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(54) **Improvements relating to fasteners**

(57) A fastener for securing a sink unit (21, 33) in a worktop has a clip (1, 24) for attachment to a stud (22, 31) below the periphery of the unit and a hinged clamping member (14) which is tightened up against the underside of the worktop by a screw (18). This threads through the hinge pin (17) and when undone allows the clamping member (14) to swing back to an inoperative position when it will clear the edge of the hole in the worktop as the unit is lowered in. The stud (22, 31) is of inverted mushroom form and the clip (1, 24) of inverted L-shape with the horizontal leg (7, 29) having a slot (9, 27) with opposed edges shaped to snap around the stem of the stud (22, 30).

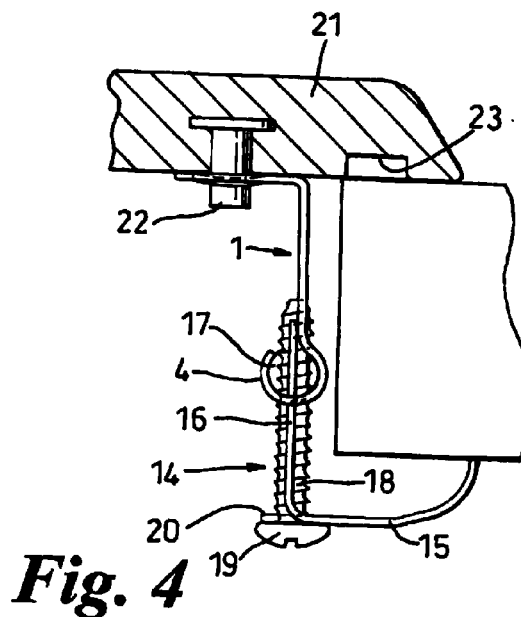


Fig. 4

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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) 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] 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 has a formation which can retentively snap around the stem of an inverted mushroom stud.

[0005] Preferably, the clip will be of sheet metal and of inverted L-shape with the horizontal leg providing the formation.

[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] The rest of the clip, and the clamping member may be as described in EP (GB) 0 128 772, and how

the fastener is adjusted and tightened can follow that Patent.

[0010] 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.

[0011] 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.

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] 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.

[0019] 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.

[0020] The remainder of the fastener is as described previously.

which can retentively snap around the stem of an inverted mushroom stud (22,31).

2. A fastener as claimed in Claim 1, characterised in that the clip (1) is of sheet metal and of inverted L-shape with the horizontal leg (7,29) providing the formation.
3. A fastener as claimed in Claim 2, characterised in that 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, characterised in that 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, characterised in that the closed end of the narrow end portion 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, characterised in that the horizontal leg (7,29) bows downwardly in the region of said formation.

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) has a formation (8,27)

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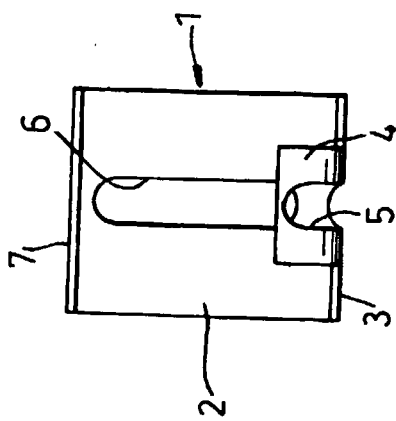


