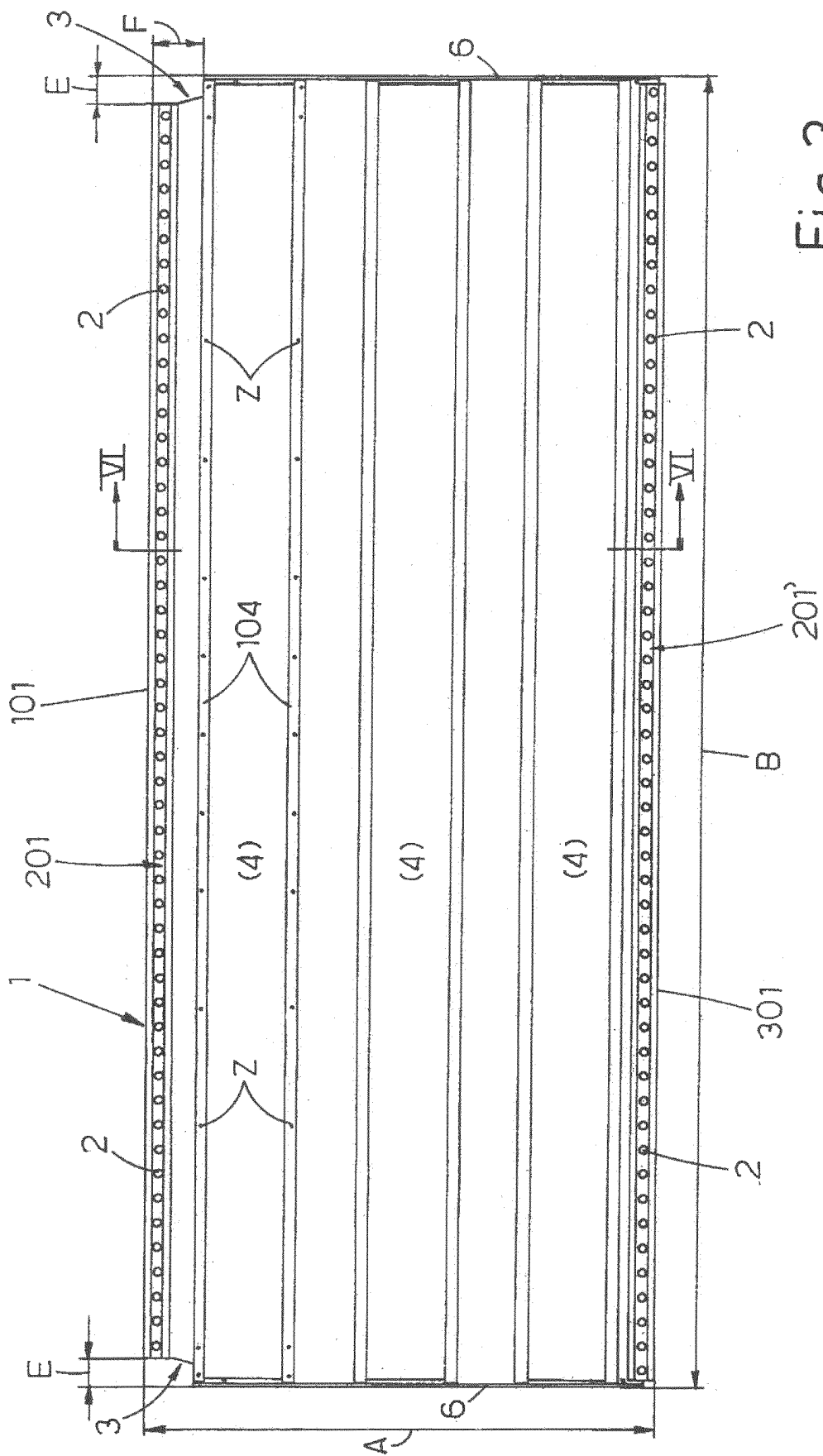


Fig. 3

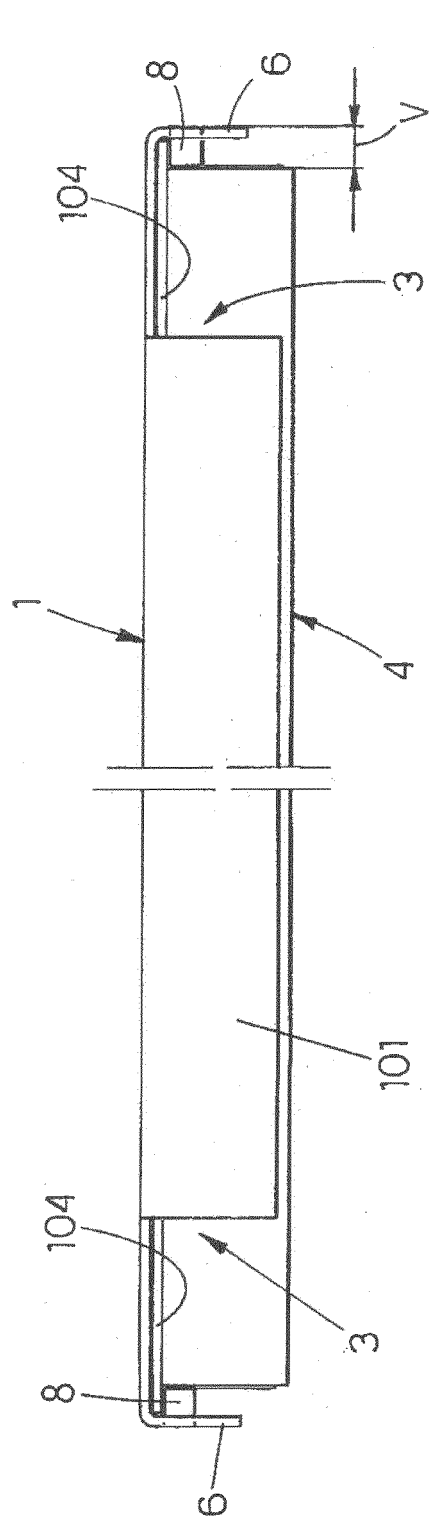


