

IMPROVED CLIP

5 This invention relates to clips, and particularly, although not exclusively to clips for use with garment hangers. However, embodiments of the invention are not limited to use on garment hangers but may be equally useful in other fields to provide a gripping function for many different forms of articles.

10 Most clips used in the garment hanger industry comprise at least two components :-

- clip elements, which may be integrally moulded or separately hinged, and
- 15 - a spring biasing element, which may be a metal element or a plastics element, which physically engages the clip elements to hold them in a closed gripping position.

20 The need to manufacture and assemble several components significantly adds to the cost of the hanger and reduces its reliability in the market place.

25 In addition to the above, when articles such as garment hangers having clips according to the prior art are loaded with garments and are then stacked for transport, the weight of the garments and the hangers bearing on each other may often cause undesired opening of the clips, whereby the garments are released from their hangers.

It is accordingly an object of the present invention to provide an improved clip which may be integrally moulded from plastics materials, in a condition ready for use, and which is suitable for integral moulding as part of a garment clip hanger.

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It is another object to provide a clip constructed in such a manner as to avoid inadvertent opening in the above manner.

One aspect of the invention therefore provides a moulded plastics clip
10 comprising a pair of legs, each leg having an object engaging free end portion and a connecting end portion, said legs being integrally connected in spaced relation at said connecting end portions by a leaf portion having an elastic memory, integrally moulded latching means capable of engagement to hold
15 said legs in at least one closed position in which said free end portions of said legs are adjacent to each other so as to be capable of gripping an object between said free end portions, said legs further having a predetermined open position in which the free end portions of the legs are spaced apart and face toward each other and define an article receiving opening to receive an article to be gripped by the free end portions of the legs, said leaf portion having a
20 transverse dimension such that said free end portions of said legs are widely spaced apart in said predetermined open position, said leaf portion being in a deformed state when said legs are held in said closed position, said leaf portion operating as a restoring spring to move said free end portions apart and to hold said free end portions in said predetermined spaced apart open
25 position when said latching means is released so that an object may be readily inserted between said free end portions for gripping.

By providing a clip in which not only the hinge is integrally moulded but also the latching means is integrally moulded, a moulded plastics article, such as a garment hanger, may be integrally moulded with one or more clips which are operational when moulded, without any additional machine or manual assembly. In this way, the overall cost of the article is considerably reduced, and the clips do not have detachable spring components which may be detached or lost when in use.

Preferably, said latching means comprises a fixed portion directly or indirectly integrally connected to one of said legs, a manually deformable portion providing releasable latching engagement with the other leg or with an element integrally connected to said other leg, said fixed and manually deformable portions being arranged such that relative movement between said portions is required to release said latch.

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By forming the latching means in the above defined manner, the clip is still able to be conveniently released using one hand, but the possibility of inadvertent or undesirable releasing of the clip is substantially reduced. Since the clip according to the above preferred embodiment requires two forces to be applied to it in opposite directions, so as to cause relative movement between the latching components, the clips are less likely to be released by stacking forces and the like, which are necessarily in a single direction.

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Preferably, said leaf portion comprises a thin leaf of plastics defining a hinge means constructed to allow said free end portions to move toward a closed position thereby deforming said hinge means in a manner so that said hinge means operates as a restoring spring to move said legs apart to, and to hold said free end portions in, said predetermined open position when released.

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The clip may further comprise reaction means adjacent said latching means and positioned to enable said reaction means and said latching means to be manually engaged to enable said latching means to be manually released.

5 Said latching means may comprise ratchet means extending from said connecting end portion of one leg into generally overlying relationship with said leaf, pawl means extending upwardly and inwardly towards said overlying ratchet means and having a length selected to engage said ratchet means when said legs are moved to said closed position to hold said legs in
10 said closed position, guard means at least partly surrounding said ratchet means, said ratchet means being manually movable relative to said guard means to release said pawl from said ratchet means.

15 Said guard means may be carried by arms extending to said connecting end portion of said one of said legs, said arms being disposed on either side of said ratchet, said guard means further having a perimeter portion partly surrounding a free end of said ratchet means such that when pressure is applied to said free end while simultaneously using the perimeter portion to
20 apply a reaction force, said pawl is released from said ratchet means.

