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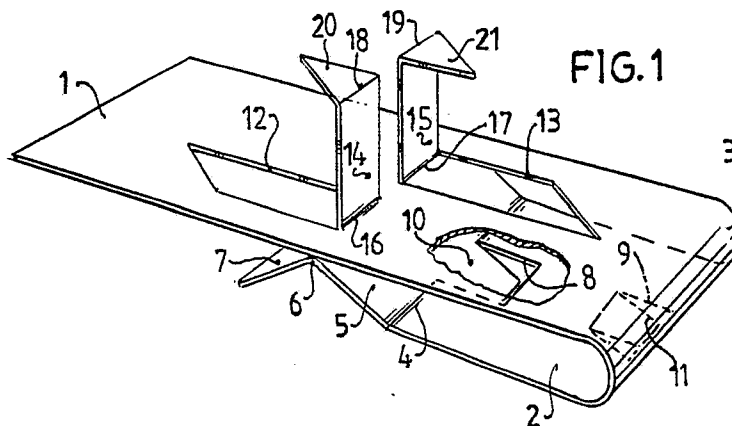
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**Clip for plaster boards.**

A clip for attachment of flat boards on thin walled profiles is disclosed, which clip comprises an outer strip (1) and an inner strip (2), mutually connected by a folded back (3). The inner strip (2) is provided with a cam. By the spring force of the folded back (3), the cam is urged towards the outer strip (1), allowing the clip to be attached to a thin walled profile. In the inner strip (2) two U-shaped cuts (8,9) have been provided. In the outer strip (1) two cuts 12, 13) have been provided, which are folded so that the attaching lips (14, 15) for the plates to be attached are provided. These plates are to be located between the lips (14, 15) and the outer strip (1).



**EP 0 373 727 A1**

## CLIP FOR PLASTER BOARDS

The present invention relates to attachment material for the attachment of flat boards on thin walled profiles.

For the attachment of flat profiles, for instance plaster boards on thin walled steel profiles, often use is made of tapping screws, which have to be provided on regular intervals, after which these selftapping screws are screwed into holes, and this screw drills itself a hole into the wall of the thin walled profile by its sharp point. Thus a connection is obtained between the plaster board and the thin walled profile.

For attachment of the boards, the plaster boards have to be located in their correct positions, after which the screws have to be screwed into the plaster boards. This last action especially requires a substantial amount of effort.

Besides the danger exists that the plaster board is damaged. The screwing tools used therewith produce a lot of noise nuisance.

The aim of the present invention is to provide a means of attachment for flat boards unto thin walled profiles, in which the disadvantages mentioned above are avoided.

This aim is reached by a clip for attaching at least one flat board onto a thin walled profile, comprising: clamping means for attaching the clip to said profile, and means for fixation of the board.

By providing this clip, the action of turning in the screws is avoided. This is replaced by only the action of locating the clips onto the right spots onto the profile, and the positioning of the plaster boards, after which the clips can be pressed on and the plaster boards are fixated. It is expected that, in connection with a reduction of weight, in the future plaster boards with a width of 60 cm will often be used. The disadvantages of the prior art connection by means of screws will be emphasized by this, so that it will be much more attractive to use the clip according to the present invention.

Subsequently the clip according to the present invention will be elucidated with the help of the accompanying drawings, in which:

fig. 1: is a partially broken away perspective view of a first embodiment of a clip according to the present invention;

fig. 2: is a perspective view of a second embodiment of the clip according to the present invention;

fig. 3: is a perspective view of a third embodiment of the clip according to the present invention; and

fig. 4: is a perspective view, partially broken away, of a thin walled profile, onto which the clips according to the present invention are used for the

attachment of plaster boards.

The embodiment of the clip depicted in fig. 1 according to the present invention comprises a substantially flat outer strip 1 and a substantially flat inner strip 2, which are connected by means of a folded back 3. The inner strip 2 is bended inwardly at the location of the folding line 4, so that a plane 5 is obtained, which is separated from a second plane 7 by a folding line 6. Thus at the location of the second folding line 6 a cam is obtained, which is urged towards the outer strip 1 by means of the spring force of the back 3.