Fig. 5

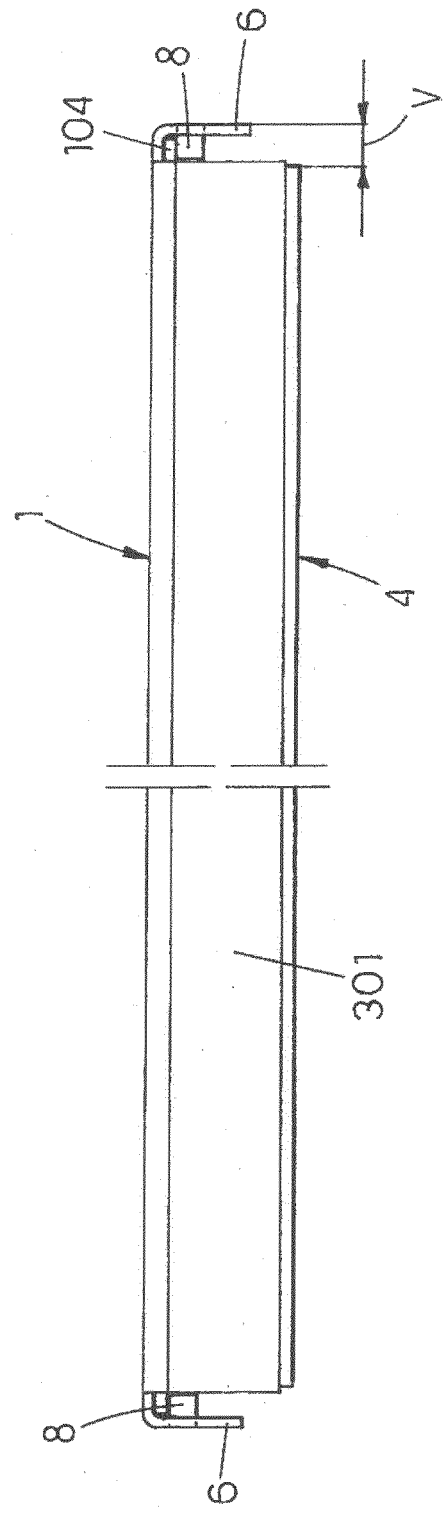
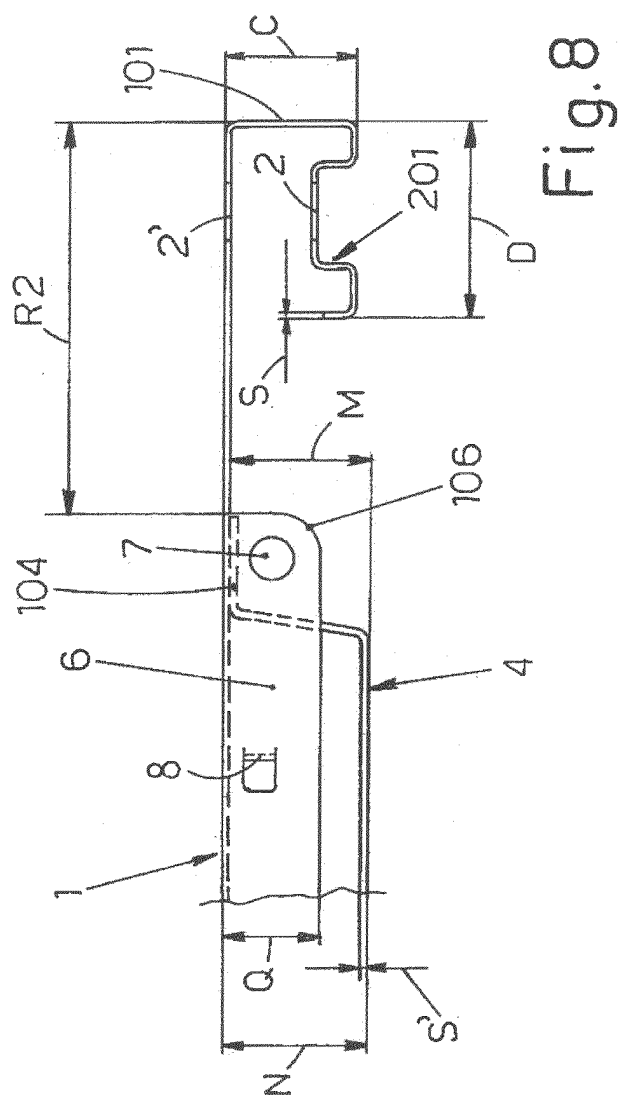
