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Signs and wedges

Field of the Invention

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The invention relates generally to signs and wedges. The invention has particular applications in the field of self-standing signs.

Background to the Invention

20 The closest prior art known to the applicant are the applicant's own signs which may be assembled without the need for tools.

Figure 1 shows the prior art as a disassembled sign 2 with display panel 4 and base 6. The base has an elongate aperture 8 in the form of an undulating trench. When assembled, the display panel 4 slots into the elongate aperture 8 of the base 6 and is fixed using a threaded fixing

25 and wing-nut mechanism through hole 10.

Figure 2 also shows the prior art. The fixing mechanism for this sign is a threaded fixing 12 and wing-nut 14 to fix the display panel 4 into the sign base 6. The wing-nut 14 provides a mechanism that can be operated by hand without the need for tools. However, the use of a rotational fixing, and the necessary hand clearance that is needed for actuating that fixing means that the sign base 6 needs to have a large depth to provide appropriate hand clearance for the fixing to be used. Such depth is counter-productive to compact and volume efficient distribution.

Summary of the Invention

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In a first broad independent aspect, the invention provides a sign comprising a base, a display panel and a wedge; whereby said base, said display panel and said wedge are initially disparate units adapted to be assembled into said sign; said display panel incorporating a lower portion with a hole; said base incorporating at least one elongate aperture for receiving said lower portion; whereby when said wedge is placed in said hole, said wedge secures said display panel to said base; said base incorporates a flat surface on both sides of the lower central portion of the display panel in order to facilitate the engagement and disengagement of the wedge; the wedge incorporating a base abutting edge to engage said flat surface and the edge of the hole whereby pivoting of the display panel relative to the base is prevented; the wedge increases in cross-section along its length, and is so adapted to draw the display panel downwards into the aperture of the base when it is inserted into the hole of the lower portion.

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This configuration provides an intuitive and quick approach to assembling a sign without the need for tools. The use of a wedge allows the depth of the sign base to be reduced as less hand clearance is needed to actuate the fixing. As a result, more compact and volume efficient distribution of the sign can be achieved. This would have further advantages for large volume transportation of disassembled signs.

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Preferably, said base and wedge consist of a non-corrosive material. This prevents potential corrosion due to rain water, humidity or the like which are frequently present in the base of signs.

03 01 20

Preferably, said elongate aperture is in the form of an undulating trench. This configuration facilitates the use of moulding techniques which are ideally suited for consistent mass production. It also provides an advantageous lower portion support structure.

5 Preferably, said hole is rectangular. This configuration provides the advantage of enabling reduced pivot motion between the panel and the base.

Preferably, said wedge comprises a number of skids on its base abutting edge to facilitate movement into and out of its fixing position. This configuration provides the assembler with the advantage of easily engaging or disengaging the wedge from the sign as the skids provide the wedge with less friction against the surface on which it is being engaged or disengaged.

10 Preferably, said wedge comprises a barbed region which, under pressure from a user, may facilitate disengagement of said wedge from said hole and base. The barbed region of the wedge provides the advantage of an effective fixing position as an assembler pushes the wedge into the panel hole. This configuration also provides the advantage of effectively disengaging the wedge from the display panel and base for quick and efficient disassembly of the sign.

15 Preferably, said wedge comprises a rear protruding lip. This configuration provides the advantage of intuitive engagement and disengagement of the wedge.

~~Preferably, said base comprises a flat surface located on its underside on either side of said lower portion of said display panel in order to facilitate the engagement and disengagement of said wedge. This configuration provides the advantage of an intuitive and effective way to fix the wedge into said display panel hole and base.~~

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25 In a subsidiary aspect, the wedge incorporates an engagement tapered surface with a cantilevered abutment arm. This configuration is particularly advantageous in allowing the wedge to be released from an engagement mode of use. The releasable properties of the wedge are also particularly intuitive and straightforward to actuate. Any improvement to a long-established device such as a wedge is particularly non-obvious since had it been obvious it would have been already proposed.

