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Daubach et al.(10) **Pub. No.: US 2004/0134870 A1**(43) **Pub. Date: Jul. 15, 2004**(54) **UMBRELLA-TYPE LAUNDRY DRYING
RACK****Publication Classification**(75) Inventors: **Harald Daubach**, Weinahr (DE); **Heinz
Josef Ohm**, Limburg (DE); **Dieter
Patzold**, Nassau (DE); **Peter Tiwi**,
Winden (DE)(51) **Int. Cl.⁷** **A47F 5/00**
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Correspondence Address:

**FRISHAUF, HOLTZ, GOODMAN & CHICK,
PC****767 THIRD AVENUE****25TH FLOOR****NEW YORK, NY 10017-2023 (US)**

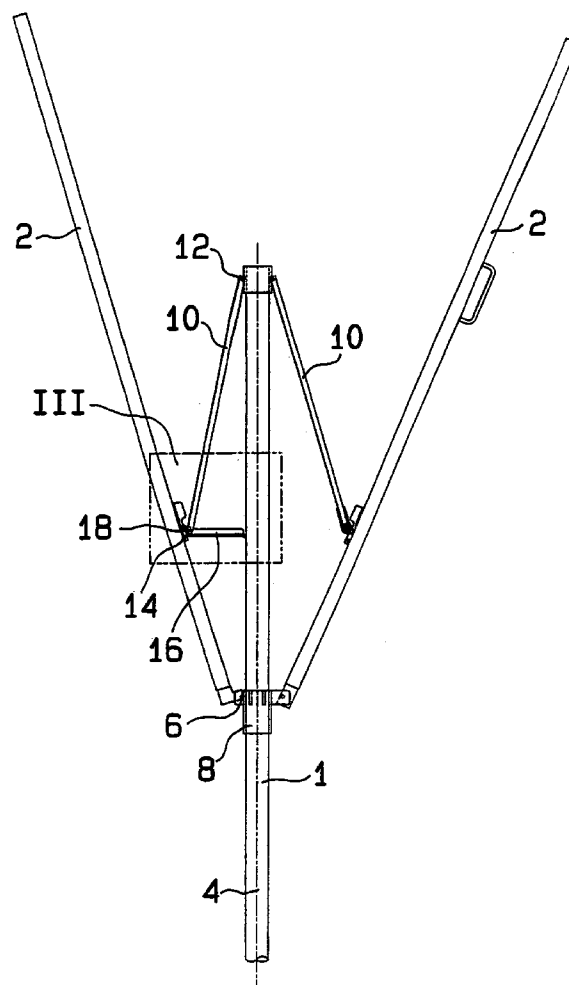
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ABSTRACT

An umbrella-type laundry drying rack is provided which has a vertical support and load-bearing arms for clothes lines. The load-bearing arms are disposed pivotably on the support about respective pivot pins, and are pivotable between a first position close to the support and a second position remote from the support. The load-bearing arms are coupled to one another such that upon pivoting of one of the load-bearing arms, the remaining load-bearing arms are jointly pivoted in the same way. At least one of the load-bearing arms has a deflection mechanism for deflecting the at least one load-bearing arm outward from the first position upon exertion of a force oriented away from the support to another one of the load-bearing arms.

(73) Assignee: **Leifheit AG**, Nassau/Lahn (DE)(21) Appl. No.: **10/613,554**(22) Filed: **Jul. 2, 2003**(30) **Foreign Application Priority Data**

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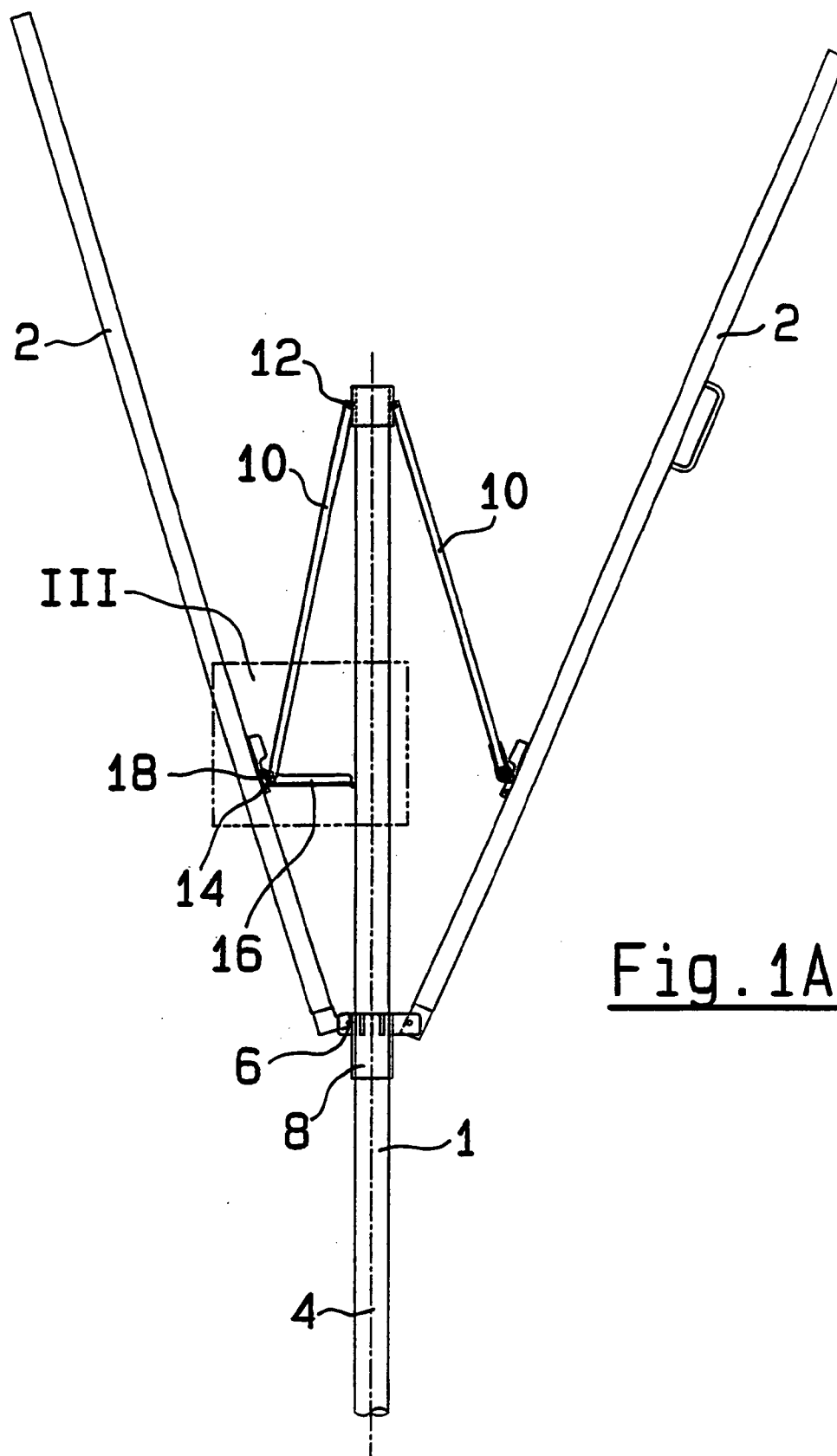