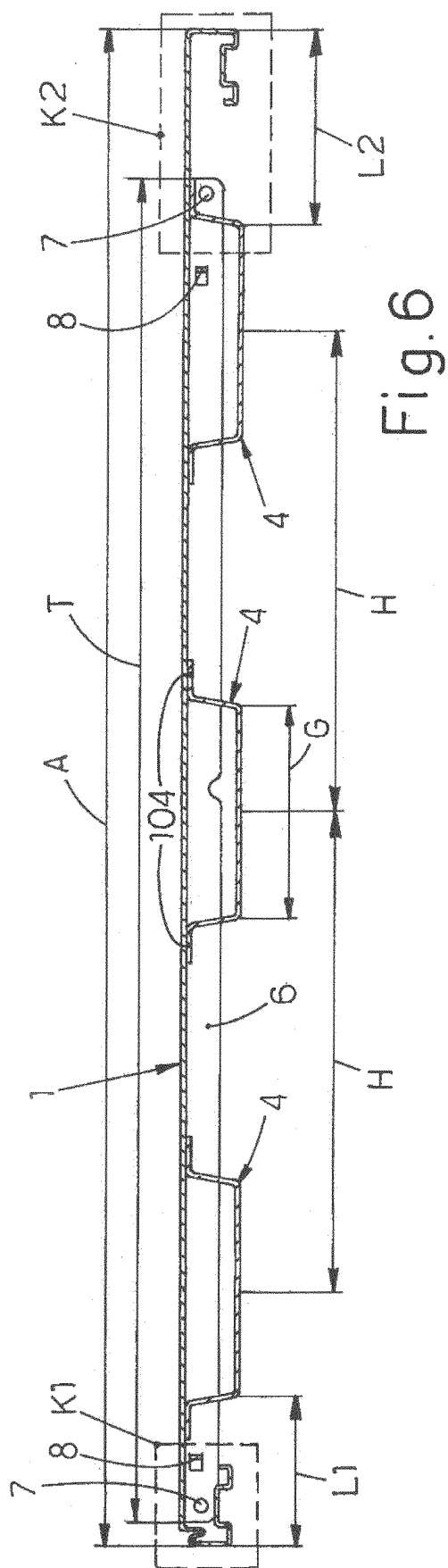
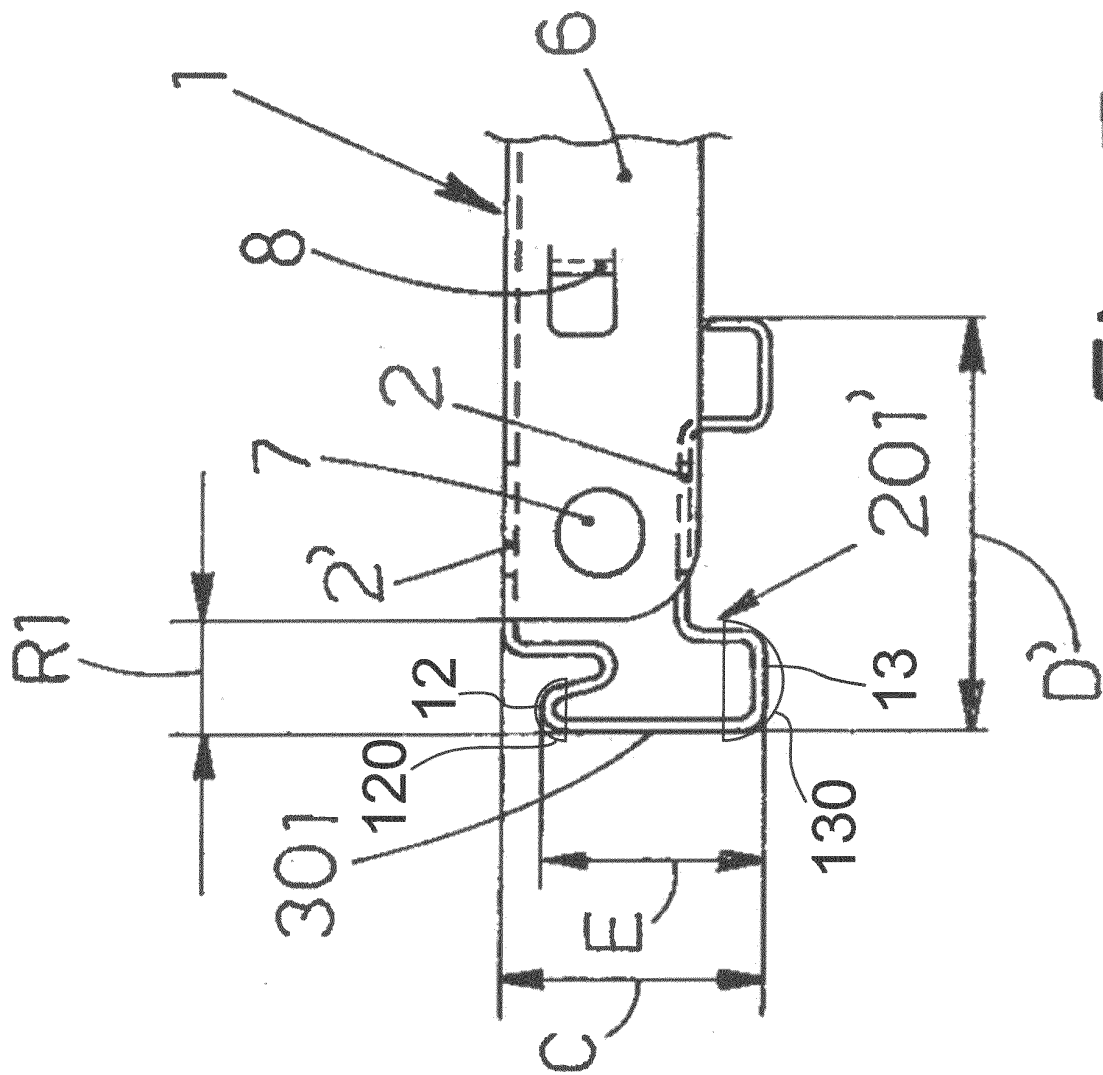


