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(71) Applicant: **BRAITRIM (U.K.) LIMITED**
London NW10 6NB (GB)

(72) Inventor: **Hunt, William Llewellyn**

Stoke Poges, Bucks SL2 4PG (GB)

(74) Representative: **Molyneaux, Martyn William**

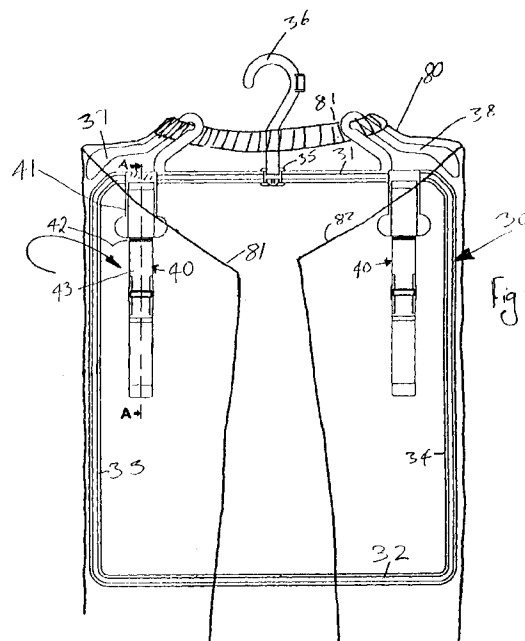
Langner Parry

52-54 High Holborn

London WC1V 6RR (GB)

(54) **A hanger**

(57) A hanger is disclosed on which articles may be supported, the articles being either box structures in which garments are packed, or alternatively garments themselves. The hanger conveniently has a one piece moulded integral structure having a fastening device (6) including at least three sections (2,12,13) interconnected one with the next in series. The sections are conveniently arranged so that a first section (2) extends from the hanger structure, a second section (12) extends from the first section and is pivotally connected thereto, and a third section (13) is pivotable relative to the second section. The arrangement is such that when the sections are pivoted to define a fastening device the second section (12) is folded against the first section (2) and the third section (13) is folded to overlie the second section for securing an article between the second and third sections. Preferably there is provided a securing member (72) for securing third section (46) relative to first (41) and second (43) sections. Conveniently, the securing member is mounted on the first section (41), or alternatively the securing member comprises a spring (72) for securing the first and second section (41,43) together and for securing the third section (46) relative to the second section.



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Description

This invention relates to a hanger for hanging garments.

One known form of a hanger is that referred to as a box hanger which generally comprises a hook and a label area and a fastening device comprising an integral moulding of polypropylene for enabling the box hanger to be attached to a preformed box in which garments such as socks or underclothes are stored for sale. Usually, the box is provided with an upstanding flange having a flat inverted U-shaped configuration with a thin elongate slot located in an elongate peripheral edge defined by the bottom of the inverted U-shape at a free outermost end remote from the box. The fastening device of the hanger which is thinner than the lateral width of the slot is inserted and held within the slot. Conveniently, the fastening device is 0.75mm thick and can be provided with barbs on either side of a tongue which overlaps the rear of the label area. The barbs extend outwardly at a free end of the tongue remote from the hook and have at their free ends an outwardly facing cup shaped recess into which elongate opposed edges of the slot fit, respectively.

However, the difficulty experienced with this barb hook arrangement is that the card from which the box is made is itself thin and often tears at longitudinal spaced edges of the slot where the card is inserted into the cup recesses of the barb type hook. To assist in preventing such damage and to prevent wobbling of the box hook on the box flange glue is often applied to the major surface of the tongue so that when the tongue is inserted in the slot the glue adheres the tongue to the inner surface of one side of the box flange. Such a barb type hook is the subject of British Registered Design No. 2042456.

In an alternative form the box hook may again comprise a hook which is integrally formed of polypropylene with a label area having an elongate fastening stud projecting from the rear surface of the label area. The outer end of the stud has an increased diameter portion to act as a stop, as will be referred to below. The label area is in addition provided with a bendable strap integrally formed with the label area and has at its free end an aperture which allows the end of the strap to be located upon the elongate stud projecting from the rear surface of the label area with the increased diameter portion of the stud preventing the end of the strap from slipping off the stud.