Fig. 1A

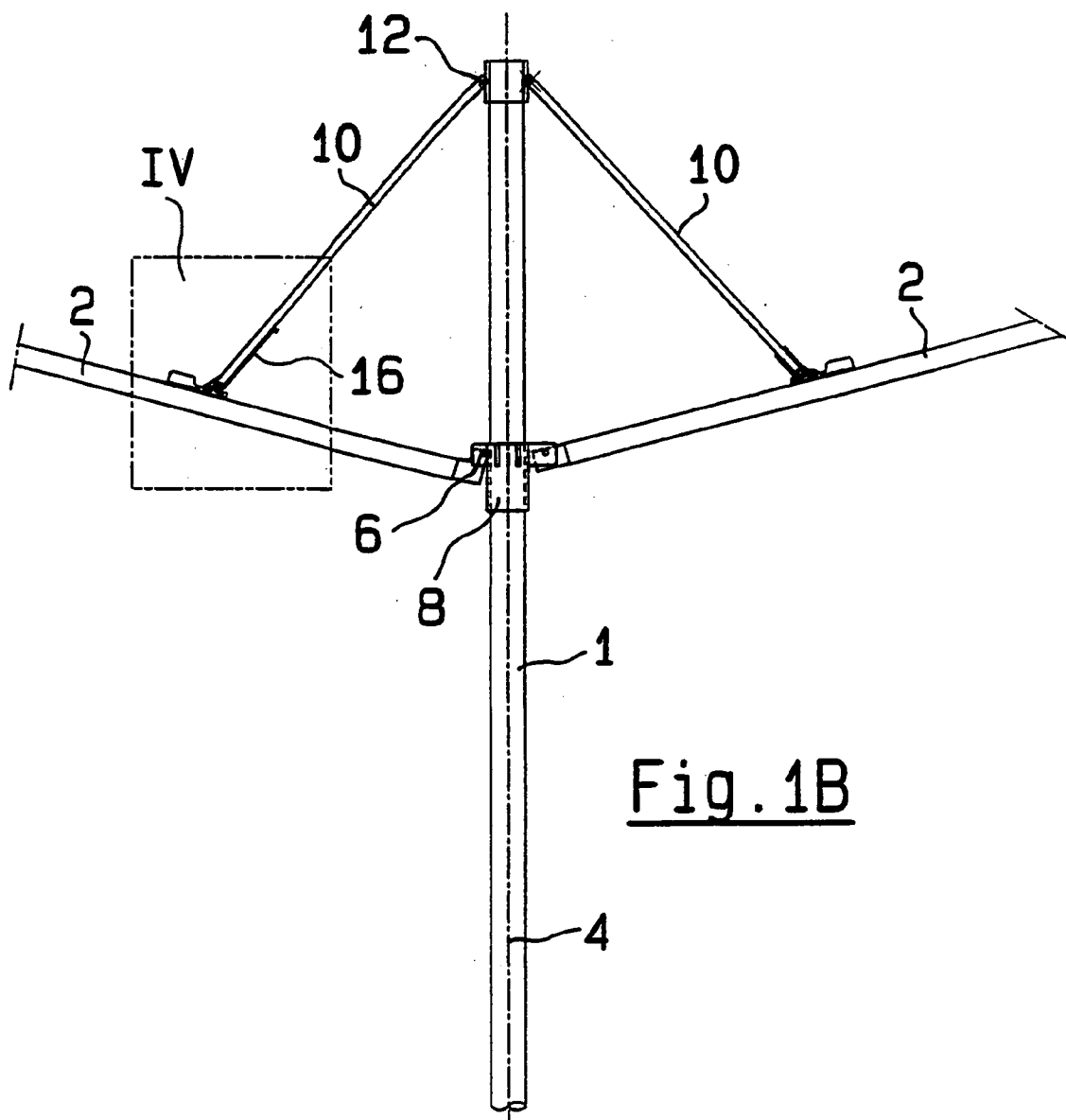


Fig. 1B

Fig.2

