

[54] **GARMENT CLAMPING HANGER**

[72] Inventor: **John H. Batts**, Grand Rapids, Mich.

[73] Assignee: **John Thomas Batts, Inc.**, Zeeland, Mich.

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[51] Int. Cl. A47j 51/14

[58] Field of Search...223/96, 91, 90, 95; 24/245 FF, 24/255 SL, 243 GC

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Primary Examiner—Jordan Franklin

Assistant Examiner—George H. Krizmanich

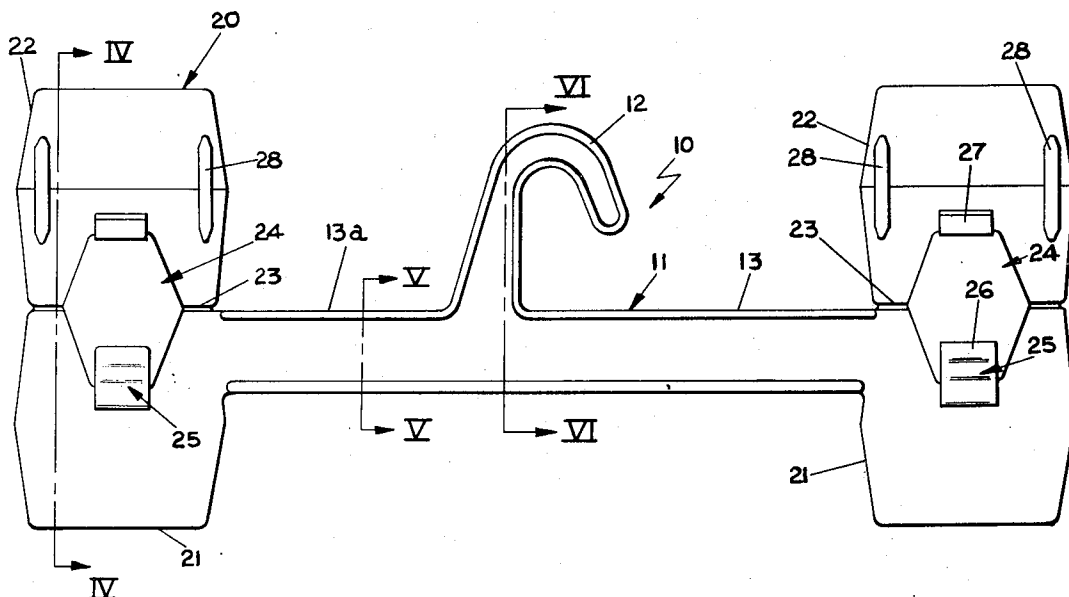
Attorney—Price, Heneveld, Huizenga and Cooper

