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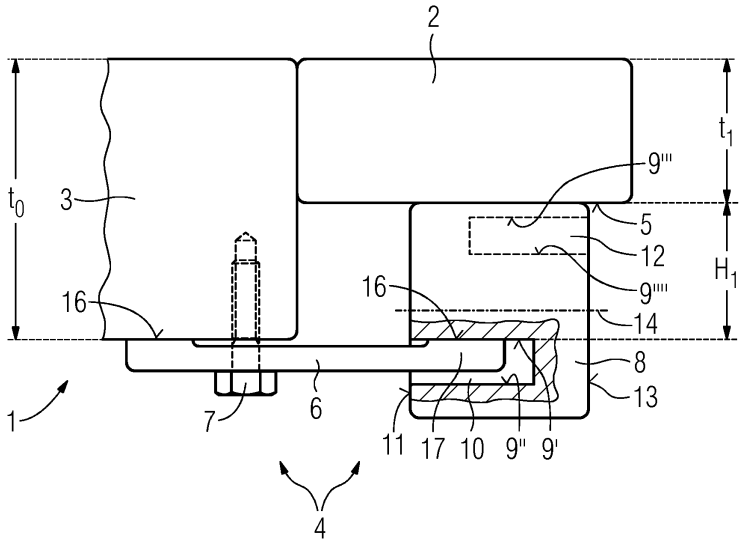
Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **Cooking appliance, especially domestic cooking appliance**

(57) The invention relates to a cooking appliance (1), especially domestic cooking appliance, comprising a stovetop (3) for being mounted to a kitchen worktop (2), wherein connection means (4) are arranged for fixing the stovetop (3) to a bottom surface (5) of the worktop (2), wherein the connection means (4) comprise at least one bracket (6), which is fixed by at least one connector (7), preferably by a screw, to the worktop (2) or the stovetop (3), characterized in that a spacer element (8) is arranged between the bottom surface (5) of the worktop (2) or a bottom surface of the stovetop (3) and a first end (17) of the bracket (6) for biasing a height (H_1,...,H_5) between the thickness (to) of the stovetop (3) and a thickness (t_1,...,t_5) of the worktop (2), wherein said spacer element (8) comprises at least two support surfaces (9' to 9'''', 11, 13) upon which said bracket 6 can be supported, and wherein said support surfaces (9' to 9'''', 11, 13) are arranged on the spacer element (8) in such way, that at least two different heights (H_1, ..., H_5) can be biased.

FIG 2



EP 2 816 291 A1

Description

[0001] The invention relates to a cooking appliance, especially domestic cooking appliance, comprising a stovetop for being mounted to a kitchen worktop, wherein connection means are arranged for fixing the stovetop to a bottom surface of the worktop, wherein the connection means comprise at least one bracket, which is fixed by at least one connector, preferably by a screw, to the worktop or the stovetop.

[0002] Such arrangements can for example be used to fix a stovetop of a gas cooking device at a kitchen worktop.

[0003] EP 0 168 722 A1 shows a generic appliance which uses a spacer element for a glass-ceramic cooking unit. The element is prismatic or parallelepiped in construction; a distance element is disposed on each of the parallelepiped faces of the distance element and the individual added distance pieces have different thicknesses.

[0004] In US 2013/0019851 A1 a stovetop with heater support holders is disclosed, which are elastically coupled to a corresponding support bracket. EP 0 964 203 A1 describes a gas burner that is mounted on a cooktop. There is a box-type frame which serves to support the burners.

[0005] In EP 2 131 111 A1 a method for manufacturing a hob is disclosed. The method involves gluing a function or design unit at the cooktop. The function unit is there for holding the hob at its place after installation.

[0006] Finally, WO 2007 023 183 A1 shows a method for mounting ceramic cooktops in appliances. The method includes a frame which has an opening therein for receiving a ceramic cooktop. The frame allocates a spaced relationship between the cooktop and the side walls.

[0007] The pre-known solutions are basically useful only for vetro-ceramic and glass hobs; problems can occur when also stainless steel and enamel hobs (stovetops) are to be manufactured. The pre-known fixation techniques are partially detrimental. In the case of stainless steel or enamel as the material for the cooktop adhesive tapes can normally not be employed to fix the position of the spacers. Additionally, the durability of this fixation solution is sometimes not satisfactory.

