

United States Patent

[19]

Mole et al.

[11] 3,856,190

[45] Dec. 24, 1974

[54] TELESCOPING COAT HANGER

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[22] Filed: Dec. 26, 1973

[21] Appl. No.: 427,519

[52] U.S. Cl. 223/94, 211/115, 211/117

[51] Int. Cl. A47j 51/10

[58] Field of Search 223/85, 88, 89, 94, 95;
211/113, 115, 117

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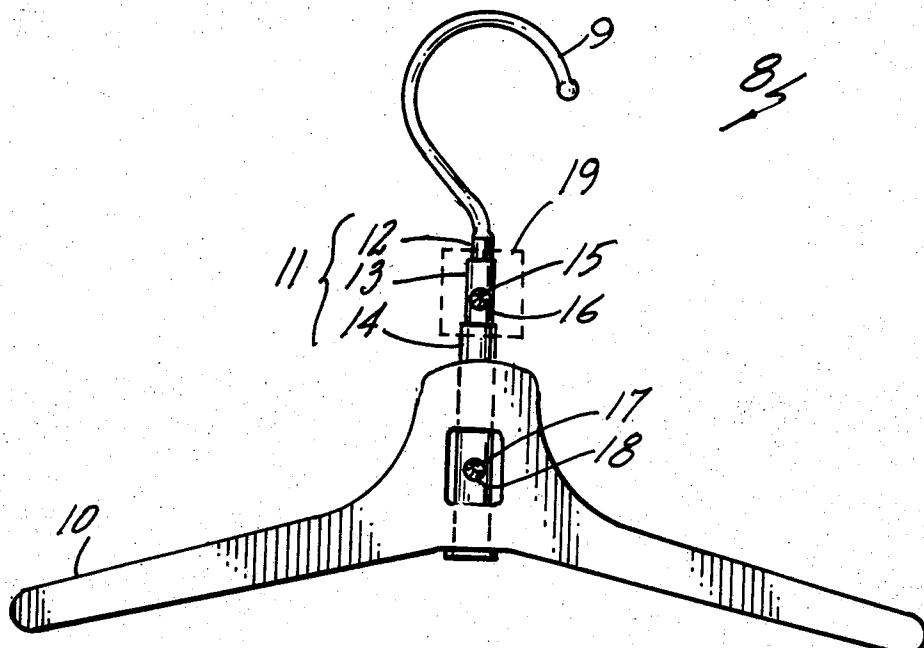
Primary Examiner—George H. Krizmanich