Fig. 4





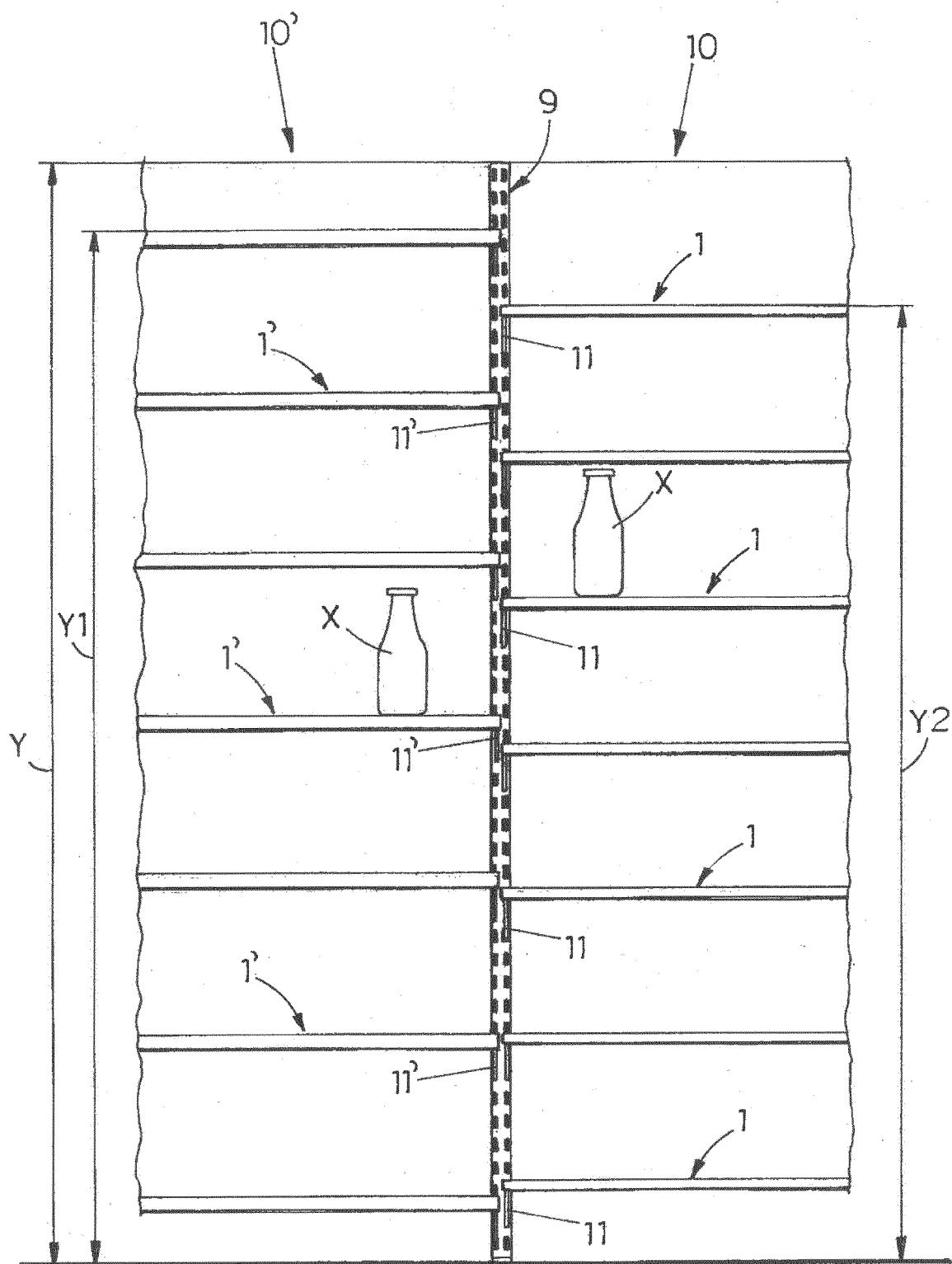


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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