Further in the inner strip 2 two U-shaped cuts 8, 9 have been provided and the lips 10, 11 resulting therefrom are folded, so that they extend outwardly relative to the inner strip 2.

Further two cuts 12, 13 have been provided in the outer strip 1, whereas the lips 14, 15 thus obtained have been folded over the folding lines 16, 17 respectively. Further the lips thus obtained are folded once again at folding lines 18, 19 respectively, so that triangular hooks 20, 21 are obtained.

For the application of this clip one is referred to the discussion of fig. 4.

The embodiment shown in fig. 2 comprises again an outer strip 22 and an inner strip 23, which are connected by a back 24. The inner strip 23 comprises a cam 25 at its distal end, which is urged towards the outer strip 22 by the spring force of the back 24. Thus the clip is clamped onto one wall of the profile.

Further two parallel cuts are provided in the outer back 22, so that a smaller strip 26 results, wherein the resulting strips 27, 28 are folded at the folding lines 29, 30 respectively, whereas the strips 27, 28 have been folded once again on some distance from the outer strip 22 at folding lines 31, 32, respectively, so that hooks results for the attachment of the boards.

Finally fig. 3 shows a last embodiment of the clip according to the present invention, in which the clip comprises an outer strip 33, which is connected with an inner strip 35 by means of a back 34. The inner strip 35 comprises a folding line 36, so that a cam is obtained. At its free end the inner strip 35 has been provided with a fixating cam 36.

The outer strip 33 comprises a cut 38, in which the resulting lip 39 has been folded at a folding line 40. Further the lip 38 comprises a further cut and the resulting triangular hooks are folded around a folding line 41 towards opposite sides. The hooks 32, 33 each comprise a barb at each of their ends.

When using the clip according to the present invention use is made of a thin walled substantially

C-shaped steel profile 35, which comprises a back 46 and two parallel sides 47, 48. At the back 46 rectangular apertures 49 have been provided on regular intervals and on a short distance from the side concerned.

For attachment of the plaster boards 50 according to the present invention, one uses the following procedure. Initially when using the clips 51 according to the embodiment described with the help of fig. 1, these clips are shifted into the relevant apertures 49, to such an extent, that the fixing cam 10 is adjacent to the inner side of the back 46, fixating the clip 51. Subsequently the relevant plaster boards 50 are located on the correct position against the wall 47. One has to bear in mind, that on some distance from the width of the relevant plaster board another profile 45 is present, and that the relevant plaster board 50 can be attached at that side by the relevant clip 51.

When the plaster board 50 has been located, the clips 51 concerned are moved towards the plaster board 50, so that this is also fixated at a location of the profile 35, as the plaster board 50 is locked up between the inner strip 1 of the clip 51 and the relevant hook 21. Subsequently the next plaster board 52 can be shifted between the outer strip 1 and the hook 20, so that this plaster board is fixated as well at the relevant side. Fig. 4 further shows how the plaster boards have been provided at both sides of a profile 45.

In the clip according to the present invention, the contact area between the plaster board and the profile is substantially smaller than in the prior art means of attachment, in which the plaster board is attached towards the profile of its full length. Thus the transmission of contact noise will be much less, so that a wall built with clips according to the present invention will have better noise damping properties than prior art walls composed of plaster boards.

An equivalent consideration is valid relative to the fire retarding properties of the wall.

In the upper description three different embodiments of the present invention have been described, which each comprise a certain line of features. It is, however, possible to produce clamps, which comprise other combinations of the features described.

## Claims

1. Clip for attaching at least one flat board onto a thin walled profile, comprising: clamping means for attaching said clip to said profile and means for fixation of the board.

2. Clip according to claim 1, **characterized in** that the clamping means comprise two strips ex-

tending substantially parallel, of which at least one has a length, which coincides with the width of the wall of said profile.

