An adjustable hanger is adapted to be secured to a surface to support and object. The hanger includes a support member with a longitudinal channel defining a raceway that is mountable to the surface. A slide member is slideably received in the raceway. Cooperative ratchet structures in the raceway and on the slide member engage one another to permit sliding movement in one direction but to resist sliding movement in the opposite direction. A hook is formed on the slide member to mount the object. A kit is disclosed to include a plurality of hangers, a level device and a flexible tape measure. Fasteners may also be included. A chart may be provided that is correlated to the width of the object, and the tape measure may be is color-coded to correspond to the chart.
ADJUSTABLE HANGER AND KIT
INCORPORATING THE SAME

FIELD OF THE INVENTION

[0001] The present invention generally relates to hangers that may be employed to mount objects such as, and without limitation, pictures, mirrors and the like to a surface. It is contemplated that such objects will be mounted to an upright support surface such as the wall of a room, a door, etc.

BACKGROUND OF THE INVENTION

[0002] Throughout history, humans have sought to enhance their surroundings by the use of decorative items. Such items have included such diverse elements as wall paintings, tiles, tapestries and two-dimensional art, to name a few. In many instances, such decorative elements become a relatively permanent part of the environment in which they are placed, remaining on display for years on end. Such decorations may include framed artwork and photographs, to name a few, which are mounted on an upright surface such as a wall or door. In addition, mirrors, flat screen televisions and like are often mounted to such upright surfaces.

[0003] In the past these objects were hung from the surface with either nails or hooks. These rudimentary hangers usually rely on a single point of attachment with a nail or screw. How securely the artwork or object is attached to the wall also depends on the integrity of the wall onto which they are secured. With only a single point of attachment on a wall of unknown integrity one is left wondering whether their wall hanging is truly secure.

[0004] These hangers provide no means of vertical adjustment; therefore in order to * level a painting or picture, the hook must be pulled from the wall and reattached. The requirements for leveling a hanging object include measurements that often start from an unreliable surface such as an uneven or un-level floor or carpet. These conditions often require the person trying to place the fixtures to remeasure multiple times. Inaccurate measurements themselves further exacerbate the problem. The level of the object cannot be truly measured until the fasteners are in place and the object is hung. Without a means to vertically adjust the nail or hook the only way to level the object is by trial and error. Inevitably this trial and error process leaves a multitude of unsightly holes in the wall that also further weaken the wall. This is particularly an issue when multiple pictures or objects are to be hung from the wall at a consistent level.

[0005] Since the human eye is very good at detecting slight misalignments and differences in height, misalignment of an ensemble of pictures or objects at differing levels and angles may be more annoying than aesthetically pleasing. Even careful measurement from the floor does not resolve this problem because picture frame wires vary in where they are attached to the frame as well as in length. Therefore, it is nearly impossible to hang a row of pictures at the same height on the first try.

[0006] Despite the development of a wide variety of hangers that are currently available for use in mounting pictures and other objects, there remains a need for improved structures that are more versatile and easier to use. The exemplary embodiments disclose an adjustable hook fixture that not only securely attaches objects to a wall but also permits vertical adjustment after mounting. These embodiments also disclose structures that provide reassurance that the mounted objects are safely secured to the support surface.

SUMMARY OF THE EXEMPLARY EMBODIMENTS

[0007] One aspect exhibited by the exemplary embodiments disclosed herein is the provision of a new and useful adjustable hanger that may be secured to a surface, such as an upright support surface, in order to support an object thereon.

[0008] Another aspect according to the exemplary embodiments is the provision of a hanger that may be adjusted after being secured to a surface in order to vary the height at which an object may be supported thereon, thereby to assist in leveling the object and aligning it with other supported objects.

[0009] The exemplary embodiments also disclose a kit that may be used to hang objects from an upright support wall.