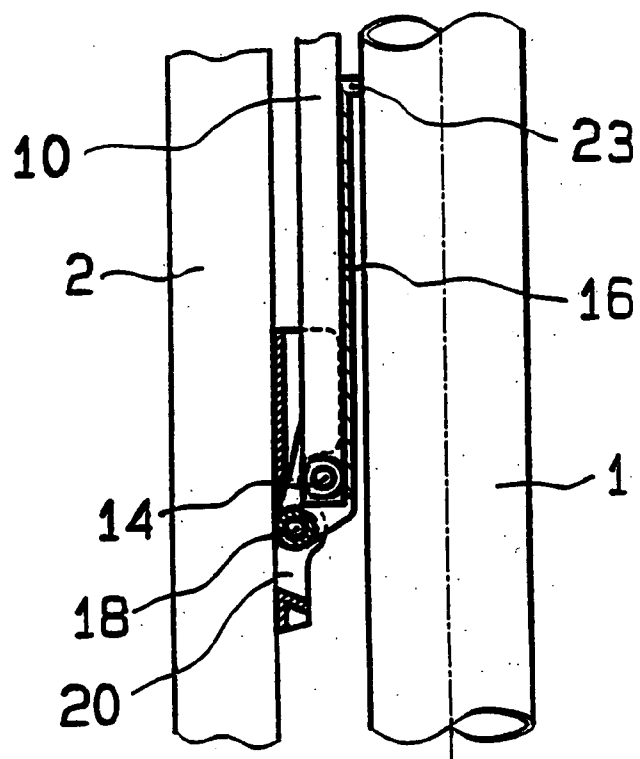
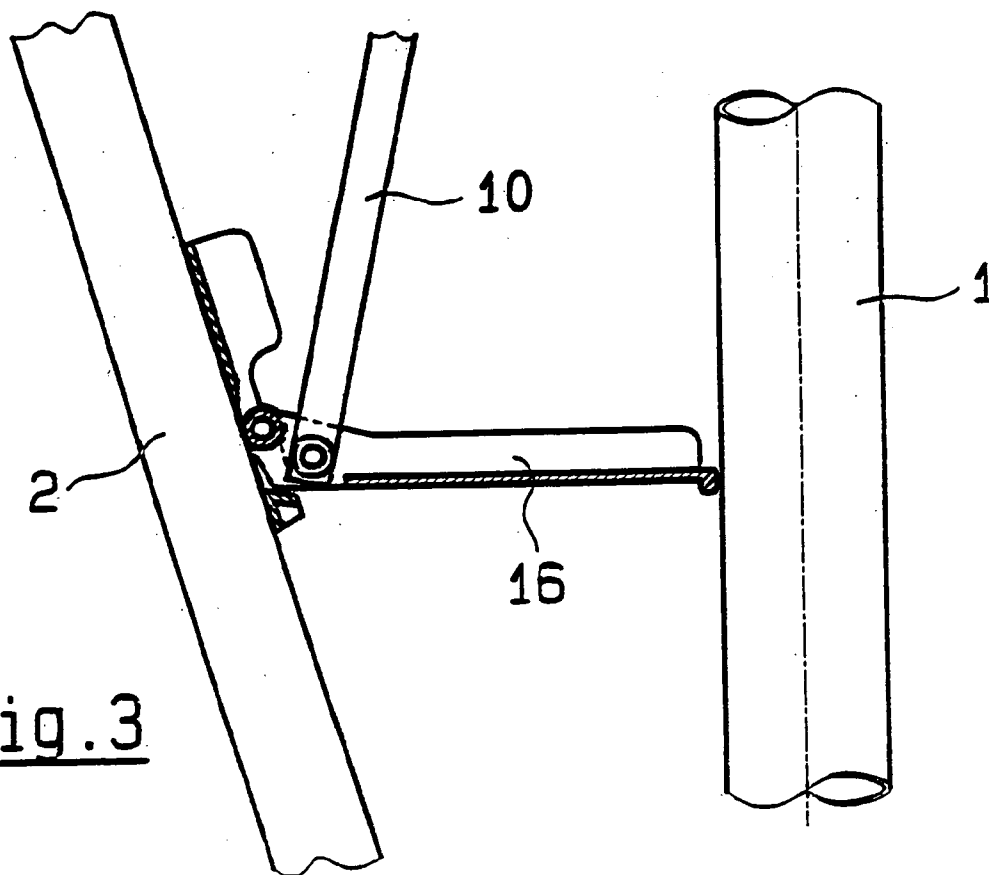


