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GB-A- 1 230 117 GB-A- 2 010 376
GB-A- 2 285 480

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Description

[0001] This invention relates to fasteners. It is primarily concerned with fasteners for sinks or basins which are set down into an aperture in a worktop, the rim being a flange that rests on the periphery of the aperture and which is clamped in place by devices fitted underneath the sink or basin. It is a development of the fastener described in our Patents EP GB-B-0 128 772 and GB-B-2 285 480.

[0002] The fasteners described in the first Patent were designed for metal sinks which provide slim ribs or tags projecting downwardly and onto which the fasteners can clip. The second Patent is concerned with fasteners for moulded plastics sinks which could provide underside formations with horizontal slots into which barbed tongues could enter and thus make the fasteners captive.

[0003] EP-A-0271705 discloses a fastener of similar form to that shown in EP-B-0128722 and is designed for vertical, edgewise engagement with a downwardly projecting wall on a sink. However, other sink constructions are proposed which require different fasteners, and it is the aim of this invention to provide one such alternative.

[0004] According to the present invention there is provided a fastener comprising a clip, a clamping member hinged thereto and means for adjusting the clamping member relative to the clip in a direction transverse to the hinge axis, wherein the clip is of inverted L-shape with the horizontal leg providing a formation which can laterally engage and retentively snap around the stem of an inverted mushroom stud.

[0005] Preferably, the clip will be of sheet metal.

[0006] In one useful form, the horizontal leg has four fingers extending away from the angle of the L, the middle two fingers being said formation. These fingers need to be quite narrow to flex satisfactorily during the snap action, and the outer two fingers add width to the horizontal leg, and therefore stability of engagement with the underside of the rim of the sink unit.

[0007] In an alternative arrangement, the horizontal leg has a closed end slot with a wide end portion through which the head of a mushroom stud can pass and a narrow end portion into which the stem of the stud can snap. The closed end of the narrow end portion will preferably be adjacent the free end of the horizontal leg and the wide end portion may extend into the vertical leg of the L-shaped clip. Indeed, it can be an extension of a slot in that portion which is provided to accommodate a screw by which the clamping member is adjusted.

[0008] For a secure engagement with the stud, the horizontal leg of the L-shaped clip may bow downwardly in the region of said formation. Then, while the upper face of the leg engages the underside of the sink unit, the downward bow wedges against the head of the mushroom stud and tends to be flattened slightly as the snap fastening is completed.

[0009] For a better understanding of the invention one

embodiment will now be described, by way of example, with reference to the accompanying drawing, in which:

Figure 1 is a front view of a clip of a fastener,

Figure 2 is a side view of the clip of Figure 1,

Figure 3 is an underneath plan view of the clip of Figure 1,

Figure 4 is a side view of the complete fastener holding the rim of a sink to a worktop,

Figure 5 is an underneath perspective view of the clip being offered up to the rim,

Figure 6 is an underneath perspective view of the clip secured to the rim,

Figure 7 is a face view of a blank for a clip of an alternative fastener,

Figure 8 is a front view of a clip made from the blank of Figure 7,

Figure 9 is an underneath plan view of the clip of Figure 8,

Figure 10 is a side view of the clip of Figure 8, and

Figure 11 is a side view of the clip of Figure 8 attached to the rim of a sink.

[0010] The upper part of the fastener of Figures 1 to 6 is a clip 1 formed from a single substantially rectangular sheet of metal having a certain resilience and bent and cut in a manner described below.

[0011] In side view, the clip 1 is of inverted L-shape with the upright leg 2 terminating at its lower end in a partial roll 3 with a central extension 4 to an almost complete roll. This roll has a central slot 5 and a further slot 6 is formed from near the end of this slot to near the centre of the top of the portion 2. The horizontal leg 7 of the clip has a set of four parallel fingers extending away from the angle of the L, the two inner ones 8 being separated by a divergent slot 9 with opposed arcuate enlargements 10 at an intermediate position. In the region of these enlargements the fingers 8 are locally bowed downwards at 11. The outer fingers 12 are separated from the inner fingers 8 by slots 13 which allow the fingers 8 to flex slightly apart.

[0012] The clamping member 14 (shown only in Figure 4) is similar to the one described in EP (GB) 0 128 772. It is generally L-shaped in side view with a lower flange 15 having upturned corners for engaging under a worktop. The upright portion comprises two fingers 16 which engage in diametral slots in opposite ends of a hinge pin 17 and which pass freely either side of the extension 4. The hinge pin 17 is captive in the roll 3 and its extension 4. A screw 18 has its head 19 engaging under a central lug 20 at the root of the flange 15 and extends upwardly, parallel to and midway between the fingers 16. It engages through the centre of the hinge pin 17 and is unimpeded by the extension 4 and the portion 2 by virtue of the slots 5 and 6.