3. Clip according to claim 2, **characterized in** that the length of the outer strip fit for attachment to the outer side is substantially equal to the width of the wall of said profile, and that the inner strip, fit for attachment to the inner side of the wall comprises a clamping cam, which is urged towards the other strip by spring pressure.

4. Clip according to claim 3, **characterized by** at least one fixation cam, extending from the inner side slopingly outwards.

5. Clip according to one of the claims 2, 3 or 4, **characterized** by at least one fixation hook extending from the outer strip outwardly for fixation of the board.

6. Clip according to claim 5, **characterized** by two fixation hooks, which extend to opposite directions in the longitudinal directions of the clip.

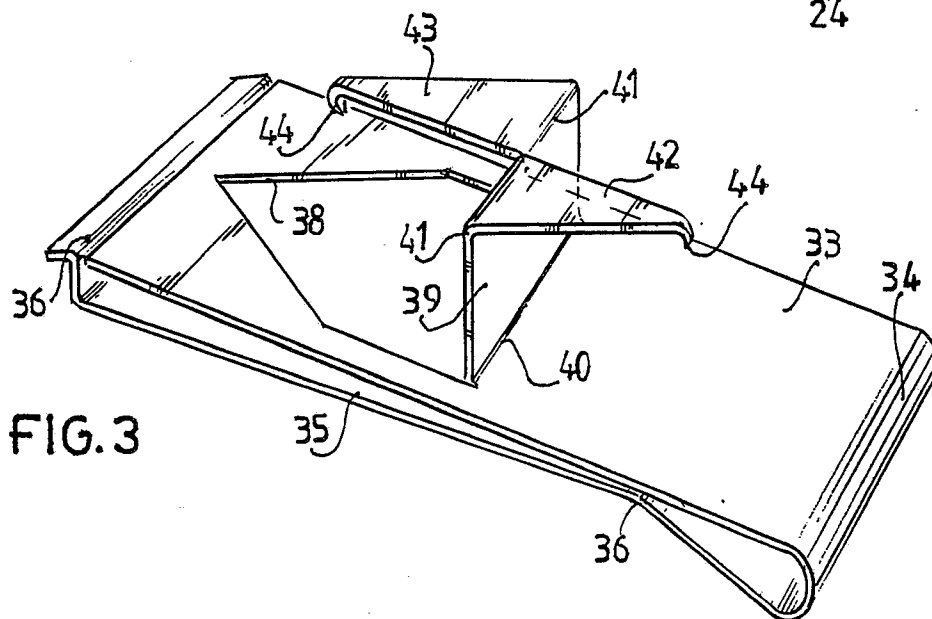
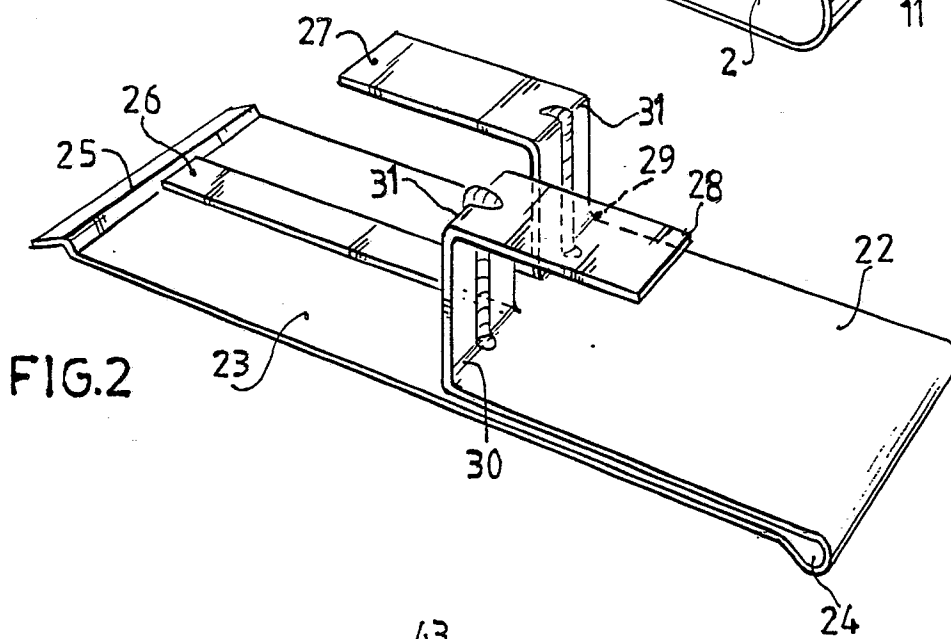
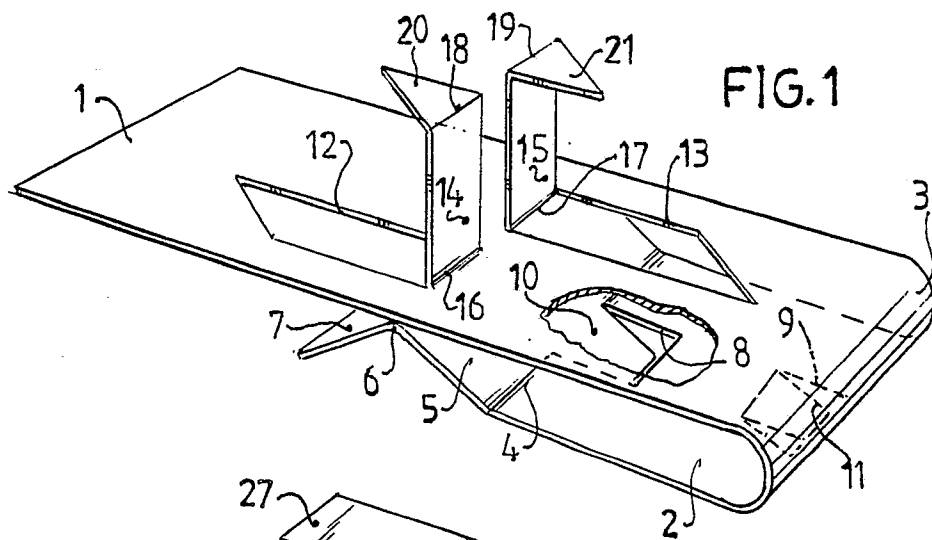
7. Clip according to claim 6, **characterized in** that the fixation hook is pointed.

