(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 459 659 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
22.09.2004 Bulletin 2004/39

(51) Int Cl.[7]: **A47G 1/16**

(21) Application number: **04004947.0**

(22) Date of filing: **03.03.2004**

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

(30) Priority: **19.03.2003 IT rn20030002**

(71) Applicant: **Tecna S.R.L.**
61010 Tavullia Pu (IT)

(72) Inventor: **Leoni, Roberto**
Cattolica (RN) (IT)

(74) Representative: **Provvisionato, Paolo**
Provvisionato & Co S.r.l.
Piazza di Porta Mascarella 7
40126 Bologna (IT)

(54) An adjustable hook

(57) An adjustable hook, comprising supporting means (2) and elastically deformable means (3) for attaching it to a fixed structure, is made as a single piece. It comprises a single shaped plate (4) with two perforated tabs (5) that bend to enable the hook (1) to slide relative to the fixed structure.

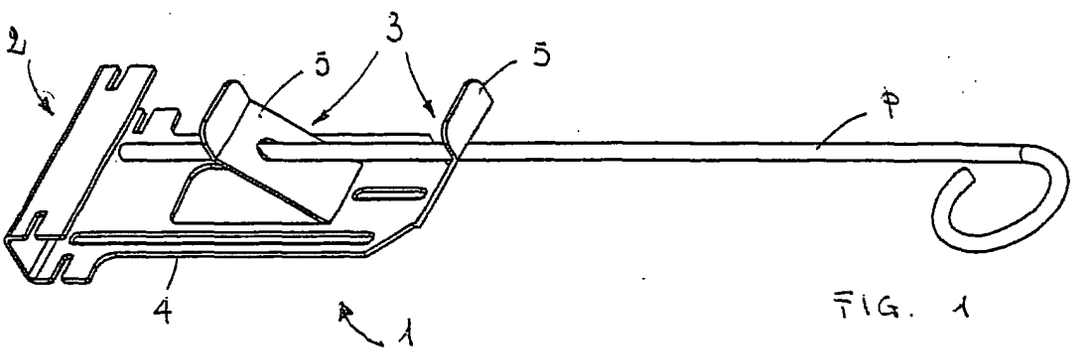

FIG. 1

EP 1 459 659 A1

Description

[0001] The present invention relates to an adjustable hook.

[0002] The main feature of hooking devices used in numerous interior decoration or building infrastructure applications must be that of allowing the point of connection between the hooked elements to be moved.

[0003] In particular, adjustable hooks which can be attached to a fixed "hanger" are known. These hooks are equipped with supporting means which extend in one or more directions and which are designed to support elements of various kinds such as ceilings, plasterboard walls or piping.

[0004] These hooks, which are made of metal, usually consist of two matching parts: a main rigid element and a bent, elastically compliant plate used as a spring. The main element is equipped with protrusions designed to support other elements, as mentioned above, and means for locking it to the plate. The plate, on the other hand, has two suitably perforated tabs enabling the hook to be attached to the fixed hanger.

[0005] The plate is designed in such a way that the hanger can be inserted into the holes only by compressing the tabs, whilst the elasticity of the tabs confers rigidity on the hook assembly.

[0006] Further compressing the plate tabs enables the hook to slide relative to the hanger, thus modifying the position of the elements supported by the hook.

[0007] Hooks of these kinds are made by moulding and bending the supporting tabs of the main rigid element and then separately moulding, hardening and bending the plate tabs. Next, the main element and the plate are suitably positioned relative to each other and the plate is secured to the main element by deforming a protruding portion of the surface of the main element.

[0008] The main disadvantage of these hooks is that they consist of two components: they must therefore be made in separate stages, thus increasing production time and cost. Moreover, the security of the fit between the main element and the plate depends on the quality of the materials used and of the production process, reducing the reliability that the structure can guarantee over time.

[0009] The aim of the present invention is to overcome the above mentioned disadvantages.

[0010] This aim is achieved by providing a hook made as a single piece.

[0011] The main advantage achieved by the present invention lies essentially in that fact that it minimises the number of stages required to make the hook, thus reducing production time and cost.

[0012] Further, it eliminates the problems due to the need to hold together two separate elements.

[0013] Further advantages and characteristics of the invention are apparent from the detailed description which follows with reference to the accompanying drawings which illustrate a preferred, non-restricting embodiment of the invention and in which:

- Figure 1 is a perspective view from above, showing the invention during use;
- Figure 2 illustrates the invention in a plan view from above;
- Figure 3 illustrates the invention in a side view;
- Figure 4 illustrates the invention in a perspective view from below.

[0014] As shown in the drawings, the invention relates to an adjustable hook. Like those traditionally used, it comprises supporting means (2) and elastically deformable attachment means (3) for attaching it to a fixed structure. The hook (1) according to the invention is characterised in that it is made as a single piece.