[0013] Only part of a rim 21 of a sink is shown in the drawing, and underneath it is provided with inverted mushroom studs 22. These are inboard of a groove 23

for receiving a sealing strip (not shown) that will bear on the worktop. The fasteners are attached to these studs as best seen in Figures 5 and 6 by the fingers 8 embracing the stem of the stud 22 and being pushed until that stem snaps into the enlargements 10. The bowed sections 11 on either side of the enlargements will be slightly flattened, keeping the fastener firm even before the sink is clamped in place. The heads of the studs 22 retain the clips against downward pull. The outer fingers 12, which might appear redundant, are useful in contributing stability.

[0014] Referring now to Figures 7 to 11, an alternative clip is made from a sheet metal blank 24, generally rectangular but with a substantially square extension 25 centrally at one end equivalent to the extension 4 and serving the same purpose. It has a slot 26 through which the screw will pass.

[0015] Aligned with this slot 26, and extending over most of the length of the blank 24 there is a bottle-shaped slot 27 part of which is equivalent to the slot 6. It has a rounded base adjacent the extension 25 and its neck tapers in towards the other end, and to opposed arcuate enlargements 28 equivalent to the enlargements 10. Beyond them the slot 27 is parallel sided up to its rounded, closed end.

[0016] This blank 24 is deformed into L-shaped like the clip 1 and the neck of the slot 27 is in the horizontal leg 29 of what is now a clip. In the region of the enlargements 28 this leg 29 is bowed downwards as a shallow rib 30 transverse of the clip.

[0017] A stud 31 which is to be engaged by this clip is similar to the stud 22 except that it offers an annular groove 32 a short distance below the underside of a rim 33 of a sink, rather than a simple mushroom head.

[0018] The lower end 34 of the stud 31, beyond the groove 32, is cylindrical and of slightly less diameter than the width of the slot 27. It can therefore pass through the slot 27 where the neck begins in the horizontal leg 29, and the clip is offered up accordingly (to the right of the position shown in Figure 11). The clip is then pulled towards the edge of the rim 33 and the groove 32 is engaged by the edges defining the neck. Finally, the enlargements 28 snap around the stud 31 within the groove 32 and the clip is secure.

Claims

1. A fastener comprising a clip (1), a clamping member (14) hinged thereto, and means (18) for adjusting the clamping member (14) relative to the clip (1) in a direction transverse to the hinge axis, **characterised in that** the clip (1) in its installed position is of inverted L-shape with a horizontal leg (7, 29) providing a formation (8, 27) which can laterally engage and retentively snap around a stem of an inverted mushroom stud (22, 31).

2. A fastener as claimed in Claim 1, wherein the clip (1) is of sheet metal.
3. A fastener as claimed in Claim 2, wherein the horizontal leg (7) has four fingers (8, 12) extending away from the angle of the L, the middle two fingers (8) being said formation.
4. A fastener as claimed in Claim 2, wherein the horizontal leg (29) has a closed end slot (27) with a wide end portion through which the head of a mushroom stud (31) can pass and a narrow end portion (28) into which the stem of the stud can snap.
5. A fastener as claimed in Claim 4, wherein the closed end of the narrow end portion (28) is adjacent the free end of the horizontal leg (29) and the wide end portion extends into the vertical leg of the L-shaped clip.
6. A fastener as claimed in any one of Claims 2 to 6, wherein the horizontal leg (7, 29) bows in the installed position downwardly in the region of said formation.

Patentansprüche

1. Befestigungselement umfassend einen Federbügel (1), ein Klemmelement (14), welches hieran angelenkt ist, sowie ein Mittel (18) zur Einstellung des Klemmelementes (14) relativ zum Federbügel (1) in einer Richtung quer zur Gelenkachse, **dadurch gekennzeichnet, dass** der Federbügel (1) in seiner installierten Position die Form eines umgekehrten L besitzt mit einem horizontalen Schenkel (7, 29), welche eine Formation (8, 27) bereitstellt, die seitlich und einschnappend haltend mit dem Schaft eines umgekehrten Kopfbolzens (22, 31) zum Eingriff führbar ist.
2. Befestigungselement gemäß Anspruch 1, wobei der Federbügel (1) aus Metallblech besteht.
3. Befestigungselement gemäß Anspruch 2, wobei der horizontale Schenkel (7) vier Finger (8, 12) besitzt, die sich von dem Winkel des L ausgehend erstrecken, wobei die mittleren beiden Finger (8) die Formation bilden.
4. Befestigungselement gemäß Anspruch 2, wobei der horizontale Schenkel (29) einen geschlossenen Endschlitz (27) aufweist mit einem weiten Endteil, durch welchen der Kopf des Kopfbolzens (31) hindurchzugreifen vermag, und einem engen Endteil (28), in welchen der Schaft des Bolzens einzuschnappen vermag.