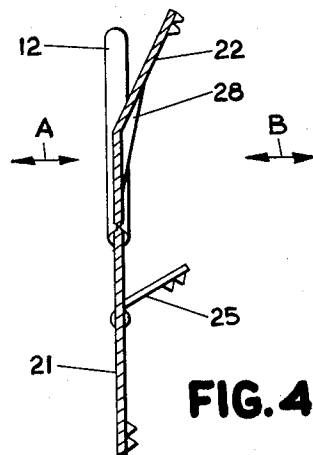
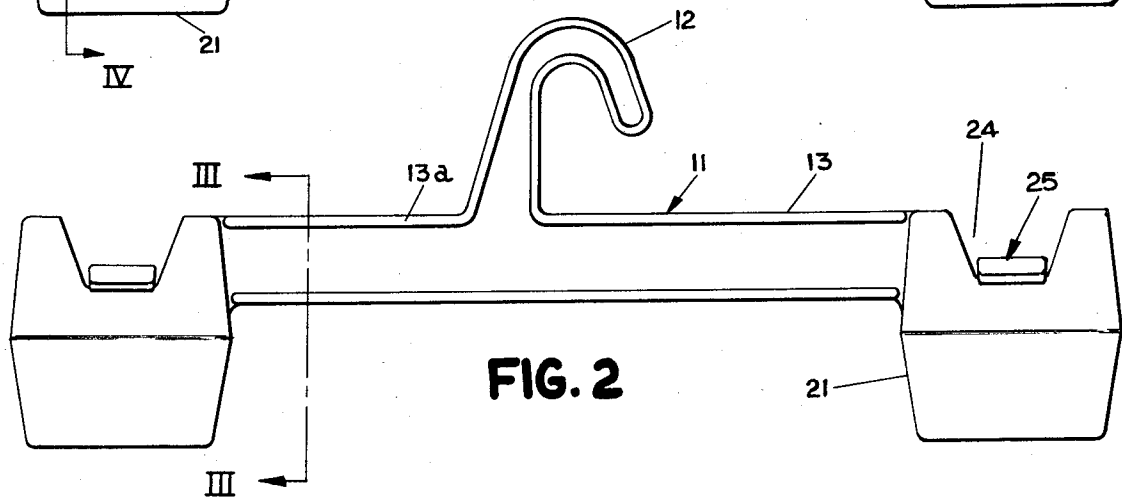
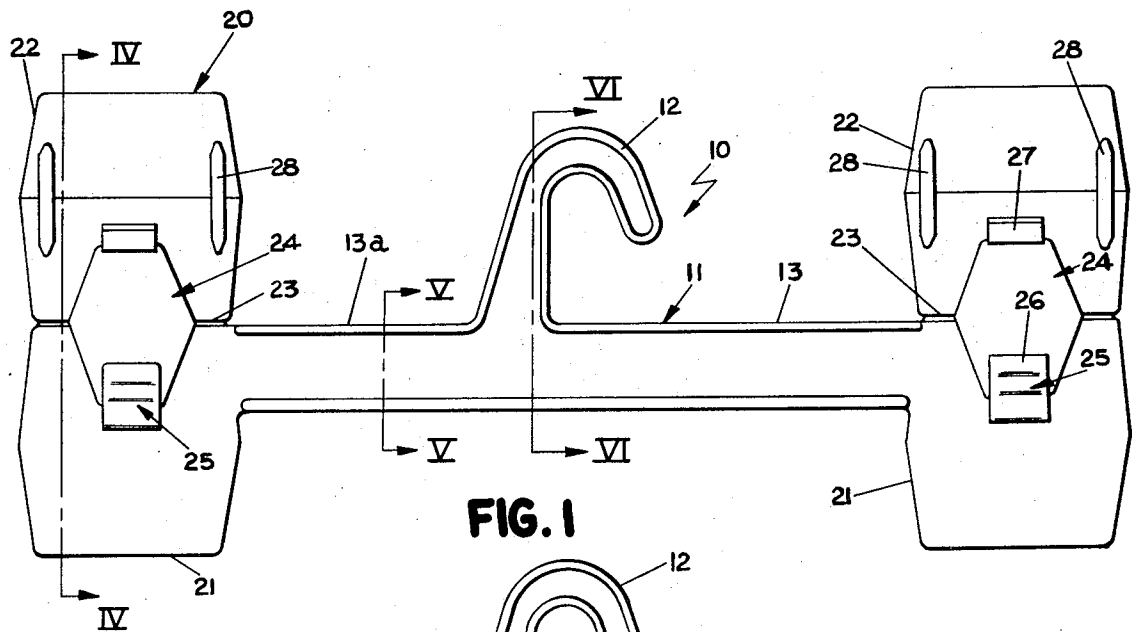
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ABSTRACT

A garment hanger having an elongated body member, a hook and at least one garment gripping clamp and a latch and keeper combination for locking the clamp in closed position. The entire hanger including the body, hook, clamps, latches and keepers being so arranged that it can be molded as a single, integral part in a two-piece mold without the use of cams.

