

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 074 204 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.02.2001 Bulletin 2001/06

(51) Int. Cl.⁷: **A47G 1/16**

(21) Application number: **00306586.9**

(22) Date of filing: **02.08.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **06.08.1999 GB 9918475**

(71) Applicant: **Dobson, Leonard Allen
Quorn, Leicestershire LE12 8 EU (GB)**

(72) Inventor: **Dobson, Leonard Allen
Quorn, Leicestershire LE12 8 EU (GB)**

(74) Representative:
**Stagg, Diana Christine et al
Lewis & Taylor,
144 New Walk
Leicester LE1 7JA (GB)**

(54) **Wall fixing**

(57) A wall fixing device for the mounting of an item such as a picture on a substrate such as a wall comprises a pair of cooperating elongate members (1). The members (1) are of identical cross-section, each having a generally planar attachment portion (10) adapted for attachment to the substrate or the item respectively, and a generally planar engagement portion (20) cranked from the attachment portion (10). The arrangement is such that with the attachment portion (10) of one member (1) affixed to the substrate with its engagement portion (20) upstanding and spaced from the substrate, and with the attachment portion (10) of the other member (1) attached to the item with its engagement portion (20) depending downwardly, the respective engagement portions (20) can be engaged to retain the item on the substrate.

EP 1 074 204 A1

Description

[0001] This invention relates to a wall fixing device, in particular to a device suitable for the mounting of pictures or other items to the surface of a wall.

[0002] Pictures are commonly hung on walls by means of nails driven into the wall or, more satisfactorily, on picture hooks which are in turn fixed by means of nails driven into the wall. A wire or cord is attached to opposite sides of the picture frame and suspended at its centre on the nail or picture hook. Such approaches suffer from a number of disadvantages. For instance, the wire or cord must be attached to the frame each side at precisely the same distance from the top of the frame. Also, and most importantly, the nails which must necessarily be driven into the wall damage the wall covering and often the plaster finish. So long as the picture is present this is of course not a problem, since the nail is obscured by the picture. However, if the arrangement of pictures on the wall is changed the damage to the wall covering may become visible.

[0003] These approaches also suffer difficulties in retaining level hanging and in obtaining accurate groupings of objects. Apart from changing the length of the wire or cord no positional adjustment is available and the object always hangs away from the wall at its top edge.

[0004] Systems for hanging pictures or the like are also known which employ elongated strips fixed to the back of the picture and/or to the wall. One example of such a system is disclosed in US-A-4530482. Systems of this type, whilst they may mitigate some of the disadvantages of the basic arrangement of nails etc. nonetheless present disadvantages of their own. For instance, they employ two different components which cooperate in a male/female type engagement. This means, for instance, that there is a potential for misuse of the system and that the two components cannot be cut to appropriate lengths from a single strip, leading to potential wastage and added expense.

[0005] There has now been devised a wall fixing device which overcomes or substantially mitigates the above-mentioned and/or other disadvantages of the prior art.

[0006] According to the invention, there is provided a wall fixing device for the mounting of an item such as a picture on a substrate such as a wall, which device comprises a pair of cooperating elongate members, said members being of identical cross-section, each of said members having a generally planar attachment portion adapted for attachment to the substrate or the item respectively, and a generally planar engagement portion cranked from said attachment portion, the arrangement being such that with the attachment portion of one of said members affixed to the substrate with the engagement portion thereof upstanding and spaced from the substrate, and with the attachment portion of the other of said members attached to the item with the

engagement portion thereof depending downwardly, the respective engagement portions can be engaged to retain the item on the substrate.

[0007] The device according to the invention is advantageous primarily in that it provides secure fixing of the item on the substrate, and greatly facilitates accurate positioning of the item. Because the attachment portions of the elongate members contact the substrate and item respectively over a relatively large surface area it is possible for them to be attached by means of adhesive which, with the use of suitably formulated adhesive, enables the device to be used in a manner which does not damage the surface of the substrate and can be removed or repositioned if required. The device is also relatively inexpensive to produce and, with wholly adhesive fixing, needs no tools and is easy to use by virtually anyone. The device can also be used to mount items on non-vertical substrates such as sloping ceilings.

[0008] The elongate members are most conveniently produced by extrusion in a plastics material. The elongate members may be produced in oversize lengths which may then be snapped or cut to suitable sizes to suit the particular item to be fixed to the substrate. Typically, for instance, the elongate members may be produced in lengths of, say, 1m. Other manufacturing methods may alternatively be used where appropriate, eg moulding or vacuum forming.