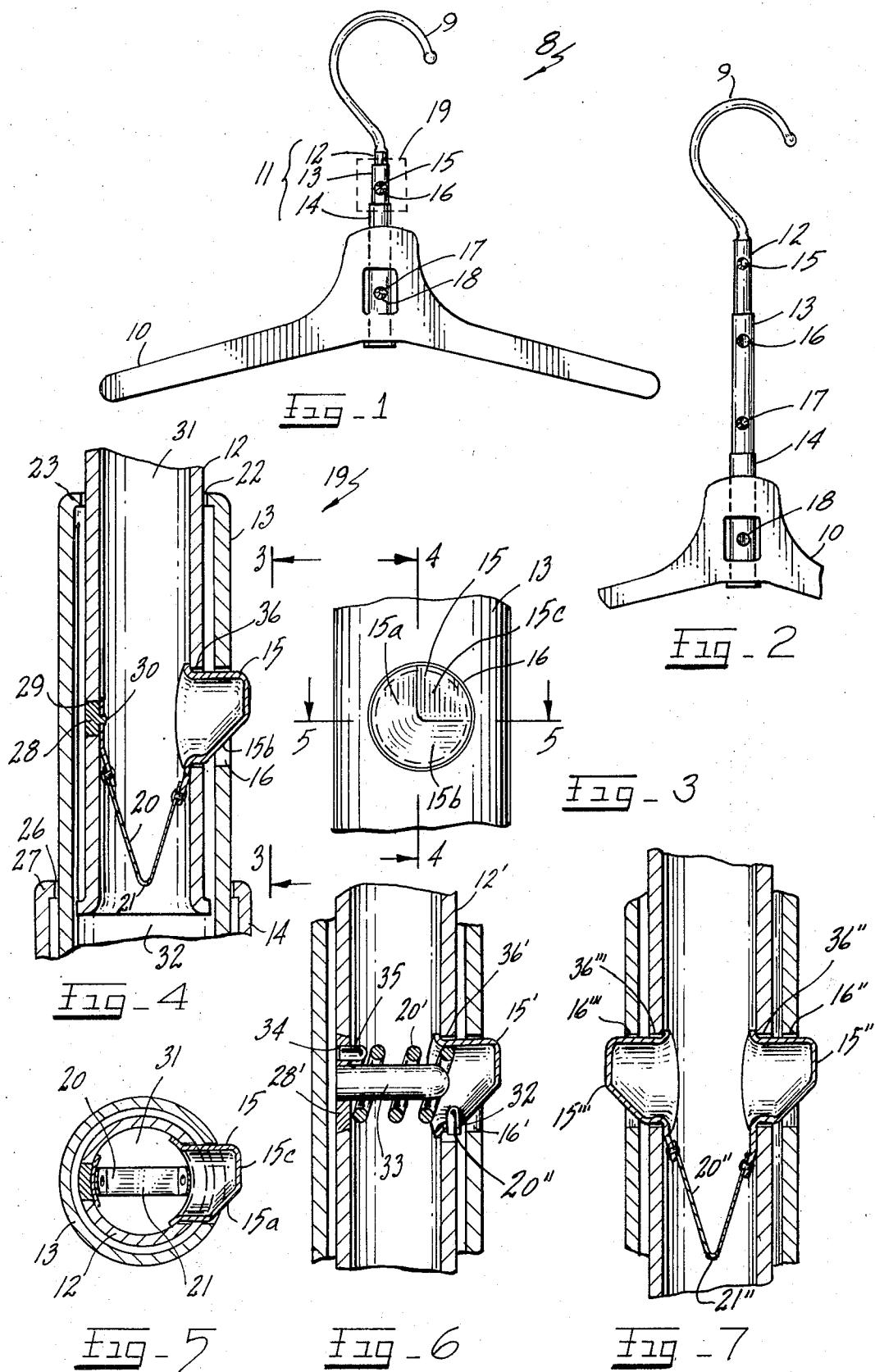
[57] ABSTRACT

In a preferred embodiment, there is provided a coat hanger which includes a telescopic and thereby extendable shaft extending between the hook and the

clothes support element(s) thereof, with the male and female portions thereof being lockable by a key upon collapse thereof one into the other and being releasable from the locked state by the key being twisted from its locking position behind a step by virtue of there being provided a spring-biased key projection with a locking end portion thereof including a lateral end face with a wedge-shaped portion such that upon a twisting laterally of one of the male and female elements relative to the other the wedge portion of the end face causes the key projection to become depressed and thereby released from behind the lock step, and the key projection locking end portion further including a downwardly located end face wedge-shaped portion such that when the male and female portions are in the extended state with the key projection fully extended upon exit from within the female elements passage, the male and female member are compressible telescopically together without obstruction by the the extended key projection by virtue of the lower or downwardly located end face wedge-shaped portion becoming engaged with the female element's inner surface at the mouth of the female element to cause the key projection to become depressed to thereby ride into the passage of the female element along the inner wall surface thereof until upon reaching the step-down indentation lock within the surface of the female members inner wall surface the key projection becomes extended lockably again to reproduce a locked collapsed state.

13 Claims, 7 Drawing Figures





TELESCOPING COAT HANGER

This application relates to a coat hanger which may be used by adults but may have the hook shaft shank extended telescopically for use by a child of shorter height.

BACKGROUND TO THE INVENTION

Prior to the present invention, there have existed telescoping shaft coat hangers such as disclosed in U.S. Pat. No. 2,645,357 and U.S. Pat. No. 2,997,217, as well as a telescoping coat-hanger support shaft U.S. Pat. No. 1,858,595. However, with each of these prior extendable shaft devices, there is required a substantial amount of manipulation of a lever mechanism in order to lock or unlock the device from an extended or collapsed state to bring about a change to an altered length, as well as the latch mechanisms of these patents being unsightly and in-the-way of normal coat-hanging operations. Moreover, whereas the present invention is directed to a coat hanger of sufficiently simple mechanism of operation for a child of young age to operate, the prior devices would most likely normally require adult intelligence and experience in order to make altering adjustments in length, as well as the cost of production being possibly exaggerated as compared to that of the present invention.

SUMMARY OF THE INVENTION

Accordingly, objects of the present invention include the obtaining of a telescoping device of simple mechanism of operation in so far as the mechanics thereof as well as the simplicity in operating the release and locking in the extending and collapsing alternately of the device.

Another object includes the obtaining of a coat hanger embodiment of such a telescoping device.

Another object is to obtain a locking and release mechanism simply lockable and releasable, for telescoping collapsed units.

Another object is to obtain a coat hanger of a telescoping hook shaft type which when collapsed is in the locked state supportable of normal weights supportable by conventional coat hangers without danger of accidental extension of the telescoped sections.

