REVERSIBLE WALL-MOUNTED MESSAGE BOARD APPARATUS

Inventors: Ray Jake, Hummelstown, PA (US); Curtis Krazer, III, Easton, PA (US); Jason Swartley, Mechanicsburg, PA (US); Thomas B. Logue, Jacksonville, FL (US); George Angell, Camas, WA (US)

Correspondence Address: ROBERT J. YARBROUGH, ATTORNEY AT LAW 201 NORTH JACKSON STREET MEDIA, PA 19063 (US)

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The Invention is a wall-mounted message board. A frame is rotatable about a first axis of rotation. The first axis of rotation is rotatable about a second axis of rotation that is parallel to the first axis of rotation. The second axis of rotation is fixed generally parallel to a wall. The frame thereby may move from a first position in which a first side of the frame is displayed and a second position in which a second side of the frame is displayed. The second side of the frame may display an artwork and the first side may display a working surface.
REVERSIBLE WALL-MOUNTED MESSAGE BOARD APPARATUS

I. RELATED APPLICATIONS

[0001] This application claims priority from U.S. provisional application No. 60/922,514 filed Apr. 9, 2007.

II. FIELD OF THE INVENTION

[0002] A. Background of the Invention

[0003] The Invention is a reversible, wall-mounted apparatus providing for the alternate display of a working surface such as a whiteboard or a corkboard and a decorative object such as a photograph or artwork. When the apparatus is in a first position, a user has access to the working surface. When the apparatus is in a second position, the working surface is hidden and the user will see only the framed decorative object. The difference in the area of a wall occupied by the apparatus when in the first position and when in the second position is small, allowing a relatively large working surface to occupy a relatively small amount of wall space and to be disguised as a framed artwork when the working surface is not in use.

[0004] B. Description of the Related Art

[0005] Message boards have been developed that disguise all or a part of the message board. For example, U.S. Pat. No. 6,817,124 B1 to Ko issued Nov. 16, 2004 teaches a fabric or web mounted between two rollers to disguise a blackboard or a whiteboard.

[0006] Japanese patent number JP410234542A to Mieko Sakai, publication date Sep. 8, 1998, teaches a frame holding a photograph. A hinged panel is attached to the rear of the frame. When in the closed position, the panel is flush with the back of the frame. When in the open position, the panel may display a message. The panel also acts as a prop to support the frame in the upright position, as on a desktop.

[0007] U.S. Pat. No. 4,828,502 to Leahy issued May 9, 1989 teaches a whiteboard having two frames. One frame is attached to the wall. The second frame is attached to the first frame by a hinge. The second frame rotates about the hinge to reveal the whiteboard. When closed, the second frame becomes a picture frame displaying a picture and disguising the white board.

[0008] U.S. Pat. No. 2,971,277 to Vaillancourt issued Nov. 16, 1959 teaches a wall-mounted blackboard having a slot to receive a panel to disguise the blackboard.

[0009] U.S. Pat. No. 2,092,323 to Myers issued Sep. 7, 1937 teaches a blackboard having a movable panel. When the movable panel is attached, a portion of the blackboard is covered.

[0010] The prior art does not teach the elements of the present invention.

III. SUMMARY OF THE INVENTION

[0011] The Invention features a frame having a front and a back. The back of the frame is configured to support and to display a working surface. As used in this application, the term “working surface” means without limitation a whiteboard, a corkboard, a blackboard, a piece of paper, or the like. The term “whiteboard” means an erasable writing surface suitable for use with conventional ‘dry erase’ or ‘dry wipe’ markers. A ‘dry erase’ or ‘dry wipe’ marker deposits an ink film on the surface of the whiteboard. The ink film dries to a powder that may be erased from the whiteboard by wiping with a cloth or felt eraser.

[0012] The front of the frame is similar in appearance to a conventional frame for an artwork. The front of the frame is configured to display the artwork. As used in this application, the term “artwork” means without limitation any decorative object that a person may wish to use to disguise the apparatus, including a photograph, a print, a painting, a decorative fabric, an electronic display such as an LCD or plasma display, or any other decorative object.

[0013] The frame is rotatable about a first axis between a first position and a second position. The first axis is defined by two frame bearings that are in turn defined by two opposite sides of the frame. In the first position, the back of the frame and the working surface are displayed. In the second position, the front of the frame and the decorative object are displayed.