[0009] Because the cooperating elongate members are of identical cross-section, they may be cut or otherwise obtained from the same length of extruded material, one piece being simply inverted relative to the other for use.

[0010] The attachment portions of the elongate members are preferably formed with extensions disposed parallel to the engagement portions so as to define channels between the extension and the engagement portion within which the tip of the other engagement portion is received in use.

[0011] The attachment portions of the elongate members are preferably formed with apertures spaced along the elongate members to facilitate the use of screws or the like to fix the respective elongate member to the substrate or the item. Such apertures are preferably shaped in such a way that fine adjustment of the position of the elongate member is possible, eg to achieve a perfectly horizontal orientation. The apertures may therefore be elongated, ie they may take the form of slots, and more preferably may be slotted in two dimensions (eg in an L-shaped or +-shaped configuration). Where the elongate members are produced by extrusion, the apertures are conveniently punched in the extruded profile in a second manufacturing operation. The apertures enable the device to be mechanically fixed in situations where wall coverings are too fragile for adhesive connection, or where levelling adjustment is sought, or where the object to be fixed is unusually heavy.

[0012] Although most preferably and commonly produced in plastics material, the elongate members may alternatively be manufactured in metal, wood, card or any other material with mechanical properties suitable for any particular application, including the attachment of very heavy or light objects.

[0013] In the application for which the device of the invention is specifically intended, viz the hanging of pictures and the like on walls, it may be that only two relatively short lengths of elongate member may be needed, one being attached to the wall and the other being attached centrally to the head of the picture frame. However, it is generally preferred that lengths of elongate member be used which are of substantially the same width as the picture frame. This allows one member to be attached to the head and/or the top of the sides of the picture frame and greatly facilitates perfectly horizontal positioning of the picture. The member attached to the wall may conveniently be of somewhat reduced length, so as to permit some horizontal adjustment in the position of the picture without exposing the member attached to the wall. Adhesive attachment to the substrate combined with mechanical attachment to the object therefore permits a complete range of horizontal, vertical and level adjustments to single items and groups without damage to wall surfaces.

[0014] The invention will now be described in greater detail, by way of illustration only, with reference to the accompanying drawings, in which

Figure 1 is a front view of a picture hanging profile according to the invention;

Figure 2 is an end view of the profile of Figure 1;

Figure 3 is a perspective view from behind of a pair of profiles of Figure 1 in use;

Figure 4 is a side view of the assembly of Figure 4; and

Figure 5 is a view similar to Figure 4 of an assembly fixed to a wall by adhesive.

[0015] Referring first to Figure 1, a picture hanging profile is generally designated 1 and is extruded in thermoplastic material as a continuous strip. The profile 1, suitable for the majority of applications, has an overall width of approximately 30mm and a thickness of approximately 1.5mm. The profile 1 may be produced in any convenient length, lengths of approximately 1m being particularly suitable. As can best be seen from Figure 2, the profile 1 is cranked to define two planar portions, the first of which 10 is approximately 15mm in width, and the second of which 20 is approximately 10mm in width. The wider 10 of the two planar portions 10,20 is perforated by a regular series of L-shaped apertures 15 which are punched in the profile following

extrusion.

[0016] Score marks (not shown) to facilitate snapping of the profile at appropriate lengths are formed at 150mm centres.

5 **[0017]** The cranked offset depth exceeds the thickness of the material by approximately 50-100% in order to facilitate fixing. The angle of the crank is designed to cause the two sections, when brought together, to close up bringing the two sections to a fixed distance apart and enabling standardised spacing buffers to be used to bring the object parallel to the wall, as described below.

10 **[0018]** As shown in Figures 3 and 4, the profile 1 can be used to hang a picture 50 in the following manner. First, two pieces of the profile 1 are snapped or cut from one or more longer lengths. A first piece 1a has a length equal to the width of the picture 50. The second piece 1b is somewhat shorter in length. The shorter piece 1b is then mounted on the wall, the wider planar portion 10b of the profile 1b being pressed against the wall at the desired position, with the narrower planar portion 20b upstanding. This piece of profile 1b is then fixed to the wall, eg using adhesive or (particularly for heavy loads) nails or screws 5 (omitted from Figure 3 for clarity) passed through two or more of the L-shaped apertures 15. If necessary, wall plugs (not shown) are inserted into bores in the wall, in conventional manner. Where the piece 1b is mechanically fixed, the shape of the apertures 15 permits precise adjustment of the position of the piece of profile 1b so that it is fixed perfectly horizontal on the wall. For most applications, it may be most convenient to attach the piece of profile 1b using adhesive.