10 Claims, 13 Drawing Figures





INVENTOR
JOHN H. BATTS
BY *Spice, Lennell*
Tringali & Cooper
ATTORNEYS

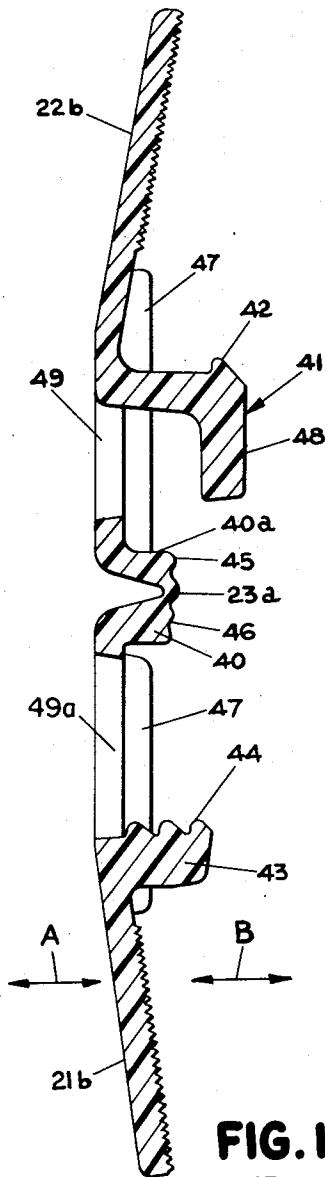


FIG. 10

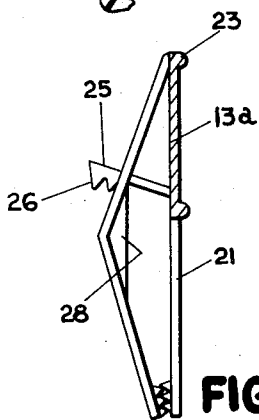


FIG. 3

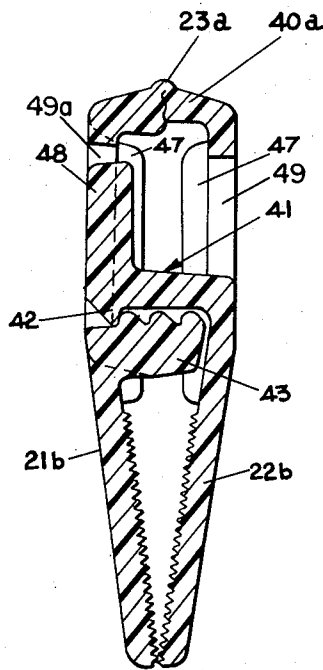


FIG. 9

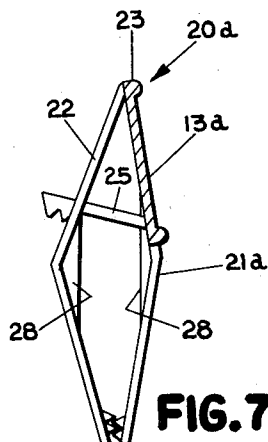


FIG. 7

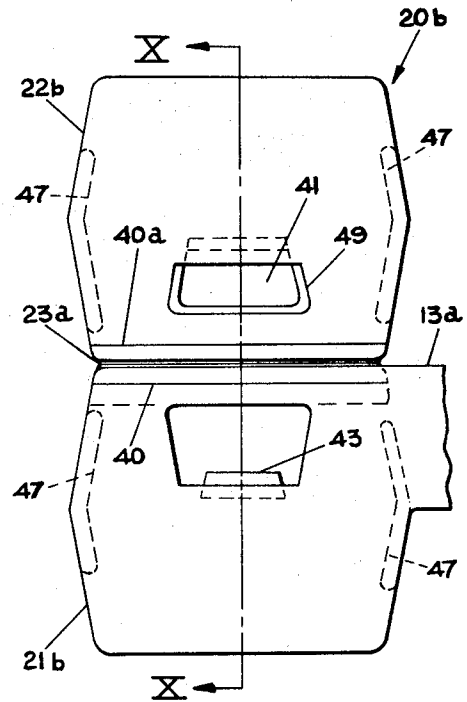


FIG. 8

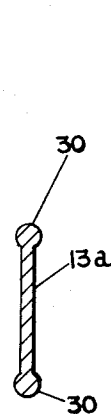


FIG. 5

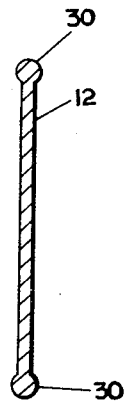
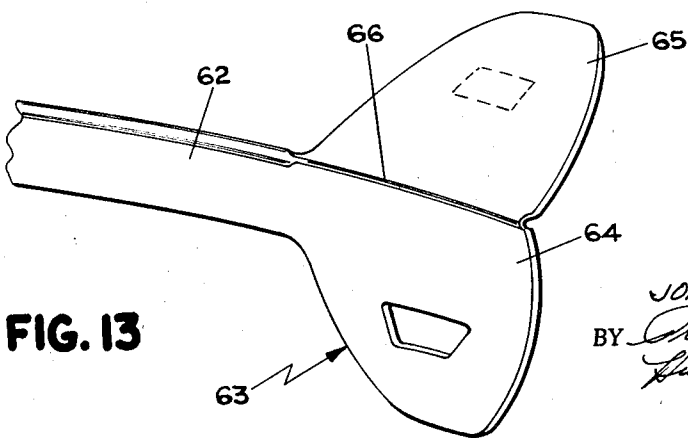
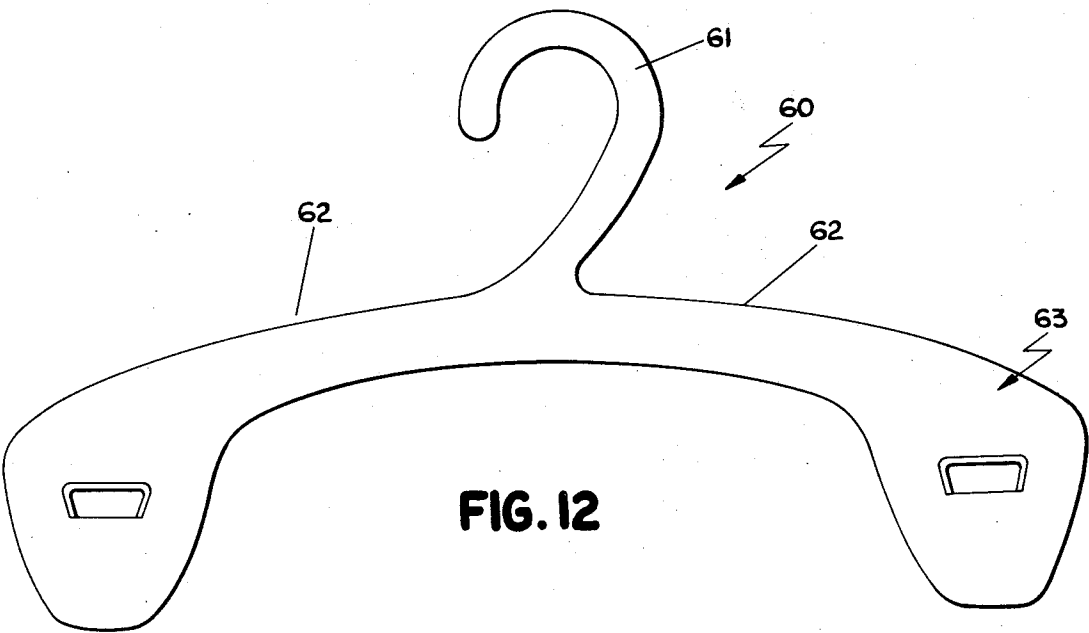
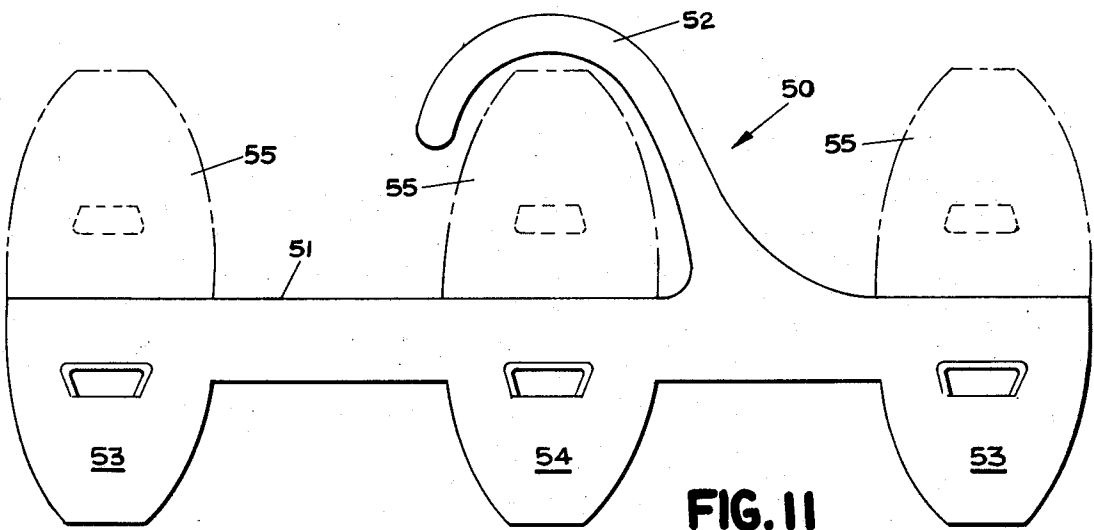


FIG. 6

INVENTOR.
JOHN H. BATTS
BY *Rich. Lennell*
Luigero & Cooper
ATTORNEYS



INVENTOR.
JOHN H. BATTS
BY *Price, Lenevelet*
Swenson & Cooper
ATTORNEYS

GARMENT CLAMPING HANGER

BACKGROUND OF THE INVENTION

This application is related to my application entitled "Molded Garment Clamp" Ser. No. 18108, filed Mar. 10, 1970 and filed concurrently herewith.

The invention is a garment hanger having a body member. The body member has a supporting hook and a pair of arms extending outwardly from each side of the hook. The body member also has integral with it one or more garment securing clamps. Each of the clamps has a latch and keeper combination for holding the sides of the clamp in closed or clamping position. All parts of the hanger are so arranged that the entire hanger including the clamps and their latching mechanisms can be molded as a single unitary part in a two-part mold.

Garment hangers having means to clamp a garment are old in the field. They are particularly utilized in the field of women's wear for hanging or suspending shorter garments such as skirts, shorts and the like which do not lend themselves to being suspended over a rod such as is conventionally used in hangers for men's wear or for garments which can be suspended from the arms or shoulder portions of a hanger. The standard hanger for this purpose consists of a metal, wood or plastic molded body with or without an integral hook and a crossbar at its lower end. On the crossbar are two or more clamp assemblies. The hanger body and the clamps are separate parts and in the manufacture of such a hanger these have to be separately manufactured and subsequently assembled. Frequently, the crossbar is also a separate part. This is a costly procedure. As such, the hangers are too expensive to be considered disposable and must be used in retail establishments as well as in manufacturing facilities.

