

GARMENT HANGER

This invention relates to a garment hanger. In particular it relates to a hanger which securely retains a garment having either an elastic or a non-elastic waistband, whilst allowing the garment to be easily removed from the hanger.

Garment hangers are currently available which are of adjustable width to provide the tension required in the waistband of a garment, such as a skirt or a pair of trousers, so as to hold the garment on the hanger. For example, WO89/03652 and EP-A-0346780 both disclose hangers in which the width is adjustable by a ratchet mechanism. Such ratchet-based hangers have their attractions, but they also suffer from some disadvantages.

Firstly, although tension is easily obtained in an elastic waistband, it is much more difficult to achieve the necessary tension in a non-elastic waistband using a ratchet mechanism. Attempts have been made to overcome this problem by reducing the size of the teeth of the ratchet, so as to allow a finer degree of control over the width of the hanger, but this increases the risk of the ratchet slipping under tension.

A further problem which arises with garment hangers using ratchet mechanisms is the problem of removal of the garment from the hanger. The hangers disclosed in WO89/03652 and EP-A-0346780 incorporate ratchet release mechanisms, but it will not necessarily be apparent to the eventual customer how to operate them. Moreover, release of the ratchet mechanism means that the hanger is no longer of any particular width. This can lead to the customer inadvertently switching garments of different sizes between hangers, so that the garment no longer corresponds to the label on its hanger.

According to the invention there is provided a garment hanger comprising: a body and a pair of members secured to the body for engaging the inside of a waistband of a garment; wherein at least one of the members includes an elastic member which enables the member to be resiliently

pivotable relative to the body portion so as to allow a garment to be placed on, or removed from, the hanger, the elastic member being compressed as the at least one resiliently pivotable member pivots.

- 5 Preferably the pair of members include teeth to grip a garment.

 In a preferred embodiment the hanger includes a variable length body and securing means to fix the length of the body. The variable length body may comprise a central
10 portion fixed to a hook for suspending the garment hanger, and at least one arm slidably mounted on the central portion and capable of movement relative to the central portion to vary the length of the body. The securing means provided
15 may fix the position of the at least one arm to set the length of the body. Preferably, the garment hanger further comprises a release mechanism to release the securing means to enable the length of the body to be varied, for example by allowing the at least one arm to move freely relative to the central portion of the body.

- 20 In one preferred embodiment, the securing means comprises a toothed finger fixed at one end to the arm and spaced apart from the arm, the toothed finger engaging teeth on the central portion.

 In an alternative embodiment, the securing means
25 comprises a toothed finger fixed at one end to the central portion, engaging with teeth on the arm, and the release mechanism comprises at least one lug mounted on the central portion adjacent the finger.

- The variable length body may comprise a rack and
30 pinion, or a ratchet device.

 Preferred embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

- Figure 1 is a schematic side view of a garment hanger,
35 Figure 2 is a perspective view of a release mechanism for a garment hanger,

 Figure 3 is a schematic transverse section of the release mechanism of Figure 2,

Figure 4 is a perspective view of a further release mechanism,

Figure 5 is a schematic transverse section of the release mechanism of Figure 4,

5 Figure 6 is a schematic side view of a first end piece for a garment hanger,

Figure 7 is a schematic side view of a second end piece for a garment hanger,

10 Figure 8 is a schematic side view of a third end piece for a garment hanger,

Figure 9 is a schematic side view of a fourth end piece for a garment hanger,

Figure 10 is a schematic side view of a fifth end piece for a garment hanger,

15 Figure 11 is a schematic side view of a sixth end piece for a garment hanger,

Figure 12 is a schematic side view of a seventh end piece for a garment hanger according to the invention,

20 Figure 13 is a schematic side view of an eighth end piece for a garment hanger,

Figure 14 is a schematic side view of a ninth end piece for a garment hanger,

Figure 15 is a schematic side view of a tenth end piece for a garment hanger,

25 Figure 16 is a schematic side view of an eleventh end piece for a garment hanger,

Figure 17 is a schematic side view of a twelfth end piece for a garment hanger,

30 Figure 18 is a schematic side view of an enlarged portion of the end piece of Figure 17,

Figure 19 is a schematic side view of a thirteenth end piece for a garment hanger, and

Figure 20 is a schematic side view of a fourteenth end piece for a garment hanger.