5. Befestigungselement gemäß Anspruch 4, wobei das geschlossene Ende des engen Endteils (28) dem freien Ende des horizontalen Schenkels (29) benachbart ist und der weite Endteil sich in den vertikalen Schenkel des L-förmigen Federbügels hinein erstreckt. 5
6. Befestigungselement gemäß einem der Ansprüche 2 bis 5, wobei der horizontale Schenkel (7, 29) in der installierten Position nach unten in den Bereich der Formation gebogen ist. 10

Revendications

1. Moyen de fixation comprenant un élément de retenue (1), un élément de serrage (14) articulé à celui-ci et un moyen (18) pour ajuster l'élément de serrage (14) par rapport à l'élément de retenue (1) dans une direction transversale à l'axe d'articulation, **caractérisé par le fait que** l'élément de retenue (1) dans sa position installée a la forme d'un L renversé avec une branche horizontale (7, 29) fournissant une formation (8, 27) qui peut s'engager latéralement et s'encliquer de façon sûre autour d'une tige d'une protubérance en champignon renversé (22 ; 31). 15 20 25
2. Moyen de fixation selon la revendication 1, dans lequel l'élément de retenue (1) est de tôle métallique. 30
3. Moyen de fixation selon la revendication 2, dans lequel la branche horizontale (7) a quatre doigts (8, 12) s'étendant à l'opposé de l'angle du L, les deux doigts du milieu (8) étant ladite formation. 35
4. Moyen de fixation selon la revendication 2, dans lequel la branche horizontale (29) a une fente (27) à extrémité fermée avec une partie d'extrémité large à travers laquelle la tête d'une protubérance en champignon (31) peut passer et une partie d'extrémité étroite (28) dans laquelle la tige de la protubérance peut s'encliquer. 40
5. Moyen de fixation selon la revendication 4, dans lequel l'extrémité fermée de la partie d'extrémité étroite (28) est adjacente à l'extrémité libre de la branche horizontale (29) et la partie d'extrémité large s'étend dans la branche verticale de l'élément de retenue en forme de L. 45 50
6. Moyen de fixation selon l'une quelconque des revendications 2 à 6, dans lequel la branche horizontale (7, 9) se courbe dans la position installée vers le bas dans la région de ladite formation. 55