[0014] A wall bracket is configured to be attached to a wall. The wall bracket defines two wall-bracket bearings. The two wall-bracket bearings define a second axis of rotation that is fixed with respect to the wall. The second axis of rotation is generally parallel to the first axis of rotation. Two links rotatably connect the frame bearings and the wall-bracket bearings. Each of the two links is configured to be rotatable about the second axis of rotation. The first axis of rotation therefore is rotatable about the second axis of rotation.

[0015] To move the apparatus between the first and second positions, the first axis of rotation (and hence the frame) is rotated about the second axis of rotation and away from the wall to which the wall bracket is mounted, the frame, whiteboard, and artwork also are rotated away from the wall. Once the frame, whiteboard and artwork are sufficiently separated from the wall to avoid interference with the wall, the frame may be rotated approximately 180° about the first axis of rotation. The direction of rotation of the first axis of rotation about the second axis of rotation is then reversed, moving the frame approximately into contact with the wall. The movement between the first and second positions now is complete.

[0016] When the apparatus is in the second position, the artwork is visible, the working surface is hidden and the frame appears to be a conventional picture frame. The perimeter of the back of the frame defines an open channel. The open channel, the frame bearings, the two links and the wall bracket are configured so that the two links and the wall bracket are concealed within the open channel when the apparatus is in the second position.

[0017] When the apparatus is in the first position, the working surface is revealed and the artwork is hidden. In the first position of the apparatus, the wall bracket is not concealed within the open channel, but a portion of the two links is located within the open channel. Interference between the two links and the frame is avoided when the apparatus is in the first position by a pair of slots defined by the top side of the frame.

IV. SUMMARY OF THE FIGURES

[0018] FIG. 1 is a partial cutaway of the apparatus when in the first position with the working surface displayed.

[0019] FIG. 2 is a perspective view of the apparatus when the apparatus is being moved between the first and second positions.

[0020] FIG. 3 is a partial cutaway view of the apparatus when in the second position.
FIG. 4 is a perspective view of the apparatus in the second position, with the artwork displayed.

FIG. 5 is a detail cross section of the frame.

FIG. 6 is a detail cross section of the apparatus.

V. DESCRIPTION OF AN EMBODIMENT

FIG. 1 is a partial cutaway perspective view of the apparatus 2 in the first position and mounted on a wall 4. In the first position, a whiteboard 6 is displayed ready for use and is supported by frame 8. A first frame bearing 10 and a corresponding second frame bearing 12 are defined by frame 8 and appear on opposite sides of the frame 8. First frame bearing and second frame bearing 10, 12 together define a first axis of rotation 14.

A wall bracket 16 is configured to be rigidly mounted to wall 4 by conventional means. Wall bracket 16 defines a first wall bracket bearing 18 and a second wall bracket bearing 20. First and second wall bracket bearings 18, 20 together define second axis of rotation 22.

First and second links 24, 26 each has a first end 28 and a second end 30. The first end 28 of each of first and second links 24, 26 is rotatably connected to one of first and second frame bearings 10, 12. The second end 30 of each of first and second links 24, 26 is rotatably connected to one of first and second wall bracket bearings 18, 20.

Because of the rotatable connection of the first and second links 24, 26 to the first and second wall bracket bearings 18, 20, the first axis of rotation 14 can rotate about the second axis of rotation 22. Because of the rotatable connection of the first and second links 24, 26 to the first and second frame bearings 10, 12, the frame 8 can rotate about the first axis of rotation 14.

Two slots appear 32 in frame 8 and prevent the first and second links 24, 26 from interfering with the frame 8 when the frame 8 is in the first position illustrated by FIG. 1.

FIG. 2 illustrates the apparatus 2 in transition between the first and second positions. To move the apparatus from the first to the second position, first and second links 24, 26 are rotated about second axis 22, as indicated by the arrow marked 34 on FIG. 2. Rotating first and second links 24, 26 as shown by arrow 34 moves frame 8 away from wall 4.

Once frame 8 is sufficiently separated from wall 4 to avoid interference with wall 4, frame 8 may be rotated approximately 180° about the first axis of rotation 14. Rotating frame 8 approximately 180° about the first axis of rotation 14 as shown by the arrow 36 will turn the whiteboard 6 and the back side 38 of frame 8 toward the wall 4, exposing front side 40 of frame 8.

Motion of the first and second links 24, 26 around the second axis of rotation 22 then is reversed until back side 38 of frame 8 is substantially parallel to wall 4. Back side 38 is proximal to wall 4 and front side 40 is distal to wall 4 and movement of the apparatus 2 from the first position to the second position is complete.