35 Figure 1 shows a garment hanger having a body 10 with a hook 20 connected to the centre of the body. A pair of arms 30 having teeth 35 are inserted into the body 10. At one end of each arm 30 is an angled portion 45 to which is

connected an upright end piece 40. The end piece 40 has teeth 50 for frictional engagement with the inside of a waistband of a skirt or a pair of trousers. The upper end of end piece 40 is a hooked portion 60 which hooks over the
 5 waistband.

In use, the size of the garment hanger is set, preferably by the factory, by moving the arms within the body. The teeth on the arms engage with teeth within the body in the manner of a rack and pinion, or ratchet
 10 mechanism. Once the size of the garment hanger is set, it may be inserted into the waistband, or removed from the waistband, simply by flexing the end piece 40. This is achieved by applying pressure, as indicated by the arrow, at point 70 on the hooked portion 60 so as to pivot the end
 15 piece about the point of connection of the angled portion 45 of arm 30 and the end piece 40. Use of the end piece allows the teeth 50 to engage with the waistband when inserted, the hooked portion 60 extending over the top of the waistband, whilst enabling release of the garment
 20 without adjustment of the ratchet mechanism.

Figure 2 shows a release mechanism for a garment hanger. The body 110 of the garment hanger has a longitudinal hooked finger 190 which engages with teeth 135 on the arm 130. Lugs 180 are provided on either side of
 25 the hooked finger 190 to enable release of the finger. The side edges of hooked finger 190 are tapered inward, and the upper portions of lugs 180 have correspondingly tapered inside faces, so that release of the finger may be achieved by applying pressure as indicated by the arrows to the lugs
 30 180, thus forcing movement of the hooked finger away from the teeth 135 of arm 130. The positions of hooked finger 190 and lugs 180 for engagement and release of the arm 130 are shown in Figures 3a and 3b respectively.

An alternative release mechanism is shown in Figure
 35 4. In this embodiment the arm 230 of the garment hanger includes a longitudinal finger 290 spaced apart from the main body of the arm 230. Upwardly extending teeth 235 on the finger 290 engage with downwardly extending teeth within

the body 210 of the garment hanger. A portion of the body 210 of the garment hanger has been removed so as to expose the finger 290. Pressure applied to the finger at this exposed point, as indicated by the arrow, presses the finger 5 290 against the main body of arm 230 thus disengaging the teeth 235 from the teeth of the body 210 and releasing the arm. A cross section of the release mechanism is shown in engaged and released modes respectively in Figures 5a and 5b.

10 Figures 6 to 20 show a number of different embodiments of end pieces.

Figure 6 shows a first embodiment of an end piece for a garment hanger in which a rotatable member 2 has a flat metal spring 4 and is connected to arm 6. Flat metal spring 15 4 is moulded into the rotatable member 2 and teeth 3 on the rotatable member improve the grip of the garment by pressing outward into the waistband of the garment and inhibiting the action of gravity on the garment. The spring 4 provides an outward force acting on the garment waistband. Hooked 20 portion 8 extends over the top of the garment waistband. To release the garment, pressure is exerted at the hooked portion 8 of the rotatable member 2 causing it to pivot about point 10 into the position indicated by 2', 4' and 8'. The spring 4 will be deformed when the rotatable member is 25 pivoted as indicated by the spring's position 4'. The spring 4 biases the garment waistband outwards, holding it in tension, the tension being removed by exerting pressure in the direction of the arrow.

