This invention relates to the clothing industry and, particularly to garment hangers and, more particularly, to molded plastic hangers with improved clothes clip having a relocated biasing force for the bottom of the plastic hanger. Further, this invention relates to an improved spring clip, particularly though not exclusively for providing a biasing force in the improved clothes clip of this invention for the suspending of clothes (e.g. trousers and skirts) during shipment or for display or storage. Further, application of the biasing force in the basic form of a U-shaped spring to the handle legs to hold the legs normally open during use, and therefore the gripping faces normally closed, allows the application of sufficient force to the gripping faces of the clip more efficiently allowing greater force at rest with less susceptibility to fatigue. Finally, the indented shape of one of the legs of the U-shaped spring allows the spring to open about the pivot of the hanger clip, thereby preventing binding when operated. Adding a ridge to the opposite leg allows retention of the spring in the clothes clip without require undue design features in the molding of the clip.
BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the clothing industry and, particularly to garment hangers and, more particularly, to molded plastic hangers with improved clothes clip having a relocated biasing force for the bottom of the plastic hanger. Further, this invention relates to an improved spring clip, particularly though not exclusively for providing a biasing force in the improved clothes clip of this invention for the suspending of clothes (e.g., trousers and skirts) during shipment or for display or storage.

2. Description of the Related Art

For many years, various types of hangers in different shapes and sizes have been used to support all different types of clothing, including coats, jackets, shirts, pants and other articles of clothing. In many instances, there will be some type of hanger clip on the bottom portion or rod of the hanger in order to hold skirts, pants and other articles of clothing that cannot be draped over the top of the hanger. Among the various hanger clips that have been used are the ones shown in Morrish (U.S. Pat. No. 4,878,276), Gau (U.S. Pat. No. 5,052,085), Abdi (U.S. Pat. No. 5,075,935), Hunter (U.S. Pat. No. 5,241,728), Santapa (U.S. Pat. No. 5,402,558), Zuckerman (U.S. Pat. No. 5,890,634), Blanchard (U.S. Pat. No. 5,934,525), Wong (U.S. Pat. No. 6,023,819), Petrou (U.S. Pat. No. 6,050,462), Bond (U.S. Pat. No. 6,119,906), Zuckerman (U.S. Pat. No. 6,202,906), and Wong (U.S. Pat. No. 6,305,586). The problem with all of these hanger clips is that they use teeth or directly opposed ridges to increase the gripping ability of the clip. Thus, the puncturing by the teeth or high point pressure can damage the more delicate fabrics used in clothing today.

There are several prior art hangers with clips using a U-shaped biasing spring to apply pressure to the gripping surfaces of hanger clips, such as Petrou (U.S. Pat. No. 6,050,462), Zuckerman (U.S. Pat. No. 6,202,906), Morrish (U.S. Pat. No. 4,878,276), Abdi (U.S. Pat. No. 5,075,935), Blanchard (U.S. Pat. Nos. 5,915,605 and 5,934,525), Santapa (U.S. Pat. No. 5,402,558), Shang (U.S. Pat. No. 6,023,818), Willinger (U.S. Pat. No. 6,098,254), Bond (U.S. Pat. No. 6,119,906) and Batts (U.S. Pat. No. 6,422,438). The problem with all these hanger clips and U-shaped biasing spring itself is that the spring operates on the gripping legs of the hanger clip and does not extend very far down the surface of the legs. This provides an ineffective biasing force, which allows the biasing spring to become useless over time as the clip stretches with each use and eventually does not return to a tightly closed position.

While the plastic hangers noted above do achieve various design goals, such hangers nevertheless suffer from one or more drawbacks, such as complexity of construction, difficulty of assembly, limited utility, limited durability and ruggedness, and the like.

These hanger clips are important to secure the clothes to the hanger. As described above the problem with current clothes clips is that the biasing means used to grip the clothing fatigues, reducing the effectiveness of the hanger clip to hold the clothes, thereby causing the clothes to fall on the floor. Expensive or delicate clothing that falls from the hanger clip can be wrinkled, soiled or even damaged, rendering them difficult or impossible to sell. In a home environment, the problem is exacerbated, as the clothes may become wrinkled or soiled such that the garment cannot be worn without ironing, pressing or dry cleaning.