To move the apparatus from the second position to the first position, the first and second links 24, 26 are rotated about second axis 22 in the direction illustrated by arrow 34 on FIG. 2. Once frame 8 is adequately separated from wall 4 to avoid interference with wall 4, frame 8 is rotated approximately 180° about axis of rotation 14 in a direction opposite to that shown by the arrow marked as item 36 on FIG. 2. Motion of the first and second links 24, 26 around the second axis of rotation 22 then is reversed until front side 40 of frame 8 is substantially parallel and proximal to wall 4. The front side 40 of frame 8 is then proximal to wall 4 and back side 38 is then distal to wall 4 and movement of the apparatus 2 from the second position to the first position is complete.

FIGS. 3 and 4 illustrate the apparatus 2 when the apparatus is in the second position. In the second position, back side 38 of frame 8 is proximal to wall 4 and whiteboard 6 is hidden from view. Front side 40 of frame 8 is distal to wall 4 and is visible to an observer. Frame 8 is configured to frame an artwork 42, such as a print, painting or photograph. The artwork 42 is displayed when the apparatus is in the second position.

From the partial cutaway view of FIG. 3, the back side 38 of frame 8 defines an open channel 44. The open channel 44, wall bracket 16, first and second links 24, 26 and frame bearings 10, 12 are configured so that the wall bracket 16 and first and second links 24, 26 are concealed within the open channel 44 when the apparatus 2 is in the second position.

In the illustrated embodiment where the shape of the frame 8 in plan is a regular rectangle, first axis of rotation 14 must be offset from the midline of the frame 8 to achieve hiding of bracket 16 within open channel 44 when the apparatus 2 is in the second position. If first axis of rotation 14 is not offset, bracket 16 will interfere with the front side 40 of frame 8 when the apparatus is in the second position. The offset must be in the direction of slots 32 shown by FIGS. 1 and 2. As a result, the apparatus 2 occupies somewhat more space on wall 4 when in the first position than when in the second position.

Because the frame 8 rotates around the first axis of rotation 14 when the apparatus 2 is transitioning between the first and second positions, and because first axis of rotation 14 is generally parallel to wall 4, clearance at least equal to the height of the frame 8 must be provided between the apparatus 2 and any object in front of the apparatus, such as another wall or an item of furniture. If adequate clearance is not provided, the apparatus 2 may not be rotated between the first and second positions.

FIG. 5 is a detail cross section of frame 8, showing front side 40, back side 38 and open channel 44.

FIG. 6 is a detail cross section of the frame 8 assembly. Front side 40, back side 38 and open channel 44 of frame 8 are shown. Artwork 42 is retained in frame 8 under clear protective sheet 46, which may be glass, acrylic or any other suitable material. Glass channel 48 holds the clear protective sheet 46 in place. Artwork 42 may be observed through the clear protective sheet 46.

Whiteboard 6 appears on back side 38 of frame 8. Whiteboard 6 is of conventional construction and may be of coated steel or of any suitable material. Whiteboard 6 reinforcing panel 50 is attached to whiteboard 6 and prevents excessive deformation of whiteboard 6 during use. Steel whiteboard 6 is releasably attached to frame 8 by magnetic tape 52. Magnetic tape 52 is attached to frame 8 by adhesive. Of course, any suitable whiteboard 6 material may be used, such as a polymer, and any suitable means may be used for connecting whiteboard 6 to frame 8, such as channels similar to glass channel 48. Other suitable means to connect whiteboard 6 to frame 8 include use of adhesives such as glue or adhesive tape, or fasteners such as a rivets, screws or staples.

In describing the above embodiments of the invention, specific terminology was selected for the sake of clarity. However, the invention is not intended to be limited to the
specific terms so selected, and it is to be understood that each specific term includes all technical equivalents that operate in a similar manner to accomplish a similar purpose.

1. A reversible message board for mounting on a wall, the message board comprising:
   a. A frame, said frame having a front side and a back side;
   b. A first axis of rotation defined by said frame, said frame being configured to rotate about said first axis or rotation between a first frame position and a second frame position.
   c. A second axis of rotation, said second axis of rotation being configured to be fixed in a position generally parallel to the wall, said first axis of rotation being generally parallel to said second axis of rotation, said first axis of rotation being rotatable about said second axis of rotation.
   d. Said frame being configured to display said first side when said second axis of rotation is fixed in said second position generally parallel to the wall and said frame is in said first position, said frame being configured to display said second side when said frame is mounted to the wall and said frame is in said second position.