In a subsidiary aspect, said abutment arm incorporates a barbed or serrated region. This improves the level of secure holding of the wedge in position.

In a further subsidiary aspect, said cantilevered abutment arm is flanked by barbed or serrated portions of the engagement surface. This further improves the level of secure holding of the wedge in position.

5 Preferably, said arm incorporates a protruding lip at its distal extremity. This allows the arm to be more straightforwardly released from its position of engagement with an object.

In a further subsidiary aspect, the slope of said arm is steeper than the slope of said tapered surface. This allows the arm to be the primary point of engagement whilst the tapered surface may also serve as an engagement surface albeit a secondary engagement surface.

10 Preferably, the wedge further comprises a recess into which said arm may retract under pressure. This provides a particularly efficient and compact structure.

Preferably, the wedge incorporates a rear most portion with an upwardly projecting lip. This provides an extended finger/thumb engagement surface and potential a shield for other parts of the wedge.

15 Preferably, the wedge incorporates a rear most portion with a rearwardly projecting lip. This provides an increased surface for the lodging of an operator's finger or thumb.

Preferably, the underside of the wedge incorporates two rails or sliders. This configuration facilitates an improved push-fit and release function.

Brief Description of the Figures

20 Figure 1 is a perspective view showing the prior art.

Figure 2 is a view from beneath the prior art showing the wing-nut fixing mechanism.

Figure 3 is a view showing insertion of the display panel into the base.

Figure 4 is a view from beneath a sign embodying the current invention.

25 Figure 5 is a view from beneath of the current invention highlighting the wedge and hole of the lower portion of the display panel.

Figure 6 is a view from beneath the current invention. The wedge is engaged with the hole of the lower portion of the display panel.

Figure 7a is a cross section of the base and display panel.

Figure 7b is a close-up cross section of the panel mounting.

Figure 8 is a perspective view of the wedge with a barbed region and rear protruding lip.

Figure 9a is a side view of the wedge when engaging.

5 Figure 9b is a side view of the wedge when disengaging.

Detailed Description of Figures 3 to 9

Figure 3 shows an embodiment of the invention, a sign 20 comprising a display panel 22, preferably of aluminium, with a lower portion 24 incorporating a hole 26, and a base 28
 10 preferably of recycled plastics material such as PVC, for receiving the lower portion of the display panel. The display panel 22 may be of a substantially rectangular shape. The display panel incorporates a hole 26 for the wedge, located at the centre of the lower portion, as well as additional holes 30 and 32, at the periphery of the lower portion. Hole 26 is preferably of rectangular shape in order to provide a close contact push-fit surface for a similarly shaped
 15 wedge (when viewed in cross section). The lower portion is defined by a narrowing of the display panel at each edge. In other words, both bottom corners of the panel incorporate substantially rectangular portions or cut-out portions. It can be seen how the lower portion 24 of the display panel is received by the elongate aperture 34 of the base; the aperture of the base being in the form of an undulating trench. Preferably, the undulating trench incorporates
 20 an upper rounded edge to facilitate the ready insertion of the bottom portion of the panel. As the lower portion of the display panel slots into the elongate aperture of the base, the wedge may be inserted through the hole 26 of the lower portion 24 to secure it to the base. The base forms a relatively shallow structure, providing the sign with a low centre of gravity in order to increase its stability. The base may preferably be rounded at its perimeter.

25 Figure 4 illustrates the insertion of the wedge 36 into the hole 26 of the lower portion of the display panel 22 once the display panel has been inserted into the base. The base 28 incorporates a peripheral rim 38. A number of protruding circular bodies, such as 40, are situated along the peripheral rim, which contact the ground. A first 42 and second 44 arm extend from the peripheral rim into the centre of the base, separated by an opening which
 30 allows the hole of the lower portion of the display panel to be accessed. A wall 46, which may

