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(54) **Clothes drying rack**

Wäscheständer

Séchoir à linge

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(56) References cited:
DE-A- 1 585 580
FR-A- 2 718 163
FR-A- 2 763 967

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Description

[0001] The present invention relates to devices for drying clothes. In winter, washed clothes are dried indoors, in dry and warm environment, which results in a need for a drying rack which has acceptable drying space and requires a minimal of room for storage when not in use.

[0002] Drying racks have heretofore been provided, as constituted by two metallic tubular structures, which have rectangular form with rounded corners and which are hinged to each other. These structures removably support grate frames situated horizontally thereto.

[0003] These grates, used for suspending thereon washed clothes, are supported by attaching elements fastened to the structure vertical sides. However, this particularly functional solution is obtained by very expensive techniques. Moreover, the assembling time is too long for such a simple device.

[0004] FR-A-2718163 discloses a cloth drying rack, in which the frame of the cloth dryer includes four "C"-shaped tubular elements and two cross-shaped connecting members.

[0005] Each cross-member has two fixed ends, facing opposite directions, and two pivoted ends also facing opposite directions. The other ends of the cross-shaped connecting members feature each one a vertical pivot. The pivot of each pivoted end of the cross-elements, is formed by a wedge-shaped disc introduced in between two wings extending from the central part of the cross-member. Circular protrusions extend from the wedge-shaped discs for entering corresponding holes made in the wings. A funnel-like introductory space is formed between the wings. The wedge-shaped discs are snap-fitted into the space delimited between the wings.

[0006] Two of the "C"-shaped tubular elements are rigidly connected to each other by fitting their ends onto the fixed ends of the cross-members. In this way, a rigid connection is created between two of the "C"-shaped elements. The other "C"-elements are connected to the pivoted ends of the cross-members

[0007] The object of the present invention is to propose a clothes drying rack, which is obtained by cheap elements and whose assembly is simple and rapid.

[0008] Another object of the present invention is to propose a clothes drying rack of reduced dimensions when it is packaged.

[0009] The above mentioned objects are obtained in accordance with the contents of claims.

[0010] The characteristic features of the invention are pointed out in the following, with reference to the enclosed drawings, in which:

- Figure 1 is an exploded schematic view of the proposed clothes drying rack;
- Figure 1a is an enlarged view of a particular K of Figure 1;
- Figures 2a, 2b are plan views of the element indicated with A in Figure 1, in two different configurations;
- Figure 3 is a top view of an attaching element, according to a second embodiment, when open;
- Figure 4 is the same view of the element of Figure 3, when closed;
- Figure 5 is a lateral view of the particular B of Figure 1, enlarged with respect to previous figures;
- Figure 6 is a prospective schematic view of the proposed clothes drying rack.

[0011] With reference to the above mentioned figures, the proposed clothes drying rack is indicated with 1.

[0012] This clothes drying rack 1 extends vertically and includes four tubular rods 2a, 2b, 2c, 2d, respectively, a first cross journal 100a and a second cross journal 100b, identical with each other.

[0013] These first and second cross journals connect and stiffen respectively the upper and lower ends of these rods.

[0014] Each cross journal includes a member 10 connecting the inner ends of four identical arms 9.

[0015] The connecting member 10 is composed of two half-shells 10a, 10b, each of which features four seats 11, made therein for receiving small vertical rolls 8a, 8b, 8c, 8d extending from the inner ends of the arms 9.

[0016] After having been coupled with the relative seats 11, two rolls 8a, 8c are located on the same diametric line and constitute, together with the half-shells walls, attaching and aligning points for the corresponding arms.

[0017] The remaining rolls 8b, 8d, define, together with the relative seats, two hinges which allow the corresponding arms to rotate by 90°.

[0018] This is possible due to a particular arrangement of the edges 180 of the half-shells, which from one side stabilise the position of two arms, and from the other side, allow the rotation of the other two arms.

[0019] A rotation move the arms from an non-operative position I, shown in Figure 2a, in which the device is ready to be packed, to an operative position O, in which the arms are arranged at 90° with respect to each other, as shown in Figure 2b.

[0020] The outer ends of the arms feature, integral therewith, sleeves 7, identical in both cross journals 100a, 100b.

[0021] The lower parts 7a of the sleeves 7 of the first cross journal 100a, are connected to the relative upper ends of the tubular rods, while the upper parts 7b of these sleeves 7 can couple with joints 51.

[0022] These joints 51 are integral with triangular elements 50 or clothes hangers holders, featuring a scalloped part 52, as shown in Figure 5.