This invention by making it possible to manufacture the hanger in a single molding operation with all of its components formed as a single, integral unit materially reduces the cost of the final hanger. Further, the hanger's structure is significantly simplified. Thus, the reduction in cost is such as to make this type of hanger, for the first time, economically feasible as a disposable item or an item which a manufacturer can ship with a garment without either charging for it or requiring its return. The use of vertically opening clamping members materially reduces mold costs because it permits a significant reduction in mold size. It is also a structurally superior arrangement because it eliminates torque loads which might otherwise be imposed upon the clamp hinge. It is sufficiently low cost that a retail store can give it to the customer with the garment even though the garment is inexpensive. So far as is known a hanger of this type consisting of a single part has never previously been developed.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation view of a hanger incorporating this invention with the clamping device open as they appear as removed from the mold;

FIG. 2 is a view similar to FIG. 1 showing the clamping devices closed;

FIG. 3 is a sectional elevation view taken along the plane III—III of FIG. 2;

FIG. 4 is a sectional elevation view taken along the plane IV—IV of FIG. 1;

FIG. 5 is a sectional elevation view taken along the plane V—V of FIG. 1;

FIG. 6 is a sectional elevation view taken along the plane VI—VI of FIG. 1;

FIG. 7 is a sectional elevation view similar to FIG. 3 showing a modified form of the invention;

FIG. 8 is a fragmentary front elevation view of a modified form of one of the clamps which could be used on this hanger and incorporating this invention;

FIG. 9 is a central sectional view of the clamp illustrated in FIG. 8 in closed position;

FIG. 10 is a sectional elevation view taken along the plane X—X of FIG. 8;

FIG. 11 is a front elevation view of a modified hanger incorporating this invention;

FIG. 12 is a front elevation view of a hanger incorporating a further modification of this invention; and

FIG. 13 is a fragmentary front view of the clamping device utilized on the hanger shown in FIG. 12 illustrating the clamp in open position as it appears as removed from the mold.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. 1 and 2 illustrate a hanger 10 having a main body 11 equipped with a hook 12 and a pair of outwardly extending arms 13 and 13a. At the end of each of the arms 13 and 13a is a clamp 20. The clamps 20 are identical and therefore the description of one will serve as the description of the other.

Each clamp 20 has a first side or clamping member 21 and a second side or clamping member 22. The clamping member 21 is integral with the end of one of the arms 13 or 13a and in effect forms an extension of that arm and is not movable with respect to the arm. The other side member 22 is integral with the side member 21 through a thin flexible web 23. The web 23 is located at the top of the bar or arm 13 or 13a. The flexible web 23 serves as a hinge, permitting the clamping member 22 to pivot with respect to the clamping member 21. Thus the clamp may be opened and closed.

At the center of the clamp is an aperture 24. Integral with the clamping member 21 at one end of the aperture 24 is a latch 25 having one or more teeth 26. The opposite end of the opening 24 forms a keeper 27 adapted to engage the teeth 26 of the latch 25 when the clamp is closed.

It will be observed from FIGS. 3 and 4 that the side member 22 is arched outwardly from the side member 21, thus spacing the two apart at a point intermediate the web 23 and the free or clamping ends of the side members. Preferably this arch is at its maximum at or adjacent the latch 25. The purpose of this will appear subsequently. Reinforcing ribs 28 may be provided for the side member 22 to strengthen the arch.

FIG. 4 illustrates the relative positions of the latch, the side members 21 and 22 and hook 12 when the clamp is open as illustrated in FIG. 1.

It will be observed from this view that the bars 13 and 13a, the hook 12 and the side members 21 and 22 are all in substantially the same plane. The fact that the arching of the side member 22 causes a portion of it to be inclined at a small angle to this plane does not change the generally common plane characteristic of these parts of the hanger in the condition in which it is removed from a mold. The opposite broad faces of the

latch 25 are accessible to opposite halves of a two-piece mold, one face being accessible to a portion of one of the mold-halves projecting through the aperture 24.

It will be understood from FIGS. 1 and 4 and the preceding description that this hanger, including the hook, the arms 13 and 13a and the clamps 20 together with their latches 25 may be molded in a two-piece mold which opens and closes in the direction of the arrows A and B in FIG. 4. There are no undercuts or other significant portions of the structure which will cause the part to hang up in such a mold after it has been opened. The teeth on the latch are such that they will release. By this means the entire hanger, ready to use, can be molded in a single operation as a single part eliminating all subsequent assembly operations as well as the necessity for the making of any separate or additional parts. This is most important in controlling the cost of this hanger. This makes a low cost one-piece hanger of this type feasible for the first time.

