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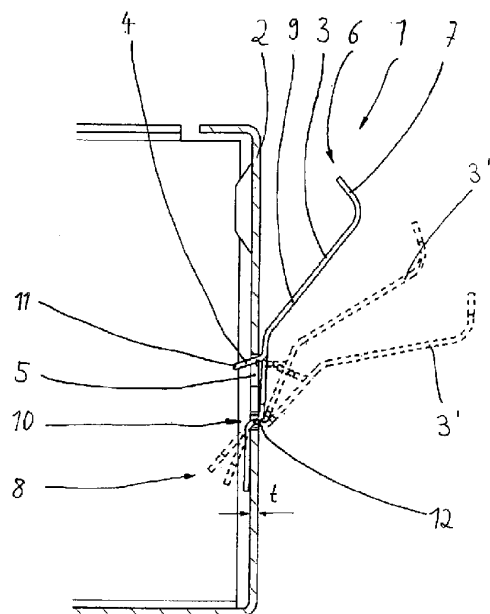
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[Fortsetzung auf der nächsten Seite]

(54) Title: FASTENING ELEMENT FOR ATTACHING A PART TO A SUPPORTING ELEMENT

(54) Bezeichnung: BEFESTIGUNGSELEMENT FÜR DIE BEFESTIGUNG EINES BAUTEILS AN EINEM TRÄGERELE-
MENT



(57) Abstract: The invention relates to a fastening element (1) for attaching a part, especially a cooking hob, to a supporting element (2), particularly a frame that supports or surrounds the cooking hob. Said fastening element (1) comprises a spring (3) which can be attached to the supporting element (2) by engaging a locking element (4) that is disposed on the spring (3) into a first recess (5) in the supporting element (2). The spring (3) is provided with a gripping section (7) for holding the part at one end (6) that is free in the mounted state while the spring (3) is embodied as an element that is bent in a leaf-shaped manner. In order to make it easier to assemble the spring, the width (b) of the other end of the spring, which is located at a distance from the free end (6), is smaller than the width (B) of the area (9) that is bent in a leaf-shaped manner. The end (8) having a smaller width penetrates a second slit-shaped recess (10) in the supporting element (2) in the mounted state of the spring, the width (B₂) of said second slit-shaped recess (10) being smaller than the non-reduced width (B) of the area (9) of the spring (3) which is bent in a leaf-shaped manner.

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WO 2007/082563 A1



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Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

(57) Zusammenfassung: Die Erfindung betrifft ein Befestigungselement (1) für die Befestigung eines Bauteils, insbesondere eines Kochfeldes, an einem Tragerelement (2), insbesondere an einem das Kochfeld tragenden bzw. umgebenden Rahmen, wobei das Befestigungselement (1) eine Feder (3) umfasst, die dadurch am Tragerelement (2) festlegbar ist, dass ein an der Feder (3) angeordnetes Rastelement (4) in eine erste Ausnehmung (5) im Tragerelement (2) eingreift, wobei die Feder (3) an ihrem einen und im montierten Zustand freien Ende (6) einen Griffabschnitt (7) zum Halten des Bauteils aufweist und wobei die Feder (3) als blattförmig gebogenes Element ausgebildet ist. Zur Vereinfachung der Montage der Feder sieht die Erfindung vor, dass diese an dem vom freien Ende (6) entfernten anderen Ende (8) eine im Verhältnis zur Breite (B) des blattförmig gebogenen Bereichs (9) reduzierte Breite (b) aufweist, wobei im montierten Zustand der Feder (3) das in der Breite reduzierte Ende (8) durch eine zweite schlitzförmige Ausnehmung (10) im Tragerelement (2) hindurch tritt, wobei die Breite (B₂) der zweiten schlitzförmigen Ausnehmung (10) geringer ist als die nicht verringerte Breite (B) des blattförmig gebogenen Bereichs (9) der Feder (3).

Fastening element for attaching a part to a supporting element

5 Description

The invention relates to a fastening element for attaching a part, especially a cooking hob, to a supporting element, in particular to a frame supporting and/or surrounding the cooking hob, the fastening element comprising a spring which can be secured to the supporting element by engaging a locking element which is disposed on the spring into a first recess in the supporting element, the spring having at its one end which is free in the mounted state a gripping portion for holding the part and the spring being embodied as an element which is bent in a leaf-shaped manner.