[0010] According to several embodiments of the invention, an adjustable hanger is provided that is adapted to be secured to a surface, such as an upright or vertical wall surface of a room, in order to support an object, such as pictures, mirrors and the like. Broadly, the adjustable hanger disclosed includes a support member that is adapted to be secured to the surface in a mounted state. The support member has a longitudinal extending channel formed therein to define a raceway and includes first cooperative ratchet structures formed in the raceway. A slide member is provided and is adapted to be slidably received in the raceway in close fitted engagement to define a mated state. The slide member includes second cooperative ratchet structures formed therein. The second cooperative ratchet structures are positioned to engage the first cooperative ratchet structures when in the mated state. The cooperative ratchet structures permit longitudinal sliding movement of the slide member in a first longitudinal direction and prohibit longitudinal sliding movement of the slide member in a second longitudinal direction opposite the first. The slide member further includes a hook element projecting away from the surface when the support member is in the mounted state with a slide member in the mated state.

[0011] In the disclosed embodiments, the support member includes a base portion and a pair of longitudinally extending flanges oriented and spaced apart, generally parallel to one another on a first surface of the support member thereby forming a channel therebetween. Each of these flanges can include a first web extending generally perpendicularly to the base portion and a second web extending from the first web generally parallel to the base portion. The flanges can be formed on longitudinal side edges of the support member. Each of these flanges may be formed of a stiff yet resilient material configured to apply force to assist in engaging the first and second ratchet structures. To this end, the support member, the first ratchet structures and the flanges may all be formed as an integral one piece molded construction of a suitable plastic material. Likewise, the slide member and its ratchet structures may be formed as an integral one piece molded construction of a suitable plastic.
In some of the disclosed embodiments, the base portion includes a raceway portion oriented between the flanges and an apron portion located longitudinally of the raceway portion. This apron portion is adapted to receive fasteners therethrough so that the support member may be secured to the surface in the mounted state. The apron portion may have at least one hole or a plurality of holes therethrough to receive the fasteners. Alternatively, an adhesive material may be provided on a rear surface of the support member, and the apron portion may be eliminated.

The ratchet structures may be recessed, if desired. In one embodiment, the slide member has an elongated recess formed therein, and the second cooperative ratchet structures are located in this recess. In another embodiment, the support member has a longitudinal recess formed therein, and the first cooperative ratchet structures are located in the recess. The ratchet structures may be arranged in increments of approximately 3.2 millimeters, if desired. One disclosed embodiment teaches a hanger kit adapted for use in hanging an object from an upright support wall. This kit includes a plurality of hangers adapted to be secured to the upright support surface. At least some of these hangers are adjustable hangers such as those described above. The kit may also include a level device and a flexible tape measure. Further, the kit may include a plurality of fasteners adapted to secure the hangers to the upright support surface.

In order to further simplify the process of hanging a picture with multiple hangers a chart may also be provided that correlates the width of the object to be hung, for instance a picture frame, and the quantity of hangers to be used with a recommended distance at which the hangers should be spaced. This chart may also be color-coded such that the recommended spacings for a given quantity of hangers are all of the same color. To this end, the tape measure may also include color-coded scales corresponding to the recommended distances for each quantity of hangers shown in the chart. In addition, the color-coded scales on the tape measure can include indicator marks corresponding to the recommended distances.

These and other aspects of the present invention will become more readily appreciated and understood from a consideration of the following detailed description of the exemplary embodiments when taken together with the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view of an adjustable hanger according to an exemplary embodiment of the present invention illustrated to secure a picture to a support surface;

FIG. 2 is a front view in elevation of the support member which forms part of the adjustable hanger according to this first exemplary embodiment

FIG. 3 is a cross-sectional view taken about lines 3-3 of FIG. 2;

FIG. 4(a) is a cross-sectional view taken about lines 4-4 of FIG. 3;

FIG. 4(b) is a cross-sectional view, similar to FIG. 4(a) but illustrating alternate cooperative interlocking teeth;

FIG. 5 is a front view in elevation of a slide member which forms part of the first exemplary embodiment of the present invention;

FIG. 6 is a top plan view of the slide member of FIG. 5;

FIG. 7(a) is a cross-sectional view taken about lines 7-7 of FIG. 5;

FIG. 7(b) is a cross-sectional view, similar to FIG. 7(a) but illustrating alternative cooperative interlocking teeth;