To permit the hanger to be made from relatively thin wall sections to reduce both cost and weight, it may be desirable to reinforce the hook 12 and the arms 13 and 13a by means of enlarged beads 30 as indicated in FIGS. 5 and 6. This expedient for obtaining additional reinforcement is conventional and its use in connection with this invention is optional.

FIG. 7 illustrates the fact that the clamps 20 need not necessarily be so designed that one of the clamping members is straight. As shown in FIG. 7 the clamp 20a has the same clamping member 22 but the clamping member 21a which, in effect, is an extension of the arm 13a can also be arched between the hinge 23 and the free or clamping ends of the side or clamping members. To permit this to be done, either the arms 13 and 13a are themselves inclined at an angle or adjacent the clamps they are twisted slightly to accommodate the inclination of the clamping member 21a. Such a modification does not in any way interfere with the basic principle which permits the entire hanger to be molded as a single piece in a two-part mold.

FIGS. 8, 9 and 10 illustrate the fact that the clamp itself can be of a substantially different construction than that shown in FIGS. 1 through 4 and yet incorporate the principles of this invention and permit the hanger to be manufactured while retaining the basic concept of a single integral part molded in a two-part die. In this case the clamp 20b has a pair of clamping members 21b and 22b integrally joined by a flexible web 23a serving as a hinge. An arm of the hanger, such as the arm 23a, is integral with the clamping member 21b.

The flexible web 23a is offset from the general plane of the clamping members 21b and 22b by virtue of the provision of the flanges 40 and 40a. The flanges 40 and 40a project inwardly of the clamp as the sides of the clamp are positioned with respect to each other when the clamp is closed. This arrangement spaces the clamping members 21b and 22b apart, when the clamp is closed, except at the free ends of the clamping members. The clamping member 22b has a latch 41 equipped with a tooth 42 adapted to engage the keeper 43 on the clamping member 21b. The keeper has a series of teeth 44 designed to cooperate with the tooth 42 of the latch 41. It will be observed from FIG. 9 that when the clamp is fully closed both the latch 41 and the

keeper 43 are entirely confined within the closed clamp. In some situations this may be considered desirable.

While it is not essential to the practice of this invention, under a number of circumstances it may be desirable to provide some closing resistance as the clamping members approach their final closed position. This can be done by the provision of a ridge 45 on the flange 40a and a stop surface 46 on the flange 40 (FIG. 10). The ridge and stop surface are designed to make contact before the clamp is closed and thus set up an interference which causes the flexible web 23a to be stretched in the final closing movement of the clamp.

The clamping members 21b and 22b may be reinforced by the use of ribs 47. Once again this is optional.

It will be observed from FIG. 10 that the finger pad 48 of the latch 41 is aligned with and overlies the opening 49 in the clamping member 22b. Also, the keeper 43 extends from the inner surface of the clamping member 21b in such a manner that a pair of dies opening and closing in the direction of the arrows A and B can be used to mold the clamp. Since the entire clamp in the open position, as illustrated in FIG. 10, lies basically in the same plane as the arm 13a and the hook of the remainder of the hanger, this hanger including the clamps can be molded as a single integral part in a simple two-piece mold. The fact that there is a slight interference due to the presence of the teeth 42 and 44 does not interfere with the release of the part from the mold since the plastic as it is removed from the mold has a slight degree of resiliency. This resiliency is necessary to permit the deflection of the clamping members as they are closed about articles of different thicknesses. As the clamp is closed it is desirable to bring the jaws or free ends of the clamping members firmly against the article and then to press the sides or clamping members slightly together to effect the latching action and to build up adequate clamping and gripping pressure.

Just as latch 41 projects inwardly from the edge of aperture 49, so also does keeper 43 project inwardly from the edge of aperture or opening 49a (FIG. 10). The apertures or openings 49 and 49a in the respective clamping members render the finger pad 48 of latch 41 readily accessible. The difference between the apertures 49 and 49a of clamp 20b and the aperture or opening 24 of clamp 20 (FIG. 1) is that the aperture or opening 24 extends through the flexible web 23 which joins the clamping members 21 and 22 together. The apertures or openings 49 and 49a are separated by the web 23a.