 Said ratchet means may have at least two spaced ribs against which said pawl is able to engage to hold said legs in two alternative closed positions.

25 Another aspect of the present invention provides a hanger for garments comprising a hook, a cross bar extending from either side of said hook and a clip means mounted on or formed integrally with said cross bar adjacent either end thereof, each of said clip means being as defined in relation to the first aspect of the invention.

Preferably, said hanger is moulded in a single piece from plastics material, said hanger having at least one clip in accordance with the first aspect of the invention.

5 Still another aspect of the present invention provides a moulded plastics clip comprising a pair of spaced legs integrally connected at one end by a thin web of plastics defining a hinge means constructed to allow the other ends of said legs to move towards a closed position and biasing said legs to an open position when released, ratchet means extending from said one end of one leg
10 into generally overlying relationship with said thin web, pawl means extending upwardly and rearwardly towards said overlying ratchet means and having a length selected to engage said ratchet means when said legs are moved to said closed position to hold said legs in said closed position, guard means at least partly surrounding said ratchet means, said ratchet means being manually
15 movable relative to said guard means to release said pawl from said ratchet means.

Said guard means may be carried by arms extending to said one end of said one of said legs, such that said arms may be disposed on either side of
20 said ratchet, having a perimeter portion partly surrounding the free end of said ratchet means such that said free end can be digitally engagable using the perimeter portion to apply a reaction force.

Said ratchet means may have at least two spaced ribs against which said
25 pawl is able to engage to hold said legs in two alternative closed positions.

The invention includes a moulded plastics hanger for garments comprising a hook, arms extending from either side of said hook and clips

formed integrally with or attached to said arms. Each clip may be according to the latter abovementioned aspect of the present invention.

5 Clips according to the present invention may be moulded from general purpose polystyrene and thus do not require the use of exotic or expensive plastics materials which would significantly erode any cost benefits of the integral constructions.

10 One presently preferred embodiment of the invention, as applied to a garment hanger, will now be described with reference to the accompanying drawings, in which :-

Figure 1 is a perspective front view of a garment hanger embodying to the invention;

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Figure 2 is a plan view of one end of the hanger according to Figure 1;

Figure 3 is a front elevation of one end of the hanger of Figure 1;

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Figure 4 is a section on the line A-A of Figure 3;

Figure 5 is an end view of the hanger of Figure 1, with cross bar and hook omitted, and

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Figure 6 is a fragmentary perspective view of one end of the hanger of Figure 1.

Referring firstly to Figure 1, the hanger comprises a cross bar 10, a hook 11 and a pair of clips 12 disposed at the ends of the cross bar 10. The hanger is moulded as a single unit from general purpose polystyrene by means of a one-off moulding operation. The hook 11 maintains the hanger in a position in use so that the cross bar 10 extends generally horizontally. The cross bar 10 is of a cross sectional shape, having sufficient strength to resist twisting or bending.

Each clip 12 comprises a front leg 13 and a rear leg 14 joined in spaced relation by an integrally moulded flexible resilient leaf 15 arranged towards the upper ends of the legs and having a generally horizontal orientation. The front leg 13 is extended in a rearward direction above the point of connection with the leaf 15 to form a pawl 16. The upper end of the rear leg 14 extends in forward direction above the point of connections with the leaf 15 to provide a ratchet 17 and a finger and thumb operated latch member 18.

The lower end of each leg is provided with one or more or a pair of inwardly directed sharp teeth 19, which extend across the width of each leg to provide a grip for gripping a variety of different garment types which may be engaged by the clips 12 on the hanger. The opposed teeth 19 define a jaw of the respective clips 12 and the jaws are moved towards a closed position by forcing the opposed legs 13 and 14 towards each other to a position as shown in Figure 5. Squeezing the legs together once a garment is inserted between the jaws causes the ratchet 17 and pawl 16 to co-operate, whereby the jaws are held in a first position on the ratchet 17 or a second more secure position as shown in Figure 5. The first position is achieved when the pawl 16 engages the first step 20 of the ratchet 17, whereas the second position is

achieved when the pawl 16 engages the second step 21 by the application of a greater force to the legs 13 and 14.

