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A WALL ELEMENT FOR SHELVES, CUPBOARDS OR TRANSPORT TROLLEYS.

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Description

The invention relates to a wall element for side walls of shelves, cupboards or transport trolleys, particularly for storage and transportation of laboratory and/or medical products, said element being formed in one piece as a profiled plate member with protruding guide members for supporting shelves or trays.

Laboratory and medical equipment and other products for use in hospitals are often stored in stationary shelves or cupboards or in cupboard or transport trolleys accommodating an arrangement of shelves, trays or baskets, some of which may have a relatively great depth.

In addition to requirements of a safe and reliable fixing of the shelves, trays or baskets so as to keep them in place and expose them to a minimum extent to vibrations during transportation, and a functional design allowing easy cleaning according to the hygienic standards applied to hospital equipment, it is usually desired to have the best possible access to direct removal of the stored objects with the least possible disturbance of their ordered arrangement on the shelves or trays.

In a design having solely horizontal shelves or trays the latter desire may be difficult to fulfil, if a requirement of a great storing capacity with a resulting relatively close arrangement of the shelves or trays above each other is to be complied with simultaneously.

An easier access to removal together with a relatively great storing capacity may be obtained by arranging the shelves, trays or baskets in inclined positions tilting downwards against the front side of the shelves or cupboard.

In known shelves, cupboards or cupboard or transport trolleys the shelves or trays are usually placed in guide rails which may be formed integrally with the wall element such as known from DE—B—1529721, or they may possibly be removably fixed to the vertical side walls. In order to avoid vibrations of the shelves or tray such guide rails have usually a relatively narrow longitudinal track for edge rails or flanges on the shelves or trays.

Thereby the shelves or cupboard arrangement gets a permanent character since displacement of the rails secured to the side walls is difficult and time-consuming. Normally it must be determined beforehand whether the shelves or trays are to be positioned horizontally or inclined or there should possibly be both horizontal and inclined shelves or trays.

In addition the narrow tracks of the guide rails often give cleaning problems with respect to accumulations of dust or dirt that can only be removed with difficulty.

To a certain extent these problems are avoided in a prior art adjustable shelf support device disclosed in US—A—3481485 by suspending the shelves between opposite vertical compartment-defining plates provided with integral support elements arranged in two rows close to the front

and rear edges of the plates and projecting to one side of the supporting plate. A similar arrangement of two rows of supporting elements may also project from the other side of the supporting plate, so that the plate may function as a partition between two neighbouring compartments. As a result of this arrangement of supporting elements, transverse plates may be supported either in an inclined or in a completely horizontal position. However, the supporting elements, which are formed by a stamping operation, are all similar and will only provide substantially point-contact support for the transverse plates.

According to the present invention there is provided a wall element for vertical side walls of shelves, cupboards or transport trolleys, particularly for storage and transportation of laboratory and/or medical products, said element being formed in one piece as a profiled plate member with protruding guide members for supporting shelves or trays, characterised in that said guide members are evenly distributed over the plate member in the height and longitudinal directions thereof and form a matrix-like arrangement for providing a set of parallel horizontal tracks and at least one set of parallel inclined tracks to accommodate side edges or flanges on said shelves and/or trays, the guide members having a prismatic shape for forming facial supports for both horizontal and inclined tracks.

With this design the need for separate guide rails having narrow tracks can be abolished. Rearrangement from a horizontal to an inclined arrangement of shelves or trays may be effected without difficulty and as a rule without emptying the shelves or trays. Moreover, since both horizontal and inclined shelves and trays may be present in the same shelves construction or cupboard a considerably improved flexibility of arrangement is obtained.

Since the guide members formed integrally with the wall element may be positioned with a relatively greater separation than corresponding to the track width of the usual guide rails and may additionally be formed with relatively softly rounded edges, a considerably improved cleaning comfort is additionally obtained.

In a relatively simple embodiment having only one set of inclined tracks said guide members may have a substantially parallelogram-shaped cross-section. Thereby two opposing sides of each guide member will be horizontal and the two other opposing sides will be inclined with an inclination that will determine the inclination of the inclined tracks.