FIG. 8 is a side view in cross-section showing the engagement of the slide member of FIGS. 5-7 with the support member of FIGS. 2-4;

FIG. 9 is a front view in elevation of a support member according to the second exemplary embodiment of the present invention;

FIG. 10 is a cross-sectional view taken about lines 10-10 of FIG. 9;

FIG. 11 is a cross-sectional view taken about lines 11-11 of FIG. 10;

FIG. 12 is a front view in elevation showing a second exemplary embodiment of the slide member of the present invention configured to engage the support member of FIGS. 9-11;

FIG. 13 is a top plan view of the slide member of FIG. 12;

FIG. 14 is a cross-sectional view taken about lines 14-14 of FIG. 12;

FIG. 15 is a side view in cross-section illustrating another embodiment of the support member;

FIG. 16 is a diagrammatic view of an exemplary embodiment of a hanger kit as contemplated herein;

FIG. 17 is a top plan view of a first side of the tape measure shown in FIG. 16;

FIG. 18 is a top plan view of a second side of the tape measure shown in FIG. 16; and

FIG. 19 is a top plan view of the chart shown in FIG. 16.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

In one aspect, the present invention concerns hangers which are adapted to be secured to a surface, such as a wall or door, in order to support an object such as a picture, mirror and the like. A particular feature of the exemplary embodiments is to accommodate vertical adjustment to help level or otherwise adjustably position the object relative to the surface. The invention also concerns a kit that may be used to hang such objects.

With reference first to FIG. 1, a first embodiment of an adjustable hanger 10 is shown with this adjustable hanger including a support member 20 and slide member 50 which is sized and adapted to be slidably received by support member 20, as described below. In FIG. 1, support member 20 is shown mounted on a vertical surface 12 so as to support an object, such as picture 14, thereon.
Support member 20 is shown in greater detail in FIGS. 2-4(a). Here, it may be seen that support member 20 includes a base portion 22 having a pair of longitudinal side edges 24, a rear surface 26 and a front surface 28. A longitudinal flange 30 extends longitudinally along each side edge 24 and projects forwardly of base portion 22. To this end, each flange 30 includes a first web 32 that extends generally perpendicularly to base portion 22 and a second web 34 that extends from first web 32 generally parallel to the front surface of base portion 22. As project towards one another, in opposed relation, so as to define a longitudinally extending channel 36. Channel 36 defines a raceway to receive slide member 50, as described below. Accordingly, base portion 22 includes a raceway portion 38 located between flanges 30 and an apron portion 40 located longitudinally of the raceway portion 38. Apron portion 40 is provided with a plurality of holes 42 which can accommodate fasteners, such as nails, screws or the like, to attach support member 20 to the support surface 12. Holes 42 may be formed at an angle “a” to the plane of the base portion 22. The angle may conveniently be in the range of about 30” to 45”.

Slide member 50 is illustrated in FIGS. 5-7(a). Here, it may be seen that slide member 50 includes a flat panel portion 52 that has side edges 54, a back surface 56 and a front surface 58. A hook element 60 is disposed centrally on slide member 50 and projects forwardly of front surface 58. With reference to FIGS. 2-7(a) and with particular reference to FIG. 8, it may be seen that slide member 50 is adapted to be slidably received in the raceway formed by flanges 30 in close fitted engagement to define a mated state illustrated in FIG. 8.

Moreover, it is desired that slide member 50 only slide in one longitudinal direction in channel 36. Accordingly, support member 20 includes first cooperative ratchet structures in the form of teeth 44 disposed on raceway portion 38 of base portion 22. Each tooth 44 includes a ramp surface 46 and a flat support surface 48, with support surfaces 48 being generally perpendicular to front surface 28. Correspondingly, slide member 50 includes second ratchet structures in the form of teeth 62. Each tooth 62 includes a ramp surface 66 and a support surface 68. As is shown in FIGS. 6 and 7, panel portion 52 has a channel like recess 64 formed in back surface 56, and teeth 62 are disposed in this recess. Each ramp surface 66 extends at an acute angle from the bottom of recess 64 to terminate in a common plane with back surface 56, and support surfaces 68 are generally perpendicular to the bottom of the recess.