When used with a box flange the upstanding flange of the box is provided with an aperture through the opposed sides of the flange so that the elongate stud can be passed through the aperture with the box flange resting against the rear surface of the label area. The strap then passes over the top of the box flange and is bent downwardly to engage the elongate stud thereby securing the box hook to the box.

One method of producing such a box hook is to provide an elongate hook and to mould the strap within or

under the hook with the strap integrally moulded with the label area of the box hook. However, when smaller hooks are to be used in which there is little space between the hook and the label area, it is not convenient to mould the strap between the hook and the label area. Therefore, it has been known to mould a box hook in which the hook is very close to the top of the label area, and in this instance the strap is integrally formed with the label area at one side thereof along the top edge of the label area in use, preferably with the open side of the hook, and extends diagonally upwards away from the label area. The difficulty with the two latter described embodiments is that the hinge is untidy and is on view to the public at all times. The elongate stud is located often approximately centrally of the label area and therefore the strap folds over the box flange and crosses the rear surface thereof diagonally of the label area for connection onto the stud to secure the box hook on the flange. A particular disadvantage is that once either of these latter two arrangements are applied to the box flange they tend to wobble making the connection to the flange of the box very unsatisfactory.

Moreover, to save costs all the hooks are moulded in polypropylene of a thickness of 1.75mm with label areas and straps generally 0.75mm in thickness and are therefore not strong. Creep resistance of the polypropylene is also not good leading to reduction in resilience and possible fracture of pivotal parts.

Fastening devices are known to be applied to knitwear frame hangers, for example, which comprise a rectangular frame having collar supports in the region of either side of the hanger which in use project outwardly and upwardly from an upper crossbar of the frame in the same direction as a centrally located hook mounted on the frame hanger. Internally of the knitwear frame and extending downward below each collar support is provided an integral clip which constitutes the fastening device. When a jumper is hung vertically on one side of the knitwear frame hanger the collar supports support the collar of the jumper and the jumper is then wrapped around the vertically extending side members of the knitwear frame. The jumper is then folded around the bottom cross member of the knitwear frame and folded upwardly with the bottom of the jumper being located within the integral clips, thereby to maintain the jumper in its folded form. The clips are usually an integral part of the frame, and therefore their performance is dependent upon the material used for the frame.

The material used in the manufacture of the knitwear frame hanger is preferably polypropylene which although tough and springy, has the tendency for the resilience to fade relatively quickly and after a while the garments become unfolded and hang loosely on the frame. Acetal is an alternative material in which the resilience of the spring does not fade nearly so much, but it is not used because the material is far too expensive to mould the whole frame in the material.

Furthermore, the integral clips need to be very stiff

to hold the garment that is held on the hanger. This makes the clip very difficult to pull open when putting the garment in the clip.

One known clip is formed integrally with the frame of the hanger and has two hingedly connected arms interconnected by a live hinge and have thickened ends at their free ends to define gripping pads of the clip. The clip normally opens wide with no resistance but is provided with an acetal spring in the form of a hook which slides between a release position in which the arms of the clip open wide with no resistance and a locking position in which the spring passes over the hinged end of the arms of the clip and the resilience in the acetal spring has the effect of forcing the two arms and the gripping pads together. This is a well known spring clip which when used on a hanger has one of the gripping arms permanently and firmly formed as part of the hanger. The other arm pivots freely of the arm, in use, ie. about the live hinge. The fixed gripping arm is integrally formed with the hanger from polypropylene and again is subject to poor creep resistance of the live hinges reducing the effectiveness of the hanger.

It is an object of the present invention to provide a fastening device in which the above mentioned problems are substantially alleviated.

According to the present invention there is provided a hanger of a one piece moulded structure arranged to be moulded flat with a fastening device, characterised in that the fastening device has at least three sections interconnected one with the next in series, the sections being arranged so that a first section extends from the hanger structure, a second section extends from the first section and is pivotally connected thereto, and a third section is pivotable relative to the second section, so that when the sections are pivoted to define a fastening device, the second section is folded against the first section and the third section is folded to overlie the second section for securing an article between the second and third sections.

In one preferred embodiment of the present invention there is provided a securing member for securing the third section relative to the first and second sections. The securing member may be mounted on the first section. Conveniently, the securing member is an elongate stud extending from the rear surface of the first section. The stud may have an increased diameter domed head at its free end remote from the rear surface of the first section.