However a preferred embodiment of a wall element according to the invention is characterized in that said matrix-like arrangement comprises a first and a second set of guide members arranged in alternating rows and columns to provide two sets of parallel inclined tracks with opposite, equal inclinations, the guide members of said first set having a pentagonal cross-section with a horizontal top face and two pairs of mutually opposed inclined faces with inclinations

corresponding to each of said sets of parallel inclined tracks, whereas the guide members of the second set have a triangular cross-section with a horizontal bottom face and two inclined faces with inclinations corresponding individually to each of said sets of parallel inclined tracks, whereby each horizontal track is defined downwards by top faces of guide members of said first set and upwards by bottom faces of guide members of said second set, whereas each inclined track is defined downwards by alternating inclined faces on guide means of said first and second set, respectively, and upwards solely by inclined faces on guide means of said first set.

Since a wall element in this design has two sets of inclined tracks with opposite, equal inclinations, the same wall element may be used in both the right-hand and left-hand sides of a shelves structure or a cupboard.

In a preferred form of this arrangement, the inclined faces on guide members of said first and second sets defining the inclined tracks downwardly have a greater inclination to the horizontal than the inclined faces on guide members of said first set defining the inclined tracks upwardly.

In accordance with another preferred feature, the said further guide members are formed with such a polygonal cross-section as to additionally form stops for the upper ends of the inclined tracks.

In accordance with another preferred feature, horizontal top and bottom edges of the profiled plate member are equally separated from the horizontal top faces in the row of guide members of said first set closest to said top edge and the horizontal bottom faces in the row of guide members of said second set closest to said bottom edge, respectively, said separation being equal to half the height of the horizontal tracks.

In some preferred arrangements, at least at one end of each horizontal track a further guide member is formed as in integrated part of the member with upwardly protruding stop bead forming an abutment for the end of side edge or flange of a shelf or tray inserted into the horizontal track.

Also in preferred forms, it may be arranged that a stop member formed integrally with the plate member is provided at the lower end of each inclined track.

It may further be arranged, in preferred forms, that the wall element is formed as a single plate member to be fixed to the inner side of a supporting wall. Alternatively, the wall element may be designed as a self-supporting plate member and be provided at its vertical sides with means for securing it to vertical tubular or rail members of a frame structure.

In the following the invention will be explained in further detail with reference to the drawings in which

Fig. 1 is a plan view of a preferred embodiment of a wall element according to the invention;

Fig. 2 a perspective view of the wall element shown in Fig. 1,

Fig. 3 is a top view of a further embodiment, and

Fig. 4 a plan view of a more simple embodiment.

The wall element 1 in Figs. 1 and 2 is designed as a profiled single plate member made, e.g. of a plastic material and adapted to be secured against the inner side of the supporting wall.

In accordance with the invention the element 1 is formed in one piece with an integrated matrix-like arrangement of prismatic guide members 2 and 3 protruding from the inner side of the element 1 to provide a set of parallel horizontal tracks 4 and, in the illustrated embodiment, two sets of parallel inclined tracks 5 and 6 having opposite equal inclinations.

In addition, the wall element 1 constitutes a rectangular module member having horizontal top and bottom edges 7 and 8 and vertical side edges 9 and 10. As a result of the design with two sets of inclined tracks 5 and 6 the element may be used both in the right-hand and the left-hand side of a shelves structure, cupboard or transport trolley. When used in the left-hand side of the illustrated element the tracks 5 tilting downwardly to the left will serve inclined arrangement of shelves and trays and when used in the right-hand side the tracks 6 tilting downwardly to the right will serve this purpose.

To provide the sets of inclined tracks 5 and 6 as well as the set of horizontal tracks 4 the above-mentioned matrix-like arrangement comprises in the embodiment shown a first set of guide members 2 and a second set of guide members 3 arranged in alternating rows and columns.

The guide members 2 in the first set have a pentagonal cross-section with a horizontal top face 11 and two pairs of mutually opposed inclined faces 12, 14 and 13, 15 respectively with inclination corresponding to each of the sets of inclined tracks 5 and 6 respectively. The guide members 3 of the second set have a substantially triangular cross-section with a horizontal bottom face 16 and two inclined faces 17 and 18 having inclinations corresponding to each of the track sets 5 and 6. Dependent on the inclination of the inclined tracks some of the guide members 3 may be formed however with bevelled corners as shown at 3'.