Another object is a coat hanger having telescoping hanger hook shank sections which when extended are collapsible into a locked collapsed state by mere unimpeded slidably collapsing the sections thereof manually, devoid of any need to manually release or open or hold open any key or the like.

Another object of the invention is to obtain an efficient and low cost and durable locking key spring mechanism for the fulfillment of one or more of the preceding objects.

Other objects become apparent from the preceding and following disclosure.

One or more of the objects of the present invention are obtained by the invention as defined herein.

Broadly the invention includes a novel lock and release device for a telescoping male and female shaft such that the shaft in the locked state does not extend when subjected to extending force, but upon twisting of the one of the male and female elements relative to the other such that for example the inner cylinder is rotated relative to an outer female cylinder, the lock is thereby released permitting thereafter the extension of the collapsed telescoped male and female elements,

and also such that upon the collapsing of the extended male and female elements the locking key becomes retracted by a simple mechanism without requiring manual depression thereof, preferably the shaft being the hook shaft of a coat hanger or pants hanger or the like such that the hanger may be extended or collapsed by a child or adult.

The mechanism of this lock device is the inclusion of a stepped recess behind which the key projection becomes snapped into a locked state, in which associated with either the end face of the key projection or with the side of the stepped recess there is a laterally extending inclined plane in the nature of a wedge ramp such that upon turning of the cylinder on which the key is mounted while holding the recessed key-engaging structure cylinder stationary, the end of the key becomes depressed against the outwardly biasing spring to thereby move laterally from behind the locking stepbarrier and thereafter allows the male and female members to be extended manually. Although it is possible for the inner surface of the outer cylinder wall to have a laterally extending ramp along which an unaltered key will ride when the inner male member on which the key is mounted is rotated, the preferred embodiment of the invention includes a spring-biased key which key does not rotate and with the key's outer face having an unaltered sharp-cornered upper edge which properly locks behind the step-down barrier upon the biasing of the key into the step-down recess, while the lateral portion of the key face is inclined downwardly providing a wedge surface ridable over the edge of the recess laterally when the inner element is rotated such that the key becomes depressed against the biasing action of the spring. In a further preferred embodiment, the lower face of the outer end of the key is similarly inclined as a wedge such that when it is desired to collapse the extended telescoped elements, the extended key (that had previously been traveled from within the enclosing wall of the female element) does not block reentry of the male element in a collapsing action due to the edge of the ramp wedge of the lower face portion of the key becoming engaged beneath the mouth edge inner surface of the female enclosing wall to thereby cause the key to become depressed as the male part is forcibly collapsed telescopically into the female element. Both female and male elements are cylindrical in shape. In a further preferred embodiment, the male inner element is tubular also, and includes at least one aperture in a side face, with the spring mounted within the inner element tube and having the key supported on the spring such that the key is inserted into and through and extends beyond the aperture. The preferred spring has been found to be a leaf spring, best mounted for efficiency as well as inexpensiveness thereof by utilizing the leaf spring in a U-shape with a second key on the tail of the spring and with a second aperture in a side of the tube opposite the other aperture with the tail key secured biasingly within the second aperture thereby both anchoring the U-shaped spring without need of brading or the like, and simultaneously preventing any possibility of the turning or twisting of the locking key face of the locking key extending through the locking key aperture. As with any telescoping device, there are included outer extending radially outwardly flanges or lip of the inner male element and similarly radially inwardly extending flanges or lip of the outer female element such that the male

member's flanges or lip engages the female element's flanges or lip when the male and female element are fully telescopically extended, to prevent disengagement of one from the other.

The invention may be better understood by making reference to the Figures as follow.

THE FIGURES

FIG. 1 illustrates a side view of a preferred embodiment of the present invention as a coat hanger having an extendable hook shank.

FIG. 2 illustrates an in-part view of the embodiment of FIG. 1 in an extended state, of the telescoped (closed) extendable shank also in side view.

FIG. 3 illustrates an in-part view as taken along lines 3—3 of FIG. 4 of the section outlined in phantom as portion 19 of the FIG. 1 embodiment, in an elevation plan view thereof and in enlarged view.

FIG. 4 illustrates a view as taken along lines 4—4 of FIG. 3 and is an in part view taken in cross-section of the portion 19 of the FIG. 1 embodiment.

FIG. 5 illustrates a cross-sectional view as taken along lines 5—5 of FIG. 3 of the embodiment of FIG. 1 in the area of section 19.

FIG. 6 illustrates a side cross-sectional view in an in-part view of an alternate embodiment, this illustrated view corresponding to that of FIG. 4 of a different embodiment.