[0008] A further aspect is the following: Stovetops shall be enabled to be mounted to worktops of differents thicknesses or heights. Thus, specific sets of fixations means are necessary to firmly attach stovetops to worktops with different vertical extensions. So, it is usually laborious and expensive to adapt a specific stovetop at the worktop. Normally, existing fixation means allow mostly only one mounting height in a certain range of tolerances of the worktop to which the stovetop shall be mounted.

[0009] Thus, it is an object of the present invention to provide a cooking appliance of the kind mentioned above which can be mounted to kitchen worktops which have different heights or thicknesses, in particular to kitchen worktops of a large variety of heights or thicknesses in an easy way.

[0010] It is a further object of the present invention to create a cooking appliance which secures a mechanical interference but which can go without adhesive solutions. So, the influence of the temperature, of the humidity and of dirt should not influence the fixation.

[0011] The solution of this object according to the invention is characterized in that a spacer element is arranged between the bottom surface of the worktop or a bottom surface of the stovetop and a first end of the bracket for biasing a height between the thickness of the stovetop and a thickness of the worktop, wherein said spacer element comprises at least two support surfaces upon which said bracket can be supported, and wherein said support surfaces are arranged on the spacer element in such way, that at least two different heights can be biased.

[0012] Thus, the fixation arrangement for the stovetop can be adapted to worktops of different thicknesses. It is not further necessary to provide different means for fixing the worktop to different worktop thicknesses. In particular, it is possible to mount the stovetop to worktops having unsual thicknesses, such as very small or very large thicknesses.

[0013] In an advantageous embodiment of the invention, the first pocket can be formed in a face side of the spacer element. The first pocket can have a substantial rectangular shape. Furthermore, the spacer element can have a substantial prismatic shape. In this case, the first pocket can extend into the inner of the prismatic shape of the spacer element, but does not totally penetrate the spacer element, i. e. the pocket forms a cavity in the spacer element. Furthermore, a second support surface can be arranged in the first pocket which is facing the first support surface.

[0014] A second pocket can be formed in the spacer element which forms a third support surface. The second pocket can be formed into an opposing face side of the spacer element. Also, the second pocket can have a substantial rectangular shape. The second pocket can also extends into the inner of the prismatic shape of the spacer element, but does not totally penetrate the spacer element. A fourth support surface can be arranged in the second pocket which is facing the third support surface.

[0015] Preferably, the two pockets are arranged in unequal distances from a center plane of the spacer element to create a plurality of different usable mounting heights.

[0016] A hole can be arranged which penetrates the spacer element totally, wherein the hole is preferably arranged in the center plane of the spacer element.

[0017] The spacer element is preferably made of plastic material.

[0018] The cooking appliance is preferably a domestic cooking device; specifically is it a gas cooking device.

[0019] Thus, the invention is basing on the idea to use a plastic spacer with different possible assemblies spe-

cifically for stovetop installation without using standard units.

[0020] The proposed concept is especially preferred in the case of worktops with different heights upon which a stovetop having a standard heightshall be mounted. With the proposed spacer element it becomes possible to mount stovetops at worktops which have a wide variation in the height. For example, the invention allows to design and to employ a spacer element for the easy fixation of a stovetop to worktops with a mounting height of 10 mm, 20 mm, 30 mm, 40 mm, 50 mm and 60 mm - dependent on the position in which the spacer is mounted and in dependence of the pocket or face side which is used for the support of the bracket.

[0021] Thus, the plastic spacer has different possible assembly positions which lead to different mounting heights. The plastic spacer can be used as accessory or as a separate kit to increase the possible ranges of worktop thickness installation. The plastic spacer can be equipped with a respective marking to easily show the assembly staff how to use the spacer element, i. e. in which position is must be mounted.

[0022] The proposed plastic spacer is a quite cheap component. With a single spacer element multiple additional solutions for the stovetop installation become obtainable with respect to the height of the worktop.

[0023] In the drawing an embodiment of the invention is depicted.

Fig. 1 shows a partial side view of a domestic cooking appliance according to the state of the art, wherein a stovetop is mounted in a kitchen worktop,

Fig. 2 shows the partial side view according to Fig. 1 for an embodiment of the present invention,

Fig. 3 shows a spacer element as used in the embodiment according to Fig. 2 in a cross sectional view and

Fig. 4 shows the partial side view according to Fig. 2, wherein the spacer element is mounted in another manner.

