

- [54] CONVERTIBLE FRAME SUPPORT
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- [51] Int. Cl.² A47F 7/14
- [58] Field of Search 248/469, 470, 471, 472, 248/473, 474, 126, 488, 489, 494, 497, 498, 467; 85/36

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[57] ABSTRACT

A dual purpose frame supporting structure permitting different modes of display is disclosed. The device includes a hanger element which is affixed to the rear of the frame which is to be displayed. For hanging the frame on a wall, the hanger element includes a central cutout to properly position the frame with respect to a wall fastener; when a picture hanger mounted on the wall is utilized, a series of raised projections on the outer surface of the hanger element resists undesirable lateral movement of the frame. The hanger element is also provided with a pair of opposed apertures which are in a plane transverse to the frame. A stand element with a pair of opposed spring arms is adapted to have each arm enter one of the apertures of the hanger element to define an easel-type stand for the frame.

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8 Claims, 9 Drawing Figures

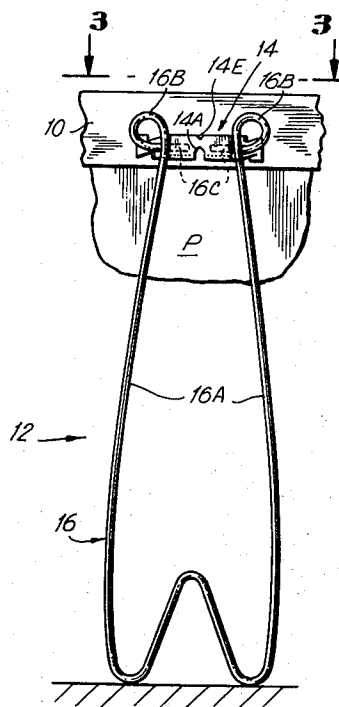


FIG. 1

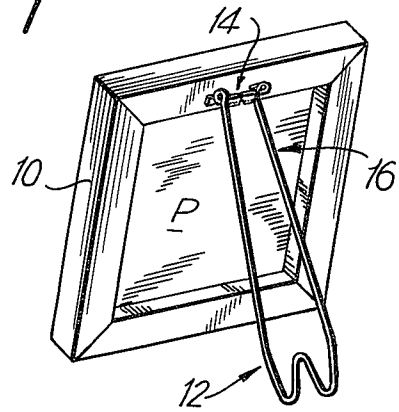


FIG. 3

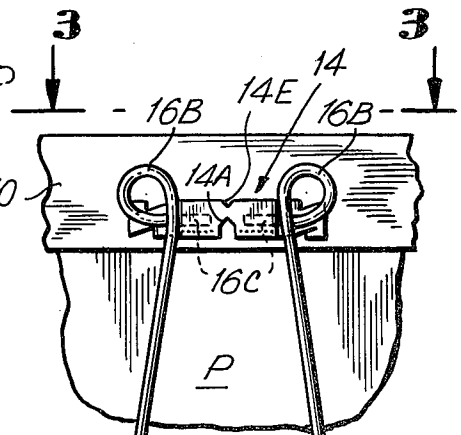
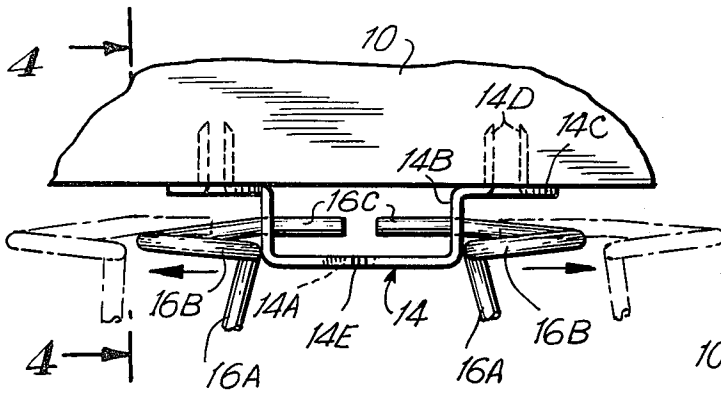