Preferably, the pivotal interconnection between the second and third sections comprises a double hinge arrangement so that when folded to overlie the second section the third section is spaced from the second section. Advantageously, the second section may comprise a pair of elongate arms spaced laterally one relative to the next to define an elongate spacing there between, preferably of a width less than the increased diameter portion of the domed head. Conveniently, the third section also includes an aperture therein of a sufficient

width to be passed over the domed head of the securing member whereupon the third section is secured on the securing member. The securing member is preferably an elongate stud projecting perpendicularly from the first section.

In an alternative embodiment in accordance with the present invention the securing member preferably comprises a spring for securing the first and second sections together and for securing the third section relative to the second section. The first section preferably include an aperture through which the spring means is slidably mounted. Conveniently, the spring means comprises a hook arranged to expand when pushed over a pivotal interconnection between the second and third sections of the clip defining opposed gripping plates, in use, to lock the gripping plates together. Conveniently, the second and third sections are each provided with gripping pads for supporting an article therebetween. The gripping pads may each comprise a convex element.

Preferably, the spring is made of acetal while the remainder of the body of the hanger is a one piece integral moulding of polypropylene. The spring may comprise a metal spring, or alternatively be made from polycarbonate.

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

Fig. 1 is front view of a box hook in accordance with the present invention;

Figs. 2a and 2b are partial sectional views showing the manner in which various interconnected portions of the fastening device are folded;

Fig. 3 is a rear view of the box hook of Fig. 1 after mounting on a box flange;

Fig. 4 illustrates a rear view of a knitwear frame hanger having a fastening device according to the present invention;

Fig. 5 is a cross-sectional side elevational view, of a fastening device according to the present invention which is part of the knitwear frame hanger of Fig. 4;

Fig. 6 is a cross-sectional side elevational view of the fastening device of Fig. 5 in its folded position; and

Fig. 7 illustrates a view similar to that in Fig. 6 but including a retaining spring.

Referring particularly to Figs. 1 to 3 there is shown a box hook 1 having an elongate rectangular label area 2 and a hook 3 integrally moulded with an upper edge 4 of the label area 2 at one end 5 thereof.

An elongate stud 6 having an increased diameter domed stop 7 at its outermost free end 8 is integrally formed with and extends from a rear surface 9 of the label area.

A flexible strap 10 integrally moulded with the label

area 2 extends downwardly (as shown in Fig. 1) from a lower edge 11 of the label area which is opposed to the upper edge 4 thereof from which the hook 3 extends. The strap 10 comprises the label area 2 and two pivotally hinged strap portions 12 and 13 with the strap portion 12 being hingedly connected with the lower edge 11 of the label area 2 via a hinge 14. The hinge 14 is an integrally formed hinge and is commonly referred to as a "live hinge". The strap portion 12 comprises two laterally spaced side-by-side arms 15, 16 between which there is located an elongate slot 17. Outermost strap portion 13 is interconnected by an integral live hinge 18 to strap portion 12. An aperture 19 of a rectangular shape is located centrally of the strap portion 13. The lateral width of the aperture 19 relative to the longitudinal axis of the elongate strap 10 is less than the width of the domed portion 7 of the stud 6 to prevent removal of the strap portion 13 from the stud 6 once the outermost strap portion 13 is located on the stud 6, as indicated in Fig. 2b.

The attachment of the box hook 1 to a box flange 25 will now be described with reference to Figs. 2a and 2b.

The method of folding the box hook 1 to achieve the fixing of the hook onto a box flange 25, as shown in Fig. 2b, is achieved by first folding the strap portion 12 upwardly about its live hinge 14 so that the strap portion 12 overlies and contacts rear surface 9, having first passed the domed head 7 of the elongate stud 6 through the slot 17 which is of a width just sufficient to pass over the domed head 7. The box hook flange 25 is then pushed over the domed head 7 onto the elongate stud 6 against strap portion 12. The live hinge 18 which comprises two closely spaced live hinges 18a, 18b to define a spacing portion 26 enabling the outermost portion 13 to be folded over and downwards about live hinge 18b so that the aperture 19 passes over the domed head 7 which then holds the portion 13 on the elongate stud 6 as shown in Fig. 2b and with surface 27 against the box flange 25.