Thereby the horizontal tracks 4 will be downwards defined by the top faces 11 of the guide members 2 of a row in the matrix-like arrangement and upwards by the bottom faces 16 of the guide members 3 of the adjacent overlying alternating row.

The inclined tracks 5 and 6 will be downwards defined by inclined faces 12, 17 and 15, 18 respectively of the guide members 2 and 3 in alternating order of succession, said inclined faces having an inclination corresponding to the track in question, whereas they are defined upwards by one of the downwards facing inclined faces 14 and 13 respectively on the guide members 2.

For the purpose of safe positioning of shelves

or trays in the inclined tracks 5 and 6 the guide members 2 and 3 in the embodiment shown are formed so that the inclined faces 12, 17 and 15, 18 on the guide members 2 and 3 respectively defining the tracks 5 and 6 downwardly have a little greater inclination than the inclined faces 14 and 13 on the guide member 2 defining the tracks 5 and 6 upwardly. Thereby, the heights of each of the inclined tracks will decrease in the upwards direction so that a certain wedge effect is obtained when introducing shelves or trays in these tracks.

Furthermore, at the lower end of each of the inclined tracks 5 and 6 there is provided a hook-like stop member 19 formed as an integrated part of the element 1 and covering part of the track height at the opening. When being introduced the side edge or flange of a shelf or tray is guided above the stop member 19 and when the shelf or tray is fully introduced it is released to get into abutment with the stop member 19 by itself.

For correspondingly safe positioning in the horizontal tracks there is provided in the further embodiment shown at both ends of these tracks a further guide member 20 which is likewise formed as an integrated part of the wall element 1 and has a stop bead 21 formed as a stop for the horizontal track.

As most clearly visible in Fig. 1 the wall element 1 is designed as a module to be combined with other corresponding wall elements in that the horizontal top edge 7 and the horizontal bottom edge 8 have the same separation from the top face 11 of the guide members 2 in the upper horizontal row and the bottom faces 16 of the guide members 3 in the lower row respectively, said separation being equal to half the height of the horizontal tracks 4.

In the embodiment shown the guide members 3 are designed as shown in Fig. 3 with open inwardly facing ends as short prismatic pins. However nothing prevents the inwardly facing ends from being closed.

In Fig. 3 a modification relative to the embodiment in Figs. 1 and 2 is shown in which the wall element 22 instead of being designed as a single plate member requiring fixing to a supporting wall is designed as a double-walled self-supporting cavity member provided at its vertical sides with means 23 for fixing it to vertical tubes of a frame structure not shown. This embodiment is well suited for transportation trolleys of the kind designed as cart frames. Dependent on the choice of material and production technology also a single plate member may be designed to be self-supporting.

Finally, in Fig. 4 a simplified embodiment relative to Figs. 1 and 2 is illustrated showing a wall element 24 having only set set of inclined tracks 25 in addition to the horizontal tracks 26. In this design which is somewhat cheaper the guide members 27 may have a substantially parallelogram-shaped cross-section as mentioned in the foregoing. On the other hand one and the same wall element may only be used in one side of a shelves structure or a cupboard.

Claims

1. A wall element for vertical side walls of shelves, cupboards or transport trolleys, particularly for storage and transportation of laboratory and/or medical products, said element being formed in one piece as a profiled plate member (1, 22, 24) with protruding guide members for supporting shelves or trays, characterized in that said guide members (2, 3, 27) are evenly distributed over the plate member (1, 22, 24) in the height and longitudinal directions thereof and form a matrix-like arrangement for providing a set of parallel horizontal tracks (4, 26) and at least one set of parallel inclined tracks (5, 6, 25) to accommodate side edges or flanges on said shelves and/or trays, the guide members having a prismatic shape for forming facial supports for both horizontal and inclined tracks.

2. A wall element as claimed in claim 1, characterized in that the guide members (27) have a substantially parallelogram-shaped cross section.