FIG. 11 illustrates the fact that this invention can be applied to hangers of radically different design and shape. In this case, the hanger 50 has a bar 51 which basically corresponds in function and purpose to the bar or rod 13 illustrated in FIG. 1. The hanger has an integral hook 52, a pair of clamps 53, one on each end, and an intermediate clamp 54. It should be noted in this construction that the structure of the bar 51 is carried through the clamp 54 because it is integral with one of the clamping members of the clamp 54. That the clamps can be opened is illustrated in phantom lines illustrating the position of the back clamping member 55 of each of the clamps in open position, that is, in the flat planar position it occupies when the hanger is removed from the mold. From this illustration it is con-

sidered to be obvious that this invention is not limited to a hanger having a single or even a pair of clamps. It is entirely feasible to mold as a single piece a hanger having any number of clamps which may be needed for a particular application.

FIGS. 12 and 13 illustrate the fact that this invention does not require the hanger to utilize straight arms. In this case the hanger 60 has a hook 61 and a pair of curved arms 62 at the end of each of which is a clamp 63. FIG. 13 illustrates the hanger 60 with the clamp 63 in its open condition as it would be as it is removed from the mold. In this case, the clamping member 64 is integral with the arm 62 and the clamping member 65 is joined to the arm 62 and to the clamping member 64 by a flexible web 66 serving as a hinge. It will be further recognized that the curvature of the arms can be compound, i.e., down as illustrated and forwardly as conventionally used in hangers for coats. In a hanger having a compound curvature, the portion of the arm or related structure forming the actual hinge line should be straight. Once again it is obvious that a hanger of this design can be fabricated in accordance with the teachings of this invention.

Hangers practicing this invention can be designed with the movable one of the clamping members positioned on either the front or the back of the hanger. FIGS. 1 and 2 illustrate clamps having the hinged member on the front while FIGS. 11, 12 and 13 illustrate clamps having the hinged member on the back. It will be obvious that it is entirely possible to mold the clamps and the main body of the hanger without the hook. The hook can be attached later as either a fixed or swivel structure. This would be an appreciably more costly product but in some instances may be considered desirable.

It is important to the invention that the side members between the hinge and the article gripping edges of the clamps be so shaped that they are spaced apart even when the clamp is fully closed. This spacing permits the necessary deflection of the side members at the latch to permit effective latching and positive article gripping pressure. In all embodiments it is optional whether small teeth, serrations or similar gripping surfaces will be provided on the inner faces of the free ends of the clamps' side members. Whether or not such are provided does not change the principles of the invention.

In all of the several embodiments of the invention which have been described, the flexible web or hinge is created by reducing the wall thickness of the plastic. In all cases it is molded of the same plastic as the remainder of the body of the hanger. In all embodiments, the side members of the clamps are resiliently deflectable within a limited range. This is important to assure both positive engagement between the latch and the keeper and adequate clamping pressure on the articles to effectively grip them. Thus, the plastic material used for the manufacture of this invention must not only be suitable for injection molding, but it must, in a wall thicknesses of about 0.0625 inch, have significant resistance to deflection yet in a wall thickness of about 0.02 have the characteristic of being both flexible and fatigue resistant. The main body of the hanger including the hook and the arms can be stiffened by the use of the beads shown in FIGS. 5 and 6 or by increasing the wall thickness or a combination of these expedients.

A number of resinous materials may be used for this product. Resins particularly suitable for the manufacture of this product include polypropylene, polyethylene and certain of the types of nylon. These materials are capable of developing the desired resilient stiffness, that is, capable of some but only limited deflection, and resistance to fatigue when used as a hinge.

In all embodiments, the invention must be so designed that the entire product can be manufactured as a single, integral part. This must be accomplished by simple, two-part molds which do not have any cams or movable sections to release any reentry portion of the product.

For this purpose, the design must be such that no part of the hanger is so related to the remainder of the hanger that it overlies in one plane any other portion of the body of the hanger lying in another plane which planes are spaced apart perpendicular to the surfaces of the hanger and its clamp in such a manner as to create an undercut or reentry condition. In other words, all surfaces must be accessible and withdrawable from each of two mold halves movable perpendicular to the surfaces of the hanger as indicated by the arrows A and B in FIGS. 4 and 10. It will be readily seen that this same condition is true for the hangers shown in FIGS. 11 and 12. In cases where slight reentry occurs, such is the case with the teeth of the latch, the withdrawal of one-half of the mold will permit removal of the clamp from the mold because the resilience of the molded part will permit minor deflection of the latch sufficient to effect disengagement of the teeth from the other mold-half.

It is obvious that the invention provides a solution to the problems of hangers of this type by reducing their cost, eliminating the problem of the use of separate components which can become disconnected and lost. It provides a hanger which is easy and simple to use and utilizes a minimum of space. This latter is important in commercial operations where the storage of hundreds or thousands of garments can create a critical factor if bulky hangers are utilized.