[0023] The upper parts 7c of the sleeves 7 of the second cross journal 100b are coupled with the lower ends of the tubular rods, while their lower parts 7d couple with joints 61, carried by corresponding pivot wheels 60.

[0024] A series of holes 40 (e.g. three for each rod, as shown in Figure 1), are made along the tubular rods, arranged along a vertical line and equispaced. These holes are made in the same position on each rod.

[0025] Each hole is connected to a corresponding supporting element 3, 300. According to a first embodiment (Figure 1), on its outer side, this element 3 is formed by a strip and on its inner side, this element 3 features a pin, which enters the hole 40 thus fastening the element 3 to the rod. Consequently, the strip fits the rod.

[0026] According to another embodiment, this supporting element 300 includes an open circular portion 32, with a stake 33, integral therewith and extending radial from its central inner part.

[0027] Two protrusions 30a, 30b extend from the ends of this circular portion and form, in their terminal part, complementary elements 31a, 31b which are snap coupled.

[0028] Before being fitted to the tubular rod, the described supporting element 300 is open, as shown in Figure 3.

[0029] This element 300 is fastened to the bar by removable introducing of the stake 33 into a corresponding hole 40.

[0030] As a result, the complementary elements 31a, 31b are snap coupled, so that the protrusions 30a, 30b are drawn to each other thus closing this element 300, as shown in Figure 4.

[0031] These joined together protrusions 30a, 30b define a rest 35.

[0032] The rests 35 are attached to the frames 80.

[0033] Each frame 80 includes an external U-shaped member 83, two hooks 81 obtained by folding the ends of this external member 83, and a plurality of stiffening cross bars 82.

[0034] A grate frame is obtained in this way.

[0035] The clothes drying rack 1 is obtained by assembling the above described elements.

[0036] By rotating about the rolls 8b, 8d hinged to the respective seats 11, the arms 9 are moved from the inoperative position I, shown in Figure 2a, to the operative position O of Figure 2b, in which these arms 9 are arranged at 90° with respect to each other.

[0037] First and second cross journals are obtained due to these rotations.

[0038] Afterwards, the tubular rods 2a, 2b, 2c, 2d are introduced first to the lower parts of the sleeves 7 of the first cross journal 100a, and then to the upper parts of the sleeves 7 of the second cross journal 100b, or otherwise, thus defining the vertical structure of the clothes drying rack 1.

[0039] During the next assembly step, the supporting elements 300 are attached to the rods, thus forming the rests 35, by which the frames 80 are attached to the rods.

[0040] Due to their conformation, the frames 80 are attached to three tubular rods in two attaching points constituted by hooks 81 (particular K of Figure 1) and in a third point, defined on a third rod along the outer structure of the frame 80.

[0041] This way, two frames are attached to two tubular rods close to the rests 35, in a removable way due to the hooks 81 form.

[0042] These hooks 81 allow the frame 80 to pass from a stationary horizontal position to a movable vertical position, by unhooking the frame 80 from the third attaching point.

[0043] The lower ends of the sleeves 7 of the lower cross journal 100b are connected to the above mentioned pivot wheels 60, which allow the clothes drying rack 1 to be easily moved, while into the upper ends of the sleeves 7 of the upper cross journal 100a clothes hangers holders 50 can be introduced, during the clothes drying rack use.

[0044] The above described clothes drying rack is formed by tubular rods, cross journals and frames which have advantageous features and can be obtained in a simple way.

[0045] The use of a plurality of simple elements which can be assembled reduces the production costs.

[0046] Moreover, the proposed clothes drying rack is simple to assemble.

[0047] The use of this plurality of elements facilitates packaging, since the rods are put together, the frames are stacked and the cross journals, in non-operative configuration, paired.

[0048] The dimension of the detached components of the clothes drying rack is reduced, therefore it requires minimal space for storage.

Claims

1. Clothes drying rack including:

four tubular rods (2a,2b,2c,2d);

a first cross journal (100a), and a second cross journal (100b) which connect and stiffen the upper and lower ends of these rods, respectively, said first and second cross journals including four arms, arranged along the diagonals of an ideal rectangle, with each of said arms being capable, at its outer end, to be coupled with the upper or lower end of a relative tubular rod,

a plurality of frames (80) for supporting clothes or like articles to be dried, with each of said frames being attached, in horizontal position, to said rods by supporting elements (3,300) attachable to said rods;

said clothes drying rack being **characterised in that**:

said first and second cross journals include also a connecting member (10), to which the inner ends of said arms are coupled, each connecting member (10) being formed by two half-shells defining corresponding seats for receiving relative inner ends of said arms;

and **in that** the edges (180) of said half-shells define the two positions of said arms hinged to said connecting members, respectively, the operative position (O) in which the arms at its outer end are coupled with the relative tubular rods, and non-operative (I), in which each arm is drawn to a corresponding stationary arm.