Fig.3



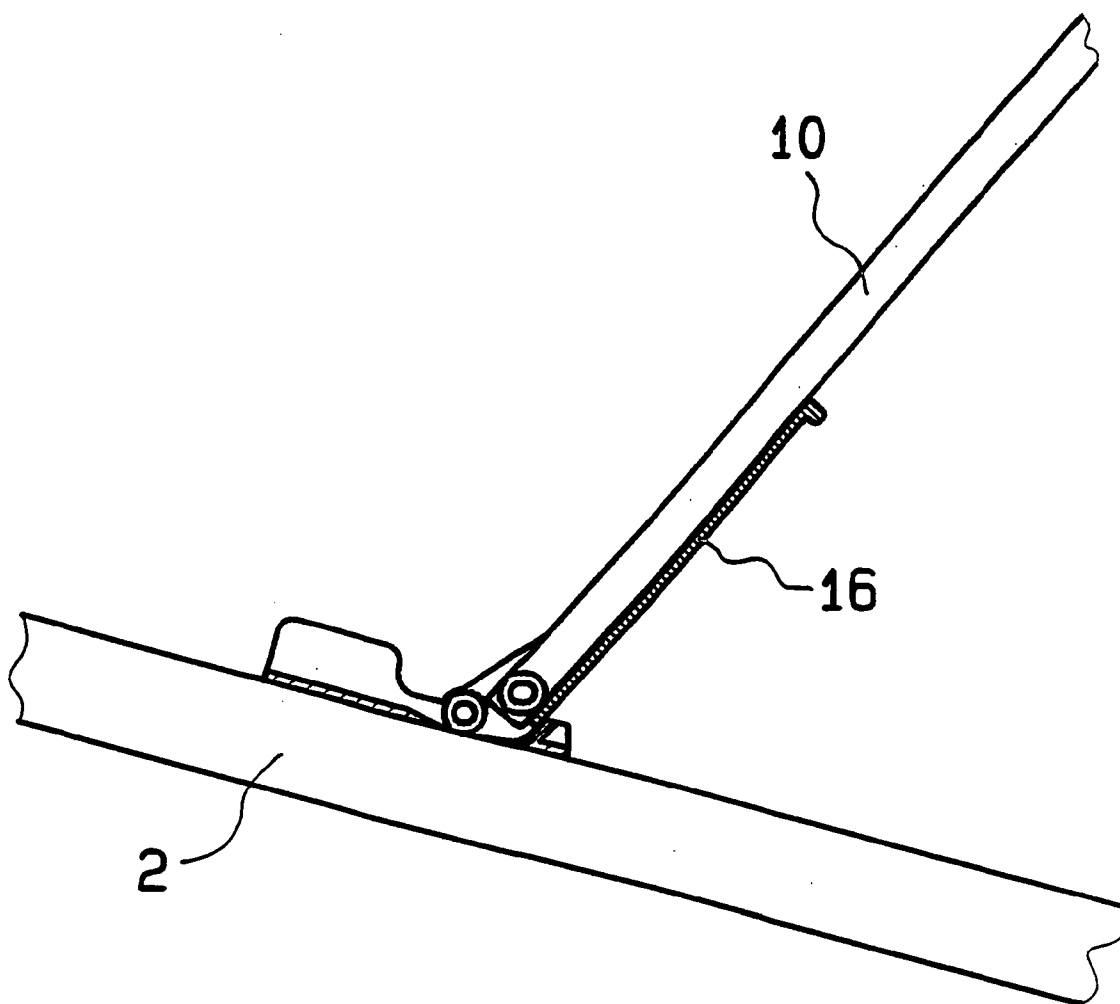


Fig. 4

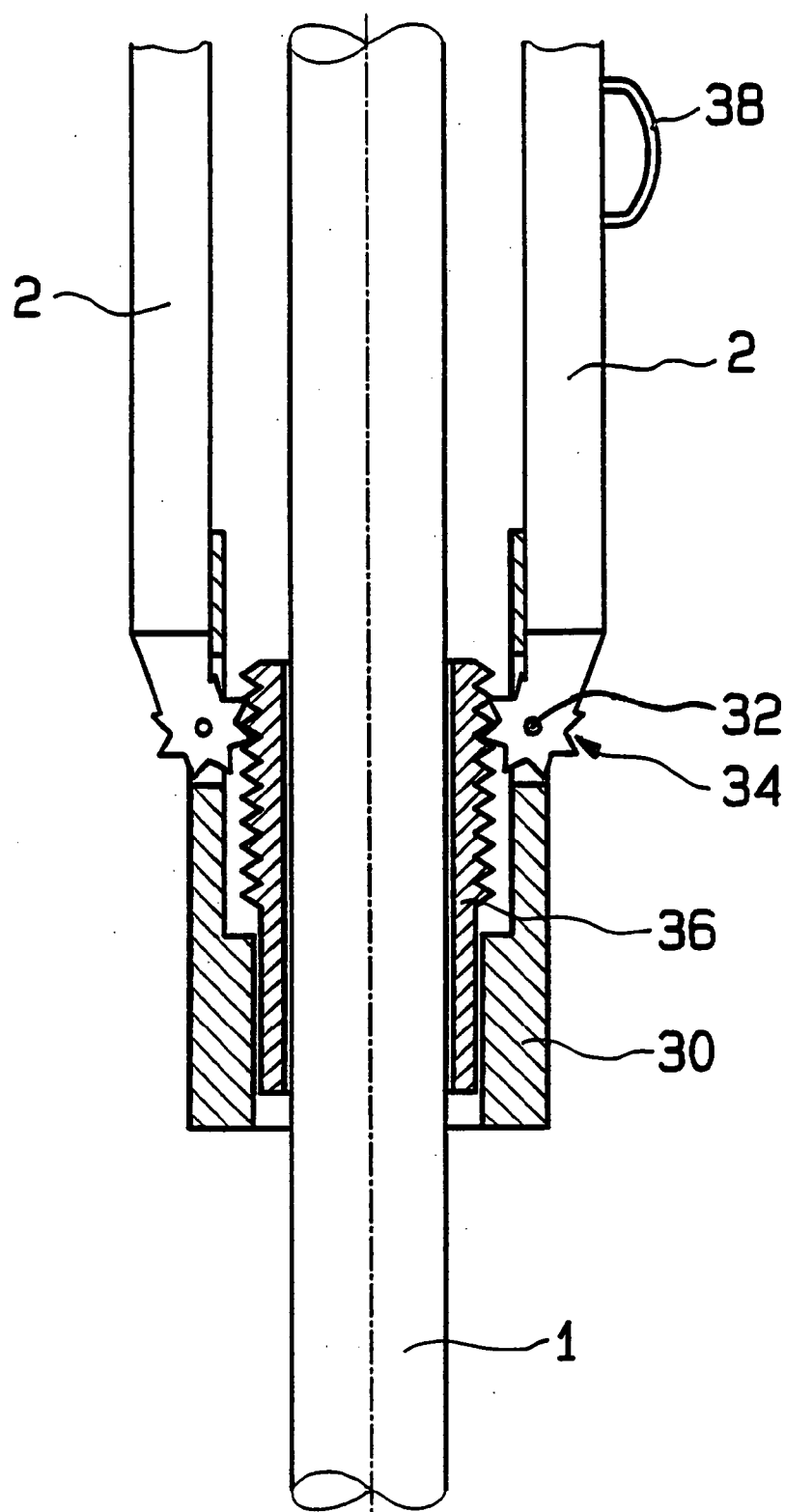


Fig. 5

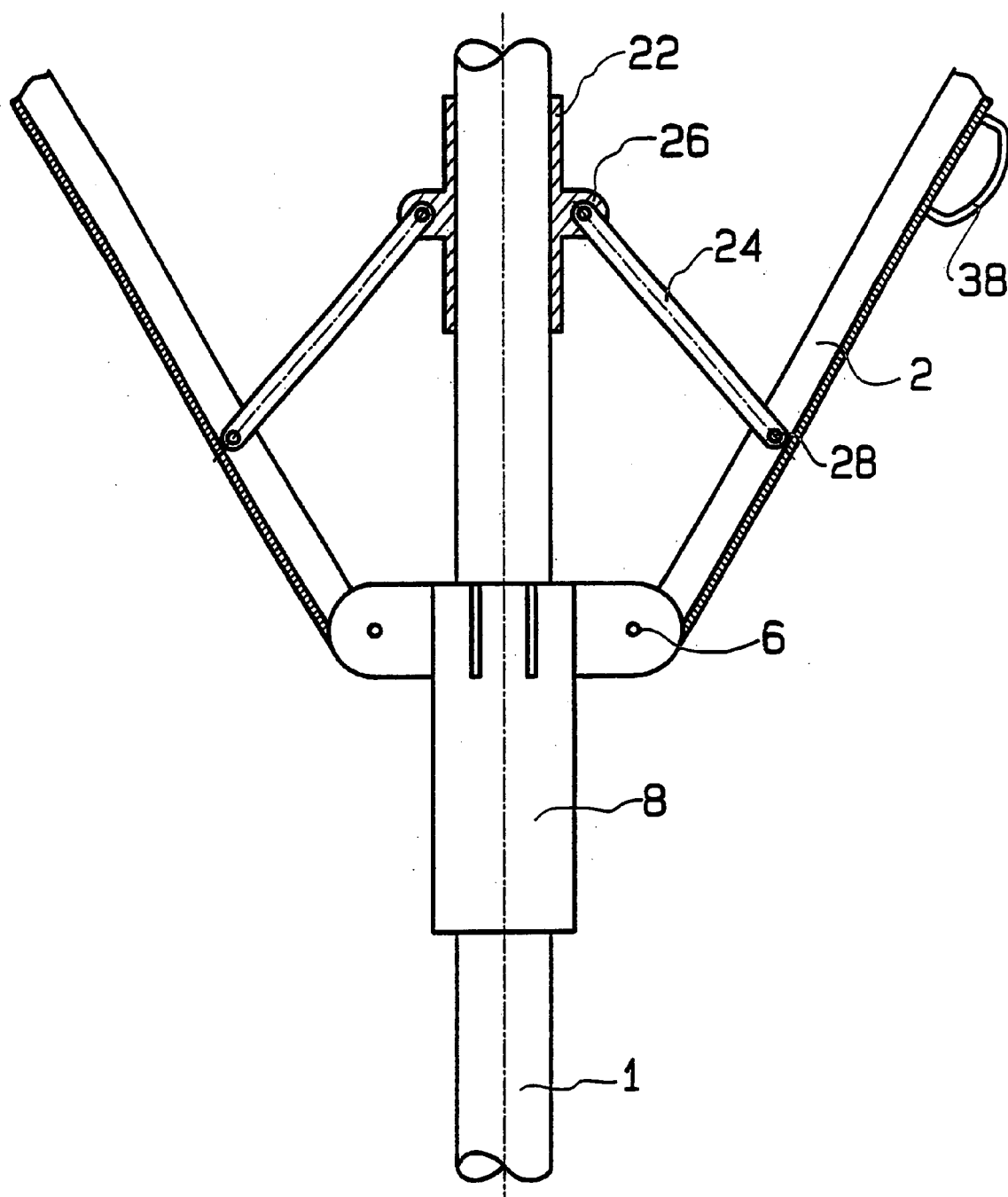


Fig. 6

UMBRELLA-TYPE LAUNDRY DRYING RACK

FIELD OF THE INVENTION

[0001] The invention relates to an umbrella-type laundry drying rack having a vertical support and having load-bearing arms for clothes lines, the load-bearing arms being disposed pivotably on the support each about a respective pivot pin, and the load-bearing arms are pivotable between a first position close to the support and a second position remote from the support and are coupled to one another such that upon pivoting of one of the load-bearing arms, the further load-bearing arms are jointly pivoted in the same way.

BACKGROUND OF THE INVENTION

[0002] In general, to enable them to hold large amounts of laundry, laundry drying racks in their operational state are not inconsiderable in size. It has therefore already been provided that they can be stored in a space-saving way by being collapsed. This means that before each use of the laundry drying rack, its load-bearing arms have to be folded out. Deploying the laundry drying rack requires the exertion of comparatively great force in the initial phase, until the load-bearing arms have moved past a certain angular position relative to the vertical support. To improve this unsatisfactory situation, the attempt has already been made to use a pull cord guided like a corkscrew for a wine bottle. But even such a device cannot make it easier to deploy the laundry drying rack until the load-bearing arms have been pivoted out of their vertical position of repose by a significant angular amount; that has to be done by hand.