FIG. 7 illustrates in a still additional alternate embodiment in a view corresponding to those of FIGS. 4 and 6 of different embodiments, the FIG. 7 being also in cross-section longitudinally, and being also an in-part view.

DETAILED DESCRIPTION OF THE INVENTION

In greater detail, FIGS. 1, 2, 3, 4, and 5 illustrate a preferred embodiment of the present invention in which a coat hanger has a telescoping extendable shaft embodying the inventive locking and release mechanism of the present invention, the coat hanger 8 having a hook 9 and clothing support shaft structure 10 mounted on the base of the shank 11 above the lower circumscribing lip thereof, which shank 11 includes the upper male hook shank 12, the intermediate cylindrical shank portion 13 which serves at its upper end as the female-receiving space 22 for the section 12, and the shank cylindrical portion 14 having the space 26 into which the intermediate cylindrical portion 13 is inserted, the clothing support structure 10 being mounted on the lower female shank portion 14. Within the tubular portion of the shank 12 defining space 31, there is mounted depressible key 15 within hole 36 of the portion 12, and in the collapsed state of the shank portions the key 15 extending through the hole 16, there being a brad connecting to the key 15 a leaf spring 20 at the end of one arm of the leaf spring 20, with the leaf spring being spring biased by virtue of its bend at point (location) 21 and having the opposite end thereof connected by brad 30 to a plug 28 extending through an aperture 29 such that the plug 28 anchors the position of the leaf spring 20 thereby maintaining the relative position and orientation of the key 15 within the hole 16 against turning (revolving) therein. Lower on the collapsed shank there is disclosed in FIG. 1 an additional similar key 17 within opening 18 of the shank portion 14, as mounted within the passage of shank portion 13. FIG. 4 illustrates

shoulder portions 23 and 27 which are analogous for the different shank portions 13 and 14, which serve to engage respective outwardly extending shank portions of the male member mounted therein such as outwardly extending flanges 25. Such shoulder flanges serve to prevent the telescoping portions in their extended state as shown in FIG. 2 from slipping one out of the other, thereby enabling the hook 9 to suspend weighty objects on the support structure 10 without the shank portions 12, 13, and 14 of the coat hanger from pulling apart. A main feature of the invention is illustrated in each of FIGS. 3, 4, and 5 in so far as the key 15 includes a laterally inclined or slanted face laterally viewable in each of FIGS. 3 and 5, and a downwardly located downwardly inclined or slanted face 15 b as viewable in FIGS. 3 and 4. The laterally inclined face 15a permits the key to have the face 15a slip under the edge of the structure defining hole 16 when the shank portion 13 is turned in a counter-clockwise direction as viewed in FIG. 5 relative to the stationary member 12 in order for the key face 15a to ride under the member (shank portion) 13 thereby depressing the key 15 to ride within the passage of shank portion 13 such that the key 15 no longer prevents the shank portion 12 from being extended from within the shank portion 13. In like manner, when the shank portion 12 is in the extended state from the shank portion 13 as illustrated in FIG. 2, it is possible to collapse the coat hanger with a minimum effort without the necessity of having to use the fingers to manually depress the key 15, it being merely necessary to insert the shank 12 into the cylindrical shank port 13 space 22 in view of the fact that the slanted face 15b becomes engaged under the shoulder or flange 23 whereby the key 15 becomes depressed to ride within the shank portion 13 space 22 until such time as it reaches the aperture or hole 16.

In like manner, the keys 15' of FIG. 6, the key 17 of FIG. 1, the key 15" of FIG. 7 function in an identical manner to the key 15 of FIGS. 1, 2, 3, 4 and 5, the sole difference being that key 17 relates to a different telescoping section, and the key 15' of FIG. 6 is mounted on a spring 20' around a guide support 33 which prevents the spring 20' from doubling or bending unduly with the spring being anchored within an aperture 34 at the spring end 35, and the opposite spring end 20' being anchored within an aperture of the key head 15' thereby preventing the head key 15' from rotating out of orientation from its required position to be operative for the present invention. The wedge 28' is mounted within the hole through which the key and spring are originally inserted and mounted within the passage of shank portion 12. The hole 32 within the key 15' receives the spring end 20''. In FIG. 7, an additional distinction is that instead of being like the embodiment of FIG. 4, there are keys on each of opposite ends of the leaf spring 20'', such as the keys 15'' and 15''', the key 15''' being within apertures 16''' and 36''' as compared to key 15'' extending through apertures 16'' and 36''.