2. Clothes drying rack, according to claim 1, **characterised in that** it includes pivot wheels (60) featuring relative joints (61), which can be coupled with the lower ends of said tubular rods.

3. Clothes drying rack, according to claim 1, **characterised in that** the outer end of each of said arms forms a sleeve (7) designed to receive therein said upper or lower end of a relative tubular rod

4. Clothes drying rack, according to claim 1, **characterised in that** two of said arms are aligned and their relative inner ends are coupled with said seats made in said half-shells and **in that** the inner ends of the other two arms, together with the relative seats, form two hinges.

5. Clothes drying rack, according to claim 1, **characterised in that** the arrangement of said edges put said arms in operative position (O), in which said arms are arranged at 90° with respect to each other.

6. Clothes drying rack, according to claim 1, **characterised in that** each support element (300) includes:

an open circular portion (32) which encircles the relative rod;

a stake (33), integral with said circular portion and extending in a radial direction from its central inner part, said stake removably coupling with a corresponding hole made in said bars;

two protrusions (30a,30b) extending from the ends of said circular portion and forming complementary elements (31a,31b) which are dovetail coupled, so as to stabilise the mutual joining of said protrusions.

7. Clothes drying rack, according to claim 1, **characterised in that** it includes at least one clothes hangers holder formed by a triangular element (50), which features a scalloped profile (52) and a joint (51), which can be coupled with the upper part of a corresponding sleeve.

Patentansprüche

1. Trocknungsgestell für Kleidungsstücke, bestehend aus
vier Rohrstangen (2a, 2b, 2c, 2d);
einem ersten Kreuzlager (100a) und einem zweiten Kreuzlager (100b), welche die oberen und unteren Enden der Rohrstangen verbinden und versteifen und wobei das erste und das zweite Kreuzlager jeweils vier in der Diagonalen eines gedachten Rechtecks liegende Arme aufweist, von denen jeder Arm mit seinem äußeren Ende mit dem oberen oder unteren Ende einer zugeordneten Rohrstange verbindbar ist,
mehreren Einlegerahmen (80) zur Aufnahme von zu trocknenden Kleidungsstücken oder dgl., wobei jeder Rahmen horizontal liegend mit den Rohretangen durch daran anbringbare Rahmenträger (3, 300) verbunden ist, **dadurch gekennzeichnet,**
dass das erste und zweite Kreuzlager außerdem ein Verbindungsglied (10) aufweisen, mit dem die inneren Enden der Arme koppelbar sind, wobei jedes Verbindungsglied (10) aus zwei Halbschalen (10a, 10b) besteht, die einen zur Aufnahme der zugeordneten inneren Enden der Arme entsprechenden Sitz bilden, und
dass Randbereiche (180) der Halbschalen (10a, 10b) die beiden Stellungen begrenzen, in denen die Arme an dem Verbindungsglied angelenkt sind, nämlich die Wirkstellung (0), in der die Arme mit ihren äußeren Enden mit der zugeordneten Rohrstange gekoppelt sind und die unwirksame Stellung (I), in der jeder Arm gegen einen zugeordneten stationären Arm geschwenkt ist.

2. Trocknungsgestell für Kleidungsstücke nach Anspruch 1, **dadurch gekennzeichnet,**
dass die unteren Enden der Rohrstangen Schwenkrollen (60) mit jeweils einem Drehzapfen (61) aufweisen.

3. Trocknungsgestell für Kleidungsstücke nach Anspruch 1, **dadurch gekennzeichnet, dass** das äußere Ende jedes Arms eine Hülse (7) bildet, in die das obere oder untere Ende einer zugehörigen Rohrstange einsetzbar ist.

4. Trocknungsgestell für Kleidungsstücke nach Anspruch 1, **dadurch gekennzeichnet, dass** zwei der Arme in einer Linie liegen und ihre inneren Enden jeweils mit den Sitzen in den Halbschalen verbun-

den sind und dass die inneren Enden der beiden anderen Arme zusammen mit den zugehörigen Sitzen zwei Scharniere bilden.