[0024] Fig. 1 shows a cooking appliance 1 which is a domestic cooking appliance which is pre-known as such. The depicted design has a worktop 2 (kitchen work plate) at which a stovetop 3 is firmly mounted within a cutout of the worktop 2. The stovetop 3 rests upon the worktop 2 by means of a stovetop frame or by means of a stovetop glass ceramic plate which extends at least partially beyond the cutout (not shown).The stovetop 3 is fixed in its mounted position within the cutout by connection means 4 to the bottom side 5 of the worktop 2. The connection means 4 comprise a certain number of (e. g. four) brackets 6, which are fixed to the stovetop 3 by means of screws 7. Thus, the brackets 6 clamp the stovetop 3 to the worktop 2 by means of a tension caused by a force generated by tightening the screw 7. In other words, the stovetop 3 is clamped by means of an element extending on the upper side of the worktop and the brackets 6. The thickness of regular worktops 2 as used in standard kitchens is between 30 mm to 40 mm. The brackets 6 without spacer element 8 are adapted to fix a stovetop 3 with a thickness to substantially corresponding to the thickness of regular worktops 2. Of course, the bracket 6 is able to bias differences between the thickness t_0 of the stovetop 3 and the thickness of the worktop 2 within certain limits.

[0025] In distinction to a pre-known design according to Fig. 1 a solution according to the invention can be seen in Fig. 2. To give the brackets 6 a firm hold on the bottom surface 5 of the worktop 2, a spacer element 8 is arranged between the bottom surface 5 of the worktop 2 and a contact surface 16 on a first end 17 of the bracket 6 which is in contact with the spacer element 8. Thus, the spacer element 8 defines a support surface 9 for the bracket 6, which is arranged in an effective height H vertically below and distanced from the bottom surface 5.

[0026] By means of the spacer element 8, the stovetop 3 is enabled to be mounted to worktops 2 of different thicknesses t_1, t_5.

[0027] As can be seen the spacer element 8 according to Fig. 2 - details of the same are shown in Fig. 3 - has a first pocket 10 at one face side 11 of the spacer element 8 and/or a second pocket 12 at the other, i. e. opposing face side 13. The pockets 10 and 12 are defining different support surfaces, i. e. the pocket 10 has a first support surface 9' and a second support surface 9" being arranged at the opposing side of the pocket 10. Accordingly, the pocket 12 has a third support surface 9"' and a fourth support surface 9"" being arranged at the opposing side of the pocket 12.

[0028] As can be seen from Fig. 3, different effective heights H_1, H_2, H_3 and H_4 can be used for the support of one end of the bracket 6 according to the position in which the spacer element 8 is mounted. In the embodiment according to Fig. 2, the first height H_1 is used for the fixation of the bracket 6. The different heights H_1, H_2, H_3 and H_4 can be used in the case that the worktop 2 comprises a thickness t_1, t_5 which is larger than the thickness to of the stovetop 3. According to the example as shown in Fig. 2, the thickness t_1 of the worktop 2 in addition to the height H_1 results substantially in the thickness t_0 of the stovetop 3,i.e. $t_0=H_1+t_1$, resulting in a substantially parallel extension of the bracket 6 relative to the bottom surface 5 of the worktop 2.

[0029] Also, the spacer element 8 has a center plane 14 which is the middle plane of the prismatic shape of the spacer element 8. Due to the different distances of the pockets 10 and 12 from the center plane 14 different heights H_1, H_2, H_3 and H_4 are realized.

[0030] A hole 15 penetrates the spacer element 8 totally as can be seen in Fig. 3. This allows the realization of another effective height H_5 for mounting the stovetop 3 as can be seen from Fig. 4. Here, the spacer element

8 is turned around 90° into the depicted position. The spacer element 8 according to Fig. 4 is fixed to the stovetop 3 and arranged between the stovetop 3 and the bracket 6. In this arrangement, the thickness t_5 of the worktop 2 is larger than the thickness of the stovetop 3. Thus, the thickness to of the stovetop 3 in addition to the height H_5 of the spacer element 8 is substantially the thickness t_5 of the worktop 2, i.e. $t_0=t_5-H_5$. Therefore, with the help of the spacer element 8 it is possible to mount the stovetop 3 to a worktop 2 having a thickness t_5 between 10 mm and 60 mm.