preferably be oval in plan view, is located and recessed at the centre of the base. Inside wall 46 is an oval portion 48 further recessed into the base body. Located between the oval portion 48 and the oval wall 46 are a number of triangular fins, such as 50, arranged to strengthen the base. Extending between the peripheral rim 38 and wall 46 are a number of radial fins, such as fin 52. Between each radial fin extends an additional fin, such as fin 54. Each fin is arranged to strengthen the base. Apertures, such as 56, between the fins reduce the amount of material used to make the base and therefore reduce its overall weight which due to the thickness of the base will already be substantial. Portion 48 of the base incorporates a flat surface 58 located on its underside on either side of the lower portion 24 of the display unit in order to facilitate the engagement and disengagement of the wedge. Additionally, the flat surface incorporates rails 60, 62, 64 and 66 which guide the wedge into the hole of the lower portion 24 of the display panel. The rails also prevent the wedge from displacing laterally. As the wedge is inserted, a number of skids 68 on the surface abutting edge of the wedge may facilitate its insertion by reducing the amount of friction against this surface. A rear protruding lip 70 is also present to facilitate the handling and engagement of the wedge by a user.

Figure 5 shows the hole 26 of the lower portion of the display panel in which the wedge 36 is inserted. The base incorporates a flat surface 58 located on its underside on either side of the lower portion of the display unit in order to facilitate the engagement and disengagement of the wedge. The wedge is inserted between rails 60, 62, 64 and 66 with its barbed region 72 facing away from the base. The hole of the lower portion of the display panel is rectangular in order to match the wedge shape and thus restrict pivoting of the display panel around the base. The wedge 36 incorporates a sloped angled region 74 at its rear for placement of a users' thumb or finger in order to push the wedge into its fixed position. As the wedge is inserted into the hole of the lower portion 24 of the display panel, the barbed region 72 of the wedge contacts the edge of the hole 26. As the wedge is further inserted, the barbed region retracts as the cross section of the wedge increases. Due to this cross section, insertion of the wedge pulls the display panel down into the base until secure.

Figure 6 shows the wedge 36 when securely inserted into the hole 26 of the lower portion of the display panel between rails 60, 62, 64 and 66. When engaged the wedge fits into the hole of the lower portion of the display panel so that the display panel is secured to the base of the sign. The barbed region 72 of the wedge prevents the wedge from moving backwards unless it is being disengaged in the proper manner by a user. As little hand clearance is required for use

of the wedge fixing, the base of the sign may have a low depth and low centre of gravity reducing the possibility of the sign falling due to wind or other forces.

Figure 7a shows a cross sectional view of the sign when assembled. Pressure is applied to the sloped angled region of the wedge 74 in order to insert it into the hole of the display panel.

5 The skids 68 on the surface abutting edge of the wedge facilitate its movement against the base into the hole. The insertion of the wedge into the hole of the lower portion of the display panel draws the display panel in a downwards direction, further into the elongate aperture 34 of the base, in order to secure the display panel 22 to the base 28. Little to no pivot of the display panel around the base is achieved due to the flat abutting edge of the wedge, rather
10 than the rounded edge of screws incorporated in the prior art. Protruding circular bodies, such as 40 located on the peripheral rim 38 of the base contact the ground.

Figure 7b shows the wedge 36 securing the display panel 22 to the base 28 of the sign. The barbed region 72 or serrated region of the wedge prevents any undesirable disassembly of the sign, as the wedge cannot be withdrawn unless the rear protruding lip 70 is utilised by a user.

15 If a user applies pressure to the rear protruding lip of the wedge, the barbed region disengages from the edge of the hole of the display panel. The wedge can then be withdrawn from the hole and the sign may be disassembled.