5. Trocknungsgestell für Kleidungsstücke nach Anspruch 1, **dadurch gekennzeichnet, dass** durch die Anordnung der Randbereiche (180) die Arme in ihre Wirkstellung (0) bringbar sind, in der die Arme (8a, 8b, 8c, 8d) relativ zueinander in einem rechten Winkel (90°) zueinander stehen.

6. Trocknungsgestell für Kleidungsstücke nach Anspruch 1, **dadurch gekennzeichnet, dass** jeder Rahmenträger (300) umfasst:

ein offenes ringförmiges Teil (32), das die zugehörige Rohrstange umschließt,
und eine einstückig mit ihm verbundene Raste (33) aufweist, die sich auf der Innenseite des Teils (32) in der Mitte radial nach innen erstreckt und lösbar mit einem korrespondierenden Loch in den Rohrstangen verbindbar ist;
zwei Ansätze (30a, 30b), die sich von den offenen Enden des Rings (32) nach außen erstrekken und komplementäre Elemente (31a, 31b) aufweisen, die eine schwalbenschwanzförmige Verbindung eingehen und so die gegeneinander liegenden Ansätze festlegen.

7. Trocknungsgestell für Kleidungsstücke nach Anspruch 1, **dadurch gekennzeichnet, dass** es mindestens eine Aufhängung für Kleiderbügel in Form eines dreieckigen Teils (50) mit ausgebogtem Profil (52) aufweist und einen Zapfen (51), der mit dem oberen Teil einer korrespondierenden Hülse verbindbar ist.

Revendications

1. Séchoir à linge comprenant:

quatre tiges tabulaires (2a, 2b, 2c, 2d);
un premier tourillon transversal (100a) et un second tourillon transversal (100b) qui relient et rigidifient les extrémités supérieure et inférieure de ces tiges, respectivement, les premier et second tourillons transversaux comprenant quatre bras, disposés le long des diagonales d'un rectangle idéal, chacun desdits bras étant capable, au niveau de son extrémité extérieure, d'être couplé à l'extrémité supérieure ou inférieure d'une tige tubulaire relative,
une pluralité de cadres (80) pour supporter du linge ou des articles similaires à sécher, chacun desdits cadres étant fixé, en position horizontale, auxdites tiges par des éléments de support (3, 300) pouvant être fixés auxdites tiges ;
ledit séchoir à linge étant **caractérisé en ce que** :

lesdits premier et second tourillons transversaux comprennent également un élément de connexion (10), auquel les extrémités intérieures desdits bras sont couplées, chaque élément de connexion (10) étant formé par deux demi-coques définissant des appuis correspondants pour recevoir des extrémités intérieures desdits bras;
et **en ce que** les arêtes (180) desdites demi-coques définissent les deux positions desdits bras articulés sur lesdits éléments de connexion, respectivement, la position de fonctionnement (O), dans laquelle les bras, au niveau de leur extrémité extérieure, sont couplés aux tiges tubulaires relatives, et la position de non fonctionnement (1), dans laquelle chaque bras est tiré dans une position de bras fixe correspondante.

2. Séchoir à linge selon la revendication 1, **caractérisé en ce qu'**il comprend des roues de pivotement (60) munies de jonctions relatives (60), qui peuvent être couplées aux extrémités inférieures desdites tiges tubulaires.

3. Séchoir à linge selon la revendication 1, **caractérisé en ce que** l'extrémité extérieure de chacun desdits bras forme un manchon (7) conçu pour recevoir à l'intérieur ladite extrémité supérieure ou inférieure d'une tige tubulaire relative.

4. Séchoir à linge selon la revendication 1, **caractérisé en ce que** deux desdits bras sont alignés et leur extrémité intérieure relative est couplée auxdits appuis formés dans lesdites demi-coques et **en ce que** les extrémités intérieures des deux autres bras, conjointement avec les appuis relatifs, forment deux articulations.

5. Séchoir à linge selon la revendication 1, **caractérisé en ce que** l'agencement desdites arêtes met lesdits bras en position de fonctionnement (O), dans laquelle lesdits bras sont disposés à un angle de 90° les uns par rapport aux autres.

6. Séchoir à linge selon la revendication 1, **caractérisé en ce que** chaque élément de support (300) comprend :

une partie circulaire ouverte (32) qui encercle la tige relative ;
un montant (33) formant un seul tenant avec ladite partie circulaire et s'étendant dans une direction radiale depuis sa partie intérieure

centrale, ledit montant s'accouplant de manière amovible avec un trou correspondant formé dans lesdits barres ;
deux saillies (30a, 30b) s'étendant depuis les extrémités de ladite partie circulaire et formant des éléments complémentaires (31a, 31b) qui sont couplés en queue d'aronde, afin de stabiliser la jonction mutuelle desdites saillies.