2. The reversible message board of claim 1, the message board further comprising:
   a. A first link and a second link, each of said first and said second links being elongated, each of said first and said second links defining a first end and a second end, each said first end of each said first and second links being rotatably attached to opposite sides of said frame in a spaced apart relation, each of said first ends of said first and second links being rotatable about said first axis of rotation.
   b. Each of said second ends of each of said first link and said second link being rotatable about said second axis of rotation.

3. The reversible message board of claim 2, the message board further comprising:
   a. Said front side of said frame being configured to display an artwork when said frame is in said second position;
   b. Said back side of said frame being configured to display a working surface when said frame is in said first position.

4. The reversible message board of claim 2, the message board further comprising: a bracket, said bracket being configured to be fixedly mounted to the wall, said bracket defining said second axis of rotation.

5. The reversible message board of claim 4, the message board further comprising:
   a. A first open channel, said first open channel being defined by said back side of said frame, said open channel being generally normal to said first axis of rotation, said open channel being configured to receive said first link when said frame is in said first position;
   b. A second open channel, said second open channel being defined by said back side of said frame, said second open channel being generally normal to said first axis of rotation in a spaced apart relation to said first open channel, said second open channel being configured to receive said second link when said frame is in said first position.

6. The reversible message board of claim 5, the message board further comprising: a first slot and a second slot communicating through said frame, said first link passing through said first slot when said frame is in said first position, said second link passing through said second slot when said frame is in said first position.

7. The reversible message board of claim 6 wherein said first link does not pass through said first slot and said second link does not pass through said second slot when said frame is in said second position.

8. The reversible message board of claim 6, the message board further comprising:
   a. A first frame bearing and a second frame bearing, each of said first frame bearing and said second frame bearing engaging said frame and a one of first link and said second link, said first frame bearing and said second frame bearing in combination defining said first axis of rotation.
   b. A first bracket bearing and a second bracket bearing, said first bracket bearing engaging said bracket and said first link, said second bracket bearing engaging said bracket and said second link, said first and said second bracket bearings in combination defining said second axis of rotation.

9. The reversible message board of claim 3 wherein said working surface is selected from the list consisting of a whiteboard, a corkboard, a blackboard and a piece of paper.

10. The reversible message board of claim 9 wherein said working surface is a whiteboard, said whiteboard being composed of a steel, the apparatus further comprising: a magnetic tape, said magnetic tape being adhesively connected to said second side of said frame, said whiteboard being magnetically connected to said magnetic tape.

11. A reversible message board for mounting on a wall, the message board comprising:
   a. A frame, said frame having a front side and a back side;
   b. A first axis of rotation defined by said frame, said frame being configured to rotate about said first axis or rotation between a first frame position and a second frame position.
   c. A second axis of rotation, said second axis of rotation being configured to be fixed in a position generally parallel to the wall, said first axis of rotation being generally parallel to said second axis of rotation, said first axis of rotation being rotatable about said second axis of rotation.
   d. Said frame being configured to display said first side when said second axis of rotation is fixed in said second position generally parallel to the wall and said frame is in said first position, said frame being configured to display said second side when said frame is mounted to the wall and said frame is in said second position.
   e. A first link and a second link, each of said first and said second links being elongated, each of said first and said second links defining a first end and a second end, each said first end of each said first and second links being rotatably attached to opposite sides of said frame in a spaced apart relation, each of said first ends of said first and second links being rotatable about said first axis of rotation.
   f. Each of said second ends of each of said first link and said second link being rotatable about said second axis of rotation.
   g. A bracket, said bracket being configured to be fixedly mounted to the wall, said bracket defining said second axis of rotation.
12. The reversible message board of claim 4, the message board further comprising:
a. A first open channel, said first open channel being defined by said back side of said frame, said open channel being generally normal to said first axis of rotation, said open channel being configured to receive said first link when said frame is in said second position;
b. A second open channel, said second open channel being defined by said back side of said frame, said second open channel being generally normal to said first axis of rotation in a spaced apart relation to said first open channel, said second open channel being configured to receive said second link when said frame is in said second position;
c. A third open channel, said third open channel being defined by said back side of said frame, said third open channel being located normal to said first and said second open channels, said frame and said third open channel being configured to cover said bracket when said frame is in said second position.

13. The reversible message board of claim 5, the message board further comprising: a first slot and a second slot communicating through said frame, said first link passing through said first slot when said frame is in said first position, said second link passing through said second slot when said frame is in said first position.

14. The reversible message board of claim 6 wherein said first link does not pass through said first slot and said second link does not pass through said second slot when said frame is in said second position.

15. The reversible message board of claim 3 wherein said working surface is a whiteboard.

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