The strap 10 is located centrally of the label area immediately below a recess 28 of the hook 3, which recess enables the box hook to be hung on a support rail close to the rail and to hang vertically in use to display the articles within the box (not shown) to which the box flange 25 is a part. The central location of the strap and also the width of the strap serve to ensure that the box hook is simple to manufacture, allows the articles in the box to be displayed much closer to the rail thereby enabling more boxes to be displayed on support rails, one row below the next, and the boxes are more stably held the box hook.

Preferably, the elongate stud 6 has a circular cross-section but may have cross-sections of various other shapes such as cross-shaped for example.

In one alternative embodiment illustrated in Figs. 4 through 7 there is illustrated a fastening device structure which forms an integral part of a knitwear frame hanger

30 having, in use, top and bottom cross rails 31, 32, and side frame arms 33, 34 interconnecting the top and bottom cross rails 31, 32, respectively, at the outermost ends of the top and bottom rails. The top rail is provided with an aperture device 35 for receiving a hook 36 therein and also a pair of collar supports 37, 38 integrally formed with the hanger and extending outwardly and upwardly from the top rail 31.

A fastening device 40 is located beneath each collar support 37, 38 which are themselves located towards each outermost end, respectively, of the top cross rail. The fastening device 40 and the collar supports 37, 38 are both integrally formed with the top rail 31 and are arranged to hold a jumper on the frame hanger. Where the jumper is folded along the line of the sleeve which is folded downwardly and inwardly, the fold line extends into the fastening device as will be further described below.

The fastening device 40 is shown in Fig. 4 to extend downwardly from the top rail 31 of the knitwear frame hanger 30. In a similar manner to that previously described with reference to Figs. 1 to 3 above, the fastening device 40 comprises three pivotally interconnected strap portions, the first one 41 of which is stationary and integrally formed with the top rail 31. An integrally formed live hinge 42 is provided along an opposed edge 42a of the strap portion 41 remote from the attachment of the strap portion 41 with the top rail 31. Intermediate strap portion 43 which is pivotally attached to the strap portion 41 via the live hinge 42, curves rearwardly of the frame hanger at 44 (Fig. 5) to a live hinge 45. An outermost strap portion 46 is also integrally connected with the live hinge 45 to interconnect the outer strap portion 46 to the intermediate strap portion 43. The strap portion is similarly curved in the region adjacent hinge 45 so that in an operative condition of the fastening device an enlarged closed end is provided.

The intermediate strap portion 43 has in the region of the live hinge 42 a substantially U-shaped recess 47 which defines a convex gripping head 48 when the various strap portions have been folded into their respective positions.

Inner surface 49 of the intermediate strap portion 43 is provided with outstanding ribs 50 only one of which is shown in Fig. 5. Support arms 51 (only one being illustrated in Fig. 5) are mounted on the ribs 50 and extend through the intermediate strap portion 43 to support a cross-bar 52 which lies parallel with a major external surface of the intermediate strap portion 43 on the side thereof remote from that side on which ribs 51 are located. A further spacing stud 53 projects outwardly in the same direction as the support 51, as will be described below.

Ribs 54 are also provided on the outermost strap portion 46 and they extend along the surface to a cup shaped recess 55 at the extreme outer end 56 of the outermost portion 46. The recessed portion 55 defines a domed gripping pad 57 which in the operating condi-

tion of the fastening device 40 can butt against the gripping pad 48 of intermediate strap portion 43. The fastening device 40 is integrally formed with the knitwear frame 30 by a plate 60. The permanently attached fixed strap portion extends outwardly in a transverse direction relative to the direction in which the upper cross-bar 31 extends so as to displace the fastening device 40 slightly relative to the cross-rail and allow the fastening device in its extended out position to substantially lie within the bounds of the knitwear hanger frame, with the live hinge junction 45 and the bar 52 extending in transverse opposite directions relative to the side frames 33, 34 of the frame hanger.

An aperture 61 is provided immediately below the hanger arm portion 60 where body 62 of the permanently attached strap portion 41 is slightly displaced relative to the arm portion 60 as indicated in Fig. 5. Strengthening ribs 63 are provided on the body 62, on the side thereof constituting the rear of the hanger.

