

Foldable Hanger

Technical Field

- 5 The invention relates to a foldable hanger for garment and belongs to the field of tools used for garment storage in households, as well as the storage of goods of such characters in textile and fashion industries, in trade networks and the like.

Background Art

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Collapsible garment hanger disclosed in WO2020122703A1 comprises a hook for hanging up on a bar or a coat-stand, and a pair of arms with each of arms having a proximal end. The first arm extends from one end of the hook, whereas the second arm is pivotably hinged to the first arm at the proximal ends of the arms. A pair of
15 corresponding female-to-female interlocking elements is disposed on the hook and the second arm (4), respectively, enabling the second arm to be detachably engaged with the hook when the hanger is in use. Disadvantage of this hanger resides in the fact that the second arm remains hanging vertically downwards and obstructs inserting the hanger through the neck openings of cloths.

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A clothes hanger according to US2440637A comprises a pair of shoulder pieces of substantially flat material hingedly connected together at their adjacent bottom portions, flat handle portions having inwardly curved sides and projecting upwards from said shoulder pieces and normally abutting each other for limiting pivoting of
25 said shoulder pieces from a substantially horizontal position upwards and by which the shoulder pieces may be pivoted downwards and then upwards with two fingers of one hand engaging against said inwardly curved sides, a projection on one of said handle portions, a leaf spring on the other handle portion and engaging said projection for holding said handle portions latched together, and said leaf spring
30 having side portions projecting from the faces of said handle portions by which the

leaf spring may be manually engaged and flexed by another finger of said hand for unlatching said handle portions.

It is disadvantageous that during hanging the cloths it is always necessary to
5 overcome the force of the handle spring and it can be rather fatiguing.

The objective of this invention is to provide a hanger removing the above insufficiencies, which using will be easy and convenient and fast for a user.

10 **Summary of the Invention**

Said insufficiencies are considerably remedied by the foldable hanger according to this invention, which hanger can be smoothly opened and closed, and comprises a body having a hanging element, one firm arm fixed to the body, and one movable
15 arm pivotably attached to the body.

The body further comprises: a spike, an arresting pin adapted for operation by a user, which arresting pin is mounted on the spike flexibly slidable (for example via a spring) for ensuring slidable movement of the arresting pin along the spike and for creating a continual force pushing the arresting pin off the spike. The arresting pin
20 comprises a shank having a relief at its bottom part, which relief is adapted to fit into an arresting groove of a sliding-block guide. The body further contains a sliding-block guide adapted for operation by a user, which sliding-block guide is movably positioned in the body. The sliding-block guide is adapted for the movement between an open position and a closed position and comprises: a guiding slot for the
25 accommodation of the shank of the arresting pin, a space for free movement of the relief of the arresting pin, which space is formed along the entire length of the guiding slot, the arresting groove adapted for the accommodation of the relief of arresting pin, which groove is formed at the closed end of the guiding slot, the prestressed flexible element for forming the continual pushing force pushing the
30 sliding-block guide into the open position, and sliding-block guide cogs adapted for collaboration with cogs of the movable arm. The movable arm is equipped with cogs

at its proximal end, preferably partially circular cogs, said cogs are adapted for the cooperation with the sliding-block guide cogs.

The sliding-block guide is adapted for the movement between the closed position, in which the relief of the arresting pin is locked in the arresting groove of the sliding-block guide and the movable arm is in its standard position, i.e. arranged symmetrically in relation to the firm arm, and the open position, in which the arresting pin is arranged at the entry of the guiding slot and the relief of the arresting pin is out of the arresting groove in the space for free movement and the movable arm is deflected from the standard position.

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According to one embodiment the foldable hangar according to this invention comprises a firm arm, which can form the integral part of the body.

According to another embodiment the flexible element can be the integral part of the sliding-block guide or it can be attached to the sliding-block guide. The flexible element can be a steel or plastic leaf spring, pushing spring, traction spring or other form of suspension, e.g. a flexible rubber element, etc. The flexible element of the sliding-block guide is prestressed for creating the continual pushing/traction force resulting in pushing/pulling/sliding the sliding-block guide into its open position. The prestressing of the flexible element can be created by (forced) pressing of the flexible element to the body, cover or a support element formed in the body of the hanger in such a way that the flexible element is deformed and thus forming the reverse force.

According to one preferred embodiment the body can be at least partially equipped with a cover. The cover can have an opening for the arresting pin.

The sliding-block guide is arranged in the body in such a way that, in its open position, it is accessible to a finger or to a palm of a user in order to operate the hanger. In the open position the sliding-block guide can extend from the body, be

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aligned with the body or be slightly sunk in the body, but still accessible to a finger of a user.