Fastening elements of this type are used during the installation of a cooking hob in a worktop. This involves inserting into recesses in the supporting element, i.e. in the support frame, during the mounting process a number of springs which are formed from a leaf-shaped material strip, which each have a gripping portion and which, when mounted, hold the cooking hob. In order to secure the spring in the support frame, the recess in the support frame and the spring end opposing the free spring end are shaped relative to each other so as to allow the spring to be secured in a defined position on the support frame.

In order to prevent the spring from falling out in the mounted position, a lug-like projection, which engages into a corresponding recess in the support frame and thus secures the spring, is stamped on in an end portion of the spring metal sheet.

The mounting of the spring and the cooking hob on the support frame is complex insofar as auxiliary means

must be used in order to be able to mount the spring on the support frame. For this purpose, use is typically made of a pressing device or a hammer which allows the spring to be pressed or struck into its end position.

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The invention is therefore based on the object of developing a fastening element of the type mentioned at the outset so as to allow simpler mounting, if possible without auxiliary means, wherein the securing of the spring in the mounted state should nevertheless be ensured with absolute reliability.

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The solution provided by the invention to this object is characterized in that the spring of the fastening element has at the other end which is remote from its free end a width which is reduced in relation to the width of the region of the spring that is bent in a leaf-shaped manner, the width-reduced end penetrating in the mounted state of the spring a second slit-shaped recess in the supporting element, the width of the second slit-shaped recess being smaller than the non-reduced width of the region of the spring that is bent in a leaf-shaped manner.

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This configuration allows the width-reduced end region of the spring to insert during mounting into the second slit-shaped recess. The aforementioned relationships of the widths of the portion of the spring that is bent in a leaf-shaped manner, of the width-reduced end portion of the spring and of the slit-shaped recess produce for the spring, once it has been inserted into the slit-shaped recess, a pivot axis about which the spring can be tilted into its mounting end position until it secures its locking element in this position.

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It is thus easily possible without tools to carry out the mounting and nevertheless to obtain a very reliable fit of the spring.

A first further development provides for the spring to consist of a strip-like piece of spring steel or spring sheet metal.

- 5 Advantageously, the locking element which is disposed on the spring is formed from the material of the spring.

- 10 A preferred embodiment allows the locking element to be formed by a portion which is punched out of the material of the spring and bent out of the plane of the metal sheet. In this case, the locking element can have a widening in its end region which is remote from the basic element of the spring. This widening is
15 preferably T-shaped in its embodiment so, once the locking element has locked into the first recess, a secure, hook-like closure is obtained.

- The first and the second slit-shaped recess in the
20 supporting element can merge and form a single material cutout in the supporting element. Furthermore, provision may in this case be made for the first recess to be embodied in a semicircular shape adjoining the second slit-shaped recess. The diameter of the
25 semicircle is in this case particularly preferably between 25 % and 70 % of the width of the second slit-shaped recess.

- Effective guidance of the spring in the recess in the
30 supporting element is ensured if the reduced width of the end which is remote from the free end of the spring is between 75 % and 90 % of the width of the region of the spring that is bent in a leaf-shaped manner.

- 35 In its mounted state, the spring abuts the supporting element particularly well if, in a development, provision is made for the end which is remote from the free end of the spring to be disposed offset relative to the region of the spring that is bent in a leaf-

shaped manner in the normal direction of the region. The offset is in this case preferably between 0.5 mm and 2.0 mm; it can correspond to the thickness of the supporting element. Advantages in terms of production
5 are obtained if the offset is generated by a process of reshaping the spring metal sheet which is flat in its initial state.

The proposal of the invention allows the spring of the
10 fastening element to be mounted in a very simple manner without the need for mounting tools. Nevertheless, in the mounted state, the spring sits very securely in the recesses in the supporting element, thus ensuring a secure hold.

15 An exemplary embodiment of the invention is illustrated in the drawings, in which:

Fig. 1 is a cross section through a supporting element
20 comprising a fastening element;

Fig. 2 is a perspective view of the spring of the fastening element;

25 Fig. 3 is a perspective view of a portion of the supporting element with the spring mounted; and

Fig. 4 shows the arrangement according to Fig. 3, viewed from the other side of the supporting element.

30 Fig. 1 shows the embodiment of a fastening element 1 which is provided to fix a cooking hob (not shown) in a fixing element 2 which, in particular, forms (also) a protective casing for the cooking hob. The basic
35 component of the fastening element 1 is a spring 3 which is produced from a strip of spring sheet metal, i.e. has a flat initial contour. The spring 3 has a region 9 which is bent in a leaf-shaped manner (see Fig. 2) and which forms the largest extension of the

spring 3. This region 9 which is bent in a leaf-shaped manner has a constant metal sheet width B. At one (upper) end 6, the spring 3 has a gripping portion 7 which is bent in such a way that it holds the cooking
5 hob (not shown) in its mounted position.