Fig. 1

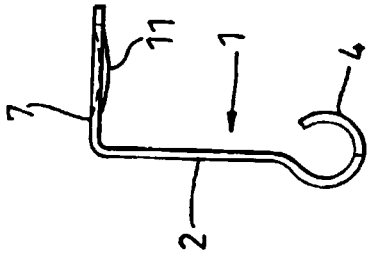


Fig. 2

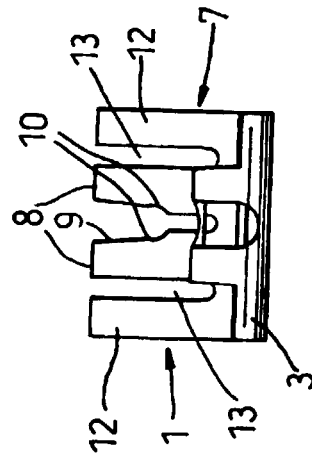


Fig. 3

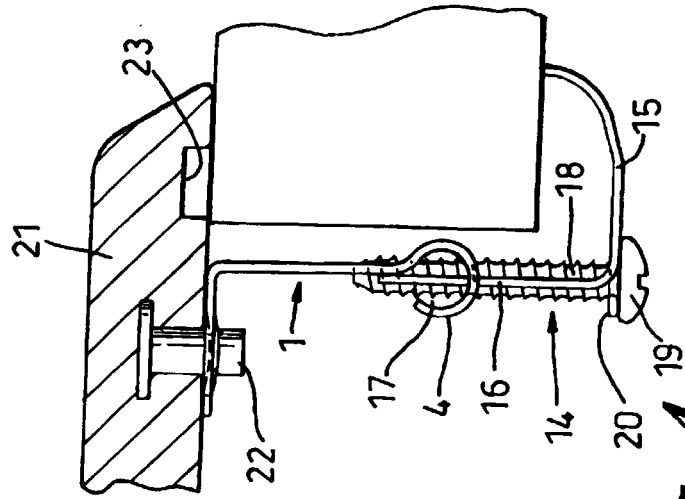


Fig. 4

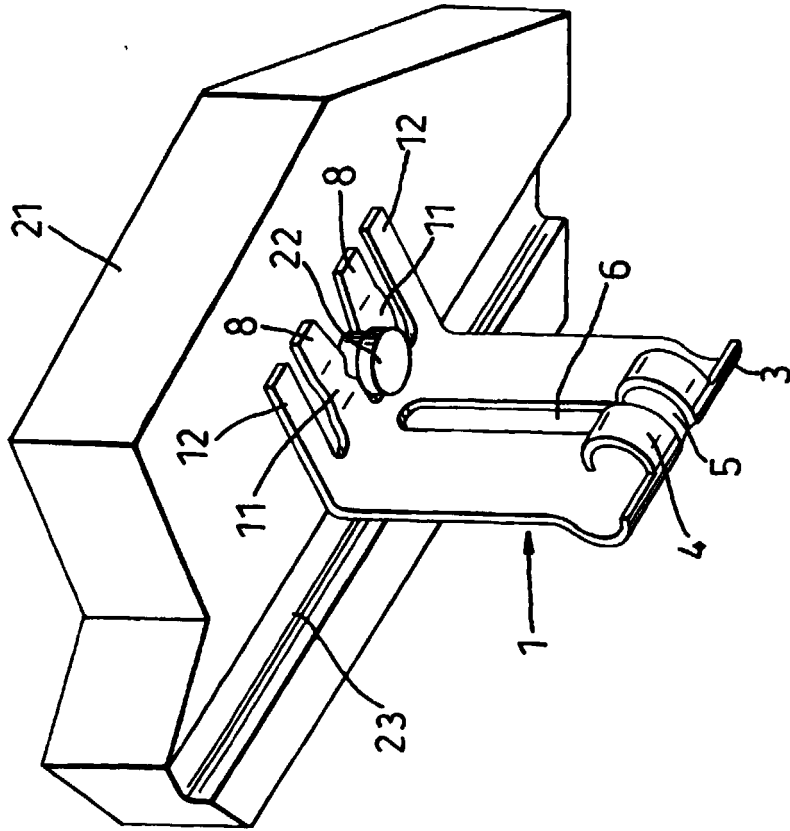


Fig. 6

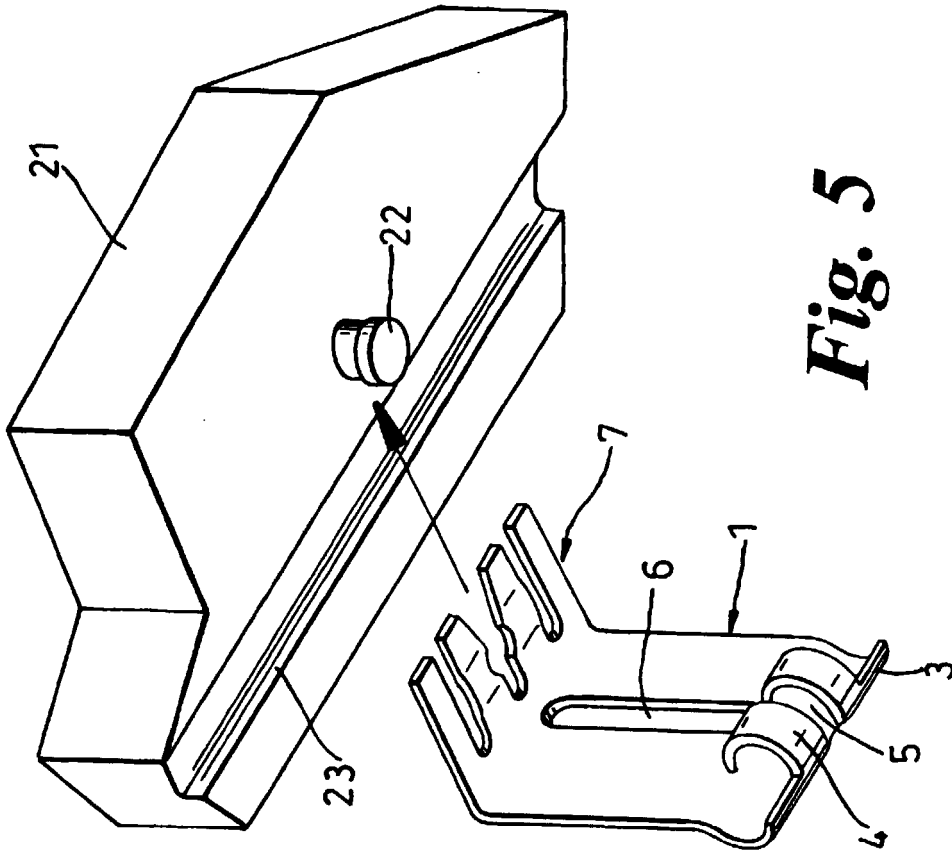