3. A wall element as claimed in claim 1, characterized in that said matrix-like arrangement comprises a first and a second set of guide members (2, 3) arranged in alternating rows and columns to provide two sets of parallel inclined tracks with opposite, equal inclinations, the guide members (2) of said first set having a pentagonal cross-section with a horizontal top face (11) and two pairs of mutually opposed inclined faces (12, 14; 13, 15) with inclinations corresponding to each of said sets of parallel inclined tracks (5, 6), whereas the guide members (3) of the second set have a triangular cross-section with a horizontal bottom face (16) and two inclined faces with inclinations corresponding individually to each of said sets of parallel inclined tracks (5, 6), whereby each horizontal track is defined downwards by top faces (11) of guide members (2) of said first set and upwards by bottom faces (16) of guide members (3) of said second set, whereas each inclined track (5,6) is defined downwards by alternating inclined faces (12, 17; 15, 18) on guide means (2, 3) of said first and second set, respectively, and upwards solely by inclined faces (14, 13) on guide means (2) of said first set.

4. A wall element as claimed in claim 3, characterized in that the inclined faces (12, 17; 15, 18) on guide members (2, 3) of said first and second sets defining the inclined tracks (5, 6) downwardly have a greater inclination to the horizontal than the inclined faces (14, 13) on guide members (2) of said first set defining the inclined tracks upwardly.

5. A wall element as claimed in any of the preceding claims, characterized in that at least at one end of each horizontal track (4) a further guide member (20) is formed as an integrated part of the member (1) with upwardly protruding stop bead (20a) forming an abutment for the end of side edge or flange of a shelf or tray inserted into the horizontal track.

6. A wall element as claimed in claim 3 or 4 and claim 5, characterized in that said further guide members (20) are formed with such a polygonal

cross-section as to additionally form stops (21) for the upper ends of the inclined tracks (5, 6).

7. A wall element as claimed in any of the preceding claims, characterized in that a stop member (19) formed integrally with the plate member (1) is provided at the lower end of each inclined track (5, 6).

8. A wall element as claimed in any of claims 2 to 4, characterized in that horizontal top and bottom edges (7, 8) are equally separated from the horizontal top faces (11) in the row of guide members (2) of said first set closest to said top edge (7) and the horizontal bottom faces (16) in the row of guide members (3) of said second set closest to said bottom edge (8), respectively, said separation being equal to half the height of the horizontal tracks (4).

9. A wall element as claimed in any of the preceding claims, characterized in that it is formed as a single plate member (1) to be fixed to the inner side of a supporting wall.

10. A wall element as claimed in any of the claims 1—8, characterized in that it is designed as a self-supporting plate member (22) and is provided at its vertical sides with means for securing it to vertical tubular or rail members of a frame structure.

Patentansprüche

1. Wandelement für senkrechte Seitenwände in Regalen, Schränken oder Transportwagen, insbesondere zur Aufbewahrung und zum Transport von Labor- und/oder Medizinalartikeln, welches Element in einem Stück als ein profiliertes Plattenelement (1, 22, 24) angefertigt ist mit herausragenden Führungsorganen zur Unterstützung von Fächern oder Trägern, dadurch gekennzeichnet, dass die Führungsorgane (2, 3, 27) über das Plattenelement (1, 2, 24) in dessen Höhen- und Längsrichtung gleichmässig verteilt sind und eine matrizenähnliche Anordnung bilden zur Erzeugung eines Satzes paralleler, waagrechtter Spuren (4, 26) und zumindest eines Satzes paralleler, schräggestellter Spuren (5, 6, 25) zur Aufnahme von Seitenkanten oder -flanschen auf den Fächern und/oder Trägern, wobei die Führungsorgane prismatisch ausgebildet sind um Flächenunterstützungen für sowohl waagrechte als schräggestellte Spuren zu bilden.

2. Wandelement nach Anspruch 1, dadurch gekennzeichnet, dass die Führungsorgane (27) einen im wesentlichen parallelogrammförmigen Querschnitt aufweisen.