In Figure 7, the arm 16 of a garment hanger has an 30 inclined end portion 17 connected to the member 12 of the end piece by parallelogram plastic leaf springs 14. In use, the parallelogram plastic leaf springs 14 deform to position 14', when pressure is applied at the hooked portion 18 of member 12. The garment is then released. Similarly, in 35 Figure 8, non-parallelogram plastic leaf springs 24 are deformed to position 24' to release the garment by pressing at hooked portion 28 of member 22. Likewise in Figure 9, two moulded-in metal leaf springs 34a and 34b are deformed

into position 34a' and 34b' by applying pressure to the hooked portion 38 of member 32.

Figure 10 shows a fifth embodiment of an end piece for a garment hanger. The end piece comprises a member 42
5 having a moulded-in bent metal leaf spring 44 moulded into arm 46 of the garment hanger. As in all the other embodiments, teeth 43 grip the garment, and gravity and action of the garment increase the grip on the garment. Applying pressure at hooked portion 48 of the member 42
10 causes the metal leaf spring 44 to bend further about point 50 so as to release the garment.

The embodiment of Figure 11 shows an end piece which is bistable. The arm 56 of the garment hanger has an open portion 60 with the bent portion of a bent spring 54 within
15 this open portion. Both ends of the bent spring are moulded

into the hanger, one end extending into a lever-type portion 58 and the other end of the spring extending into member 52 of the end piece having teeth 53. To release the garment, pressure is applied to the lever 58 causing the spring 54 to
 5 flip over into a second stable position as indicated by 54'. The position of member 52 is indicated by 52'.

In Figure 12, the end piece comprises a member 62 having a bent portion 70 with a rubber section 64 inserted into the included angle of the bent portion 70. Pressure
 10 applied at hooked portion 68 of member 62 compresses the rubber section 64 thus allowing the arm 62 to be moved out of engagement with a garment waistband.

Figure 13 shows a similar end piece comprising member 72 having teeth 73 and bent portion 80. The arm 76 of the
 15 garment hanger has portion 77 extending outwardly beyond the member 72 and having pin 75 at the outer end of this portion. The part of portion 77 of the arm 76, which extends beyond the end piece, hooks over the waistband of the garment. An elastic or rubber band 74 is positioned
 20 around the pin 75 and the end 78 of the end piece, holding the end piece against the garment waistband. To release the garment, pressure applied in the direction of the arrow to end 78 stretches the elastic or rubber band 74 and member 72 pivots about point 79.

Figure 14 shows an end piece which is connected to arm
 25 86 of the garment hanger by outer plastic springs 84 surrounding clip-in metal leaf spring 85. The springs form an extension to the arm 86 of the garment hanger connecting it to member 82 of the end piece. The springs 84 and 85 are
 30 compressed when end 88 of the end piece is pushed in the direction of the arrow so as to release the garment from the hanger.

Figure 15 shows an end piece having an arm 95 which is inserted into a sleeve 97 extending from arm 96 of a
 35 garment hanger. Sleeve 97 has a lug 91 around which an elastic or rubber band is placed and connected around a second lug 93 on arm 95 of the end piece so as to be held under tension. When the end piece is pushed in by applying

force in the direction of the arrow at end 98 of the end piece the elastic band 94 will extend further as the arm 95 is pushed further into the sleeve 97, thus releasing the garment.

5 In a further embodiment, shown in Figure 16, a sleeve 107 extending from arm 106 of the garment hanger is placed within a sleeve 105 extending from the end piece. A helical spring 104 is placed within the sleeves 107 and 105 and contacts arm 106 at one end and member 102 of the end piece
10 at its other end. Pressure applied at hooked portion 108 will compress the helical spring 104 enabling the garment to be released from the hanger.

Figure 17 shows a bistable end piece, with a detail of its hinged portion being shown in Figure 18. Arm 116 of
15 the garment hanger has a downwardly extending portion 117 to which member 112 of the end piece is connected by a series of "live" hinges. These hinges are shown in more detail in Figure 18.

As can be seen in Figure 18, when the garment is held
20 under tension, hinge 121 is held at approximately 180° , and hinges 120 and 122 at approximate right angles, producing a first stable position. To release the garment member 112 of the end piece is moved into position 112' by applying pressure to hooked portion 118 of the end piece, as
25 indicated by the direction of the arrow.