8. Clip according to claim 6, **characterized in** that the part extending perpendicular to the outer strip comprises a reinforcement rib.

9. Clip according to claim 6, **characterized in** that the fixation cams comprise bended points.

10. Clip according to one of the preceding claims, **characterized in** that the inner strip extends over the full width of the wall of said profile.

11. Profile to be used with the clip according to one of the preceding claims, **characterized** by slits and the back wall, which are on regular intervals provided in the vicinity of each of the side walls.



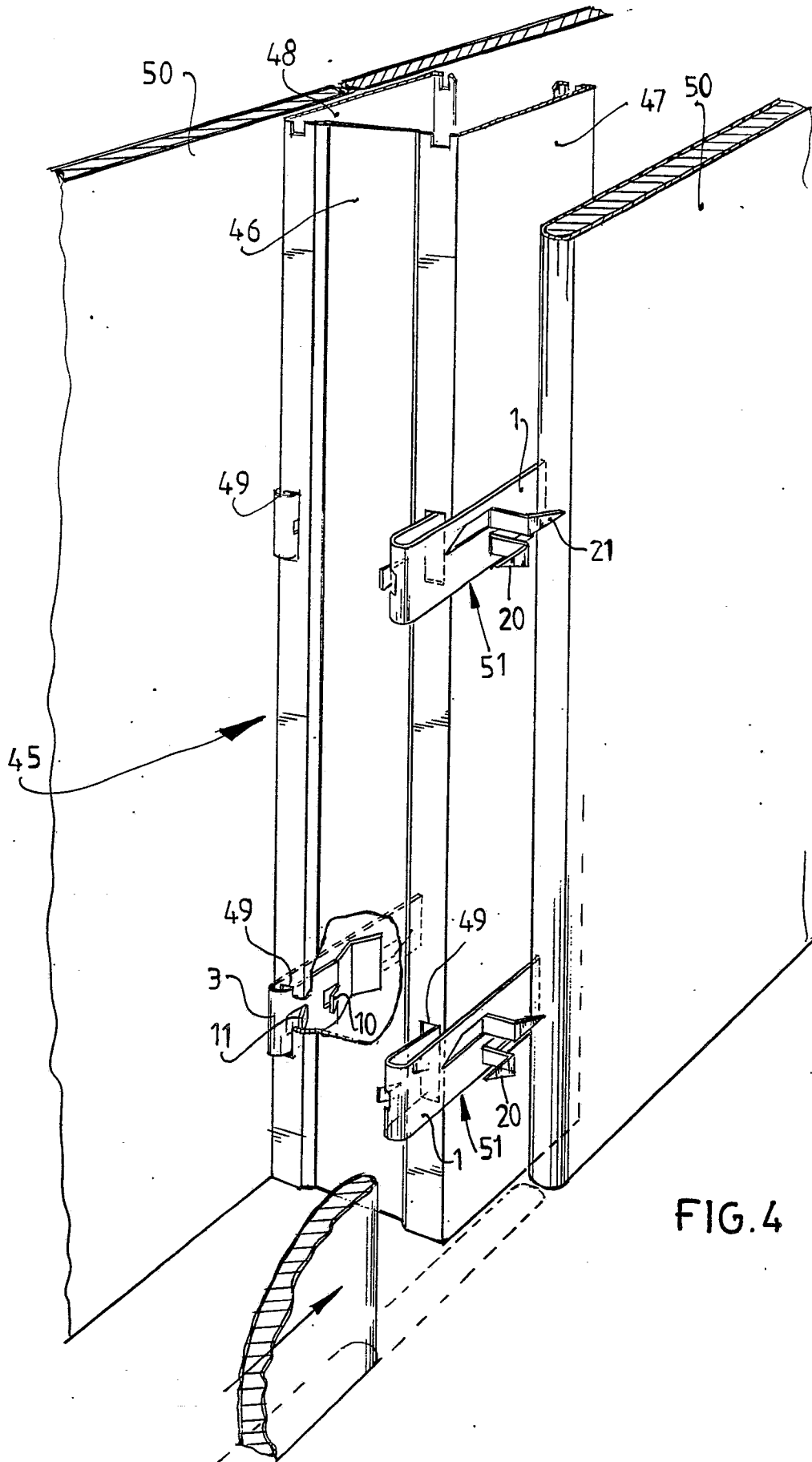


FIG. 4



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	DE-A-3 036 474 (STROBL) * The whole document *	1,2,5,6	E 04 F 13/08 F 16 B 5/06
Y		3,4,7,8 ,9	
X	--- GB-A-1 055 029 (FORKIN) * Page 2, lines 9-83; claim 1; figures 1-5 *	1,2,5,6	
X	--- US-A-4 578 922 (WENDT) * Column 2, lines 23-56; figures 1-9 *	1	
A		2,3,4,5 ,7	
X	--- GB-A- 651 891 (BEAN & CO. LTD) * Page 2, lines 35-101; line 111 - page 3, line 22; lines 40-115, page 4, lines 12-89; figures 1-10 *	1	
Y		3,4	
A		2,5,6	
X	--- GB-A-2 115 449 (BRITISH STEEL CORP.) * Page 1, line 90 - page 2, line 15; figures 1-3 *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
Y		9	E 04 F
A		2,3,5,7 ,10	
Y	--- DE-A-3 101 767 (HOLTSCHOPPEN) * Page 6, line 19 - page 9, line 21; page 11, lines 19-20; figures 1-4 * --- -/-	7,8	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15-02-1990	Examiner AYITER J.
<b>CATEGORY OF CITED DOCUMENTS</b> 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	



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	-----	1, 5, 6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15-02-1990	Examiner AYITER J.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>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</p> <p>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</p> <p>.....            &amp; : member of the same patent family, corresponding document</p>			

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