[0015] It consists of a single shaped plate (4) in which the attachment means (3) comprise two perforated tabs (5). With reference to its typical application, the drawings show the hook (1) connected to a fixed hanger (p). The deformability of the tabs (5) enables the hanger (p) to be inserted into the holes and their spring back guarantees the stability of the connection. The hook (1) may be moved along the hanger (p) by acting simultaneously on the tabs (5) to temporarily deform them so as to allow the hook (1) to slide along the hanger (p).

[0016] The plate (4) may be made in various ways and using various materials: for example, it may be made by cutting and bending or by moulding metal or plastic.

[0017] It will be understood that the invention can be modified and adapted in several ways without thereby departing from the scope of the inventive concept. Moreover, all the details of the invention may be substituted by technically equivalent elements.

[0018] In practice, the invention can be modified and improved without departing from the scope of the claims set out below.

Claims

1. An adjustable hook, comprising supporting means (2) and elastically deformable attachment means (3) for attaching it to a fixed structure, **characterised in that** it is made as a single piece.

2. The adjustable hook according to claim 1, **characterised in that** it comprises a single shaped plate (4) in which the attachment means (3) comprise two perforated tabs (5).

3. The adjustable hook according to claim 2, **characterised in that** the tabs (5) enable the insertion and the movement of the hook (1) on a fixed structure by their simultaneous deformation.

4. The adjustable hook according to claim 2, **characterized in that** the tabs (5) guarantee the stability

of the connection between the hook (1) and a fixed structure by their spring back.

5. The adjustable hook according to claim 2, **characterised in that** the plate (4) is made by a cutting and bending process.