[0031] So, a plurality of different mounting heights can be realized in an easy manner and with low costs. For using those different mounting heights the respective support surfaces 9', 9", 9'" or 9"" are used for supporting the bracket 6 or - as shown in Fig. 4 - an outer face side of the spacer element 8.

List of reference numerals

[0032]

1	Cooking appliance (domestic cooking appliance)
2	Worktop
3	Stovetop
4	Connection means
5	Bottom surface
6	Bracket
7	Connector (screw)
8	Spacer element
9	Support surface
9'	First support surface
9''	Second support surface
9'''	Third support surface
9''''	Fourth support surface
10	First pocket
11	Face side of the spacer element
12	Second pocket
13	Face side of the spacer element
14	Center plane
15	Hole
16	Contact surface
17	First end
H	Effective height
H_1	First height
H_2	Second height
H_3	Third height
H_4	Fourth height
H_5	Fifth height
t_0	thickness of stovetop
t_1, t_5	thickness of worktop

Claims

1. Cooking appliance (1), especially domestic cooking appliance, comprising a stovetop (3) for being mounted to a kitchen worktop (2), wherein connection means (4) are arranged for fixing the stovetop (3) to a bottom surface (5) of the worktop (2), wherein the connection means (4) comprise at least one bracket (6), which is fixed by at least one connector (7), preferably by a screw, to the worktop (2) or the stovetop (3), **characterized in that** a spacer element (8) is arranged between the bottom surface (5) of the worktop (2) or a bottom surface of the stovetop (3) and a first end (17) of the bracket (6) for biasing a height (H_1, ..., H_5) between the thickness (to) of the stovetop (3) and a thickness (t_1, ..., t_5) of the worktop (2), wherein said spacer element (8) comprises at least two support surfaces (9' to 9"", 11, 13) upon which said bracket 6 can be supported, and wherein said support surfaces (9' to 9"", 11, 13) are arranged on the spacer element (8) in such way, that at least two different heights (H_1, ..., H_5) can be biased.

2. Cooking appliance according to claim 1, **characterized in that** at least a first support surface (9') is arranged in a first pocket (10) which is formed in the spacer element (8).

3. Cooking appliance according to claim 1 or 2, **characterized in that** the first pocket (10) is formed in a face side (11) of the spacer element (8).

4. Cooking appliance according to one of the claims 1 to 3, **characterized in that** the first pocket (10) has a substantial rectangular shape.

5. Cooking appliance according to one of claims 1 to 4, **characterized in that** the spacer element (8) has a substantial prismatic shape, in particular wherein the first pocket (10) extends into the inner of the prismatic shape of the spacer element (8), but does not totally penetrate the spacer element (8).

6. Cooking appliance according to one of claims 2 to 5, **characterized in that** a second support surface (9") is arranged in the first pocket (10) which is facing the first support surface (9').

7. Cooking appliance according to one of claims 1 to 6, **characterized in that** a second pocket (12) is formed in the spacer element (8) which forms a third support surface (9''').

8. Cooking appliance according to claim 7, **characterized in that** the second pocket (12) is formed into an opposing face side (13) of the spacer element (8).

9. Cooking appliance according to claim 7 or 8, **characterized in that** the second pocket (12) has a substantial rectangular shape.

10. Cooking appliance according to one of claims 7 to 9, **characterized in that** the second pocket (12) extends into the inner of the prismatic shape of the spacer element (8), but does not totally penetrate the spacer element (8).

11. Cooking appliance according to one of claims 7 to 10, **characterized in that** a fourth support surface (9"") is arranged in the second pocket (12) which is facing the third support surface (9"').

12. Cooking appliance according to one of claims 7 to 11, **characterized in that** the two pockets (10, 12) are arranged in unequal distances from a center plane (14) of the spacer element (8).

13. Cooking appliance according to one of claims 1 to 12, **characterized in that** a hole (15) is arranged which penetrates the spacer element (8) totally, wherein the hole (15) is preferably arranged in the center plane (14) of the spacer element (8).

14. Cooking appliance according to one of claims 1 to 13, **characterized in that** the spacer element (8) is made of plastic material.

15. Cooking appliance according to one of claims 1 to 14, **characterized in that** it is a gas cooking device.

Amended claims in accordance with Rule 137(2) EPC.