In addition, it is common for clothing manufacturers to ship clothing on hangers. Hangers with bottom clips are often used to secure skirts, pants and other articles of clothing during transit. When the clips loosen or fail, the clothes fall out of the grips of the hanger during shipment. This causes the garments to be soiled, wrinkled and, in some cases, damaged. These conditions have been a plight to manufacturers and retailers causing not only the extra labor of replacing the garments on the hangers, but the extra cost of cleaning and pressing the garments to make them saleable or potentially the cost of returning unmerchantable goods to the manufacturer or other source.

Further, the advent of new delicate and “slippery” man-made materials used in garment manufacture (microfibers, modal, etc.) and the increasing use of extremely “slippery” existing fabrics (such as silk) has led to new gripping requirements for bottom hanger clips. It is not always desirable to use sharp ridges or spikes as teeth (teeth) on the inside of the jaws of the clothes clip to securely grab the fibers of the garment, due to the damage these types of holding mechanisms cause to the appearance of the garment. There is a new industry requirement to have increased holding power exerted on the garment by other non-destructive means. By means of having the legs of the U-shaped spring clip extend the full length of the surface of the handle of the hanger clip, increased force can be applied to the opposing gripper end of the hanger clip to allow pressure to be applied more evenly across the garment clip interface. This combined with the offset of the ridges on the grip portion of the hanger clip creates greater holding power with less damage to the garments, as compared to the standard prior art U-shaped spring clips, whose legs stop mid way down the jaw face of the clip.

Therefore, there is a need in the industry for a simple, easy to use, inexpensive hanger clip and U-shaped biasing spring that exerts enough force to hold clothing during storage, display or transit, and is not affected by the natural fatigue of the biasing spring caused by repeated use so that the hanger clip will continue to hold clothes securely.

Another need exists for a hanger clip which can retain the “slippery” fabrics in use today without damaging the delicate nature of such fabric.

SUMMARY OF THE INVENTION

Therefore, it is an object of this invention to provide an improved hanger clip and biasing force, which will not loosen and will maintain a greater uniform pressure on the gripping end of the clip for the entire useful life of the hanger. An additional object of the invention is to permit greater retention of today’s “slippery” fabrics without damaging the delicate threads.

This and other objects of the invention are obtained by an improved bottom hanger clip having a biasing force applied to the handle of the clip, which provides increased force and a more evenly applied pressure at the gripping face of the improved hanger clip.

The improved hanger clip uses interlocking ridges on the gripping legs to “trap” clothing as opposed to gripping the threads of the material. Further, application of the biasing force in the basic form of a U-shaped spring to the handle legs to hold the legs open during use, and
therefore the gripping faces closed, allows the application of sufficient force to the gripping faces of the clip more efficiently allowing greater force at rest with less susceptibility to fatigue. Finally, the indented shape of one of the legs of the U-shaped spring allows the spring to open about the pivot of the hanger clip, thereby preventing binding when operated. Adding a ridge to the opposite leg allows retention of the spring in the clothes clip without require undue design features in the molding of the clip.

[0015] It can also be appreciated by those skilled in the art that these and other objects of this invention will become more apparent in the detailed description of the invention and thus the scope of this invention should not be restricted only to these objects.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0016] FIG. 1 is a complete view of a hanger with the new hanger clips permanently attached as one of the preferred embodiments as described in this invention.

[0017] FIG. 2 is a frontal view of the new hanger clip of this invention as would be permanently attached to a hanger truss in one of the preferred embodiments as described in this invention.

[0018] FIG. 3 is a perspective view of the improved U-shaped biasing spring as described in this invention.

[0019] FIG. 4 is a side view of the improved U-shaped biasing spring as described in this invention.