FIG. 2

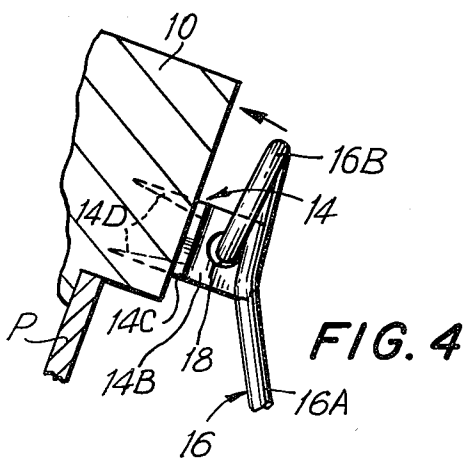
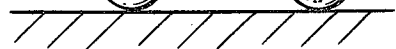
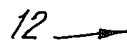


FIG. 4

FIG. 5

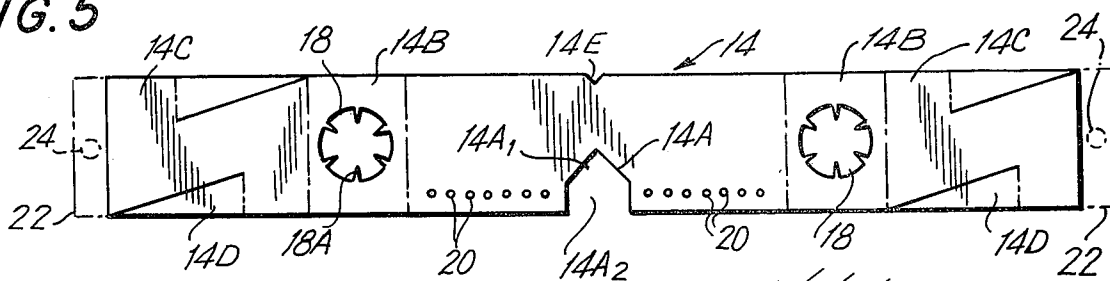


FIG. 6

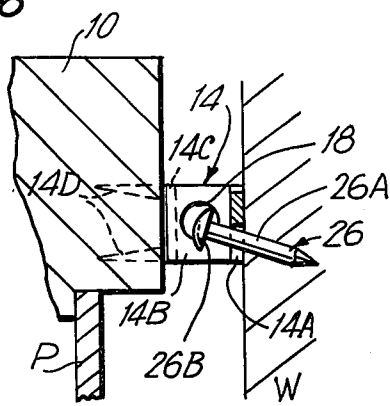


FIG. 7

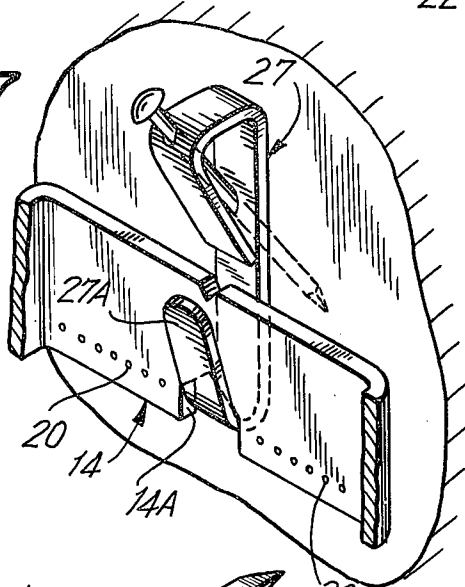


FIG. 8

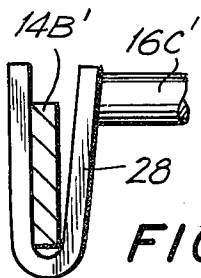
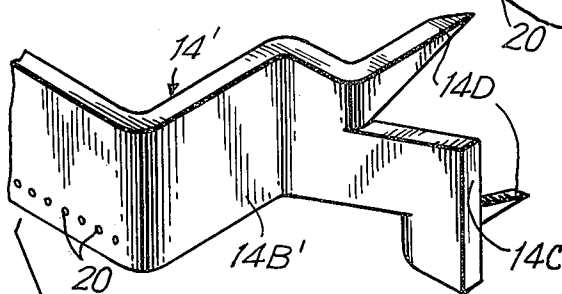
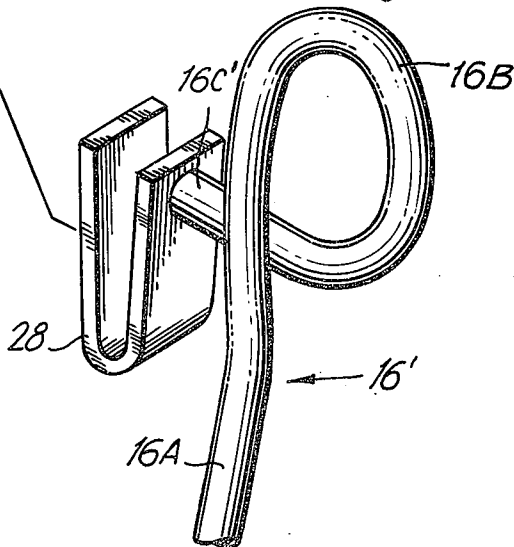


FIG. 9



CONVERTIBLE FRAME SUPPORT

This invention relates to support members in general, and to devices for supporting pictures or other similar framed articles in a plurality of display modes in particular.

In the field of displaying framed or other encased works of art, mirrors, academic degrees and the like, numerous types of hangers have been developed. Most of these devices have been quite straightforward in nature and have been designed to simply support a framed picture or the like in one specific mode. For example, one frequently used device is the so-called "zig-zag" hanger, having a series of saw teeth on its lower edge for receiving nails therein for positioning purposes. But this hanger is not readily usable with all conventional size nails and is not at all convenient to use with picture hangers whose width is often too great for the spaces between the saw teeth. In addition, such hangers are only capable of providing one type of display — on a vertical wall — other modes of display may be desired for particular types of exhibitions and accordingly, prior art hangers have limited versatility in this respect.

While other hanger elements have also been used in the prior art to provide other modes of display, such as stand elements, these elements suffer from the same restriction noted above, namely only a single mode of display is possible with them. Thus, although an easel can be utilized, such a display element has no provision for wall mounting.

It is therefore an object of this invention to obviate one or more of the aforesaid difficulties.

It is a further object of this invention to provide a multi-purpose hanger element permitting more than one mode of display to be achieved with the same basic structure.

It is also an object of this invention to furnish a support member readily convertible from one display mode to another.

These and other objects and advantages of the invention will become apparent when a particular illustrative embodiment thereof is considered, wherein a combined hanger and standing element is disclosed. The first portion of my invention includes a hanger element which is affixed to the rear of a frame which encloses a picture, mirror or other article which is to be displayed. The hanger element is capable of use both in the hanging mode and in the standing mode. The hanger element consists of a relatively flat rectangular piece of metal which has been stamped or otherwise formed into suitable shape. A central portion of the hanger includes a lower edge having a cutout and an upper edge having a small notch. The cutout functions to receive a wall fastener therein in the hanging mode of display — thus, either a nail or a picture hanger can be accommodated within the cutout on the lower edge of the hanger element. The notch on the upper edge permits the hanger element to be centrally positioned on the frame.