Figure 8 shows a wedge 36 incorporating two opposite side walls, 76 and 78, with increasing cross section. The bottom surface incorporates two skids 68 extending along the length of the wedge. The rear end of the wedge incorporates a sloped angled region 74 for a user to place his thumb or finger when inserting the wedge into the hole of the display panel. The top surface of the wedge incorporates undulating support regions, 80 and 82, on either side of the top surface, and a central barbed or serrated region 72 which contacts the edge of the hole of the display panel. The central barbed region 72 is flexibly attached to the front of the wedge
20 84 in order for it to recess into the wedge when it makes contact with the edge of the hole of the display panel and the cross section of the wedge increases. The cross section of the wedge increases so that as it is inserted into the hole of the lower portion of the display panel the display panel is drawn further downwards into the aperture of the base. Each barb of the barbed region incorporates a sloping face, such as 86, which engages the edge of the hole of
25 the lower portion of the display panel when the wedge is inserted, and a vertically flat face, such as 88, which prevents movement of the wedge against the edge of the hole if the wedge is moved backwards. The barbed region of the wedge prevents the wedge from disengaging without the intention to do so. When a user intends to dismantle the sign, pressure is put on
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the rear protruding lip 70 of the wedge. The barbed region 72 of the wedge subsequently retracts into the body of the wedge so that there is no friction against the hole of the lower portion 24 of the display panel. The wedge may then be withdrawn from the hole of the lower portion of the display panel and the sign may be disassembled.

5 Figure 9a shows the wedge 36 when engaging with the hole of the lower portion of the display panel. The barbed region 72 of the wedge engages with the edge of the hole of the lower portion of the display panel in order to prevent it from improperly disengaging. Skids 68 on the surface abutting edge of the wedge facilitate its movement against the base when engaging the hole of the lower portion 24 of the display panel. A user may apply pressure to
10 the sloped angled region 74 at the rear of the wedge in order to secure it in its fixed position. Support regions, such as 82, on each side of the top surface of the wedge are undulated or serrated in shape to match the shape of the barbed region so that the entire width of the wedge may make contact with the edge of the hole of the display panel when the wedge is in its fixed position.

15 Figure 9b shows the wedge 36 when disengaging from the hole of the lower portion of the display panel. Pressure from the user on the rear protruding lip 70 of the wedge retracts the central barbed region 72 into the body of the wedge so that the wedge can be removed from the hole of the lower portion of the display panel. The sign can then be disassembled. Skids 68 on the surface abutting edge of the wedge facilitate its movement against the base when
20 disengaging from the hole of the lower portion 24 of the display panel. A user may put his thumb in the sloped angled region 74 at the rear of the wedge and a finger on the rear protruding lip 70 to facilitate pulling of the wedge from the hole of the display panel.

25 The description also envisages that the wedge described in combination with a display panel may be used on other signs or for other fastening mechanisms when inserted in an appropriate hole or space of a structure.

03 01 20

Claims

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1. A sign comprising a base, a display panel and a wedge; whereby said base, said display panel and said wedge are initially disparate units adapted to be assembled into said sign; said display panel incorporating a lower portion with a hole; said base incorporating at least one elongate aperture for receiving said lower portion; ~~whereby when said wedge is placed in said hole, said wedge secures said display panel to said base~~ said base incorporates a flat surface on both sides of the lower central portion of the display panel in order to facilitate the engagement and disengagement of the wedge; the wedge incorporating a base abutting edge to engage said flat surface and the edge of the hole whereby pivoting of the display panel relative to the base is prevented; the wedge increases in cross-section along its length, and is so adapted to draw the display panel downwards into the aperture of the base when it is inserted into the hole of the lower portion.
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2. A sign according to claim 1, wherein said base and wedge consist of a non-corrosive material.
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3. A sign according to either claim 1 or claim 2, wherein said elongate aperture is in the form of an undulating trench.
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4. A sign according to any of the preceding claims, wherein said hole is rectangular.
5. A sign according to any of the preceding claims, wherein said wedge comprises a number of skids on its base abutting edge to facilitate movement into and out of its fixing position.
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6. A sign according to any of the preceding claims, wherein said wedge comprises a barbed region which, under pressure from a user, may facilitate disengagement of said wedge from said hole and base.
7. A sign according to any of the preceding claims, wherein said wedge comprises a rear protruding lip.

03 01 20

~~8. A sign according to any of the preceding claims, wherein said base comprises a flat surface located on its underside on either side of said lower portion of said display unit in order to facilitate the engagement and disengagement of said wedge.~~

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~~9. A sign substantially as hereinbefore described and/or illustrated in any appropriate combination of the accompanying text and/or figures.~~

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03 01 20