[0020] FIG. 5 is a face view of the improved U-shaped biasing spring as described in this invention.

[0021] FIG. 6 is a side view, in section, of the new hanger clip of this invention as attached with one permanent leg and one moveable leg as described in this invention.

[0022] FIG. 7 is a side view, of a first leg of the new hanger clip of this invention.

[0023] FIG. 8 is a side view of a second leg of the new hanger clip of this invention.

[0024] FIG. 9 is a section view of a first leg of the new hanger clip of this invention with metal spring inserted.

[0025] FIG. 10 is a section view of a second leg of the new hanger clip of this invention with metal spring inserted.

DETAILED DESCRIPTION OF THE INVENTION

[0026] It should be understood that in the various Figures, like reference characters refer to like components.

[0027] The basic hanger 10 can be of any size, shape and configuration that is standard in the industry or required by the size/weight of the garment. In the preferred embodiment, the unitary body 12 is a one piece integrally molded l-beam type unit with opposing hanger clips 20 at either end, and made of a reasonably strong, semi-rigid plastic, such as styrene-butadiene. Such plastics are manufactured by Phillips 66 under the Trademark K-RESIN and by BASF under the trademark SYROLUX. Any other materials that are accepted in the industry for making plastic hangers may be used. As well, the hanger of this invention may work as well if made from wood, metal or a composite material. Further, the unitary body 12 may have an open frame or wire type construction where the hanger clips 20 may be attached so as to be repositionable along the lateral axis of the hanger.

[0028] In addition to the unitary body 12 the basic hanger 10 would have a hook 14, as is known in the industry. The hook 14 may be made of any suitable wire stock or other metal. Plastic may be used, particularly, where it is integrally molded with the unitary body 12.

[0029] As another embodiment for use with open frame or wire style hangers the hanger needs to have a bottom flange, beam or rod on which one or more hanger clips 20 may be positioned. Usually, a hanger of this type will include two repositionable clips offset from the center, but the invention will work without regard to the number of hanger clips. One, two or three or more clips may be incorporated.

[0030] Each of the hanger clips on each side of the hanger would be constructed in exactly the same manner. Thus, only one illustrative hanger clip will be described herein.

[0031] As is usual with hanger clips, this hanger clip has two centrally joined levers, such as to pivot with respect to each other, creating a gripping jaw on one end, in order to hold garments, and handles on the other end, which when pressed together, release the pressure of the gripping jaw. In the preferred embodiment, one member 22 is stationary or fixed where the handle leg 28 is made integral with the hanger, however, in other embodiments the member 22 may be attached to the lower beam, flange or rod of an open hanger so as to be repositionable along the beam, flange or rod. The second member 24 pivots about the first member 22 at a central axis 16 in the transition region 32 to create a functioning clothes clip when its top or handle leg 38 is pressed toward the stationary leg 28 of member 22. A biasing force, such as U-shaped spring 26, holds the handle legs 28, 38 of the hanger clip apart in a normal position to create a closing or gripping pressure on the gripping jaw end 30, 40 of the members to securely hold an article of clothing. Outside pressure on the handle legs 28, 38 overcomes the force of the biasing U-spring 26 to open the gripping jaw ends 30, 40 of the hanger clip to release the clothing.

[0032] In order to better support this hanger clip, it is preferable that the hanger be of l-beam construction 12 or that the lower flange, beam or rod of the hanger have a flat cross-section. In the preferred embodiment the top or handle leg 28 of the fixed member 22 is made integral with the beam 12, as is known in the trade; and, the opposite end of the member 22 defines a gripping leg 30, which will engage the clothing. A transition region 32 between the handle leg 28 and the gripping leg 30 includes two parallel supports 34, each defining a seat 36, which mates with pin 46 on member 24.

[0033] The movable jaw 24 has a top or handle leg 38 and a gripping leg 40 at its other end. The transition region 42 between the two legs contains an opening 44. A pin 46 extends across opening 44 such to mate with seat 36 in supports 34 of member 22.