3. Wandelement nach Anspruch 1, dadurch gekennzeichnet, dass die matrizenähnliche Anordnung einen ersten und einen zweiten Satz abwechselnd in Reihen und Säulen angeordneter Führungsorgane (2, 3) umfasst, zur Bildung zweier Sätze paralleler, schräggestellter Spuren mit gegenüberliegenden gleichen Neigungen, wobei die Führungsorgane (2) des ersten Satzes einen pentagonalen Querschnitt mit einer waagrechteten Oberseite (11) und zwei Paar einander gegenüberliegende Schrägseiten (12, 14; 13, 15) aufweisen,

deren Neigungen einem jeden Satz paralleler, schräggestellter Spuren entsprechen, während die Führungsorgane (3) des zweiten Satzes einen dreieckigen Querschnitt aufweisen mit einer waagrechteten Unterseite (16) und zwei Schrägseiten, deren Neigungen jede für sich einem jeden der erwähnten Sätze paralleler, schräggestellter Spuren (5, 6) entsprechen, sodass jede waagrechtete Spur nach unten durch Oberseiten (11) von Führungsorganen (2) des ersten Satzes und nach oben durch Unterseiten (16) von Führungsorganen (3) des zweiten Satzes abgegrenzt wird, während jede Schrägspur (5, 6) nach unten abwechselnd durch Schrägseiten (12, 17; 15, 18) von Führungsorganen (2, 3) des ersten bzw. des zweiten Satzes und nach oben lediglich durch Schrägseiten (14, 13) von Führungsorganen (2) des ersten Satzes abgegrenzt wird.

4. Wandelement nach Anspruch 3, dadurch gekennzeichnet, dass die Schrägseiten (12, 17; 15, 18) auf den Führungsorganen (2, 3) der erwähnten ersten und zweiten Sätze, welche die schräggestellten Spuren (5, 6) nach unten abgrenzen, eine grössere Neigung zur waagrechteten haben als die Schrägseiten (14, 13) auf Führungsorganen (2) des die schräggestellten Spuren nach oben abgrenzenden ersten Satzes.

5. Wandelement nach einem jeden der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass zumindest an dem einen Ende einer jeden waagrechteten Spur (4) als integrierter Teil des Elements (1) ein zusätzliches Führungsorgan (20) mit einer herausragenden Sperrwulst (20a) vorgesehen ist, die als Anlage für das Ende einer Seitenkante oder -flansches eines in die waagrechtete Spur eingeschobenen Faches oder Trägers dient.

6. Wandelement nach Anspruch 3 oder 4, und Anspruch 5, dadurch gekennzeichnet, dass die zusätzlichen Führungsorgane (20) einen derartigen vieleckigen Querschnitt aufweisen, dass die zusätzliche Sperren (21) für die oberen Enden der schräggestellten Spuren (5, 6,) bilden.

7. Wandelement nach einem jeden der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass ein als integrierter Teil des Plattenelementes (1) ausgebildetes Sperrorgan (19) am unteren Ende einer jeden schräggestellten Spur (5, 6) vorgesehen ist.

8. Wandelement nach einem jeden der Ansprüche 2—4, dadurch gekennzeichnet, dass waagrechtete Ober- und Unterkanten (7, 8) von den waagrechteten Oberseiten (11) in der der Oberkante (7) am nächsten liegenden Reihe von Führungsorganen (2) des ersten Satzes bzw. von den waagrechteten Unterseiten (16) in der der Unterkante (8) am nächsten liegenden Reihe von Führungsorganen (3) des zweiten Satzes in gleichem Abstand gehalten werden, welcher Abstand die Hälfte der Höhe der waagrechteten Spuren (4) beträgt.

9. Wandelement nach einem jeden der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass es als ein einziges Plattenelement (1) zur Befestigung auf der Innenseite einer Stützwand ausgebildet ist.

10. Wandelement nach einem jeden der Ansprüche 1—8, dadurch gekennzeichnet, dass es als ein selbsttragendes Plattenelement (22) ausgeformt ist und an seinen senkrechten Seiten Mittel zu dessen Befestigung an senkrechte, röhren- oder schienenförmige Elemente in einer Rahmenkonstruktion aufweist.