The cutout and notch are included within a central section of the hanger element. Also included on this section are a series of raised projections on either side of the cutout which are adapted to resist lateral movement of a frame which is hung on a picture hanger, as will be described in greater detail below. To either side of the central section of the hanger element is a shorter

segment designed to be bent transversely to the central section, and having central apertures therein. These apertures play no specific role in the hanging mode, but are adapted to receive the spring-loaded arms of a stand element in the standing mode to be described below. The apertures in the segment can either be complete through-holes, or else they can include inwardly directed fins adapted to provide gripping surfaces against the stand arms when the arms are inserted through the apertures.

Still outward of the apertured segments are respective end portions also designed to have a bending edge with the apertured segment, and adapted to be bent into a plane which is parallel to the plane of the central segment but separated therefrom by the width of the apertured segment. This end segment includes upper and lower barbs capable of being bent in from the segment towards the frame. These barbs in effect act as prongs or nails which are physically inserted into the surrounding frame to thereby affix the hanger element thereto. The outer elements can also be provided with respective extensions substantially rectangular in shape and having a central aperture to permit a nail or other suitable fastener to be inserted therethrough in the case of particularly heavy framed articles.

In the hanging mode, the hanger element is initially formed along the various bend lines to have the apertured segments transverse to the central segment and directed toward the frame, with the barbed segment transverse to the apertured segment and in contact with the frame's rear surface. The barbs of the outer segments, having been previously bent inwardly (toward the frame) from the hanger element, are inserted into the rear surface of the frame and form a relatively permanent attachment thereto. A small central notch in the upper edge of the central hanger segment facilitates proper positioning of the hanger with respect to the frame. The cutout is formed at the center of the lower edge of the central portion of the hanger element and serves a positioning as well as a hanging function. Thus, when a nail is used as the hanger element in a wall, the shaft of the nail is accommodated at the apex of the cutout. When a picture hanger is used in the wall, the thickness thereof precludes its being accommodated at the apex of the cutout, but instead, the cutout is provided with parallel lower walls depending from the apex, thereby permitting the picture hanger to be received centrally within the cutout. In either case, the central location of the cutout only allows the frame to be properly centered with respect to the wall fastener.

When it is desired to display an article in the standing mode, a stand, which may be formed of suitable flexible wire such as spring wire, is utilized. The lower portion of the stand includes two interconnected U-shaped lower portions adapted to rest on a relatively flat surface. The side arms of the stand rise and terminate in respective looped ends creating two opposed transverse legs which are biased towards each other. In use, the arms are spread apart against the slight spring action thereof, and the opposed legs are inserted into the apertures of the apertured segments of the hanger element. The pressure on the spring arms is then released, causing the legs to approach each other and more firmly enter and remain within the apertures. The diameter of the apertures is, however, slightly larger than the diameter of the legs therein, thereby permitting pivoting action between the stand and the hanger element.

The U-shaped portions of the stand are then rotated slightly rearwardly of the frame until the upper portions of the looped ends of the stand come in contact with the upper portion of the frame, thereby providing a rest or stop position. In this mode, the frame assumes the stance of an easel and permits a standing display of the framed article.

It is therefore a feature of an embodiment of this invention that a multi-mode display element is defined by a hanger element and a companion stand element, to permit supporting a frame on a vertical surface or a horizontal surface.

It is also a feature of an embodiment of this invention that a hanger element is provided with a central cutout to correctly position a frame on a wall fastener in one support mode.

It is another feature of an embodiment of this invention that a hanger element is provided with apertures on transverse segments to receive therein spring legs of a stand element to create an easel-type standing display mode.