5 According to preferred embodiment the sliding-block guide comprises a side wall, and the sliding-block guide is arranged in to body in such a way that in the closed position the side wall of the sliding-block guide is aligned with the cover and/or the body surface, and in its open position the sliding-block guide partially projects from the body, in order to enable a user to operate the hanger.

10 According to another preferred embodiment the first and second arms can have shapes adapted for mutual engagement in the open position of the sliding-block guide.

15 According to the preferred embodiment the arresting pin can contain a head adapted for operation by a user. The arresting pin head can extend from the cover/body via the opening, it can be aligned with the body or cover surfaces, or it can be slightly sunk in the body, but accessible to a finger of a user.

20 The sliding-block guide can be pivotably positioned in the body, e.g. hanged on a pin or also slidably positioned, e.g. in the groove. In case of pivotable arrangement of the sliding-block guide, both the arresting groove of the sliding-block guide and the sliding-block guide cogs are preferably arch-shaped. In case of slidable arrangement of the sliding-block guide, both the arresting groove and the sliding-block guide cogs are preferably straight.

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Advantage of the foldable hanger according to this invention resides in the fact that simple pressing of the arresting pin results in the turning of the movable arm from the standard position to the folded position; preferably in such a way that the firm arm is aligned with the movable arm, and the movable arm is blocked in this position
30 without necessity to apply a force or hold the arresting pin during hanging of a cloth to the hanger. The movable arm is in its stable position (under the firm arm)

enabling easy and simple threading of the cloth on the hanger without deformation of the neck opening of the cloth. Similarly, upon pushing of the (extended) sliding-block guide inwardly into the body the movable arm is turned back to its standard position and become blocked.

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The movable arm is in its folded position, when it is deflected from its standard position. Preferably the movable arm can be deflected in the range of 10° to 180° , more preferably by 70° , 80° , 90° , the most preferably the movable arm is aligned with the firm arm, i.e. it is parallel or almost parallel with the firm arm.

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When the user presses the arresting pin the relief of the arresting pin is released from the arresting groove and the prestressed sliding-block guide is turned from its closed position to its open position, while the shank of the arresting pin is moved out of the guiding slot of the sliding-block guide and the sliding-block guide is turned in such a way that it is accessible for the operation by the user. The sliding-block guide can partially extend over the body surface, it can be aligned with the body surface, or it can be slightly sunk into the body. Partial turning of the prestressed sliding-block guide via the gearing formed by the sliding-block guide cogs and the cogs of the movable arm transfer this movement to the movable arm and this arm is turned by the predetermined angle. In preferred embodiment the movable arm is turned to such a position that it is parallel or almost parallel with the firm arm.

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Upon pressing the sliding-block guide inwardly into the body by the user the flexible element of the sliding-block guide is deformed into the prestressed position and the sliding-block guide is partially turned from its open position to its closed position resulting in the return of the movable arm to its standard position by the means of the above gearing, and it is blocked in this position. By partial turning the shank of the arresting pin is moved in the guiding slot of the sliding-block guide until engagement of the prestressed arresting pin relief with the arresting groove of the sliding-block guide, which engagement results in the blocking of the sliding-block guide in its closed position, and thus also the movable arm is blocked in its standard

position. In turn this closed position of the sliding-block guide is unblocked by the pressing of the arresting pin.

Brief Description of the Drawings

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Figure 1a shows the hanger with the sliding-block guide in its closed position and with the prestressed flexible element.

Figure 1b shows the cover.

Figure 2 shows the hanger with the sliding-block guide in its open position.

10 Figures 3a and 3b show one sliding-block guide embodiment in front and side views, respectively.

Figure 4 shows the hanger body with the hanging element and firm arm.

Figure 5 shows the arresting pin.

15 Examples of the Embodiment

Example 1

The foldable hanger 1 as shown on fig. 1a contains the flat body 2 containing the bottom having two side walls. The body has the cover 2.1 with an opening 2.2 for
20 the arresting pin (fig. 1b). The body further contains the hanging element 3 in the form of a hook integrally connected with one side wall of the body 2. At its bottom part the body 2 contains a firm arm 4 and movable arm 5 arranged in the standard position. There is a pin at the bottom of the body 2, approximately in its right top corner, which pin bears a pivotable sliding-block guide 8. The sliding-block guide 8,
25 illustrated also on figs. 3A and 3b, contains the side wall 8.6 and arch shaped guiding slot 8.1. A space 8.2 is formed around the guiding slot 8.1 at one side 8.2 of the sliding-block guide 8 and there is the circular arresting groove 8.3 formed at the end of the guiding slot 8.1 from the side of the space 8.2 (fig. 3b). In its top part the sliding-block guide is equipped with the prestressed flexible element 8.4, which, in
30 this case, leans on the body side wall. On the side adjacent to the arms 4, 5, the sliding-block guide 8 is equipped with the arch-shaped cogs 8.5 having attached the