1. Cooking appliance (1), especially domestic cooking appliance, comprising a stovetop (3) for being mounted to a kitchen worktop (2), wherein connection means (4) are arranged for fixing the stovetop (3) to a bottom surface (5) of the work-top (2), wherein the connection means (4) comprise at least one bracket (6), which is fixed by at least one connector (7), preferably by a screw, to the worktop (2) or the stovetop (3), wherein a spacer element (8) is arranged between the bottom surface (5) of the worktop (2) or a bottom surface of the stovetop (3) and a first end (17) of the bracket (6) for biasing a height (H_1,...,H_5) between the thickness (t_0) of the stovetop (3) and a thickness (t_1,...,t_5) of the worktop (2), wherein said spacer element (8) comprises at least two support surfaces (9' to 9"", 11, 13) upon which said bracket (6) can be supported, and wherein said support surfaces (9' to 9"", 11, 13) are arranged on the spacer element (8) in such way, that at least two different heights (H_1,...,H_5) can be biased,
characterized in that
at least a first support surface (9') is arranged in a first pocket (10) which is formed in the spacer element (8), where-in the support surfaces (9' to 9"", 11, 13) are of different distances to an opposing face side (11, 13) of the spacer element (8) or off-set of a symmetric axis of said spacer element (8).

2. Cooking appliance according to claim 1, **characterized in that** the first pocket (10) is formed in a face side (11) of the spacer element (8).

3. Cooking appliance according to claim 1 or 2, **characterized in that** the first pocket (10) has a substantial rectangular shape.

4. Cooking appliance according to one of claims 1 to 3, **characterized in that** the spacer element (8) has a substantial prismatic shape, in particular wherein
the first pocket (10) extends into the inner of the prismatic shape of the spacer element (8), but does not totally penetrate the spacer element (8).

5. Cooking appliance according to one of claims 2 to 4, **characterized in that** a second support surface (9") is arranged in the first pocket (10) which is facing the first support surface (9').

6. Cooking appliance according to one of claims 1 to 5, **characterized in that** a second pocket (12) is formed in the spacer element (8) which forms a third support surface (9"').

7. Cooking appliance according to claim 6, **characterized in that** the second pocket (12) is formed into the opposing face side (13) of the spacer element (8).

8. Cooking appliance according to claim 6 or 7, **characterized in that** the second pocket (12) has a substantial rectangular shape.

9. Cooking appliance according to one of claims 6 to 8, **characterized in that** the second pocket (12) extends into the inner of the prismatic shape of the spacer element (8), but does not totally penetrate the spacer element (8).

10. Cooking appliance according to one of claims 6 to 9, **characterized in that** a fourth support surface (9"") is arranged in the second pocket (12) which is facing the third support surface (9"').

11. Cooking appliance according to one of claims 6 to 10, **characterized in that** the two pockets (10, 12) are arranged in unequal distances from a centre plane (14) of the spacer element (8).

12. Cooking appliance according to one of claims 1 to 11, **characterized in that** a hole (15) is arranged which penetrates the spacer element (8) totally, wherein the hole (15) is preferably arranged in the centre plane (14) of the spacer element (8).

13. Cooking appliance according to one of claims 1 to 12, **characterized in that** the spacer element (8) is made of plastic material.

14. Cooking appliance according to one of claims 1 to 13, **characterized in that** it is a gas cooking device.

FIG 1
(State of the Art)