The other (lower) end 8 of the spring 3 is fixed to the supporting element 2. For this purpose, the supporting element 2 has two recesses 5 and 10. In the present
10 case, the two recesses 5, 10 merge with each other, i.e. they form a single cutout from the material of the supporting element 2. As may be seen most clearly in Fig. 3, but also in Fig. 4, the first recess 5 is semicircular in shape. The diameter of the semicircle
15 is denoted by D. The second recess 10, which has a slit-shaped form, adjoins the recess 5.

Of crucial importance are the width relationships between the region 9 of the spring 3 that is bent in a
20 leaf-shaped manner, the fixed end 8 of the spring 3 and the slit-shaped recess 10:

The width B of the region 9 of the spring 3 that is bent in a leaf-shaped manner is larger than the width
25 B_s of the second slit-shaped recess 10. However, the width B_s of the second slit-shaped recess 10 is, in turn, larger than the width b of the fixed end 8 of the spring 3.

30 This allows the (in the mounted state) fixed end 8 of the spring 3 to be inserted or slid into the slit 10 until the start of the region 9 which is bent in a leaf-shaped manner rests against the recess 10. In Fig. 1, this position of the spring 3 during the mounting
35 process is indicated by broken lines and the spring 3 is denoted in this position by reference numeral 3'. During the mounting of the spring 3 on the supporting element 2, the spring 3 is then pivoted about the resulting axis 12 (see Figures 1 and 3) in such a way

that the spring 3 enters - via the position 3'' according to Fig. 1 - the mounting end position indicated by fixed lines.

- 5 In order to secure the spring 3 in the mounting end position, a substantially rectangular window 13 is punched out of the basic element of the spring 3 (see Fig. 2), although the punching process is carried out in such a way that there remains in the window 13 a
10 strip-like projection which is then bent out of the plane of the metal sheet (i.e. in the normal direction N, see Fig. 2), thus forming a locking element 4.

- As may be seen in Fig. 3, the end of the locking
15 element 4 is in this case widened, i.e. it has a widening 11, so the locking element 4 has a T-shaped contour. The widening 11 of this resilient end of the locking element 4 reaches, while the spring 3 pivots during mounting, behind the recess 5 and then engages
20 in such a way that the spring 3 is secured and fixed to the supporting element 2. In order to simplify the mounting process, the widening 11 can have lateral bevels 14 (insertion bevels) (see Fig. 3).

- 25 An optimum fit of the spring 3 which is mounted on the supporting element 2 is achieved if the fixed end 8 of the spring 3 has an offset t relative to the region 9 which is bent in a leaf-shaped manner, i.e. if the portion 8 is offset relative to the portion 9 of the
30 spring 3 by an amount t in the normal direction N of the spring basic part. In the exemplary embodiment, the offset t corresponds - as may be seen in Fig. 1 - precisely to the thickness of the supporting element 2.

- 35 The spring 3 can be fixed in its mounting end position by means of the described configuration without mounting tools in that the spring is pivoted about the axis 12 and then clipped in by means of the locking element 4.

The shaping of the spring 3 allows it to be used for any desired installation situations, i.e. in the event of variations in the depth of the protective casing or
5 in the worktop appropriate adaptation can easily ensure that the cooking hob to be held or to be secured comes to lie in the correct position.

The described geometric embodiment of the spring 3,
10 with the bending configured through the offset t and the locking element 4 which is embodied as a snap hook, allows the manufacture and the mounting at low cost of a reliable fastening element which is suitable for a large number of cooking hobs to be secured.

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List of reference numerals

	1	Fastening element
	2	Supporting element
5	3	Spring
	4	Locking element
	5	First recess
	6	Free end of the spring
	7	Gripping portion
10	8	Fixed end of the spring
	9	Region which is bent in a leaf-shaped manner
	10	Second slit-shaped recess
	11	Widening
	12	Axis
15	13	Window
	14	Bevel
	B	Width of the region which is bent in a leaf-shaped manner
20	b	Reduced width
	B _s	Width of the second slit-shaped recess
	D	Diameter
	N	Normal direction
	t	Offset
25		