To achieve the operative inter-relationship illustrated in Fig. 6 between the various strap portions of the extended fastening device of Fig. 5, requires the strap portion 43 to be moved to the left in Fig. 5 so that intermediate strap portion 43 pivots via the live hinge 42 until the intermediate strap portion engages the body 62 of the permanently attached strap portion 41. In this pivoted position the bar 52 and its support arms 51 are arranged to pass through the aperture 61 so that the bar 52, as shown in Fig. 6, lies immediately below and parallel with the integral hanger plate portion 60. The outermost strap portion 46 is then pivoted about live hinge 45, again to the left hand side in Fig. 5 until the gripping pads 48, 56 touch each other as shown in Fig. 6, and providing an enlarged closed end in the region of the live hinge 45.

In the relative positions of the various strap portions as indicated in Fig. 6, an aperture 70 is provided between the integral hanger plate portion 60 and spacer 53 of the intermediate portion 43. In addition, the arms 51 supporting the bar 52 are spaced one from the other to define a further aperture between the bar 52 and the strap portion 41. The aperture 70 and the spacing between the arms 51 receive, as shown in Fig. 7, a locking spring 72 which is formed of acetal to provide increased strength and maintenance of the inherent resilient force which is required in hook shaped end 73 of the spring 72.

End 74 of the spring remote from the hook 73 is provided with an outstanding flange 75 which is arranged to engage with bar 52 to prevent the spring from being removed from the aperture 70 and spacing between the arms 51.

In use, the outermost strap portion 46 is pivotable about the hinge 45 having very little inherent force to direct the gripping pad 56 against the gripping pad 48 of the strap portion 43 and 46, respectively.

The spring 72 being slidable up and down in Fig. 7 has a relatively small opening 76 between elongate straight portion 77 of the hook and hook end 78. The

width of the aperture 76 at this point is less than the width of the enlarged close end of the fastening device in the operative condition of Fig. 6. Therefore, when the spring 72 is moved downwardly as indicated by arrow 79, the hook end 78 if forced outwardly when it engages the enlarged closed end in the region of the live hinge 45 and moves outwardly to the left to allow the hook end to pass over the enlarged end whereupon the hook end 78 under its inherent resilience forces the outermost strap portion 46 inwardly so that there is a gripping force between the gripping pads 48, 56 of the intermediate and outermost portions, respectively. The gripping force is sufficient to securely hold the shoulders, sleeve and bottom edge of a jumper 80 which is suspended on the knitwear frame, as is indicated in Fig. 4.

In Fig. 4 it will be seen that the jumper 80 is arranged with the collar support arms 37, 38 located within a neck 81 of the jumper to support the neck and allow the jumper to hang downwardly in front of the knitwear frame 30. The remainder of the jumper is then folded around the knitwear frame side arms 33, 34 and also folded diagonally along lines 81, 82 with the arm of the jumper hanging inwardly of the fold between the jumper and the knitwear frame. When the hanger is mounted on the frame as indicated in Fig. 4, the spring 72 is located in the position which is shown in Fig. 7 but the outermost strap portion 46 is pivoted about the live strap 45 outwardly and upwardly so that the diagonal line 81 of the jumper passes across the intermediate hinge portion 43.

Although not shown in Fig. 4 a bottom edge of the jumper 8 would be folded upwardly over rail 32. The bottom edge of the jumper is then located over intermediate strap portion 43 with the shoulder/arm area of the jumper.

The outermost strap portion 46 is then pivoted downwardly against the outer surface of the jumper and the spring 72 is forced downwardly over the enlarged closed end of the strap portions 43, 46 to lock the outermost portion 46 and hence the jumper within the fastening device, or clip. The diagonal line of fold 82 of the jumper is similarly located in the other of the fastening devices with the bottom edge portion of the jumper.

In either of the embodiments described above the portions of the fastening devices are conveniently manufactured from polypropylene with the hanger itself and therefore the manufacture is both simple and cheap. In the second of the embodiments described above in which a spring is provided, such spring may be formed of a plastics material such as acetal to give it the inherent resilient strength needed and reduce the fade time of the resilient forces within the hook, thereby providing a fastening device with a much longer useful life expectancy. However, the spring may be formed of a metal such as spring steel. Polycarbonate can also be used to make the spring, having a lesser life expectancy than acetal but longer than polypropylene.

Moreover, although the strap has been described as being located centrally of the label area such strap

may be located at a position relative to the label area which is off-set from the centre thereof. Conveniently, the label area may comprise any external shape.