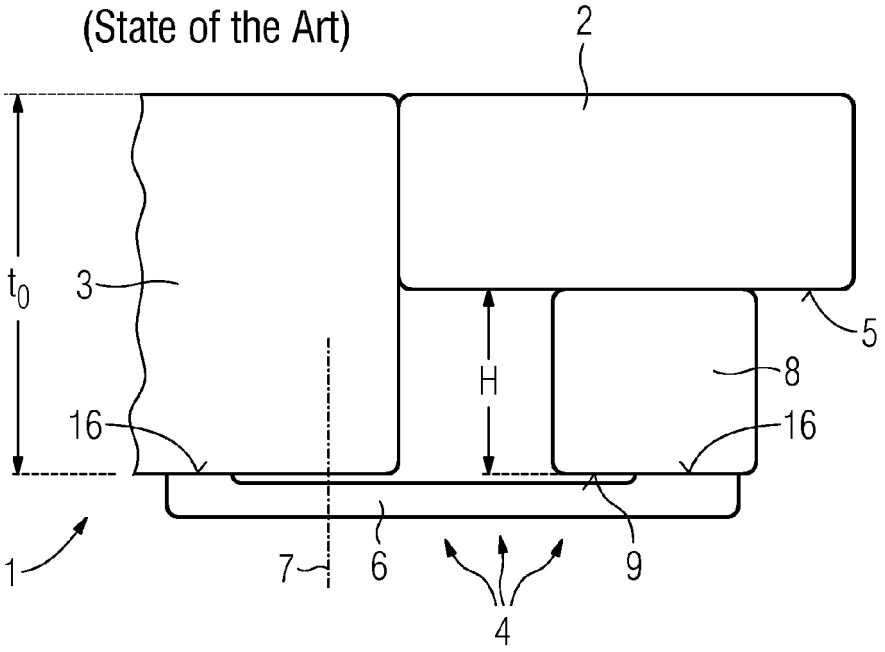


FIG 2

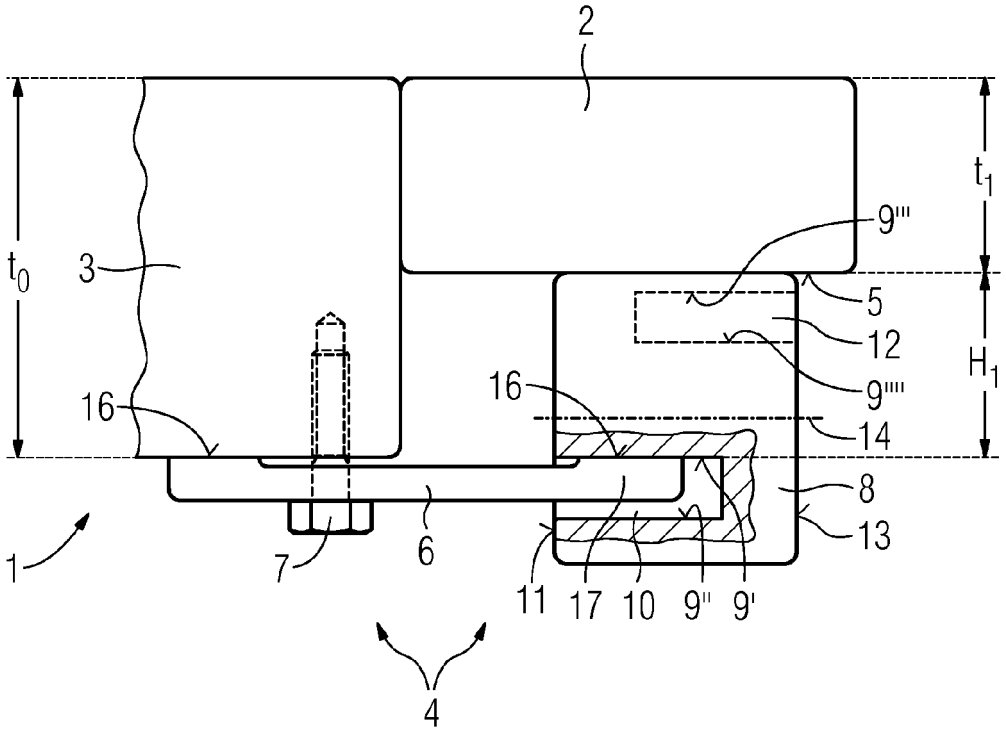


FIG 3

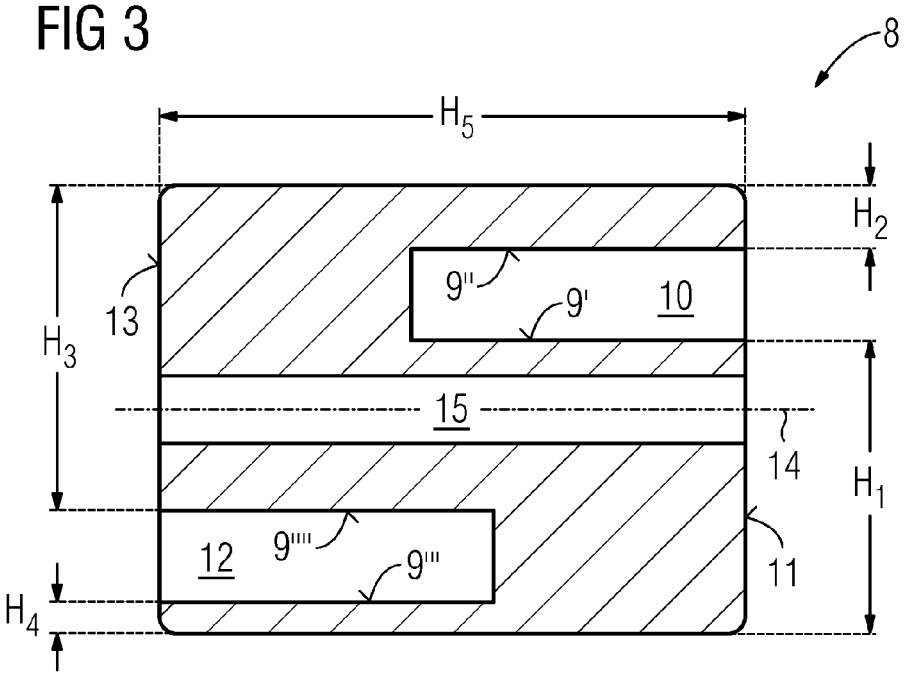
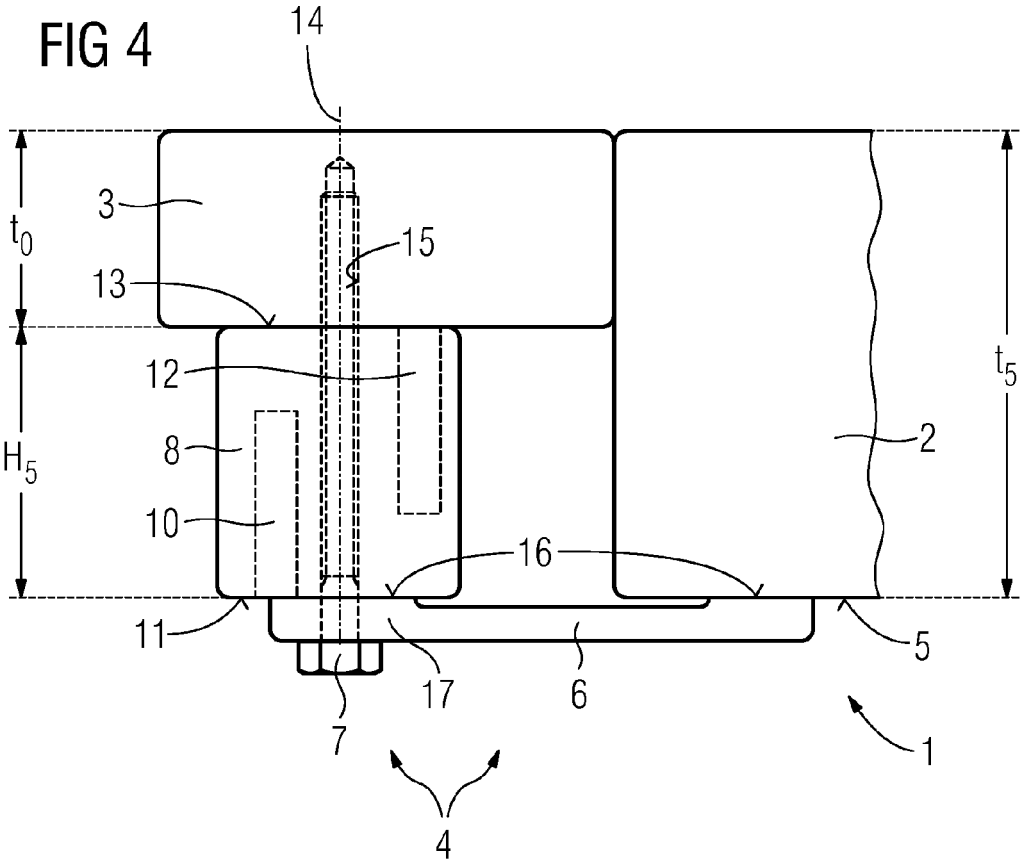

8
H5
H2
H3
13
9''
9'
10
15
14
H1
12
9''''
9'''
11
H4

FIG 4


14
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EUROPEAN SEARCH REPORT

Application Number
EP 13 17 2610

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TECHNICAL FIELDS SEARCHED (IPC)
F24C
E03C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	27 January 2014	Rodriguez, Alexander

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

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