[0003] To make it easier to pivot the load-bearing arms outward, it has already been proposed that a spreader body be mounted longitudinally displaceably on the vertical support of an umbrella-type laundry drying rack; the spreader body cooperates with support elements mounted on spreader arms, and upon longitudinal displacement, it pivots the spreader arms and with them the load-bearing arms for the clothes lines out of their folded-up position of repose. Such an apparatus can indeed facilitate deploying the laundry drying rack but entails major structural effort and expense.

OBJECT AND SUMMARY OF THE INVENTION

[0004] It is therefore the object of the invention to create a laundry drying rack of the type defined at the outset that assures simple deployment with high functional safety and reliability and that is simple to produce.

[0005] According to the invention, this object is attained in that, in an umbrella-type laundry drying rack of the type defined at the outset, at least one load-bearing arm has a means for its forced deflection out of the first position outward, upon exertion of a force oriented away from the support to one of the other load-bearing arms. Because it is easy to exert the force for deploying the laundry drying rack immediately onto a load-bearing arm, complicated transfer elements for this force are unnecessary. Only on at least one of the further load-bearing arms is a means for its forced deflection provided. When the laundry drying rack is deployed, immediately after the forced deflection of the first load-bearing arm the further load-bearing arms are pivoted out of their position of repose as well, because of the coupling of the load-bearing arms to one another. A laundry

drying rack of the invention has an especially small number of components and is not only simple and economical to produce but also extraordinarily safe and reliable in operation and invulnerable to wear. It is true that a plurality of load-bearing arms or even each load-bearing arm may be provided with a means for forced deflection out of the first position, that is, the position of repose, but experiments have shown that it is entirely adequate for such a means to be provided on only one of the load-bearing arms.

[0006] In an advantageous refinement of the invention, the load-bearing arm having the means for its forced deflection is disposed, relative to the support, opposite a load-bearing arm provided for exerting the force oriented away from the support; as a result, only a very slight exertion of force suffices to deploy the laundry drying rack.

[0007] Adequately high stability of the laundry drying rack is advantageously attained if the load-bearing arms are each braced on the support with a respective spreader arm that is pivotable on the one hand about a retaining shaft disposed on the support and on the other about an articulation shaft disposed on the load-bearing arm. In an advantageous refinement of the invention, the laundry drying rack becomes simple to use and at the same time has high stability because the retaining shafts of the spreader arms are disposed fixedly on the support.

[0008] To assure simple, operationally safe and reliable deployment of the laundry drying rack, the pivot pins of the load-bearing arms are advantageously disposed on a sleeve that is displaceable relative to the support. Such an embodiment furthermore allows adjusting the height of the laundry drying rack. This means that the load-bearing arms for the clothes lines, in the deployed state of the laundry drying rack, can be fixed at different heights, making it easy to hang articles of laundry on the clothes lines, regardless of how tall the person performing this activity is.

[0009] The laundry drying rack can have a large number of load-bearing arms. However, a great usable length of clothes line with simultaneously high stability and low weight of the laundry drying rack are advantageously obtained if—as experiments have shown—four load-bearing arms are provided.

[0010] In an advantageous refinement of the invention, one load-bearing arm has a handle, and this load-bearing arm is intended for exerting the force oriented away from the support. As a result, the introduction of force into the load-bearing arm is improved, without requiring complicated additional devices for operating it. It is conceivable for the handle on the load-bearing arm to be made adjustable, so that a user-specific setting can be made.

[0011] For the mean for forced deflection of the load-bearing arm, various embodiments are conceivable. It is advantageously possible to achieve virtually no operating wear of the laundry drying rack if, in a further refinement of the invention, the means for forced deflection of the load-bearing arm has a tilt lever that on the one hand can be pivoted about a tilt pin on the load-bearing arm and on the other can be braced on the support. Such an embodiment moreover means especially easy production of the laundry drying rack. The laundry drying rack can be opened especially easily and with only little exertion of force if the tilt lever carries the articulation shaft of the corresponding

spreader arm, and the articulation shaft of the spreader arm is disposed between the tilt pin of the tilt lever and an end of the tilt lever that can be braced on the support.

[0012] Another advantageous, very precise means for forced deflection of the load-bearing arm has a toothed sleeve, which is displaceable relative to the support, and a gear wheel or gear wheel segment that engages the toothed sleeve and is disposed on the load-bearing arm. Advantageously, a very compact, space-saving structure can be achieved if the toothed sleeve is disposed displaceably in the sleeve, on which the pivot pins of the load-bearing arms are disposed and which is displaceable relative to the support. The number of components can be reduced further if advantageously the toothed sleeve is drivable by a gear wheel or gear wheel segment disposed on a load-bearing arm intended for exerting the force oriented away from the support.

[0013] In another advantageous refinement of the invention, the means for forced deflection of the load-bearing arm has a connecting rod disposed on the one hand pivotably on a connecting rod sleeve that is displaceable relative to the support and on the other pivotably on the load-bearing arm. In this way, an especially low-wear design that is secure against jamming is achieved. The laundry drying rack is advantageously constructed especially simply and is operationally safe if, in an advantageous refinement of the invention, the connecting rod sleeve is drivable by a connecting rod that is connected to a load-bearing arm intended for exerting the force oriented away from the support.