The hinges 120, 121 and 122, which form an "over-centre" plastic spring, allow the member 112 to rotate. Member 112 can then be moved out of the first stable position, where the garment waistband is held in tension,
30 and into a second stable position, where the garment is released. In the released stable position, hinges 120 and 122 will form approximately 180° and the hinge 121 will have moved into an approximate right-angled position.

Figure 19 shows a further bistable end piece. Arm 136
35 of the garment hanger has downwardly extending portion 137 to which member 132 is connected by "live" hinge 140. The end of arm 136 is connected to member 132 by a further member 135 having "live" hinges 141 and 142 at its opposite

ends.

When the garment is held under tension, hinge 141 is held at an obtuse angle, and hinges 140 and 142 at acute angles, producing a first stable position. When the garment
 5 is released by applying pressure at 138, the end piece moves into a second stable position, in which the member 135 is flipped over centre into a second obtuse angled position. Hinges 140 and 142 form smaller acute angled or closed positions. Member 135 contacts the end of arm 136.

10 Figures 20a and 20b show an end piece in which a plastic leaf spring 154 is only loaded when the garment is released. Figure 20a shows the end piece as moulded connected to arm 156 of the garment hanger. Arm extension 157 extends upwardly and downwardly. The lower end of
 15 extension 157 is connected to member 152 at pivot point 160. The upper end of extension 157 has a stop, or lug, 161 at its apex. Member 152 has a hooked portion 158 with a longitudinal slit 162. Arm 156 has a further downwardly extending hooked portion 163 at approximately the mid-point
 20 of extension 157.

Figure 20b shows the end piece in use, when the longitudinal slit 162 is placed over stop 161. The stop 161 will tend to sit in the rounded area 164 at the inner end of the longitudinal slit. In this position, the garment is
 25 gripped and spring 154 rests against the downwardly extending part of extension 157.

To release the garment, the member 152 is pivoted about pivot point 160 into position 152'. Stop 161 slides along the slit 162, loading the spring 154. The spring 154
 30 tends to move upwards when loaded, into hooked portion 163 as indicated by 154'.

It will be appreciated that a number of preferred embodiments have been described, by way of example, and that changes can be made without departing from the scope of the
 35 invention as defined in the appended claims.

CLAIMS

1. A garment hanger comprising:
a body and a pair of members secured to the body for
5 engaging the inside of a waistband of a garment;
wherein at least one of the members includes an elastic
member which enables the member to be resiliently pivotable
relative to the body portion so as to allow a garment to be
placed on, or removed from, the hanger, the elastic member
10 being compressed as the at least one resiliently pivotable
member pivots.
2. A garment hanger according to claim 1, in which the
pair of members include teeth to grip a garment.
- 15 3. A garment hanger substantially as hereinbefore
described, with reference and as shown in Figure 12 of the
accompanying drawings.
- 20 4. A garment hanger as claimed in any preceding claim,
further comprising:
a variable length body; and
securing means to fix the length of the body.
- 25 5. A garment hanger according to claim 4, in which the
variable length body comprises:
a central portion fixed to a hook for suspending the
garment hanger; and
at least one arm slidably mounted on the central portion
30 and capable of movement relative to the central portion to
vary the length of the body.
6. A garment hanger according to claim 4, in which the
securing means fixes the position of the at least one arm to
35 set the length of the body.
7. A garment hanger according to any one of claims 4 to
6, further comprising a release mechanism to release the



securing means to enable the length of the body to be varied.

8. A garment hanger according to claim 6 or claim 7, in which the securing means comprises a toothed finger fixed at one end to the arm and spaced apart from the arm, the toothed finger engaging with teeth on the central portion.
9. A garment hanger according to claim 7, in which the securing means comprises a toothed finger fixed at one end to the central portion engaging with teeth on the arm, and the release mechanism comprises at least one lug mounted on the central portion adjacent the finger.
10. A garment hanger according to any one of claims 4 to 9, in which the variable length body comprises a rack and pinion, or ratchet device.