30 **[0019]** The longer piece of profile 1a is then fitted to the back of the picture 50, the wider planar portion 10a of the profile 1a being pressed against the picture 50, with the narrower planar portion 20a depending downwards, ie this piece of profile 1a is inverted relative to the other 1b. The piece of profile 1a is again fixed in a horizontal orientation. This may be achieved particularly easily by aligning the upper edge of the profile 1a with the upper edge of the picture 50, as illustrated. It is expected that, in most cases, the profile 1a will be fixed with screws 6 and just below the top of the object in order to enable simple horizontal adjustment if the profile 1b has been attached to the wall somewhat out of true.

45 **[0020]** Once the two pieces of profile 1a,1b have been positioned as described, the picture 50 is mounted on the wall by engaging the downwardly-projecting narrower portion 20a of the profile 1a attached to the picture 50 behind the upstanding portion 20b of the profile 1b attached to the wall (see Figure 4). The free edge of the narrower portion 10a of the profile 1a has a rounded chamfer so as to minimise the risk of damage to the wall covering as the two profiles 1a,1b engage, to ease that engagement, and to facilitate tightening of the joint as full engagement is reached. The engagement of these two components 1a,1b across substantially the whole

width of the picture 50 gives a secure and perfectly horizontal positioning of the picture 50. In order to counteract a slight extra turning effect that may occur when fixing is by means of adhesive pads (as described below), additional locking lugs 7 are formed near the cranked part of each profile 1. The lugs 7 constitute short extensions of the planar portions 10a,10b which are fixed to the picture 50 and the wall respectively such that the tip of one of the other planar portions 20a,20b is received in the shallow channel between the lug 7 and the other one of the other planar portions 20a,20b. This provides further stability to the seated joint between the two profiles. Because the profile 1b attached to the wall is somewhat shorter than the width of the picture 50 some adjustment of the horizontal position of the picture 50 is possible without exposing the ends of the profile 1b.

[0021] Once in optimum position and in order to maintain the picture 50 perfectly upright and parallel to the plane of the wall, spacers 40 may be affixed to the back of the picture 50 near its bottom edge. Such spacers 40 are preferably of relatively soft material which will not stain or otherwise mark the wall at the points at which they contact it. The spacers 40 may be supplied with a self adhesive surface which can be pressed into engagement with the back of the picture 50.

[0022] As shown in Figures 3 and 4, the two lengths of profile 1 are affixed respectively to the picture 50 and the wall using round-headed screws 5,6. Whilst this is perfectly feasible, the large area of contact between the profile 1a,1b (specifically the wider portion 10a,10b of each profile) and its respective substrate (the wall in one case and the picture 50 in the other) means that it is also possible to use adhesive mounting. Such mounting may offer the advantage that it avoids any permanent damage to the wall or its decorative surface. Adhesives have been developed which, whilst they can hold objects securely can subsequently be removed with little or no damage to the underlying substrate. One such adhesive is that sold under the trade mark COMMAND by 3M (3M Construction and Home Improvement Markets Division, 3M Center, Building 223-4S-02, St Paul, MN 55144-1000, USA). Such material is produced as double-sided adhesive pads and can bear loads of approximately 3lbs/in² (approximately 0.2kg/cm²). Thus, a profile attached to a wall using three such pads, each having a contact area of say 2cm², would be able to bear a load of some 1.2kg. Figure 5 is a view similar to Figure 4 but showing the profile 1b affixed to the wall in such a manner. Three adhesive pads 60 (only one of which is visible in Figure 5) are used to fix the profile 1b in position. These pads 60 can be released from the wall by stretching the adhesive downwards. A tab 61 is provided to facilitate this operation in accordance with the manufacturer's instructions.

[0023] In Figure 5, the profile 1a is shown fixed to the picture 50 in the same manner as in the embodiment of Figures 3 and 4, ie by screws 6. Adhesive could

also be used in place of these screws but in general there is less incentive or benefit in doing so since minor damage to the rear of the picture frame is generally of no significance, and mechanical fixing enables adjustment for level.