It is important to avoid deterioration of the hanger through reduction of creep resistance and this can be improved by using polycarbonate for the spring means or for the whole hanger. The disadvantage in commercial terms is that the cost of each hanger becomes more expensive. Therefore, the hanger of the present invention is preferably made of polypropylene because there is no undue loading on the live hinges and the loading is achieved by the acetal spring which can also be of polycarbonate or metal for similar long lasting qualities and substantially eliminates the difficulties experienced by employees when loading hangers respectively when the hangers have difficult pre-tensioned clips.

Claims

1. A hanger of a one piece moulded structure arranged to be moulded flat with a fastening device (6) characterised in that the fastening device has at least three sections (2,12,13) interconnected one with the next in series, the sections being arranged so that a first section (2) extends from the hanger structure (1), a second section (12) extends from the first section and is pivotally connected thereto, and a third section (13) is pivotable relative to the second section (12), so that when the sections are pivoted to define a fastening device, the second section (12) is folded against the first section (2) and the third section (13) is folded to overlie the second section for securing an article (25) between the second and third sections.
2. A hanger as claimed in claim 1, comprising a securing member (6,7) for securing the third section relative to the first and second sections.
3. A hanger as claimed in claim 2, wherein the securing member (6,7) is mounted on the first section.
4. A hanger as claimed in any preceding claim, wherein the securing member is an elongate stud (5) extending from a rear surface (9) of the first section (2).
5. A hanger as claimed in claim 4, wherein the stud (6) has an increased diameter domed head (7) at its free end remote from the rear surface (9) of the first section (2).
6. A hanger as claimed in claim 5, wherein the pivotal interconnection between the second (12) and third (13) sections comprises a double hinge arrangement (18a & 18b) so that when folded to overlie the second section (12) the third section (13) is spaced from the second section.
7. A hanger as claimed in claim 6, wherein the second section (12) comprises a pair of elongate arms (15,16) spaced laterally one relative to the next to define an elongate spacing (17) therebetween.
8. A hanger as claimed in claim 7, wherein the spacing between the elongate arms (15, 16) is of a width less than the increased diameter portion of the domed head (7).
9. A hanger as claimed in claim 8, wherein the third section (13) includes an aperture (19) therein of a sufficient width to be passed over the domed head (7) of the securing member whereupon the third section is secured on the securing member (6).
10. A hanger as claimed in any preceding claim, wherein the first section (2) comprises a label area of the hanger.
11. A hanger as claimed in any one of claims 1 to 3, wherein the securing member comprises a spring (72) for securing the first (41) and second (43) sections together and for securing the third section (46) relative to the second section.
12. A hanger as claimed in claim 11, wherein the first section (41) includes an aperture (70) through which the spring (72) is slidably mounted.
13. A hanger as claimed in claim 11 or 12, wherein the spring (72) comprises a hook arranged to expand when pushed over a pivotal interconnection between the second and third sections (43,46) of the clip defining opposed gripping plates, in use, to lock the gripping plates together.
14. A hanger as claimed in any one of claim 13, wherein the second and third sections (43,46) are each provided with gripping pads for supporting an article therebetween.
15. A hanger as claimed in claim 14, wherein the gripping pads (48,57) each comprise a convex element.
16. A hanger as claimed in any of claims 11 to 15, wherein the spring (72) is a metal spring.
17. A hanger as claimed in any of claims 11 to 15, wherein the spring (72) is of acetal.
18. A hanger as claimed in any of claims 11 to 17, wherein the spring (72) includes a barb (75) located at its end remote from the hook for limiting the amount of sliding movement of the spring and retaining the spring in position on the fastening de-

vice.

- 19.** A hanger as claimed in any one of claims 14 - 18, wherein the pivotal interconnection between the second and third sections (43,46) is at an enlarged closed end portion tapering inwardly towards the gripping pads. 5
- 20.** A hanger as claimed in any one of claims 11 to 19, including two spaced arms (51) supporting a bar (52) therebetween mounted on the second section (43) and arranged to project through an aperture (61) in the first section (41) so that the spring (72) can pass between the arms and the bar supported by the arms thereby to retain the second section against the first section. 10 15
- 21.** A hanger as claimed in any one of the preceding claims, wherein the fastening device (40) is integrally formed with the hanger. 20
- 22.** A hanger as claimed in any preceding claim, wherein the hanger includes a hook which is low relative to the label area. 25

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