These and other objects, features and advantages of this invention will become more readily understood when considered in connection with a presently preferred, but nonetheless illustrative, embodiment of the invention as explained in the following detailed description and as shown in the accompanying drawing, wherein:

FIG. 1 is a perspective view of an illustrative frame outfitted with the present invention, with the hanger element affixed to the frame and the stand element mounted within the hanger element;

FIG. 2 is an enlarged rear view of the standing element, illustrating its general mode of attachment to the hanger element affixed to the frame;

FIG. 3 is an enlarged fragmentary top view of a portion of the stand element, illustrating its insertion into the apertures of the hanger element which has been affixed to the frame, taken along the perspective of line 3—3 of FIG. 2 in the direction of the arrows;

FIG. 4 is a fragmentary side sectional view illustrating the stand within the apertured segment at one side of the hanger element, taken along the line 4—4 of FIG. 3 in the direction of the arrows;

FIG. 5 is an overall layout view of the hanger element, illustrating the various segments thereof;

FIG. 6 is a side view of a frame to which has been affixed the hanger element, illustrating the hanging mode of the invention with respect to a vertical wall;

FIG. 7 is a fragmentary perspective view of the hanger element as used in connection with a picture hanger;

FIG. 8 is an exploded perspective view of an alternate embodiment of the invention wherein the stand is provided with clips to grip the side segments of the hanger element; and

FIG. 9 is a view taken from the rear of the frame showing the stand element of FIG. 8 gripping the side segment of the hanger element illustrated in FIG. 8.

In FIG. 1, a frame 10 in which an illustrative article P is enclosed, is illustrated. The article P can represent a suitable picture, photograph, mirror or any other item susceptible of display. The invention which is illustrated in FIG. 1 is generally designated by the numeral 12 and includes upper hanger element 14 affixed to the upper rear surface of frame 10, and stand element 16. The particular mode of display illustrated in FIG. 1 is

the standing mode, and both hanger element 14 and standing element 16 are utilized in that mode.

A more detailed understanding of the invention can be obtained from a consideration of FIGS. 2-4, which illustrate the hanger element 14 and its various parts and their use in conjunction with the corresponding parts of stand 16. Specifically, and also considering the various component parts of hanger 14 as illustrated in FIG. 5, the significant portions of hanger element 14 used in the display mode illustrated in FIGS. 1-4 include a rearward central section having cutout 14A, transverse side segments 14B which include respective apertures 18 and end segments 14C from which barbed members 14D are bent transversely to enter into the body of the frame. Also shown is central notch 14E. Thus, as shown in FIGS. 2 and 3, the hanger element is first bent into appropriate shape for attachment to the frame. Considering the layout view of hanger element 14 shown in FIG. 5, apertured segments 14B are initially bent so as to assume a transverse relation to the central segment of hanger element 14 in which cutout 14A has been made. Similarly, segments 14C are bent transversely to segments 14B, to assume the position shown in the top view in FIG. 3. Finally, barbed members 14D are bent inwardly (i.e., toward the frame body) from the layout outline of hanger element 14, to thereby permit insertion of corresponding pairs of barbed members 14D into the frame. In almost all cases, these barbs provide sufficient retentive force for the hanger element with respect to the frame, regardless of what type of frame or what article is being displayed. In certain cases, however, additional support may be required and as illustrated in FIG. 5, outward extensions 22 of the barbed segments 14C may accordingly be provided; each of these extensions includes a substantially central aperture 24 into which auxiliary fasteners such as nails may be driven to provide additional support for the hanger elements with respect to frame 10.

To facilitate attaching hanger element 14 to frame 10, notch 14E is provided on the upper edge of the hanger element. Notch 14E is positioned equidistant between aperture segments 14B and in fact, is at the direct center of the upper edge of hanger element 14, aligned with cutout 14A as well. In order to correctly position hanger element 14 on frame 10, an operator simply measures the top edge of the frame and ascertains the midpoint thereof, marking the same. The central mark is then aligned with cutout 14A and notch 14E during the attachment process, and barbs 14D are driven into the frame body pursuant to such alignment. Using this technique, hanger element 14 will automatically be centrally positioned with respect to frame 10.