The arrangement of the clamping members with respect to the arms permits the clamps to be arranged at any point on the arms. It also permits the arrangement to be used with hangers of compound curvature. Further, it is particularly convenient to the user because the clamps open and close in a manner which is easy to manipulate when the hanger is being loaded and unloaded. This invention can be used with garments which are wider than the hanger since the garment can project beyond the ends of the hanger.

It will be recognized that while a preferred embodiment together with several modifications of this invention have been illustrated and described that numerous other modifications may be made incorporating the principles of the invention. Such of these modifications as incorporate the principles of the invention are to be considered included in the hereinafter appended claims unless these claims by their language expressly state otherwise.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows.

1. A garment hanger comprising: an arm and a garment securing clamp integral with said arm; said clamp having a pair of clamping members each having a free end; a flexible web hingedly joining said clamping members at their other ends whereby they may be opened and closed; said web extending lengthwise of said arm; one of said clamping members being integral with said arm and the other member opening through a generally vertical path; latch means integral with one of said clamping members and a keeper integral with the other thereof for locking said clamping members in garment clamping position; one of said clamping members arching away from the other at the web end thereof and then arching back towards the other such that when closed, said clamping members tend to abut only at the free ends thereof; one of said latch and keeper including a plurality of teeth spaced transversely of said clamping members and the other of said latch and keeper including teeth engaging means whereby the pressure applied by said clamp when closed can be varied by using different ones of said teeth in conjunction with said teeth engaging means.

2. The hanger of claim 1 in which said one of said latch and said keeper is positioned on said arching clamping member at a point where the distance between said clamping members is maximum when said clamp is closed.

3. A garment hanger comprising an arm and a garment securing clamp integral with said arm, said clamp having a pair of clamping members each having a free end; a flexible web hingedly joining said clamping members at their other ends whereby they may be opened and closed; said web extending lengthwise of said arm; one of said clamping members being integral with said arm and the other member opening through a generally vertical path; latch means integral with one of said clamping members and a keeper integral with the other thereof for locking said clamping members in garment clamping position; said clamp including an opening extending from said latch means in said one clamping member, through said web and to said keeper in said other clamping member.

4. A garment hanger as described in claim 3, wherein said arm and said clamping members all lie generally in a common plane when said clamp is fully open such that said clamping members are generally aligned on opposite sides of said flexible web whereby said garment hanger may be formed in a two-piece mold.

5. A garment hanger comprising: an elongated arm, a hook for supporting said arm extending vertically upwardly from generally the middle of said arm and a pair of garment securing clamps integral with said arm positioned at the ends thereof; each said clamp having a pair of clamping members each having a free end; a flexible web hingedly joining said clamping members at their other ends whereby they may be opened and closed, said web being sufficiently flexible that said

clamping members can be opened through a distance sufficient to allow them to lie generally in a common plane on opposite sides of said flexible web; said flexible web extending lengthwise of said arm; one of said clamping members being integral with said arm and the other member opening through a generally vertical path; said arm being positioned entirely outside of said generally vertical path, whereby said hanger can be molded in a two-piece mold with said clamp opened; one of said clamping members arching away from the other at the web end thereof and then arching back towards the other such that when closed, said clamping members tend to abut only at the free ends thereof; closure means operably joined to one of said clamping members and positively seating over at least a portion of the other for locking said clamping members in a garment clamping position.

6. The garment hanger of claim 5 in which said closure means comprises: a latching finger integral with one of said clamping members and projecting towards the other; a keeper integral with said other clamping member in alignment with said latching finger for engagement thereby whereby said closure means can also be integrally molded in a two-piece mold.

7. The garment hanger of claim 6 in which one of said latch and keeper includes a plurality of teeth spaced transversely of said clamping members; the other of said latch and keeper including teeth engaging means whereby the pressure applied by said clamp when closed can be varied by using different ones of said teeth in conjunction with said teeth engaging means.

8. The garment hanger of claim 6 in which all of said latching finger and said keeper are between said clamping members when said clamps are closed whereby the exposed outer surfaces of said clamping members can be smooth and snag-free with respect to garments hung on said hanger.

9. The garment hanger of claim 5 in which said web is positioned in alignment with the upper edge of said arm whereby integral molding of said hanger is further simplified.

10. The garment hanger of claim 5 comprising: an aperture through one of said clamping members; said closure means including a latch, one end of said latch being integral with said one of said clamping members at one end of said aperture and projecting therefrom towards the other of said clamping members; an opening through said other of said clamping members; a keeper integral with said other clamping member adjacent one edge of said opening and interengaging with and securing said latch when said clamp is closed; a finger pad on the end of said latch for manipulating said latch; said opening through said other clamping member being aligned with said pad to provide access thereto.

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