With reference to FIG. 8, it may be seen that slide member 50 is sized for close fitted engagement in the raceway formed by channel 36 to define a mated state when in the mated state, teeth 62 of slide member 50 engage teeth 44 of support member 20 with support surface 68 of teeth 62 resting on support surface 48 of teeth 44. Teeth 44 and 62 are constructed so that slide member 50 may be selectively advanced in the direction of arrow “A” so that ramp surfaces 46 can slide past each other and with support surfaces 48 and 68 becoming sequentially locked against each other to prohibit opposite longitudinal sliding movement. These ratchet structures may be arranged in increments of approximately 3.2 millimeters, if desired.

Further, in order to facilitate such sliding movement and further to maintain engagement between the teeth, flanges 30 in this exemplary embodiment are formed of a resilient material. Thus, flanges 30 may be configured to apply force to a system engaging teeth 44 and 62. In this embodiment, support member 20 may be formed as an integral one piece molded construction, for example, any suitable plastic material. Thus, base portion 22, flanges 30 and teeth 44 are all an integral unitary member. Similarly, slide member 50 may include integral one piece molding construction so that panel portion 52, hook element 60 and teeth 62 are all an integral unit.

With reference now to FIGS. 4(b) and 7(b), it may be appreciated that the alternative cooperative ratchet structures can be employed to enhance the system depicted in FIGS. 1-4. FIGS. 4(b) and 7(b) are not to scale and are for illustrative purposes only. FIGS. 4(b) and 7(b) depict a similar system to that depicted in FIGS. 1-4, except as otherwise specifically described herein.

A second exemplary embodiment of the present invention is illustrated in FIGS. 9-14. Here, it may be seen that the adjustable hanger again includes a support member 120 and a slide member 150. Support member 120 is constructed similarly to support member 20 so as to include a base portion 122, a pair of side edges 124, a rear surface 126 and a front surface 128. A longitudinally extending flange 130 extends along each side edge 124 so as to form a channel 136 therebetween.

Support member 120 differs from support member 20, however, in that a centrally located longitudinal channel-like recess 137 is formed in base portion 122. Recess 137 is generally parallel to side edges 124. First ratchet structures in the form of teeth 144 are then formed in this recess 137 and extend forwardly thereof to terminate in a common plane with front surface 128. Teeth 144 are similar in construction to teeth 44, described above.

Slide member 150 is constructed similarly to slide member 50 so as to have a panel portion 152, side edges 154, a back surface 156 and a front surface 158. Hook element 160 projects forwardly of panel portion 152 so an object may be hung thereon. In this embodiment, however, there is no recess, such as recess 64 of slide member 50, formed in the back surface of the slide member 150. Rather, teeth 162 are disposed directly on back surface 156 and project rearwardly thereof. Engagement of slide member 150 into the mated state with support member 120 is similar to that described with respect to FIG. 8. Here, however, teeth 162 project into recess 137 so as to engage teeth 144.

FIG. 15 illustrates yet another embodiment of the support member, namely support member 170, which may be employed. Support member 170 is similar to support member 20 but utilizes an adhesive to attach the support member to the support surface. Here, support member 70 includes a base portion 172 provided with flanges, such as flange 174 and first cooperative ratchet structures such as teeth 176. However, apron portion 40 is eliminated. Instead, an adhesive layer, such as a double-sided tape 178, is secured to rear surface 180 of base portion 172. A backing strip 182 is provided to protect adhesive layer 178 until use. When it is desired to use support member 170, the user removes backing strip 182 and simply adheres support member 170 to the support surface.

The present invention also contemplates a kit that is adapted for use in hanging an object, such as a picture, mirror and the like, from an upright support wall.
exemplary embodiment of such a kit is depicted in FIG. 16. Here, kit 200 includes a suitable container 210 that is sized and adapted to receive the components of the kit 200 in the interior 212 thereof. As is illustrated, kit 200 includes a plurality of hangers 214 that are adapted to be secured to the upright support surface. In FIG. 16, each hanger includes a support member 220 and a slider member 250 of any of the type described above. A flexible tape measure 270 and a bubble level 280 may also be included in the kit. In addition, the kit may optionally include a chart 290 and a plurality of flat fasteners 300 with the fasteners 300 adapted to secure the hangers 214 to the upright support wall. Other optional elements may be included in the kit, such as hanger wire 310 and attachment eyelets 320 that are mountable to a picture frame in order to secure the hanger wire. These optional kit items are shown in box 330, and these elements are well known in the art. Naturally, other kit items known in the art of picture hanging could be included in the kit.