7. Séchoir à linge selon la revendication 1, caractérisé en qu'il comprend au moins un support de cintres de vêtements formé par un élément triangulaire (50), se composant d'un profil échancré (52) et d'une jonction (51), qui peut être couplé à la partie supérieure d'un manchon correspondant.

FIG.1a

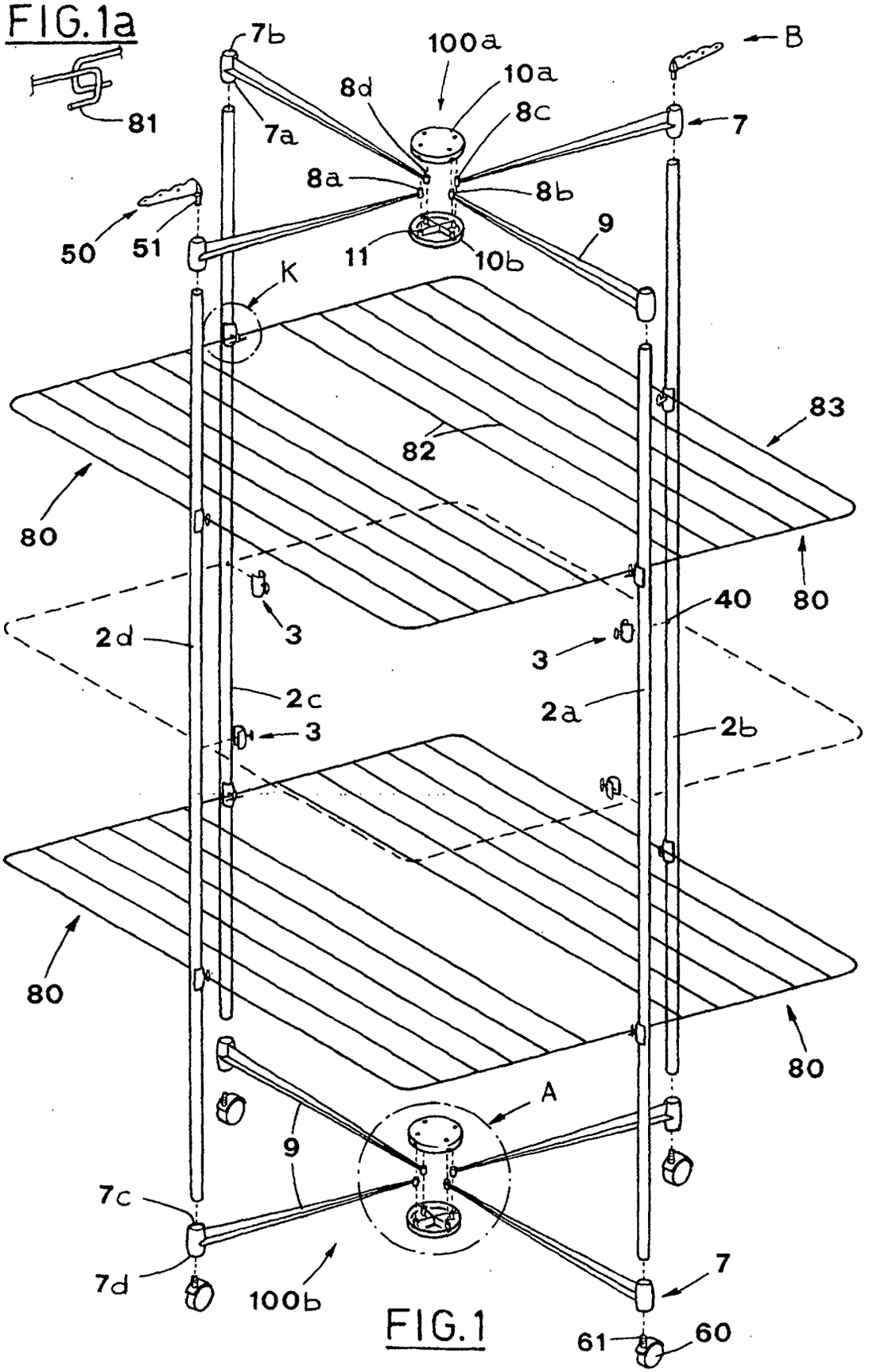
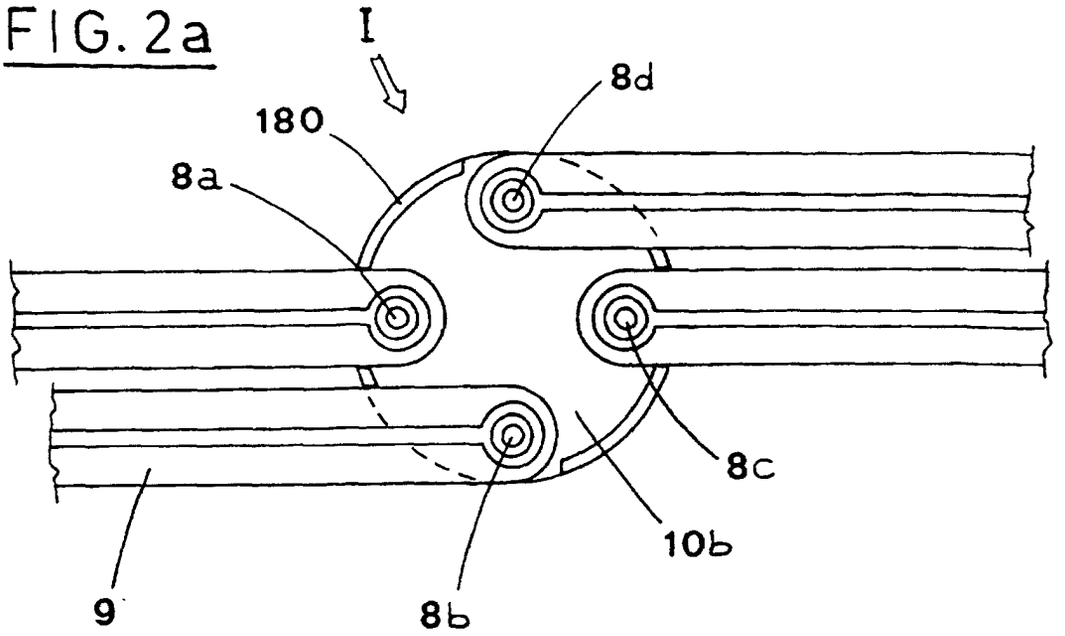