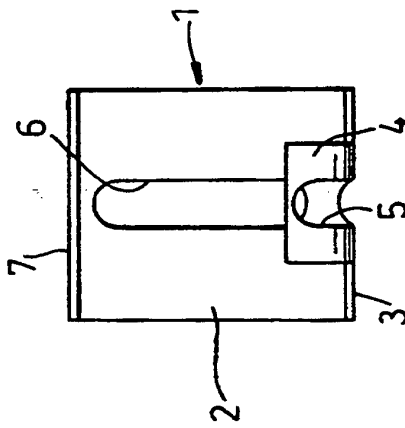


Fig. 1

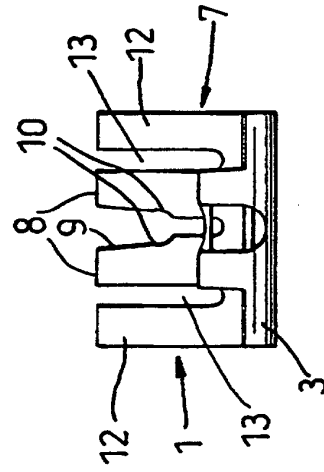


Fig. 3

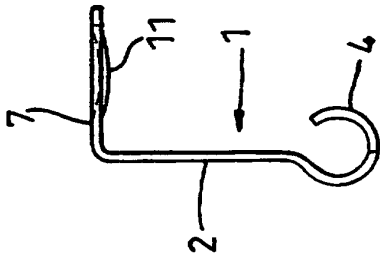


Fig. 2

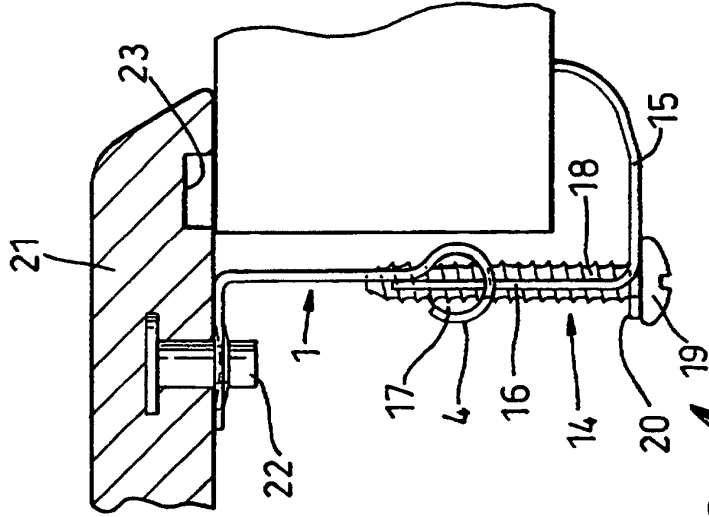


Fig. 4

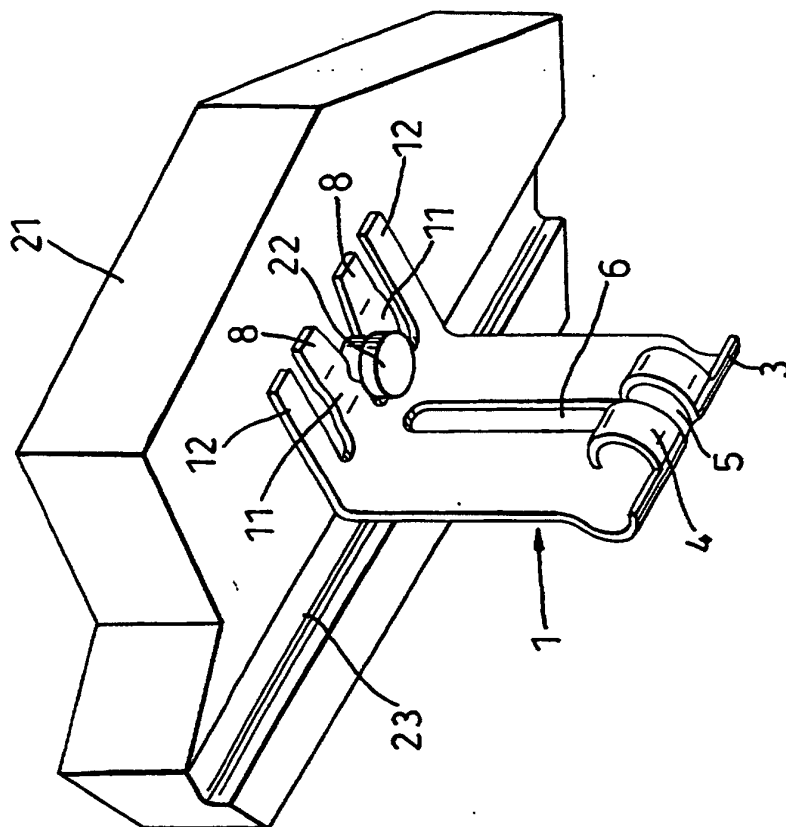


Fig. 6

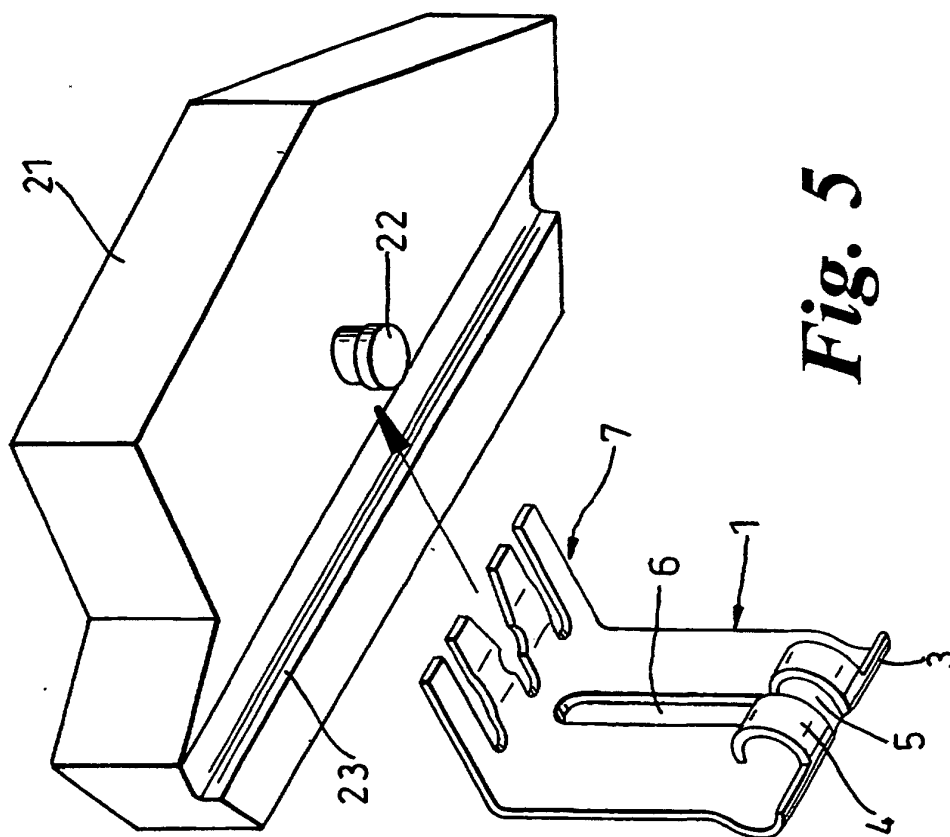