As is illustrated in FIG. 19, chart 290 correlates the width 293 of the object to be hung, for instance a picture frame, and the number 294 of hangers 214 to be used with a recommended distance 292 at which the hangers should be spaced. This chart may also be color-coded, such as at 291, whereby the recommended spacings 292 for a given set number of hangers 294, with the recommended spacings in each set being of the same color.

With reference to FIGS. 17 and 18, tape measure 270 has a front side 271 and a back side 272 as shown in FIG. 17. Each such side 271, 272 in this exemplary embodiment includes a ruler or scale 277 for conventional measurements. In addition, on the front side 271 a color-coded scale 273 is provided that corresponds to color coding of chart 290. On front side 271, scale 273 is colored “red” to correspond to the red scale (two hangers) on chart 290. At each of the recommended spacings listed in the chart, an indicator mark 276 is present. Similarly, on the back side 272, there are additional color-coded scales 274 and 275 that correspond to chart 290 for three and four hangers, again with indicator marks 276.

By referencing chart 290 it can be quickly and accurately determined how far to space each hanger on the wall for a given application. For example if the picture frame to be hung is 30 inches wide and the desired number of hangers to be used is three, then by referring to chart 290 the corresponding spacing between hangers is 10 inches. Referencing the appropriate color-coded scale on the tape measure further simplifies installing the hangers and provides a double check by ensuring that the distance matches one of the predetermined indicator marks.

Accordingly, the exemplary embodiments of the present invention have been described with some degree of particularity. It should be appreciated, though, that the modifications or changes may be made to the exemplary embodiments of the present invention without departing from the inventive concepts contained herein.

1 claim:

1. An adjustable hanger adapted to be secured to a surface in order to support an object, comprising:

(A) a support member adapted to be secured to the surface in a mounted state, said support member having a longitudinally extending channel formed therein to define a raceway and including first cooperative ratchet structures formed in the raceway; and

(B) a slide member adapted to be slideably received in the raceway in close-fitted engagement to define a mated state and including second cooperative ratchet structures formed thereon and positioned to engage said first cooperative ratchet structures when in the mated state thereby to permit longitudinal sliding movement of said slide member in a first longitudinal direction and to prohibit longitudinal sliding movement of said slide member in a second longitudinal direction opposite the first longitudinal direction, said slide member including a hook element projecting away from the surface when said support member is in the mounted state with said slide member in the mated state.

2. An adjustable hanger according to claim 1 wherein said support member including a base portion and a pair of longitudinally extending flanges oriented in spaced-apart generally parallel relation to one another on a first side of said support member to form said channel therebetween.

3. An adjustable hanger according to claim 2 wherein each of said flanges includes a first web extending generally perpendicularly to said base portion and a second web extending from said first web generally parallel to said base portion.

4. An adjustable hanger according to claim 2 wherein each of said flanges is located along a longitudinally extending side edge of said base portion.

5. An adjustable hanger according to claim 2 wherein each of said flanges is formed of a stiff yet resilient material and is configured to apply a force to assist in engaging said first and second ratchet structures.

6. An adjustable hanger according to claim 1 wherein said base portion includes a raceway portion oriented between said flanges and an apron portion located longitudinally of said raceway portion, said apron portion adapted to receive fasteners therethrough so that said support member may be secured to the surface in the mounted state.

7. An adjustable hanger according to claim 6 wherein said apron portion has at least one hole therethrough such that at least one fastener may be received therein.

8. An adjustable hanger according to claim 7 wherein said apron portion has a plurality of holes therethrough such that a plurality of fasteners may be respectively received therein.

9. An adjustable hanger according to claim 1 wherein the channel has a bottom surface, said first ratchet structures being located on the bottom surface.