[0034] In the preferred embodiment, the fixed or stationary member 22 is integral with the hanger 12 and made as a single piece of molded plastic. Further, in the preferred embodiment the movable member 24 is made as a single piece of molded plastic.

[0035] To pivotally connect the two jaws, they are overlaid—one over the other, so that the pin 46 of member 24 rests in the seat 36 on the supports 34 of the movable jaw 22. Thus, the jaws pivot about the axis 16 of the pins 46, as is known in the trade.

[0036] The biasing force consists of a U-shaped spring 26 and may be any gauge metal composite or other material that may used for springs in clothes clips. The particular gauge
and material will depend on the force required by the spring to exert a needed pressure at the gripper jaw of the hanger clip.

[0037] As shown, the spring 26 is disposed so that it resembles a "U" which contains a bend 48 offset from the base 49 of the "U" and oriented about the same axis 16 as the pin 46 of member 24 about which the members 22, 24 pivot with respect to each other. The two legs 50, 51 of the spring are such that one leg 50 extends from the bend 48 and exerts a uniform force on the top or handle leg 38 of movable member 24, and the other leg 51 extends from base 49 and exerts a uniform force on the top or handle leg 28 of fixed member 22. The two legs 50, 51 of the spring exert force so as to hold the top or handle legs 28, 38 in a normally open position. This has the effect of holding the gripper jaw formed by gripping legs 30 on fixed member 22 and gripper leg 40 on member 24 together or closed so as to hold garments. The shape of the spring 26 is critical as without the bend 48 which places the pin 46 on the outside of the spring 26, the spring would constrict on the pin 46, thereby binding the clip and thus rendering it difficult or impossible to use.

[0038] The indented bend 48 mating with pin 46 generally holds the spring 26 in place. Opposite the bend 48 is a ridge 54 running perpendicular to the leg 51. This ridge further prevents movement of the spring 26 during use of the clip 20. To better support the spring 26 and to prevent it from moving or slipping, an edge lip 54 may be employed on the top or handle leg of member 24. Additionally, ribs may be placed on the top or handle legs of the members which extend the length of the interface between leg 50 and member 24 and of leg 51 and member 22 so as to contain the lateral movement of the spring as well. Further, an edge lip 29 may also be placed on the stationary or handle leg 28 of member 22 to prevent slipping or moving of the spring 26 in relation to that leg.

[0039] It may be appreciated that the spring 26 may be shortened and need not run the entire length of the top or handle legs of members 22, 24 or may be widened at the top to contain more surface area. However, the preferred embodiment, which is designed for increased uniform pressure at the gripper legs of 22, 24, uses such maximum length as is practical. The key point is that preferred design and location of the biasing spring in the hanger clip permits a greater and more uniform pressure at the jaw of the clip without binding on the pin 46.

[0040] In operation, the clothes clip is normally closed. Pressure of a user's fingers on the top or handle leg 38 of the movable member 24 and the fixed or top leg 28 or member 22 overcomes the force of the spring and moves the top or handle legs 28, 38 of the members together. Due to the pivot arrangement of the two members, this action causes the gripping legs 30 and 40 of the members to separate. The user then places an article of clothing between the gripping legs 30 and 40. When the top or handle ends 28 and 38 are released by the user, the spring moves the jaws 30 and 40 back into position and the clothing is held securely between the gripping legs 30 and 40. To release the clothing, the user again applies pressure on the top or handle legs 28 and 38 as heretofore, and the clothing can be removed from between the gripping legs 30 and 40.

[0041] To improve the gripping action of the gripping legs 30, 40, raised ridges 60 are employed. These ridges 60 are offset so as to not contact the opposing ridge when closed.

This causes the clothing to "snake" through the alternating ridges so as to permit today’s "slippery" garments to be held with little or no damage to the delicate threads.

[0042] Gripping pads may be employed to enhance the slip resistance of the gripping faces. To affix the pads one could utilize direct molding of the pad to the members, any suitable mechanical means, or just use an adhesive. Another way to affix the pads is to provide projections on the pads which fit into recesses or openings on the gripping legs. One version uses projections with arrow shaped heads that extend into slots. Cylindrical and rectangular shapes may also be used. Generally, the pads may be made of a tactile material, such as rubber; however, any material with good anti-slip qualities is preferred.