5 The latch member 18 is formed as an extension of the rear leg 14 and comprises an upwardly extending portion arranged beyond the ratchet 17. Each latch member 18 comprises an outer perimeter portion 22 which encloses a movable member 23 and is supported by arms 22a, 22b extending forwardly from the top of leg 14 on either side of the ratchet 17 (Figures 2 and 6). The movable member 23 contains the ratchet 17 on the underside
10 thereof. In operation the perimeter portion 22 and the movable member 23 are gripped between a finger and thumb of the user and squeezed in order to release the pawl 16 from the ratchet 17. The movable member 23 is operated by the thumb of the user, whereby slight pressure causes the ratchet 17 to move to a slightly raised position to release the pawl 16 from the first step 20
15 or second step 21, so that the clip 12 reverts to the position shown in Figure 4.

It should be appreciated that the flexible resilient leaf 15 performs two essential functions, namely:

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(a) hinging of the front and back legs to allow the legs to be squeezed together;

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(b) providing a high tensile resistance resilient force within the mechanical arrangement, due to the elastic memory of the leaf, whereby the legs return to a predetermined widely spaced apart neutral position, as shown in Figure 4, when the ratchet and pawl mechanism is disengaged.

The ratchet and pawl mechanism is stiff enough during its arc of travel, to compensate for spring back or relaxation of the clip legs 13 and 14 after squeezing against a garment. This results in a small loss of the original pressure which the legs exert on the garment, but such loss is sufficiently
5 small to ensure continued grip on the garment after the clipping action has been performed. The combination of overall flexibility and springiness of the legs 13 and 14 accommodate a wide variation of garment thickness and texture, while retaining adequate gripping pressure. The additional ratchet position extends this variation even further and it is possible that more than
10 two ratchet positions could be included in the clips 12.

In order to release a garment from the clips, it is merely necessary for a user to provide thumb pressure on the member 23 while placing a finger behind the perimeter portion 22, in which case the pawl and ratchet is
15 disengaged. This is a simple operation which can be readily performed by the user with one hand, using considerably less force than required to release a thick garment from a known spring clip. By using mechanical advantage, the protective surround or perimeter portion 22 overrides the grip force on the clip legs and ejects the front leg pawl 16 from the rear leg ratchet 17. The
20 clip then springs to the normal open and ready position as shown in Figure 4 due to the elastic memory of the leaf 15. Under normal use the clip may be operated fully between the extent of its travel without incurring damage.

Furthermore, since the member 23 must be pushed relative to the
25 perimeter portion 22, the likelihood of undesired or inadvertent opening of the clip in use is substantially reduced since forces applied to the clip during stacking of garments supported by the hanger will be in a single direction,

which does not cause relative movement between the member 23 and the portion 22.

5 It should be evident to persons skilled in the art that the clip described
above employs a unique and simple configuration of several mechanical
features in a way such as to satisfy a wide range of multifunction
requirements. The invention also provides a much improved garment hanger
of the clip type which may be moulded in plastics material, which may be
clear or may be coloured so as to be aesthetically appealing. Of course,
10 modifications to the above described embodiment may be readily envisaged
by persons skilled in the art. As mentioned, the pawl and ratchet
arrangement may incorporate additional steps to provide a wider variation in
travel between the open and closed positions of the clip 12. Of course, the
various strengthening ribs which are disclosed in the drawings and not
15 specifically mentioned herein may be varied, according to different
applications of the hanger, to provide strength in the areas needed.

20 It will be further evident that the invention provides a single piece
moulded article ready for immediate use and free of any post-moulding
operations or the addition of any other components. The hanger provides a
strong self-adjusting grip for a variety of garment thicknesses and textures.
It is a simple and gentle action to release the mechanically advantaged clip in
order to release a garment from the hanger. The hanger provides strength and
durability during normal use and has a fail safe release mechanism during
25 bulk storage or transport of garments. The operation of the clip is a self-
evident operation for ready consumer acceptance.

As mentioned above, the clip embodying the invention, forming part of the hanger described above, may be used for many different purposes outside the garment hanger industry. Thus, the invention is not in any way restricted to the use of the clip according to the invention on garment hangers.