Claims

1. A fastening element (1) for attaching a part,
5 especially a cooking hob, to a supporting element (2),
in particular to a frame supporting and/or surrounding
the cooking hob, the fastening element (1) comprising a
spring (3) which can be secured to the supporting
element (2) by engaging a locking element (4) which is
10 disposed on the spring (3) into a first recess (5) in
the supporting element (2), the spring (3) having at
its one end (6) which is free in the mounted state a
gripping portion (7) for holding the part and the
spring (3) being embodied as an element which is bent
15 in a leaf-shaped manner, characterized in, that the
spring (3) has at the other end (8) which is remote
from the free end (6) a width (b) which is reduced in
relation to the width (B) of the region (9) which is
bent in a leaf-shaped manner, the width-reduced end (8)
20 penetrating in the mounted state of the spring (3) a
second slit-shaped recess (10) in the supporting
element (2), the width (B_s) of the second slit-shaped
recess (10) being smaller than the non-reduced width
(B) of the region (9) of the spring (3) that is bent in
25 a leaf-shaped manner.
2. The fastening element as claimed in claim 1,
characterized in, that the spring (3) consists of a
strip-like piece of spring steel.
- 30 3. The fastening element as claimed in either
claim 1 or claim 2, characterized in, that the locking
element (4) which is disposed on the spring (3) is
formed from the material of the spring (3).
- 35 4. The fastening element as claimed in any one of
claims 1 to 3, characterized in, that the locking
element (4) is formed by a portion which is punched out

of the material of the spring (3) and bent out of the plane of the metal sheet.

5. The fastening element as claimed in claim 4, characterized in, that the locking element (4) has a widening (11) in its end region which is remote from the basic element of the spring (3).

6. The fastening element as claimed in claim 5, characterized in, that the widening (11) is T-shaped in its embodiment.

7. The fastening element as claimed in any one of claims 1 to 6, characterized in, that the first (5) and the second (10) slit-shaped recess in the supporting element (2) merge and form a single material cutout in the supporting element (2).

8. The fastening element as claimed in claim 7, characterized in, that the first recess (5) is embodied in a semicircular shape adjoining the second slit-shaped recess (10).

9. The fastening element as claimed in claim 8, characterized in, that the diameter (D) of the semicircle is between 25 % and 70 % of the width (B_s) of the second slit-shaped recess (10).

10. The fastening element as claimed in any one of claims 1 to 9, characterized in, that the reduced width (b) of the end (8) which is remote from the free end (6) of the spring (3) is between 75 % and 90 % of the width (B) of the region (9) of the spring (3) that is bent in a leaf-shaped manner.

11. The fastening element as claimed in any one of claims 1 to 10, characterized in, that the end (8) which is remote from the free end (6) of the spring (3) is disposed offset relative to the region (9) of the

spring (3) that is bent in a leaf-shaped manner in the normal direction (N) of the region (9).

12. The fastening element as claimed in claim 11,
5 characterized in, that the offset (t) is between 0.5 mm and 2.0 mm.

13. The fastening element as claimed in either
claim 11 or claim 12, characterized in, that the offset
10 (t) corresponds to the thickness of the supporting element (2).

14. The fastening element as claimed in any one of
claims 11 to 13, characterized in, that the offset (t)
15 is generated by a process of reshaping the spring metal sheet which is flat in its initial state.