Fig. 5

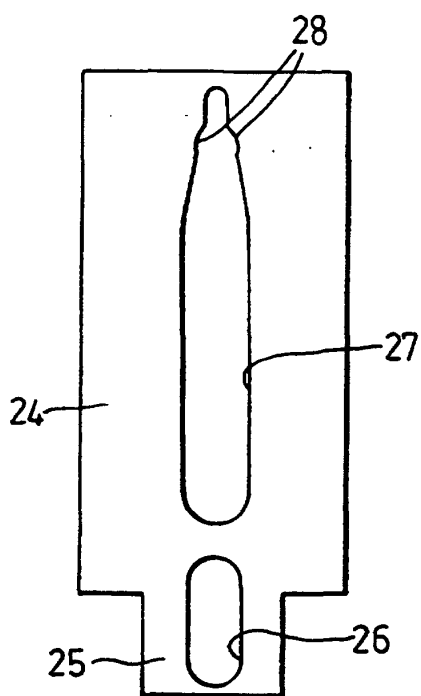


Fig. 7

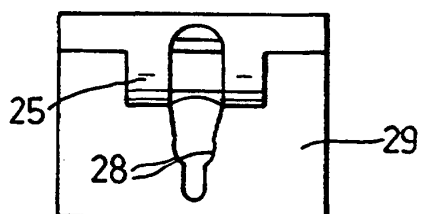


Fig. 9

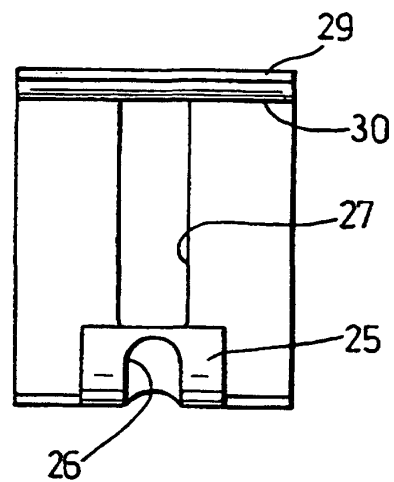


Fig. 8

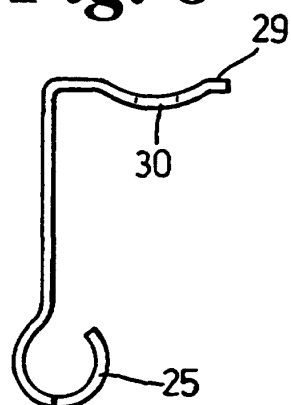


Fig. 10

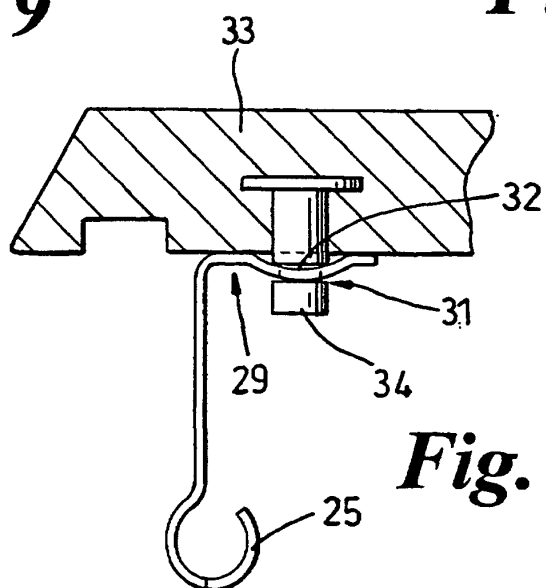


Fig. 11