81
7b
100a
B
8d
10a
8c
7a
7
8a
8b
50
51
11
10b
9
K
83
82
80
80
40
80
3
2d
3
3
2c
2a
2b
3
80
80
A
9
7c
7
7d
100b
61
60

FIG.1

FIG. 2a



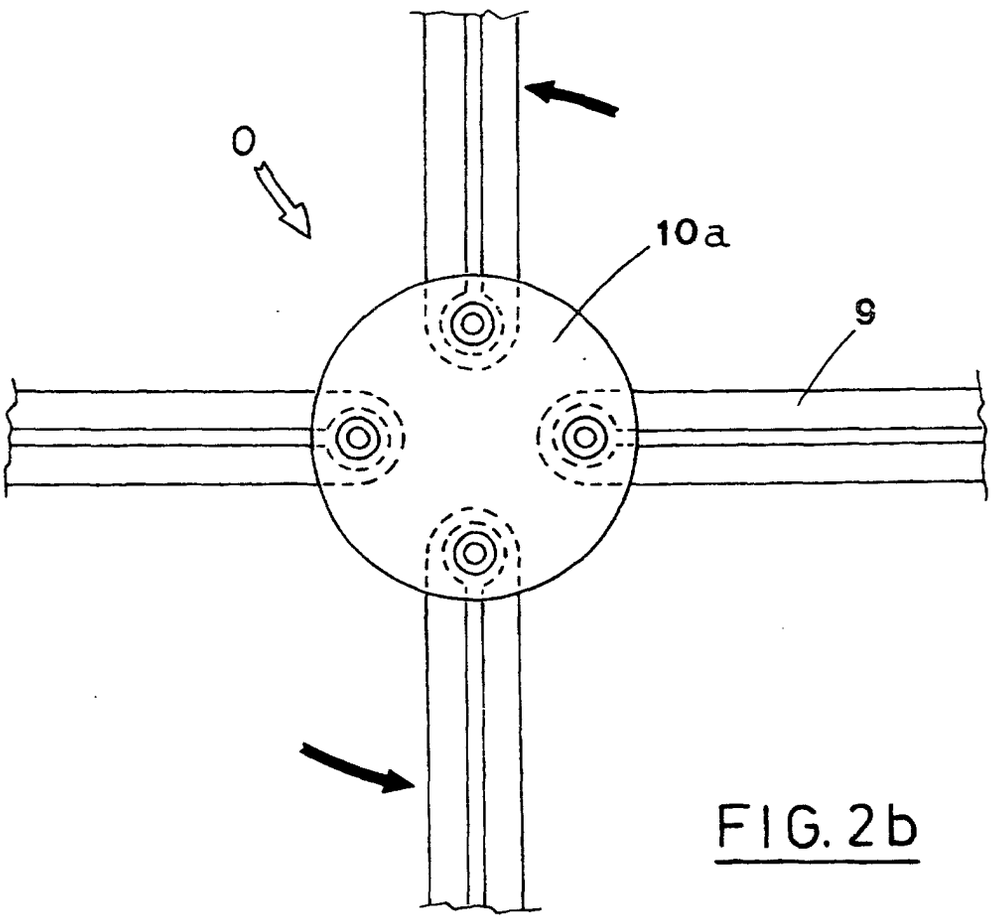


FIG. 2b

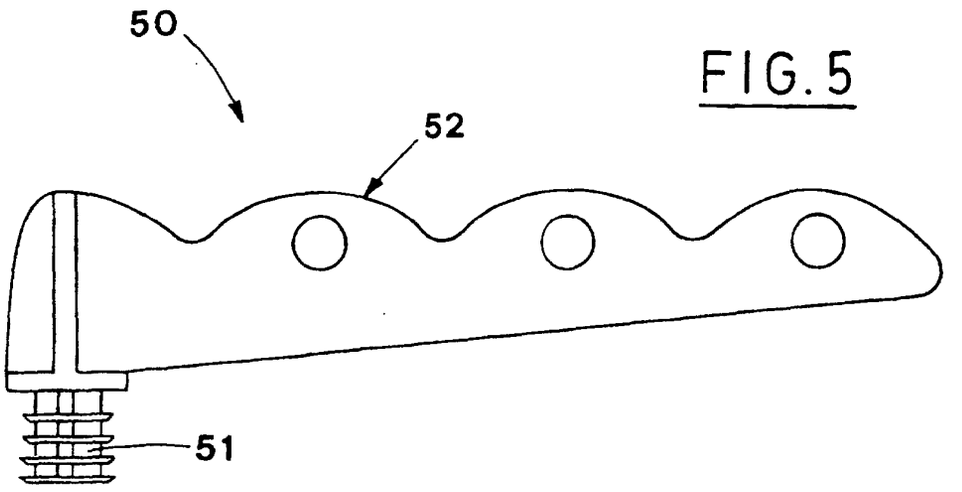


FIG. 5

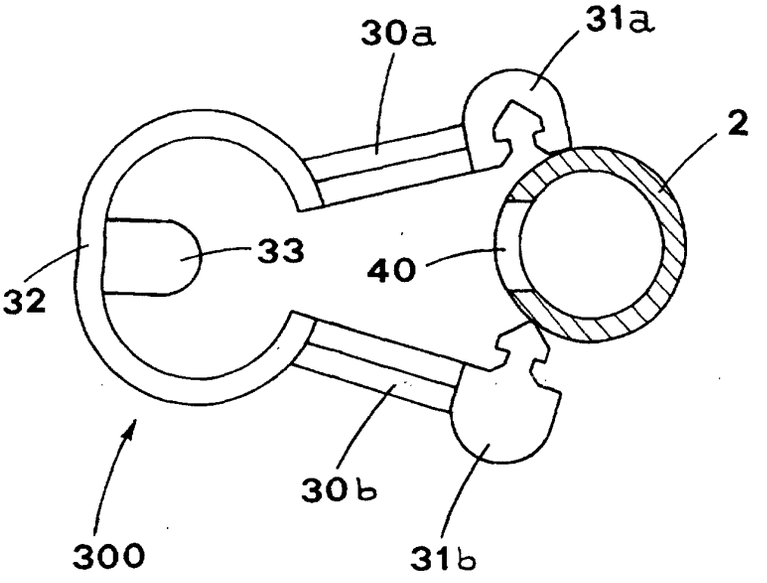