6. The adjustable hook according to claim 2, **characterised in that** the plate (4) is made by a moulding process.

7. The adjustable hook according to claim 2, **characterised in that** the plate (4) is made from plastic.

8. The adjustable hook according to claim 2, **characterised in that** the plate (4) is made from metal.

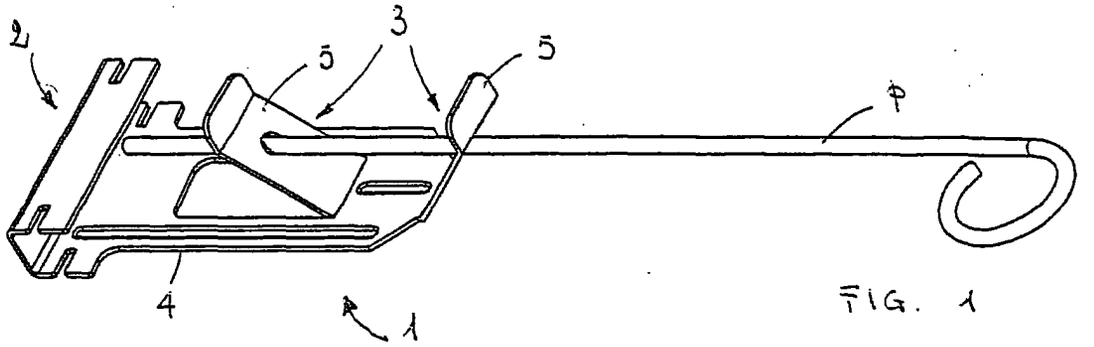

FIG. 1

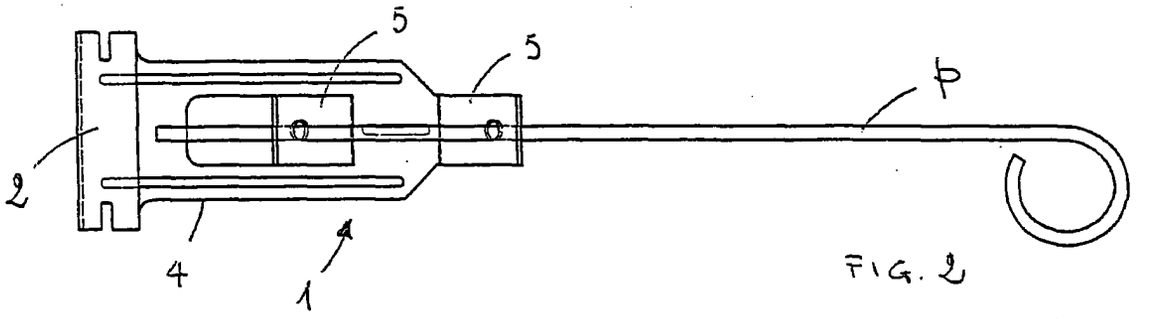

FIG. 2

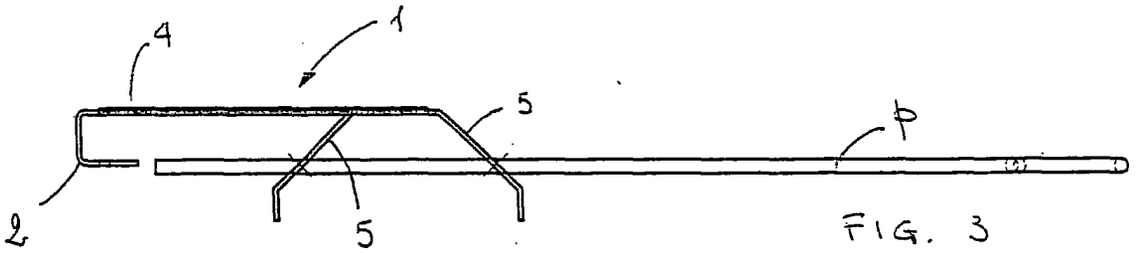

FIG. 3

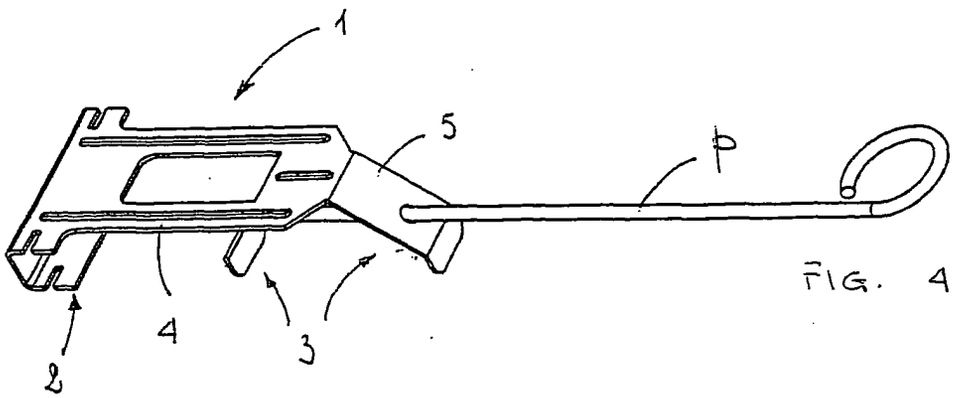

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 00 4947

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.7)
X	US 4 160 344 A (BRUGMAN JOHANNES A H) 10 July 1979 (1979-07-10) * column 4, line 11; figures 1-4 *	1-5,7,8	A47G1/16
X	EP 0 652 337 A (MAARS HOLDING B.V.) 10 May 1995 (1995-05-10) * figure 3 *	1-5,8	
X	EP 0 607 707 A (LEWIS SPRING PRODUCTS LTD) 27 July 1994 (1994-07-27) * figure 2 *	1-5,8	
X	DE 94 15 660 U (GEORG KIMMEL GMBH) 1 December 1994 (1994-12-01) * figure 2 *	1-5,8	
X	DE 29 18 022 B (RICHTER REINHOLD) 11 September 1980 (1980-09-11) * figure 1 *	1-5,8	
X	EP 0 419 855 A (ZUMTOBEL AG) 3 April 1991 (1991-04-03) * figures 5,6 *	1-5,8	TECHNICAL FIELDS SEARCHED (Int.Cl.7) A47G F16B E04B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	1 June 2004	Reichhardt, O

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 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 00 4947

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.

01-06-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4160344 A	10-07-1979	DE 2700002 A1	06-07-1978
		BE 862570 A1	30-06-1978
		BR 7800061 A	15-08-1978
		CA 1057017 A1	26-06-1979
		ES 232992 Y	01-07-1978
		FR 2376325 A1	28-07-1978
		GB 1567716 A	21-05-1980
		IT 1089263 B	18-06-1985
		JP 1340217 C	29-09-1986
		JP 53115445 A	07-10-1978
		JP 61006218 B	25-02-1986
		NL 7714468 A ,C	05-07-1978
		SE 436444 B	10-12-1984
		SE 7714895 A	04-07-1978
EP 0652337 A	10-05-1995	EP 0652337 A1	10-05-1995
EP 0607707 A	27-07-1994	EP 0607707 A2	27-07-1994
		GB 2274292 A ,B	20-07-1994
DE 9415660 U	01-12-1994	DE 9415660 U1	01-12-1994
DE 2918022 B	11-09-1980	DE 2918022 B1	11-09-1980
		AT 364133 B	25-09-1981
		AT 211680 A	15-02-1981
		BE 883047 A1	18-08-1980
		NL 8002504 A	06-11-1980
EP 0419855 A	03-04-1991	AT 392816 B	25-06-1991
		AT 222589 A	15-11-1990
		DE 59010004 D1	08-02-1996
		EP 0419855 A2	03-04-1991

EPO FORM P0459

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