Fig. 5

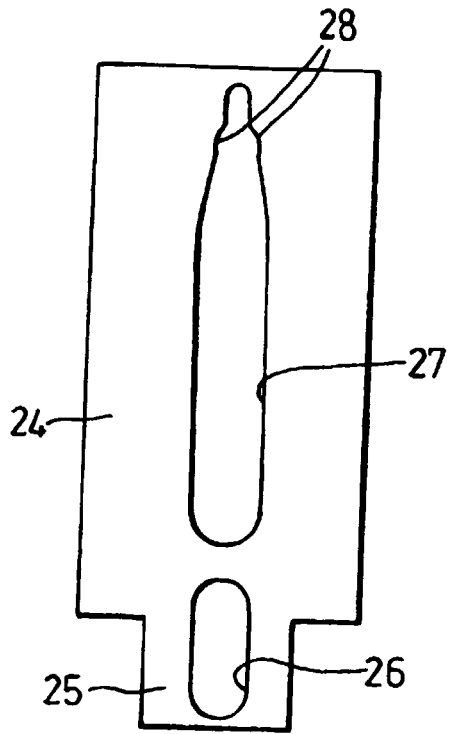


Fig. 7

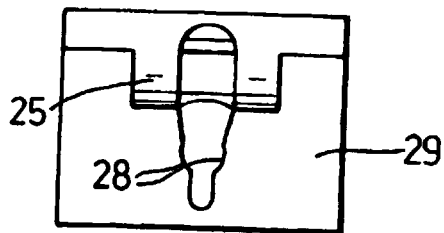


Fig. 9

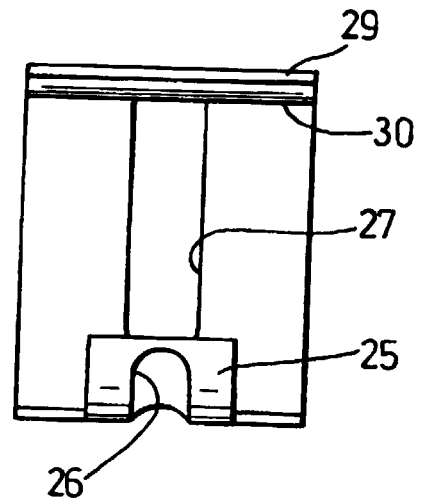


Fig. 8

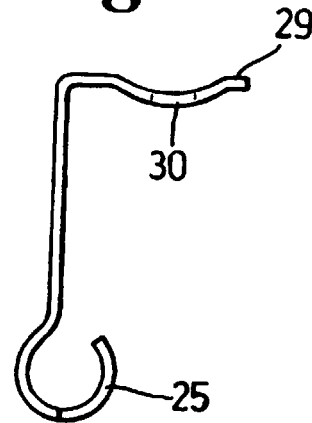


Fig. 10

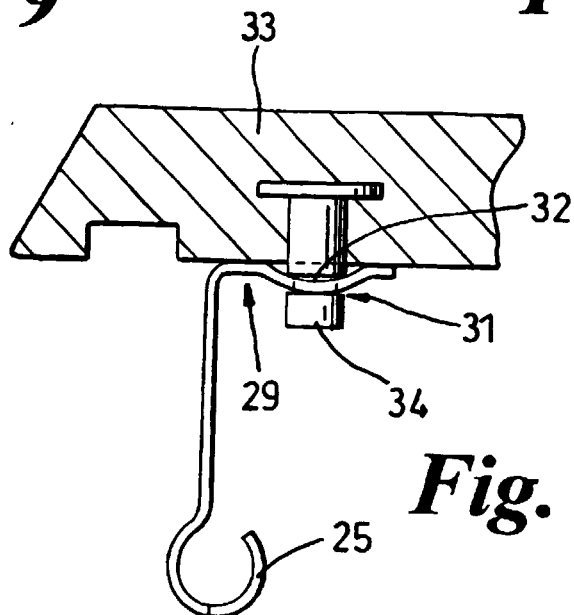


Fig. 11