[0043] Hangers with these clothing clips are typically made in standard 8", 10", 12" or 14" widths. Softer or harder springs may be used, depending on the thickness or bulkiness of the clothes to be held by the hanger. For heavy weight trousers or skirts; a heavier gauge spring may be desirable. For light summer clothes and bathing suits, a much lighter gauge spring would be used, so as to not damage the more delicate clothing.

[0044] Thus, there is shown and described a unique design and concept of a hanger clip and improved biasing force for that clip. The particular configuration shown and described herein relates to a preferred embodiment. While this description is directed to a particular embodiment, it is understood that those skilled in the art may conceive modifications and/or variations to the specific preferred embodiment shown and described herein while still remaining within the scope and spirit of the invention. Any such modifications or variations which fall within the purview of this description and ensuing claims are intended to be included therein as well even if not specifically described. The description herein is intended to be illustrative only and is not intended to be limitative.

1. A clothes clip for securing clothes to a garment hanger, wherein the clothes clip consists of
   a first gripping member attached to a depending edge of the garment hanger,
   a second gripping member pivotally mounted on the first gripping member, the second gripping member having a pin about which each of the gripping members pivot,
   and
   a U-shaped spring biasing the gripping members, the U-shaped spring having an outer surface, an inner surface and a base,
   wherein each of the gripping members has a gripping end and a top end,
   wherein the legs to the U-shaped spring includes a bend offset from the base of the U-shaped spring, and
   wherein the U-shaped spring is situated between the first gripping member and the second gripping member such that the outside surface of the the U-shaped spring contacts the pin at the bend.

2. A clothes clip according to claim 1, wherein the bend is oriented about the same axis as the pin.

3. A clothes clip according to claim 1, wherein the U-shaped spring exerts force on the top ends of the gripping members,
   wherein the force of the spring maintains the top ends apart thereby holding the gripping faces ends together to grasp clothes securely, and
wherein pressure on the top ends of the gripping members momentarily overcomes the force of the symmetrical spring to separate the gripping ends for removal of the clothes.

4. A clothes clip according to claim 2, wherein the U-shaped spring exerts force on the top ends of the gripping members,

wherein the force of the spring maintains the top ends apart thereby holding the gripping ends together to grasp clothes securely, and

wherein pressure on the top ends of the gripping members momentarily overcomes the force of the symmetrical spring to separate the gripping ends for removal of the clothes.

5. A clothes clip according to claim 1, wherein raised ridges are formed on the gripping ends and the ridges being offset from a respective ridge on a facing gripping end.

6. A clothes clip for securing clothes to a garment hanger, wherein the clothes clip consists of

a first gripping member attached to a depending edge of the garment hanger,

a second gripping member pivotally mounted on the first gripping member, the second gripping member having a pin about which each of the gripping members pivot, wherein each of the gripping members having a gripping end and a top end, and

a U-shaped spring having an outer surface, an inner surface and a base, wherein the U-shaped spring exerts force on the top ends of the gripping members, such that the force of the spring holds the top ends apart which maintains the gripping ends together to grasp clothes securely, and such that pressure on the top ends of the gripping members momentarily overcomes the force of the U-shaped spring to separate said gripping ends for removal of said clothes, and

wherein the U-shaped spring is situated between the first gripping member and the second gripping member such that the outside surface of the U-shaped spring contacts the

7. A clothes clip according to claim 6, wherein the U-shaped spring includes a bend offset from the base of the U-shaped spring.

8. A clothes clip according to claim 7, wherein the U-shaped spring being oriented about the same axis as the pin on the second gripping member about which the gripping members pivot with respect to each other.

9. A clothes clip according to claim 6, wherein raised ridges are formed on the gripping ends and the ridges being offset from a respective ridge on a facing gripping end.