Revendications

1. Élément de paroi pour parois latérales verticales d'étagères, armoires ou chariots de transport, notamment pour le dépôt et le transport de produits médicaux et/ou de laboratoire, cet élément étant formé en une pièce comme une plaque profilée (1, 22, 24) avec des pièces de guidage en saillie pour le support de tablettes ou tirettes, caractérisé en ce que lesdites pièces de guidage (2, 3, 27) sont distribuées de manière égal sur la plaque (1, 22, 24) en hauteur et dans la direction longitudinale de cette plaque et présentant une disposition en matrice pour constituer un jeu de pistes horizontales parallèles (4, 26) et au moins un jeu de pistes inclinées parallèles (5, 6, 25) pour recevoir les bords ou flancs latéraux desdites tablettes et/ou tirettes, les pièces de guidage étant de forme prismatique pour former des supports frontaux pour aussi bien les pistes horizontales que les pistes inclinées.

2. Élément de paroi selon la revendication 1, caractérisé en ce que les pièces de guidage (27) ont une section essentiellement en parallélogramme.

3. Élément de paroi selon la revendication 1, caractérisé en ce que ladite disposition en matrice comprend un premier et un deuxième jeu de pièces de guidage (2, 3) disposée en rangées alternant avec des colonnes pour constituer deux jeux de pistes inclinées parallèles avec des inclinaisons égales opposées, les pièces de guidage (2) dudit premier jeu présentant une section pentagonale avec une face supérieure horizontale (11), et deux paires de faces inclinées et mutuellement opposées (12, 14; 13, 15) avec des inclinaisons correspond à chacun desdits jeux de pistes inclinées parallèles (5, 6), tandis que les pièces de guidage (3) du deuxième jeu présentent une section triangulaire avec une face inférieure horizontale (16) et deux faces inclinées avec des inclinaisons correspondant individuellement à chacun desdits jeux de pistes inclinées parallèles (5, 6), chaque piste horizontale étant ainsi délimité vers le bas par des faces supérieures (11) de pièces de guidage (2) dudit premier jeu et vers le haut par des faces inférieures (16) de pièces de guidage (3) dudit deuxième jeu, tandis que chaque piste inclinée (5, 6) est délimitée vers le bas

alternativement par des faces inclinées (12, 17; 15, 18) de moyens de guidage (2, 3) desdits première et deuxième jeux, respectivement, et vers le haut uniquement par des faces inclinées (14, 13) de moyens de guidage (2) dudit premier jeu.

4. Élément de paroi selon la revendication 3, caractérisé en ce que les faces inclinées (12, 17; 15, 18) sur des pièces de guidage (2, 3) desdits premier et deuxième jeux délimitant les pistes inclinées (5, 6) vers le bas ont une plus grande inclinaison par rapport à l'horizontale que les faces inclinées (14, 13) de pièces de guidage (2) dudit premier jeu délimitant les pistes inclinées vers le haut.

5. Élément de paroi selon une quelconque des revendications précédentes, caractérisé en ce qu'à au moins une extrémité de chaque piste horizontale (4) une pièce de guidage supplémentaire (20) fait partie intégrante de la plaque (1) avec une protubérance d'arrêt (20a) faisant saillie vers le haut et constituant un appui à l'extrémité du bord latéral au flanc d'une tablette ou tirette insérée dans la piste horizontale.

6. Élément de paroi selon la revendication 3 ou 4 et la revendication 5, caractérisé en ce que des pièces supplémentaires de guidage (20) ont une section polygonale telle qu'elles constituent des arrêts (21) également pour les extrémités supérieures des pistes inclinées (5, 6).

7. Élément de paroi selon une quelconque des revendications précédentes, caractérisé en ce qu'une pièce d'arrêt (19) qui fait partie intégrante de la plaque (1) est prévue à l'extrémité inférieure de chaque piste inclinée (5, 6).

8. Élément de paroi selon une quelconque des revendications 2 à 4, caractérisée en ce que des bords horizontaux supérieurs et inférieurs (7, 8) sont séparés de manière égale respectivement des faces supérieures horizontales (11) de la rangée de pièces de guidage (2) dudit premier jeu située le plus près du bord supérieur (7) et des faces inférieures horizontales (16) de la rangée de pièces de guidage (3) dudit deuxième jeu située le plus près dudit bord inférieur (8), cette séparation étant égale à la moitié de la hauteur des pistes horizontales (4).

9. Élément de paroi selon une quelconque des revendications précédentes, caractérisée en ce qu'il est formé comme une plaque simple (1) à fixer au côté intérieur d'une paroi de support.