DRAWING

[0014] The invention will be described in further detail below in terms of exemplary embodiments shown in the drawing. Shown are

[0015] FIG. 1A, a side view of an approximately halfway open laundry drying rack with a tilt lever;

[0016] FIG. 1B, the laundry drying rack of FIG. 1A in the fully open state;

[0017] FIG. 2, a detail of a laundry drying rack of FIGS. 1A, 1B, with one load-bearing arm in a folded-up position near the support;

[0018] FIG. 3, an enlarged detail of a laundry drying rack of FIGS. 1A, 1B, with one load-bearing arm in an outward-deflected position;

[0019] FIG. 4, a detail of a laundry drying rack of FIGS. 1A, 1B, with one load-bearing arm in a fully outward-pivoted position;

[0020] FIG. 5, a detail of a laundry drying rack with a gear wheel segment and a toothed sleeve; and

[0021] FIG. 6, a detail of a laundry drying rack with a connecting rod and a connecting rod sleeve.

DETAILED DESCRIPTION

[0022] FIG. 1A—which like all the other figures is schematic—shows an umbrella-type laundry drying rack with a vertical support 1, on which load-bearing arms 2 for clothes lines, not otherwise shown, are disposed. The laundry drying rack has four load-bearing arms 2 disposed symmetrically to the center axis 4 of the vertical support 1; for the sake of

simplicity, only the right and left load-bearing arms 2 have been shown here, while in this view the front and rear load-bearing arms have conversely been omitted. The load-bearing arms 2 are located in a deflected-outward position in which they have been unfolded from the vertical support 1. The load-bearing arms 2 are disposed pivotably, about pivot pins 6, on a sleeve 8 that is displaceable relative to the support 1. For reasons of stability, the load-bearing arms 2 are also each braced on the support 1 by a respective spreader arm 10. Each spreader arm 10 is pivotable on the one hand about a retaining shaft 12 disposed on the support 1 and on the other about an articulation shaft 14 disposed on the load-bearing arm 2. The articulation shaft 14 on the left load-bearing arm 2 is not disposed directly on the load-bearing arm 2 but rather on a tilt lever 16, which is pivotable on the load-bearing arm 2 about a tilt pin 18.

[0023] The laundry drying rack of FIG. 1A is shown in FIG. 1B in the fully open state. The load-bearing arms 2 are now in the fully outward-pivoted position relative to the vertical support 1, and the clothes lines—not shown here—extend taut, and with vertical spacing from one another, in the horizontal direction between the load-bearing arms 2. In FIGS. 1A, 1B and all the other figures, identical or equivalent components are identified by the same reference numerals. It can be seen that in the open state of the laundry drying rack, the tilt lever 16 rests on the corresponding spreader arm 10.

[0024] FIG. 2 shows the left load-bearing arm 2 of the laundry drying rack of FIGS. 1A, 1B in a first position, close to the support, where it is folded up against the vertical support 1. It can be seen that the load-bearing arm 2 has a tilt lever holder 20 with a tilt pin 18 of the tilt lever 16. In the folded-up position shown here, the tilt lever 16 rests on the one hand with a lug 22 on the vertical support 1 and on the other, it rests lengthwise on a spreader arm 10; the spreader arm 10 is joined to the tilt lever 16 via an articulation shaft 14.

[0025] With reference to FIGS. 1A, 1B and 2, the unfolding or deployment of the laundry drying rack proceeds as follows: One load-bearing arm, which in terms of a vertical support 1 is opposite or in other words faces a load-bearing arm 2 having a tilt lever 16, is pulled away from the support 1, for instance by means of a handle, and the laundry drying rack is thus pulled open. As a result, the sleeve 8, to which all the load-bearing arms are secured, is pulled upward along the support 1; as a result, the tilt lever 16, by means of the load-bearing arm 2 connected to it and by means of a lug 22 of the tilt lever 16 that rests on the support 1, forces the load-bearing arm 2 outward. In a first intermediate position, which is emphasized in FIG. 1A by means of a detail III (shown enlarged in FIG. 3), the tilt lever 16 is located approximately horizontally between the load-bearing arm 2 and the vertical support 1. The spreader arm 10 is in a half-open intermediate position.

[0026] As the laundry drying rack is pulled farther open, the load-bearing arms 2 reach the operating position shown in FIG. 1B. In it, the tilt lever 16 (as in its outset position shown in FIG. 2) is again placed against the spreader arm 10 (see detail IV in FIG. 1B, shown enlarged in FIG. 4).

[0027] An important factor in the laundry drying racks shown in FIGS. 1A, 1B through 4 and in the other laundry drying racks shown in FIGS. 5 and 6 and described here-

inafter, is that the laundry drying rack in each case can be opened by simply pulling one load-bearing arm **2** away from a vertical support **1**.

[0028] A detail of another embodiment of an umbrella-type laundry drying rack is shown in **FIG. 5**. In this laundry drying rack as well, a vertical support **1** is provided with four load-bearing arms **2**, of which only two are shown here for the sake of simplicity. The load-bearing arms **2** are supported pivotably, by means of pivot pins **32**, on a sleeve **30** that is displaceable relative to the support **1**. On their lower end, the load-bearing arms **2** each have one gear wheel segment **34**, which is disposed centrally to the pivot pin **32** of the respective load-bearing arm **2** and which engages a toothed sleeve **36** that is displaceable relative to the support **1**. As in a laundry drying rack of **FIGS. 1A and 1B** through **4**, the laundry drying rack of **FIG. 5** also has spreader arms on its load-bearing arms **2**; the spreader arms are joined to the support **1** in the corresponding way and are not shown here. Pulling on a handle **38**, which is disposed on one of the load-bearing arms **2**, not only causes an outward deflection of this load-bearing arm away from the vertical support **1** but also (with transmission by the gear wheel segment **34** and the toothed sleeve **36**) a forced deflection of the load-bearing arm **2** that is located opposite, in terms of the vertical support **1**, the load-bearing arm **2** that has the handle **38**.