10. An adjustable hanger according to claim 1 wherein said support member and said first ratchet structures are formed as an integral one-piece molded construction.

11. An adjustable hanger according to claim 1 wherein said slide member and said second ratchet structures are formed as an integral one-piece molded construction.

12. An adjustable hanger according to claim 1 wherein said support member has a longitudinal recess formed therein, said first cooperative ratchet structures being located in the recess.

13. An adjustable hanger according to claim 1 wherein said slide member has an elongated recess formed therein, said second cooperative ratchet structures being located in the recess.

14. An adjustable hanger according to claim 1 wherein said ratchet structures are arranged in increments of approximately 3.2 millimeters.

15. An adjustable hanger adapted to be secured to a surface in order to support an object, comprising:
(A) a support member adapted to be secured to the surface in a mounted state and including a longitudinally extending flat base portion having a front surface, a rear surface and a pair of longitudinal edges, said support member including a longitudinally extending flanges extending forwardly from each of said edges, said flanges each including an inwardly turned flange in spaced relation to said base portion such that said base portion and said flanges form a raceway therebetween, said support member including first cooperative ratchet structures extending forwardly of said flat base portion within said raceway; and

(B) a slide member adapted to be slideably received in the raceway in close-fitted engagement with said flanges thereby to define a mated state wherein said flanges confront said slide member, said slide member including second cooperative ratchet structures formed thereon and positioned to engage said first cooperative ratchet structures when in the mated state thereby to permit longitudinal sliding movement of said slide member in a first longitudinal direction and to prohibit longitudinal sliding movement of said slide member in a second longitudinal direction opposite the first longitudinal direction, said slide member including a forwardly projecting hook element when in the mated state.

16. An adjustable hanger according to claim 15 wherein said flanges are formed of a stiff yet resilient material and are configured to apply a force to assist in engaging said first and second ratchet structures.

17. An adjustable hanger according to claim 15 wherein said base portion includes an apron portion located longitudinally of said raceway portion, said apron portion adapted to receive fasteners therethrough so that said support member may be secured to the surface in the mounted state.

18. An adjustable hanger according to claim 17 wherein said apron portion has at least one hole therethrough such that at least one fastener may be received therein.

19. An adjustable hanger according to claim 18 wherein said apron portion has a plurality of holes therethrough such that a plurality of fasteners may be respectively received therein.

20. An adjustable hanger according to claim 15 wherein said support member and said first ratchet structures are formed as an integral one-piece molded construction.

21. An adjustable hanger according to claim 15 wherein said slide member and said second ratchet structures are formed as an integral one-piece molded construction.

22. A hanger kit adapted for use in hanging an object from an upright support wall, comprising:

(A) a plurality of hangers adapted to be secured to the upright support surface, at least some of said hangers including

(1) a support member adapted to be secured to the surface in a mounted state, said support member having a longitudinally extending channel formed therein to define a raceway and including first cooperative ratchet structures formed in the raceway, and

(2) a slide member adapted to be slideably received in the raceway in close-fitted engagement to define a mated state and including second cooperative ratchet structures formed thereon and positioned to engage said first cooperative ratchet structures when in the mated state thereby to permit longitudinal sliding movement of said slide member in a first longitudinal direction and to prohibit longitudinal sliding movement of said slide member in a second longitudinal direction opposite the first longitudinal direction, said slide member including a hook element projecting away from the surface when said support member is in the mounted state with said slide member in the mated state;

(B) a level device; and

(C) a flexible tape measure.

23. A hanger kit according to claim 22 including a plurality of fasteners adapted to secure said support members to the upright support surface.

24. A hanger kit according to claim 22 including a chart correlating the width of the object and at least two sets of differing numbers of hangers to be used with a selected distance at which the hangers in said two sets are to be spaced.

25. A hanger kit according to claim 24 wherein a different color-code is assigned to each of said sets of hangers.

26. A hanger kit according to claim 25 wherein said tape measure includes a first side and an opposite second side wherein said first side has at least one color-coded scale corresponding to one of said sets and wherein said second side includes at least one color-coded scale corresponding to another of said sets.

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