It is contemplated that the keys and the leaf springs will be made out of stainless steel, but may be made of any other suitable metal, plastic or other composition conventionally known to be suitable for such purposes. In like manner, the hanger other portions may be of metal and/or plastic and/or wood or any other suitable and/or conventional material, as might be desired.

It is within the scope of the present invention to make other variations and modifications and substitution of equivalents to the extent that would be obvious to a person skilled in this particular art.

We claim:

1. A telescoping device comprising in combination: first and second elements, the first being a female element and the second being a male element telescopably insertable into the female first element; the first element including in its inner wall surface a step indentation toward the outer wall thereof stepping downwardly in a direction moving away from the point of insertion of the second element, and the second element having mounted thereon extending laterally from a side of the second element a spring-biased key means spring-biased laterally outwardly from the second element's side such that upon insertion of the second element within the first element the spring-biased key means outer end is rideable against the inner wall surface of the first element and is lockably snapable outwardly behind the step indentation securable of the second element telescopically within the first element, the first element further including a radially inwardly extending flange element and the second element further including a radially extending outwardly directed flange element with the inwardly extending flange element being aligned with and for engagement with the outwardly extending flange element such that when the spring-biased key means is not engaged lockably the male second element in the telescopically opening thereof is not separable from within the mouth of the female first element, the improvement being that at least one of said first element's inner wall surface lateral to the step indentation and of said spring-biased key means on a lateral side portion of an outwardly directed end face surface of a lock key projection includes a wedge-inclined surface such that upon lateral or rotary twisting of one of the first and second elements one relative to the other the key projection becomes pressed radially inwardly to thereby become unlockably released from a locked state behind the downwardly stepped step indentation thus permitting the male second element to be telescopically extended within the female first element, at least the female first element being cylindrical in shape.

2. A telescoping device of claim 1, in which at least one of said first element's mouth lip portion into which the second element is telescoped and of said lock key projection's lower side portion of the outwardly directed end face surface includes a wedge inclined surface such that upon the female first element and the male second element being telescopically extended beyond a point at which the lock projection is outside of and free from pressure against the female first element's inner wall surface, the first and second elements are collapsible telescopically by virtue of the wedge-inclined surface during the collapsing becoming engaged to thereby cause the extended key to become depressed sufficiently to thereafter ride on the female first element's inner wall surface.

3. A telescoping device of claim 2, in which the lock key projection includes a wedge-shaped laterally-extending portion of the outwardly directed end face,

the second element being cylindrical.

4. A telescoping device of claim 3, in which the lock key projection includes a wedge-shape downwardly-extending portion of the outwardly directed end face.

5. A telescoping device of claim 4, in which a free end of one of the first and second elements includes a coat-hanger clothes-support element intimate therewith and the remaining one of the first and second elements includes a coat-hanger hanging-up means for suspendedly mounting thereof.

15 6. A telescoping device of claim 3, in which a free end of one of the first and second elements includes a coat-hanger clothes-support element intimate therewith and the remaining one of the first and second elements includes a coat-hanger hanging-up means for suspendedly mounting thereof.

7. A telescoping device of claim 2, in which the lock key projection includes a wedge-shape downwardly-extending portion of the outwardly directed end face.

20 8. A telescoping device of claim 1, in which the lock key projection includes a wedge-shaped laterally-extending portion of the outwardly directed end face.

25 9. A telescoping device of claim 1, in which the lock key projection includes a wedge-shape downwardly-extending portion of the outwardly directed end face.

30 10. A telescoping device of claim 1, in which a free end of one of the first and second elements includes a coat-hanger clothes-support element intimate therewith and the remaining one of the first and second elements includes a coat-hanger hanging-up means for suspendedly mounting thereof.

35 11. A telescoping device of claim 1, in which the male second element is tubular and has an aperture in a side face thereof with the lock key projection inserted into and extending through the aperture beyond an outer face of the second element's side face's outer surface, and the spring-biased key means includes a leaf spring fixedly secured within the tubular second element such that the position of the key projection remains constant against rotation thereof.

40 12. A telescoping device of claim 5, in which the male second element is tubular and has an aperture in a side face thereof with the lock key projection inserted into and extending through the aperture beyond an outer face of the second element's side face's outer surface, and the spring-biased key means includes a leaf spring fixedly secured within the tubular second element such that the position of the key projection remains constant against rotation thereof.

45 13. A telescoping device of claim 12, in which the leaf spring is bent into a U-shape with one end thereof being biased against one inside lateral wall surface of the tubular female second element, and with the other end thereof having the key projection extending from an outer lateral flat face thereof with the end supporting the key projection being biased against the opposite inside lateral wall surface of the tubular female second element adjacent the aperture.

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