Claims

1. A wall fixing device for the mounting of an item such as a picture on a substrate such as a wall, which device comprises a pair of cooperating elongate members, said members being of identical cross-section, each of said members having a generally planar attachment portion adapted for attachment to the substrate or the item respectively, and a generally planar engagement portion cranked from said attachment portion, the arrangement being such that with the attachment portion of one of said members affixed to the substrate with the engagement portion thereof upstanding and spaced from the substrate, and with the attachment portion of the other of said members attached to the item with the engagement portion thereof depending downwards, the respective engagement portions can be engaged to retain the item on the substrate.
2. A device as claimed in Claim 1, wherein the elongate members are produced by extrusion in a plastics material.
3. A device as claimed in Claim 1 or Claim 2, wherein the attachment portions of the elongate members are formed with extensions disposed parallel to the engagement portions so as to define channels between the extension and the engagement portion within which the tip of the other engagement portion is received in use.
4. A device as claimed in any preceding claim, wherein the attachment portions of the elongate members are formed with apertures spaced along the elongate members to facilitate the use of screws or the like to fix the respective elongate member to the substrate or the item.
5. A device as claimed in Claim 4, wherein the apertures are elongated.
6. A device as claimed in Claim 5, wherein the apertures are slotted in two dimensions, in an L-shaped or +-shaped configuration.
7. A device as claimed in any preceding claim, wherein the attachment portion of one or both of the elongate members is attached to the substrate and/or the item respectively by means of adhesive.
8. A device as claimed in Claim 7, wherein the adhe-

sive is in the form of double-sided self-adhesive pads.

5

10

15

20

25

30

35

40

45

50

55

5

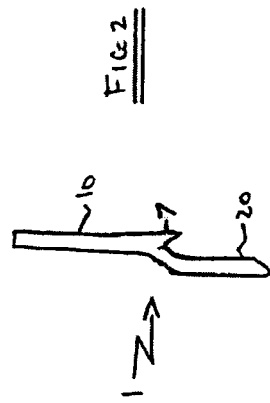
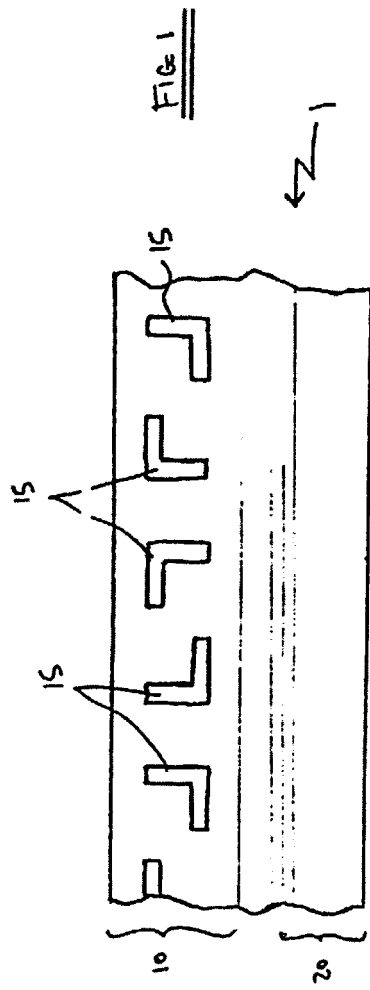