10. Élément de paroi selon une quelconque des revendications 1 à 8, caractérisé en ce qu'il est construit comme une plaque autoportante (22) et est pourvu sur ses côtés verticaux de moyens pour le fixer à des montants verticaux tubulaires ou profilés.

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FIG. 1

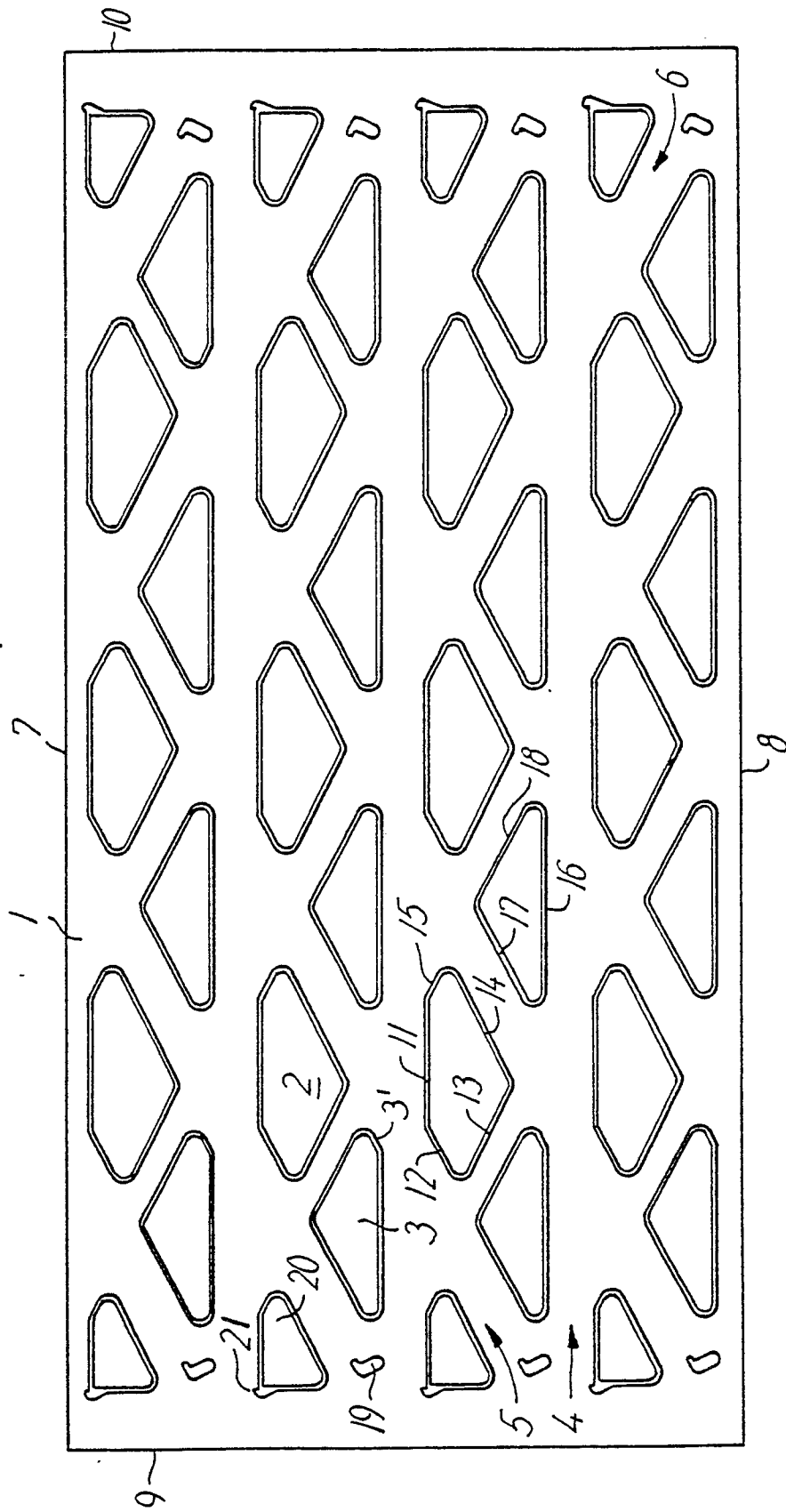


FIG.2