After the hanger element 14 has been formed into its appropriate segments as illustrated in FIG. 3 and the hanger attached to the frame, spring arms 16A of stand 16 are slightly spread apart against the spring action inherent in the spring wire forming stand element 16. This spreading action is illustrated by the outwardly directed arrows in FIG. 3 and the phantom positions of the fragmentary portions of stand 16 in that figure. When sufficient spreading of the stand has taken place, and the opposed legs 16C which terminate looped portions 16B of the arms are each opposite the outer surfaces of apertured segments 14B of the hanger element, the spreading pressure may be relaxed and the legs 16C approach each other and enter into apertures 18 of seg-

ments 14B of hanger element 14. The arms 16A of stand 16 eventually reach the position illustrated in FIGS. 2 and 3, namely with the inner surfaces of looped portions 16B resting against the outer surfaces of apertured segments 14B, with legs 16C within apertures 18.

The view of FIG. 4 illustrates the initial position of stand 16 with respect to hanger element 14 and frame 10, upon insertion of legs 16C within aperture 18. As indicated by the arrow in FIG. 4, stand 16 will then rotate slightly towards the rear surface of frame 10, so that when the looped portion 16B of stand 16 comes into contact with the rear surface of frame 10, a final resting position for stand 16 with respect to frame 10 is reached, resulting in the rest position illustrated in FIG. 1. Legs 16C can be inserted in apertures 18 which may be straight through holes, or they may have inwardly directed fins 18A as shown in FIG. 5. This structure would permit a more snug fit between legs 16C and apertures 18, without restricting the pivoting motion which is still required therebetween. It is also noted that the attachment of a stand can also be effected where the stand omits the looped portion 16B — this is possible due to the relatively snug fit between legs 16C and openings 18.

The view of FIG. 3 is also helpful in indicating the manner in which the invention is utilized to display frame 10 in the hanging mode. Specifically, considering FIGS. 3 and 6 together, stand element 16 plays no role in the hanging mode, and instead hanger element 14 is utilized together with an appropriate wall fastener, as is illustrated in FIGS. 6 and 7 (the view of FIG. 3 should therefore be considered here without any of the elements of stand 16 being present). Thus, hanger element 14 is affixed to frame 10 in the same fashion and is intended to be so affixed to thereby obtain dual acting operation for hanger element 14. In the hanging mode, however, cutout 14A which played no specific role in the standing mode, now comes into play. Initially, an operator first selects a position on the wall for a suitable wall fastener, such as nail 26 embedded within wall W in FIG. 6. Frame 10 is then lowered until hanger element 14 comes in contact with shaft 26A of nail 26. Specifically, shaft 26A will be accommodated at apex portion 14A₁ of cutout 14A (see FIG. 5). The head 26B of nail 26 will be positioned within the rectangular cavity defined at the rear by the central segment of hanger element 14 and on the sides by apertured segments 14B (see FIG. 3). Although apertures 18 are visible in the side view of FIG. 6, it is also seen that they do not play a specific role in the hanging function with respect to nail 26. The remaining portion of cutout 14A, namely that portion designated 14A₂ in FIG. 5, is between depending parallel side walls and is adapted to define a cavity within which a picture hanger can be accommodated. This arrangement is illustrated in FIG. 7. Thus, such a hanger 27 would have too great width to be received near the apex of portion 14A₁, and although its top portion might be accommodated therein, its lower portion 27A would have to be accommodated within the greater spread defined at area 14A₂. Thus, cutout 14A is adapted to accommodate any type of suitable wall fastener, regardless of its diameter or width or nature.