movable arm 5 in the locked position, via partially circular cogs 5.1. This locked position is secured via the position of the arresting pin 7 mounted on the spike 6 on the pushing spring enabling the flexible movement along the spike 6. The spike 6 position is visible on fig. 4. The arresting pin 7 presented on fig. 5 contains the
5 shank 7.1, and the relief 7.2 in its bottom part, which relief is sunk in the circular arresting groove 8.3 in its standard locked position.

Example 2

The foldable hanger shown at fig. 2 consists of the same elements as the hanger at
10 fig. 1A, but the position of the movable arm 5, the position of the sliding-block guide, and the position of the relief 7.2 of the arresting pin 7 are different. The movable arm is present in its folded locked position under the firm arm 4 and on the same side as the firm arm 4, and therefore the width of the foldable hanger 1 is reduced to approximately to half. This position enables an easy hanging of the cloth through its
15 neck opening on the hanger. The sliding-block guide 8 is in its open position and partially extends from the body 2. The flexible element 8.4 of the sliding-block guide 8 loosely leans on the wall of the body 2 and thus holds the sliding-block guide in its open position. The arresting pin 7 is present at the free end of the guiding slot 8.1 and the relief 7.2 of the arresting pin 7 is released from the arresting groove 8.3 of
20 the sliding-block guide 8, and it is positioned in the space 8.2 of the sliding-block guide 8 for free movement of the relief 7.2. In this position the hanger is prepared for the hanging of cloth.

Example 3

25 The foldable hanger works as follows:
The cloth hanged on the foldable hanger 1 according to this invention can be hanged without extension of its neck opening. It is possible to change the position of the movable arm 5 from its standard position to its folded position by one hand - one finger of the hand, in which a man holds the hanger 1.
30 Pressing of the arresting pin 7 mounted on the spring slidable along the spike 6 results in the moving of the relief of the arresting pin 7.2 out of the arresting groove

8.3 of the sliding-block guide 8 releasing the sliding-block guide 8, which sliding-block guide is partially turned by the effect of the prestressed flexible element 8.4 in such a way that its part is moved out of the body 2, thus forming open position of the sliding-block guide. By this way the arresting pin 7, being mounted on the fixed
5 spike 6, comes to the free end of the guiding slot 8.1, and the movable arm 5 is turning via the cogs 5.1 at the proximal end over the cogs 8.5 at the bottom end of the sliding-block guide 8 until it hits the firm arm 4.

After putting of the cloth on the hanger, a hand holding the foldable hanger 1 at the body 2 presses the part of the sliding-block guide 8 extending out of the body 2.
10 This pressing acts against the flexible element 8.4 of the sliding-block guide 8, which element is deformed against the wall of the body 2 coming to the prestressed position, and the whole volume of the sliding-block guide becomes accommodated in the body 2; the guiding slot 8.1 is moving together with the sliding-block guide 8 until the shank 7.1 of the arresting pin 7 comes to the end of the guiding slot 8.1,
15 where the arresting groove 8.3 is formed, and the relief 7.2 of the arresting pin 7 falls into the arresting groove 8.3 due to the flexible mounting of the arresting pin 7 on the spike 6. The movable arm 5 connected with the sliding-block guide 8 via the gearing is forced to turn until reaching the locked standard position. The locking of the standard position is achieved by the sinking of the relief 7.2 of the arresting pin 7
20 into the arresting groove 8.3 of the sliding-block guide.

List of the reference signs

- 1 foldable hanger
- 2 body
- 5 2.1 body cover
- 2.2 opening for arresting pin
- 3 hanging element
- 4 firm arm
- 5 movable arm
- 10 5.1 cogs of the movable arm
- 6 spike
- 7 arresting pin
- 7.1 shank
- 7.2 relief
- 15 8 sliding-block guide
- 8.1 guiding slot
- 8.2 space for free movement of the relief
- 8.3 arresting groove
- 8.4 flexible element
- 20 8.5 sliding-block guide cogs
- 8.6 side wall