[0029] In **FIG. 6**, a detail of a further laundry drying rack is shown, with a vertical support **1** that has load-bearing arms **2** that are each joined pivotably to the support **1** about a respective pivot pin **6**. The pivot pins **6** are disposed on a sleeve **8** that is displaceable relative to the support **1**. A connecting rod sleeve **22** is also provided, which is likewise displaceable relative to the support **1** and is connected to each of the load-bearing arms **2** by a respective connecting rod **24**. Each connecting rod **24** is mounted movably on the connecting rod sleeve **22**, where it is pivotable about a pivot pin **26**, and on the load-bearing arms **2** where it is pivotable about a pivot pin **28**. The load-bearing arms **2** of the laundry drying rack of **FIG. 6** are likewise—analogsously to the laundry drying racks of **FIGS. 1A and 1B** through **5**—moreover provided with spreader arms, not shown here, which are also secured in a corresponding way to the support **1**.

LIST OF REFERENCE NUMERALS

- [0030] **1** (Vertical) support
- [0031] **2** Load-bearing arm
- [0032] **4** Center axis
- [0033] **6** Pivot pin
- [0034] **8** Sleeve
- [0035] **10** Spreader arm
- [0036] **12** Retaining shaft
- [0037] **14** Articulation shaft
- [0038] **16** Tilt lever
- [0039] **18** Tilt pin
- [0040] **20** Tilt lever holder
- [0041] **22** Connecting rod sleeve
- [0042] **24** Connecting rod

- [0043] **26** Pivot pin
- [0044] **28** Pivot pin
- [0045] **30** Sleeve
- [0046] **32** Pivot pin
- [0047] **34** Gear wheel segment
- [0048] **36** Toothed sleeve
- [0049] **38** Handle

1. An umbrella-type laundry drying rack having a vertical support (**1**) and having load-bearing arms (**2**) for clothes lines, the load-bearing arms being disposed pivotably on the support (**1**) each about a respective pivot pin (**6**), and the load-bearing arms (**2**) are pivotable between a first position close to the support and a second position remote from the support and are coupled to one another such that upon pivoting of one of the load-bearing arms (**2**), the further load-bearing arms (**2**) are jointly pivoted in the same way, characterized in that at least one load-bearing arm has a means for its forced deflection out of the first position outward, upon exertion of a force oriented away from the support (**1**) to one of the other load-bearing arms (**2**).

2. The laundry drying rack of claim 1, characterized in that the load-bearing arm (**2**) having the means for its forced deflection is disposed, relative to the support (**1**), opposite a load-bearing arm (**2**) provided for exerting the force oriented away from the support (**1**).

3. The laundry drying rack of one of the foregoing claims, characterized in that the load-bearing arms (**2**) are each braced on the support (**1**) with a respective spreader arm (**10**) that is pivotable on the one hand about a retaining shaft (**12**) disposed on the support (**1**) and on the other about an articulation shaft (**14**) disposed on the load-bearing arm (**2**).

4. The laundry drying rack of claim 3, characterized in that the retaining shafts (**12**) of the spreader arms (**10**) are disposed fixedly on the support (**1**).

5. The laundry drying rack of one of the foregoing claims, characterized in that the pivot pins (**6**) of the load-bearing arms (**2**) are disposed on a sleeve (**8**) that is displaceable relative to the support (**1**).

6. The laundry drying rack of one of the foregoing claims, characterized in that four load-bearing arms (**2**) are provided.

7. The laundry drying rack of one of the foregoing claims, characterized in that one load-bearing arm (**2**) has a handle (**38**), and this load-bearing arm (**2**) is intended for exerting the force oriented away from the support (**1**).

8. The laundry drying rack of one of the foregoing claims, characterized in that the means for forced deflection of the load-bearing arm (**2**) has a tilt lever (**16**) that on the one hand can be pivoted about a tilt pin (**18**) on the load-bearing arm (**2**) and on the other can be braced on the support (**1**).

9. The laundry drying rack of claim 8, characterized in that the tilt lever (**16**) carries the articulation shaft (**14**) of the corresponding spreader arm (**10**), and the articulation shaft (**14**) of the spreader arm (**10**) is disposed between the tilt pin (**18**) of the tilt lever (**16**) and an end of the tilt lever (**16**) that can be braced on the support (**1**).

10. The laundry drying rack of one of claims 1-7, characterized in that the means for forced deflection of the load-bearing arm (**2**) has a toothed sleeve (**36**), which is displaceable relative to the support (**1**), and a gear wheel or

gear wheel segment that engages the toothed sleeve (36) and is disposed on the load-bearing arm (2).

11. The laundry drying rack of claim 10, characterized in that the toothed sleeve (36) is disposed displaceably in the sleeve (30), on which the pivot pins (32) of the load-bearing arms are disposed and which is displaceable relative to the support (1).

12. The laundry drying rack of claim 10 or 11, characterized in that the toothed sleeve (36) is drivable by a gear wheel or gear wheel segment (34) disposed on a load-bearing arm (2) intended for exerting the force oriented away from the support (1).

13. The laundry drying rack of one of claims 1-7, characterized in that the means for forced deflection of the load-bearing arm (2) has a connecting rod disposed on the one hand pivotably on a connecting rod sleeve (22) that is displaceable relative to the support (1) and on the other pivotably on the load-bearing arm (2).

14. The laundry drying rack of claim 13, characterized in that the connecting rod sleeve (22) is drivable by a connecting rod (24) that is connected to a load-bearing arm (2) intended for exerting the force oriented away from the support (1).

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