The use of hanger element 14 in connection with bent picture hangers (such as 27 in FIG. 7) is enhanced by the presence of embossments or raised projections 20 on the rear surface of the central segment of hanger

element 14. Specifically, a series of projections 20 is illustrated on either side of cutout 14A in FIG. 5, and these projections are also visible in the view of FIG. 2, although they do not play any specific physical role in that illustration. When hanger 14 is formed into the shape indicated in FIGS. 2 and 3, i.e., when it is bent so as to have its apertured segments 14B transverse to the main central segment containing cutout 14A and when segments 14C are also bent so as to bear against the rear surface of frame 10 with barbs 14D within the body of frame 10, projections 20 face outwardly from the rear of the central segment of hanger element 14. When a picture hanger is utilized for hanging particular types of framed articles (see FIG. 7), the upwardly directed hook portion 27A of such picture hanger will pass under and around cutout 14A and rest substantially within the parallel walled portion of cutout 14A designated as 14A₂ in FIG. 5. Should there be any undesirable lateral pressure on frame 10 when it is being so supported on picture hanger 27, thereby conceivably causing the picture hanger to be removed from cavity 14A₂, it will then occupy a position somewhat laterally of cutout 14A.

At this moment in time, projections 20 come into play. By virtue of their presence on the rear surface of the segment containing cutout 14A and being adjacent thereto, the upwardly directed hook portion 27A of the picture hanger 27 will bear against successive ones of projections 20, commencing with the first one immediately adjacent to cutout 14A on either side (depending upon which direction the picture hanger moves with respect to the frame). Accordingly, projections 20 act as lateral stops to resist sideways motion of frame 10, with hanger element 14 affixed thereto, with respect to the picture hanger. Thus, any displacement of the frame with respect to the picture hanger will be relatively small, with projections 20 accordingly limiting the amount of travel of the frame with respect to the picture hanger. This will in turn restrict the movement of the frame to any undesirable and unattractive off-center position.

In FIGS. 8 and 9, an alternate embodiment of the invention is disclosed, wherein a portion of a hanger element 14' is shown. This hanger element is substantially identical to the hanger element 14 discussed heretofore, except that segment 14B' includes no aperture such as 18 in segment 14B in FIG. 5. Thus, end segment 14C and barbs 14D thereof are shown, as well as projections 20 as previously described. The hanger element 14' is intended to be used in the hanging mode, described above with respect to FIGS. 5-7, in the same fashion as there described. However, in the standing mode, described above with respect to FIGS. 1-4, a difference will exist. This difference relates to the manner of attachment of stand 16 with hanger element 14. As illustrated in FIG. 8, the stand element is identified as 16', and includes at the end of its legs 16C' a U-shaped spring clip 28 having an internal cavity adapted to clip onto the transverse and unapertured segment 14B'. Although the arms 16A of stand 16' will be formed in substantially the same fashion as illustrated in FIGS. 1 and 2, i.e., with spring metal giving a certain inwardly directed spring bias to the opposed loops 16B, the manner of attachment of the stand 16' to hanger element 14' is different in this embodiment.

This manner of attachment is suggested by the exploded view of FIG. 8 and is specifically illustrated by

the fragmentary rear view of FIG. 9. When it is desired to affix stand 16' to hanger element 14', i.e., when it is desired to utilize the standing mode of display of a framed article, the arms 16A of stand 16' are spread apart in the same fashion as described above with respect to FIGS. 1-4, and as specifically illustrated in FIG. 3. However, the spreading apart need not be as great, since the correct orientation for attachment purposes is to position the cavity of clip 28 directly beneath the bottom surface of segment 14B'. Then stand 16' is elevated upwards towards hanger element 14', with segment 14B' entering the U-shaped cavity of spring clip 28, reaching the position shown in FIG. 9. Clip 28 is urged upward until the right bottom edge of segment 14B' engages the right inner surface of the U-shaped cavity of clip 28, as shown in FIG. 9.

This spring clip arrangement will cause a firm gripping relationship to exist between hanger element 14' and stand 16'. In addition, the force of gravity which establishes a downward force component from segment 14B' will also tend to maintain hanger element 14' within the cavity of spring clip 28. After such gripping relationship has been established, clip 28 may still move somewhat rearwardly at its lower inner loop portion, in the manner indicated in FIG. 4 for the other mode of attachment of stand 16 with hanger element 14. This will permit the upper inner surface of loop 16B of stand 16' to bear against the rear frame 10, as was explained in connection with FIG. 4, to establish a firm rest position for the display mode of this invention.