FIG. 3

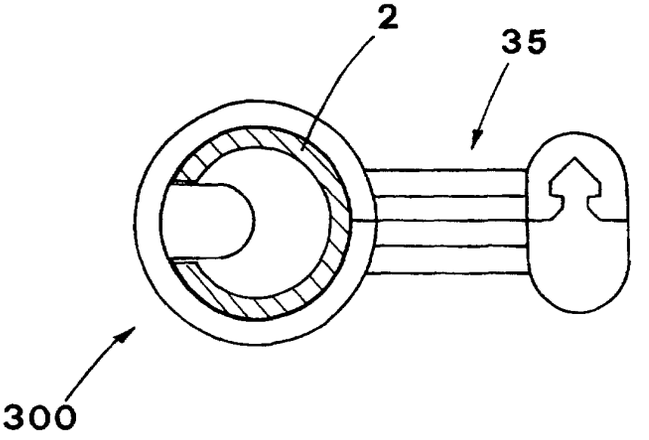


FIG. 4

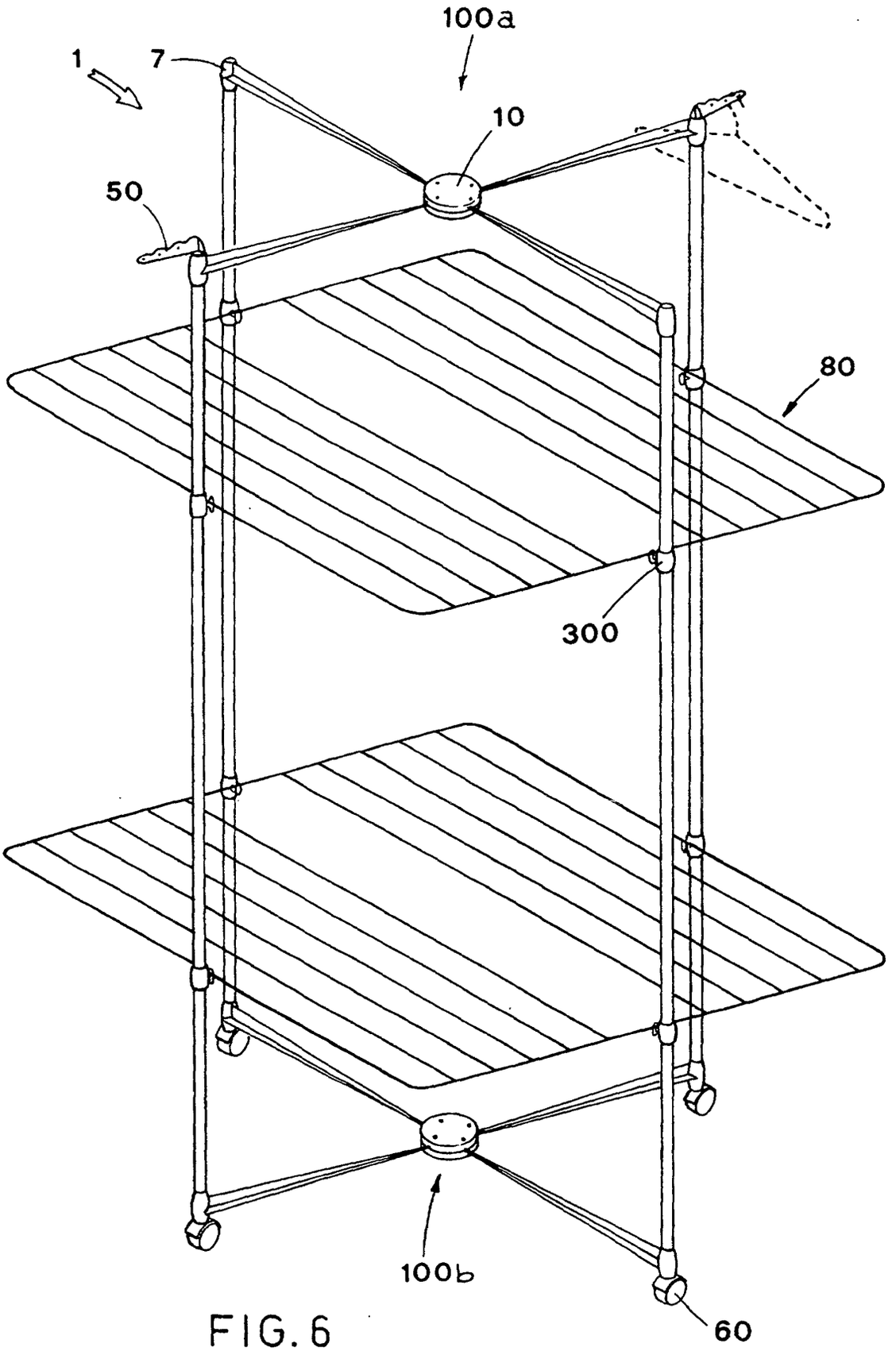


FIG. 6