Fig 5

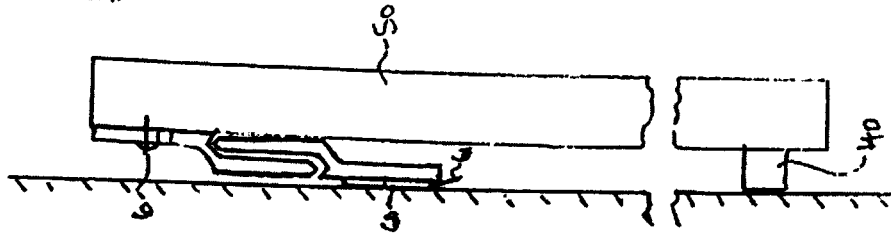


Fig 6

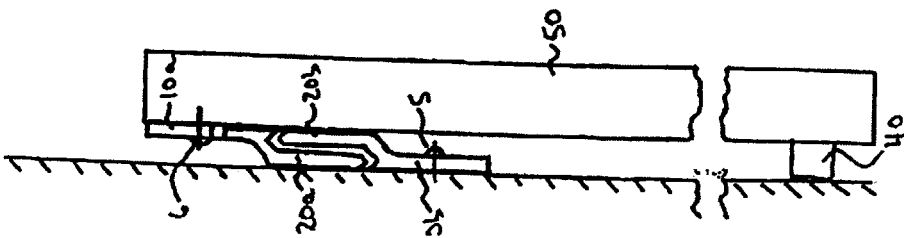
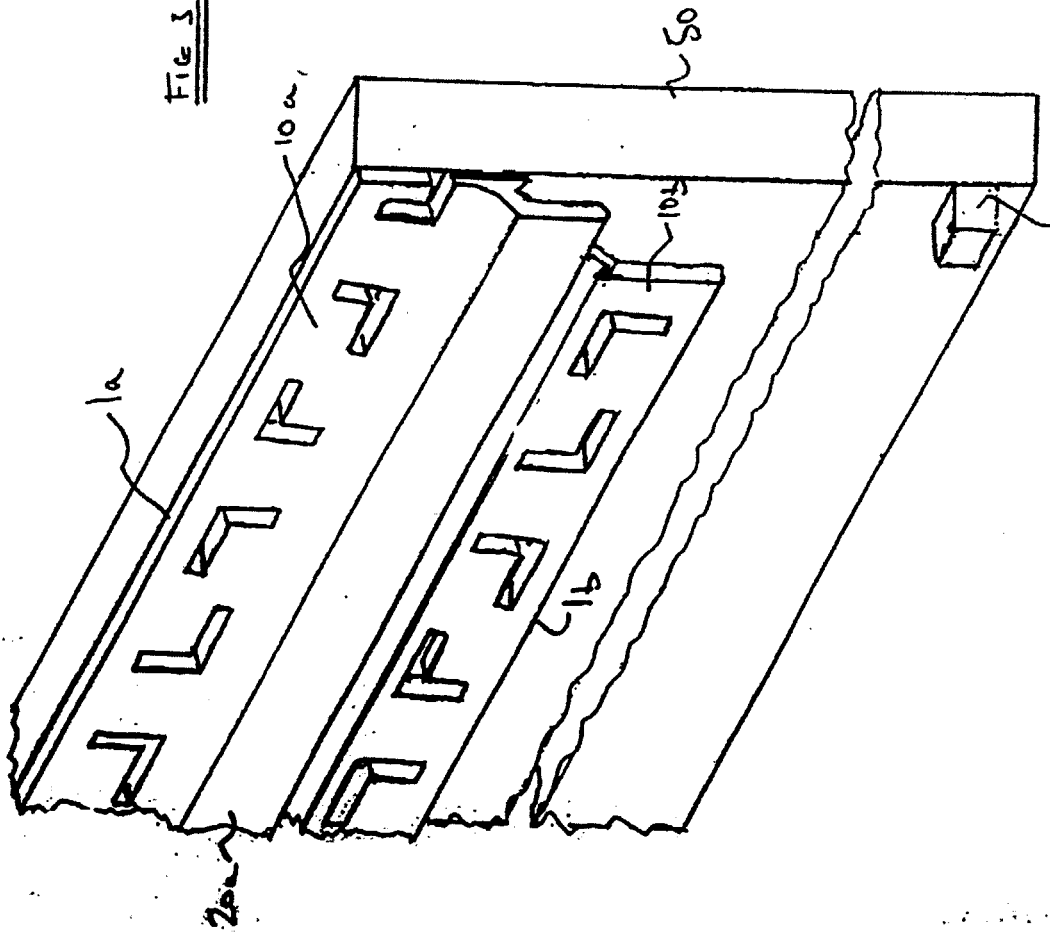


Fig 3





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 00 30 6586

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)
X	FR 2 606 844 A (RICHARD) 20 May 1988 (1988-05-20) * page 1, line 16 - line 23; figures * ----	1-3,7,8	A47G1/16
X	US 1 908 200 A (WEBSTER) 9 May 1933 (1933-05-09) * figures * ----	1,4	
Y		5,6	
Y	FR 2 121 947 A (MOINE) 25 August 1972 (1972-08-25) * figures 2,3 * -----	5,6	
			TECHNICAL FIELDS SEARCHED (Int.CI.7)
			A47G
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		24 November 2000	Beugelling, G.L.H.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03 92 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 30 6586

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-11-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2606844 A	20-05-1988	NONE	
US 1908200 A	09-05-1933	NONE	
FR 2121947 A	25-08-1972	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82