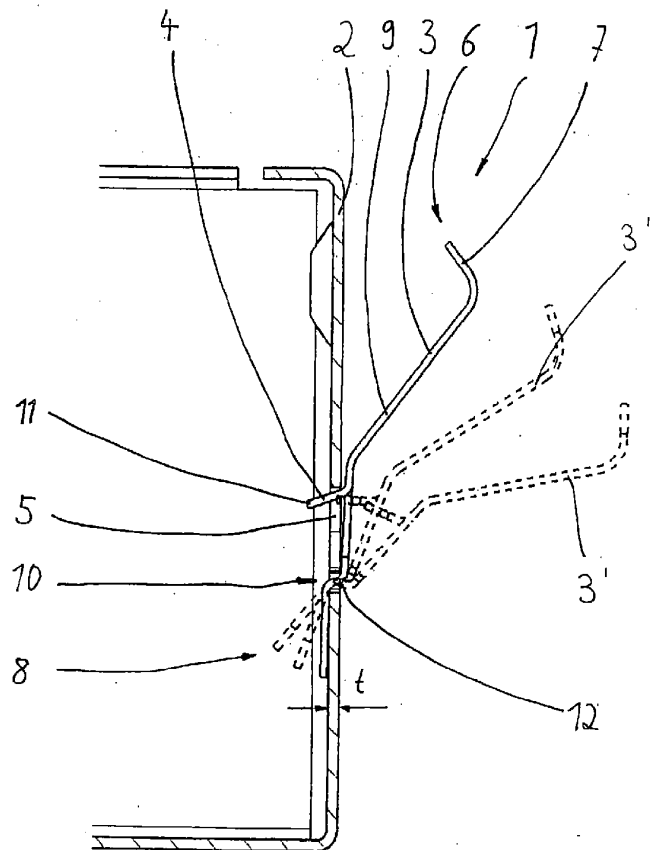


FIG 1

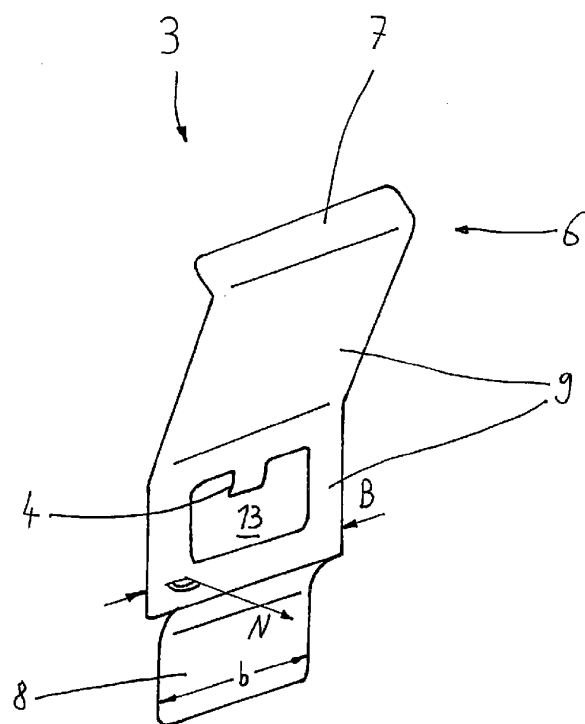


FIG 2

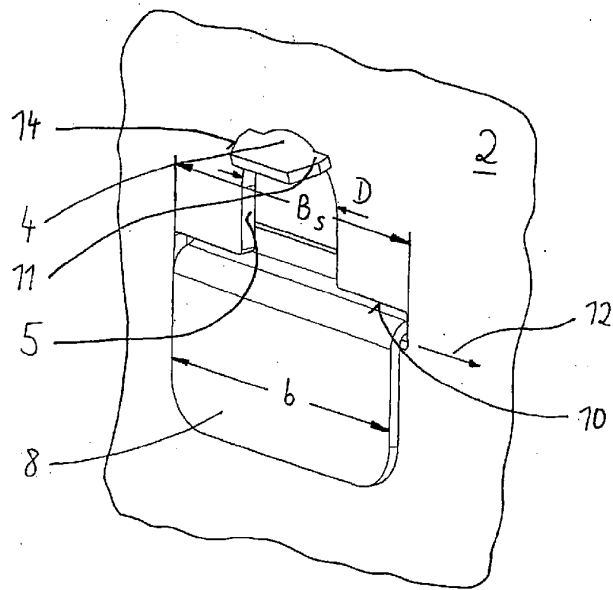


FIG 3

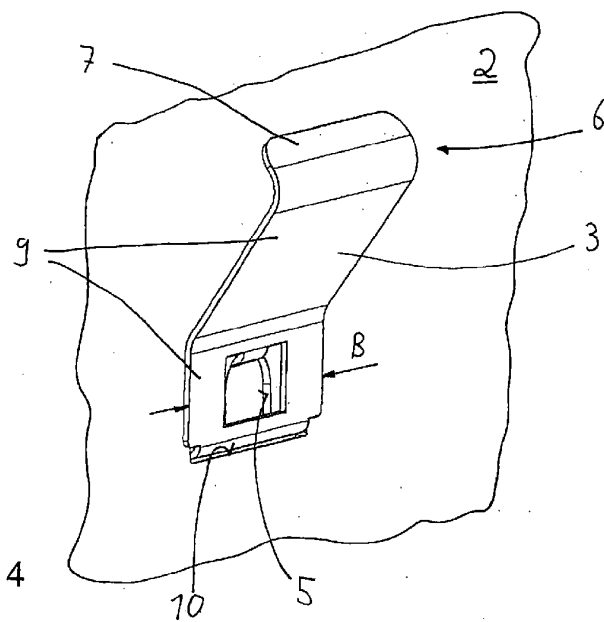


FIG 4