There has accordingly been described herein a dual acting stand and display device for use in connection with framed articles. It will of course be apparent to those skilled in the art that numerous variations can be utilized in connection with this invention to achieve the same purposes and result. For example, to reinforce the fit between stand element 16 and hanger element 14, either in the mode of FIGS. 1-4 or 8-9, either or both of the hanger elements or the stand can be made of magnetic material, so as to be attracted one to the other when the legs 16C enter apertures 18 (FIGS. 1-4) or when clip 28 attaches to unapertured segment 14B' (FIGS. 8-9). In addition, spring arms 16A can be formed close together, with an outward spring bias. In this manner, legs 16C of stand 16 can enter apertures 18 from the inner surfaces of segments 14B, thereby establishing the standing display mode of the invention.

It is to be understood that the above-described embodiments are merely illustrative of the application of the principles of this invention. Numerous variations may be devised by those skilled in the art without departing from the spirit or scope of the invention.

What is claimed is:

1. A device supporting an article having a frame comprising a stand element supporting said article in a first display mode, said stand including a pair of arms formed of resilient material and having a lower rest portion and an upper attachment portion, and a hanger element for supporting said article in a second display mode independently of said stand element and in said first display mode in conjunction with said stand element attached to said article and, said hanger element including coupling means for receiving said attachment portion of said stand element in said first display mode, wherein said upper attachment portion of said stand includes a pair of looped ends connected to respective ones of said arms and formed with opposed leg mem-

bers, and wherein said coupling means of said hanger element includes a pair of segments located in planes transverse to the plane of said article and each transverse segment having an aperture corresponding to each of said leg members, each of said apertures receiving one of said leg members in a snug fitting relationship whereby said stand is pivotable away from said article until said looped ends contact said article to restrain further movement of said stand away from said article to thereby define said first display mode with said lower rest portion of said stand in contact with a substantially horizontal support surface.

2. A device in accordance with claim 1 adapted for use in conjunction with a wall fastener mounted on a substantially vertical wall, wherein said hanger element includes a central segment having a centered cutout for receiving said wall fastener therein to define said second display mode.

3. A device in accordance with claim 2 wherein said central segment includes at least one raised projection on either side of said central cutout to resist lateral movement of said hanger element with respect to said wall fastener.

4. A device in accordance with claim 2 wherein said central segment includes a centered notch on the edge of said central segment opposite that of said centered cutout, said notch and said cutout cooperating to centrally position said hanger element with respect to said article.

5. A device in accordance with claim 1 wherein said hanger element includes a pair of side segments each having at least one barb formed integrally therewith, said barb having a bending axis and a pointed end to permit said barb to be oriented substantially transversely to said side segment and to enter said frame.

6. A device in accordance with claim 5 including a pair of end segments outward of said side segments and having at least one perforation therein to receive a fastening element therethrough and into said frame.

7. A device in accordance with claim 1 wherein said arms and said looped ends of said stand define an obtuse angle therebetween such that said first display mode provides stable support for said article.

8. A device supporting an article having a frame comprising a stand element supporting said article in a first display mode, said stand including a pair of arms formed of resilient material and having a lower rest portion and an upper attachment portion, and a hanger element for supporting said article in a second display mode independently of said stand element and in said first display mode in conjunction with such stand element, said hanger element attached to said article and including coupling means for receiving said attachment portion of said stand element in said first display mode, wherein said upper attachment portion of said stand includes a pair of looped ends connected to respective ones of said arms and formed with opposed leg members, each of said looped ends being formed with a corresponding spring clip, and wherein said coupling means of said hanger element includes a pair of segments located in planes transverse to the plane of said article for receiving one of said spring clips therearound, each of said clips being pivotable with respect to a corresponding one of said transverse segments until said looped ends contact said article to restrain further movement of said stand away from said article to thereby define said first display mode.

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