CLAIMS

1. A moulded plastics clip comprising a pair of legs, each leg having an object engaging free end portion and a connecting end portion, said legs being
5 integrally connected in spaced relation at said connecting end portions by a leaf portion having an elastic memory, integrally moulded latching means capable of engagement to hold said legs in at least one closed position in which said free end portions of said legs are adjacent to each other so as to
10 be capable of gripping an object between said free end portions, said legs further having a predetermined open position in which the free end portions of the legs are spaced apart and face toward each other and define an article receiving opening to receive an article to be gripped by the free end portions of the legs, said leaf portion having a transverse dimension such that said free
15 end portions of said legs are widely spaced apart in said predetermined open position, said leaf portion being in a deformed state when said legs are held in said closed position, said leaf portion operating as a restoring spring to move said free end portions apart and to hold said free end portions in said predetermined spaced apart open position when said latching means is released so that an object may be readily inserted between said free end portions for
20 gripping.
2. The clip of Claim 1, wherein said latching means comprises a fixed portion integrally connected to one of said legs, a manually deformable portion providing releasably latching engagement with said fixed portion, said
25 fixed and manually deformable portions being arranged such that relative movement between said portions is required to release said latch.



3. The clip of Claim 1 or 2, wherein said leaf portion comprises a thin leaf of plastics defining a hinge means constructed to allow said free end portions to move toward a closed position thereby deforming said hinge means in a manner so that said hinge means operates as a restoring spring to move
5 said legs apart to, and to hold said free end portions in, said predetermined open position when released.

4. The clip of any preceding claim, further comprising reaction means adjacent said latching means and positioned to enable said reaction means and
10 said latching means to be manually engaged to enable said latching means to be manually released.

5. The clip of any preceding claims, wherein said latching means comprises ratchet means extending from said connecting end portion of one
15 leg into generally overlying relationship with said leaf, pawl means extending upwardly and inwardly towards said overlying ratchet means and having a length selected to engage said ratchet means when said legs are moved to said closed position to hold said legs in said closed position, guard means at least partly surrounding said ratchet means, said ratchet means being manually
20 movable relative to said guard means to release said pawl from said ratchet means.

6. The clip of claim 5, wherein said guard means is carried by arms extending to said connecting end portion of said one of said legs, said arms
25 being disposed on either side of said ratchet, said guard means further having a perimeter portion partly surrounding a free end of said ratchet means such that when pressure is applied to said free end while simultaneously using the



perimeter portion to apply a reaction force, said pawl is released from said ratchet means.

5 7. The clip of claim 5 or 6, wherein said ratchet means has at least two spaced ribs against which said pawl is able to engage to hold said legs in two alternative closed positions.

8. The clip of any preceding claim, substantially as hereinbefore described with reference to the accompanying drawings.

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9. A hanger for garments comprising a hook, a cross bar extending from either side of said hook and a clip means mounted on or formed integrally with said cross bar adjacent either end thereof, each of said clip means being as defined in any preceding claim.

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10. A hanger moulded in a single piece from plastics material, said hanger having at least one clip as defined in any one of claims 1 to 8.

20 11. A hanger substantially as hereinbefore described with reference to the accompanying drawings.

25 12. A moulded plastics clip comprising a pair of spaced legs integrally connected at one end by a thin web of plastics defining a hinge means constructed to allow the other ends of said legs to move towards a closed position and biasing said legs to an open position when released, ratchet means extending from said one end of one leg into generally overlying relationship with said thin web, pawl means extending upwardly and rearwardly towards said overlying ratchet means and having a length selected



to engage said ratchet means when said legs are moved to said closed position to hold said legs in closed position, guard means at least partly surrounding said ratchet means, said ratchet means being manually movable relative to said guard means to release said pawl from said ratchet means.

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13. The clip of Claim 12, wherein said guard means is carried by arms extending to said one end of said one of said legs, said arms being disposed on either side of said ratchet, having a perimeter portion partly surrounding the free end of said ratchet means such that said free end is digitally
10 engagable using the perimeter portion to apply a reaction force.

14. The clip of Claim 12 or 13, wherein said ratchet means has at least two spaced ribs against which said pawl is able to engage to hold said legs in two alternative closed positions.

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15. A moulded plastics hanger for garments comprising a hook, arms extending from either side of said hook and clips formed integrally with or attached to said arms, each clip being as claimed in Claim 12, 13 or 14.