P A T E N T C L A I M S

1. A foldable hanger (1) containing a body (2) equipped with a hanging element (3) and one firm arm (4) fixed to the body (2) and one movable arm (5) pivotably attached to the body (2), **characterized in that** the body (2) further comprises:
- a spike (6),
 - an arresting pin (7) adapted for operation by a user, mounted on the spike (6) in a flexibly slidable manner for ensuring slidable movement of the arresting pin (7) along the spike (6) and for creating a continual force pushing the arresting pin (7) off the spike (6), wherein the arresting pin (7) consists of a shank (7.1) having, at its bottom part, a relief (7.2) adapted to fit into an arresting groove (8.3) of a sliding-block guide (8);
 - a sliding-block guide (8) adapted for operation by a user, movably positioned in the body (2), wherein the sliding-block guide (8) is adapted for a movement between an open position and a closed position and contains:
 - a guiding slot (8.1) for accommodation of the shank (7.1) of the arresting pin (7),
 - a space (8.2) for free movement of the relief (7.2) of the arresting pin (7) formed along an entire length of the guiding slot (8.1),
 - an arresting groove (8.3) adapted for accommodation of the relief (7.2) of the arresting pin (7) formed at a closed end of the guiding slot (8.1),
 - a prestressed flexible element (8.4) adapted to create a continual force sliding(forcing) the sliding-block guide (8) to its open position,
 - sliding-block guide cogs (8.5) adapted for collaboration with cogs (5.1) of the movable arm (5),
- wherein the movable arm (5) is equipped with the cogs (5.1) at its proximal end, which cogs (5.1) are adapted for collaboration with the sliding-block guide cogs (8.5), and
- wherein the sliding-block guide (8) is adapted for the movement between:

- the closed position, in which the relief (7.2) of the arresting pin (7) is sunk in the arresting groove (8.3) of the sliding-block guide (8), and the movable arm (5) is in a standard position, arranged symmetrically to the firm arm (4), and
 - the open position, in which the arresting pin (7) is arranged at an entry of the guiding slot (8.1), and the relief (7.2) of the arresting pin (7) is out of the arresting groove (8.3) in the space (8.2) for free movement of the relief resulting in a movement of the sliding-block guide (8) to the position, in which the sliding-block guide (8) is accessible for operation by a user and the movable arm (5) is displaced from the standard position in this position of the sliding-block guide (8).
2. The foldable hanger according to claim 1, **characterized in that** the firm arm (4) forms an integral part of the body (2).
3. The foldable hanger according to any one of previous claims, **characterized in that** the flexible element (8.4) form an integral part of the sliding-block guide (8).
4. The foldable hanger according to any one of previous claims, **characterized in that** the flexible element (8.4) is a steel or plastic spring, pushing spring, traction string.
5. The foldable hanger according to any one of previous claims, **characterized in that** the body (2) is equipped with a cover (2.1).
6. The foldable hanger according to any one of previous claims, **characterized in that** the sliding-block guide (8) comprises a side wall (8.6), which side wall (8.6) is arranged in the body (2) in such a way that in the closed position the side wall (8.6) of the sliding-block guide (8) is aligned with the body (2) and/or with the cover (2.1), and in the open position the sliding-block guide

(8) partially projects from the body (2) in order to enable a user to operate the sliding-block guide (8).

- 5 7. The foldable hanger according to any one of previous claims, **characterized in that** the firm arm (4) and the movable arm (5) have shapes adapted for a mutual engagement in the open position of the sliding-block guide (8).
- 10 8. The foldable hanger according to any one of previous claims, **characterized in that** the sliding-block guide cogs (8.5) are arch shaped.
- 15 9. The foldable hanger according to any one of previous claims, **characterized in that** the cogs (5.1) of the movable arm (5) are arch shaped.
- 20 10. The foldable hanger according to any one of previous claims, **characterized in that** the body (2) with the cover (2.1) have in the closed position of the sliding-block guide (8) a shape of a cylinder, a block or a flat block.
- 25 11. The foldable hanger according to any one of previous claims, **characterized in that** the arresting pin (7) is equipped with a head for operation by a user arranged in such a way that it is aligned with the body (2) or cover surfaces, or it extends from an opening (2.2) for the arresting pin (7) or it is slightly sunk in the body (2), but accessible for a finger of a user.
- 30 12. The foldable hanger according to any one of previous claims, **characterized in that** the guiding slot (8.1) of the sliding-block guide (8) is arch shaped.
13. The foldable hanger according to any one of previous claims, **characterized in that** the sliding-block guide (8) is pivotably positioned in the body (2).
14. The foldable hanger according to any of claims 1 to 12, **characterized in that** the sliding-block guide (8) is slidably positioned in the body (2).