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

(11) Publication number: **0 341 060**
A1

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **89304495.8**

(51) Int. Cl.[4]: **E 03 C 1/33**

(22) Date of filing: **04.05.89**

(30) Priority: **06.05.88 GB 8810762**
14.04.89 GB 8908533

(43) Date of publication of application:
08.11.89 Bulletin 89/45

(84) Designated Contracting States:
AT BE CH DE ES FR GR IT LI LU NL SE

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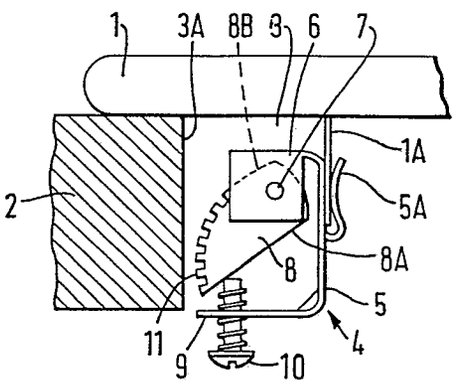
(54) **Fasteners.**

(57) A fastener (4) comprises a body having a portion (5) for securing to a first member (1), an engagement member (8 or 80 or 800) movable with respect to said portion (5) from a withdrawn position, in which the first member with the fastener secured thereto can be entered in a prepared aperture (3) in a second member (2), to an extended position to engage the second member to hold the first member secured to the second member, and means (10) for applying cam action to the engagement member to move the engagement member into its extended position. The engagement member (8; 80; 800) is equally effective to hold the first member (1) to the second member (2) whether the engagement member is sandwiched between the first member and the second member, or is engaged with the undersurface of the second member so that the fastener is suitable for use with second members of any thickness above a minimum thickness. Furthermore, when used with second members (2) sufficiently above a certain thickness the fastener will not project beyond the engaged surface of the second member so that no obstruction is created.
Particularly the first member (1) is a sink or basin and the second member (2) is a worktop, the top of a kitchen unit or the top of a vanitory unit.

FIG. 1



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Description

FASTENERS

This invention relates to fasteners and is particularly concerned with fasteners for securing a sink or basin in a support.

Kitchen sinks and inset wash basins are conventionally secured in a prepared aperture in a support which is a work top, the top of a kitchen unit or the top of a vanitory unit by fasteners that are engaged with the sink or basin and the undersurface of the support. The fasteners are set in an operative position in which the sink or basin is pulled down onto the support and held clamped in position. Examples of such fasteners described in European Patent Specification No. 0 128 772 comprise a clip (11) for positively engaging a rail (18) of a sink (20) and a screw-operated clamping member (12) with a hinge pin connection (13) to the base (14) of the clip, the screw (25) being threaded transversely through the hinge pin (13), and the clamping member (12) being movable between operative and non-operative positions. In the non-operative position the clamping member (12) is removed from projecting to any substantial extent to one side of the sink rail with which the clip is engaged. In the operative position a portion (21/22) of the clamping member (12) is brought to project to the one side of the sink for engagement with the undersurface of a work top (19) to pull the sink down on to the work top and hold the sink clamped in position. Disadvantages are that as the fastener has to engage the undersurface of the work top a range of fasteners of differing size overall is required to suit work tops of different thickness. Furthermore, as the fasteners project below the work top they form obstructions to appliances which it may be desired to site under the work top adjacent the sink.

According to the present invention there is provided a fastener comprising a body having a portion for securing to a first member, an engagement member movable with respect to said portion from a withdrawn position, in which the first member with the fastener secured thereto can be entered in a prepared aperture in a second member, to an extended position to engage the second member to hold the first member secured to the second member, and means for applying cam action to the engagement member to move the engagement member into its extended position. The means for applying cam action can also serve to lock the engagement member in its extended position. Specifically the engagement member in moving to its extended position pivots, with respect to the portion of the fastener that is secured to the first member, so that after engagement with the second member the engagement member acts to draw the first member onto the second member. Particularly the first member is a sink or basin and the second member is a work top, the top of a kitchen unit or the top of a vanitory unit. As the engagement member is moved into its operative position by the cam action, the engagement member is equally effective to hold the first member to the second member whether the engagement member is sandwiched between the first member and the second member, (as will occur with second members above a certain thickness), or is engaged with the undersurface of the second member (as will occur with second members less than the certain thickness). Thus the present fastener is suitable for use with second members of any thickness above a minimum thickness, and when used with second members sufficiently above the certain thickness will not project beyond the engaged surface of the second member so that no obstruction is created.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:

Figure 1 is a side view illustrating placing a sink in a prepared aperture in a work top,

Figure 2 is a perspective view, on a larger scale, of a fastener that is fitted to the sink shown in Figure 1,

Figure 3 is a perspective view of another form of fastener,

Figure 4 is a perspective view of another form of fastener,

Figure 5 is a view similar to Figure 4 but showing a different condition of the fastener of Figure 4, and

Figure 6 is a perspective view of a further form of fastener.

In Figures 1 and 2 the sink is referenced 1, the work top is referenced 2, the prepared aperture is referenced 3 and the fastener is referenced 4. The sink constitutes a first member that is to be secured to a second member that is the work top.

The fastener 4 has a portion 5 which is upstanding in use and the upper part of which is formed as a clip 5A that can be engaged with a depending rail 1A of the sink 1 to secure the fastener to the sink as shown in Figure 1. The portion 5 is also (or alternatively) provided with holes 5B (Figure 2) so that the fastener can be fixed by screws to a sink having no depending rail.

The upper part of the portion 5 is cut and bent to form a downwardly open channel 6 the upright side faces of which carry a hinge pin 7. An engagement member 8 pivots about the axis of this hinge pin 7. The lower part of the portion 5 is bent over to form a base 9 that is opposed to the channel 6. A screw 10 in screw-threaded engagement with the base 9 extends through the base 9 and into contact with an inner flank 8A of the engagement member 8, that constitutes a cam surface of the engagement member 8. An outer flank 8B of the engagement member 8 has gripper ribs 11 thereon.

In Figure 1 the engagement member 8 is shown in a withdrawn position in which the sink unit with several of the fasteners 4 secured to it can be entered in the prepared aperture 3 in the work top 2. Once the sink unit is positioned in the aperture it is made fast therein by turning the screws 10 so that

they advance and act on the inner flanks 8A of the engagement members 8 to exert cam action to pivot the engagement members into extended positions in which each engagement member 8 is sandwiched between the sink 1 and the peripheral wall 3A of the aperture 3. As the engagement members 8 come into contact with the wall 3A the ribs 11 bite into the wall 3A so that the engagement members 8 grip the work top 2 and further rotation of the screws 10 exerting further cam action serves to draw the sink 1 onto the work top 2. The sink is held secured to the work top with the engagement members 8 locked in their extended positions by the screws 10.

In Figure 1 the work top is of sufficient thickness for the engagement member 8 of each fastener to engage the peripheral wall 3A. However, the fastener is also suitable for use with a thinner work top since the engagement member will then engage either the undersurface only of the work top, or the undersurface and the peripheral wall. Thus as the engagement member 8 can engage the peripheral wall 3A of the aperture 3 only, or undersurface only, or the peripheral wall and the undersurface, the fastener 4 can be used with any thickness of work top above a minimum necessary for the engagement member properly to engage the work top. In cases where the work top is above certain thickness, so that the engagement member does not engage the undersurface of the work top, the extent to which the fastener projects below the work top is minimised, and at thicknesses sufficiently above the certain thickness the fastener does not extend at all.

The amount to which the fastener extends, if at all, below the work top is determined by the length of the screw 10 that is left projecting below the base 9 when the fully secured position is reached. The amount of projection is minimised in the form of Figure 3 where the screw 100 is captive in the base 900 but can freely rotate in the base 900, and has its screw-threading in engagement with a ribbed heel 80C, constituting a cam surface, at the base of the inner flank 80A of the engagement member 80. In this form at all times only the head of the screw 100 projects from the base 900. The fastener of Figure 3 is otherwise as the fastener of Figures 1 and 2.

The fastener of Figures 4 and 5 has the lower part of its portion 5 cut and bent to form an upwardly open channel 600 that is wider at its base and narrower at its top. The upright side walls W of the channel 600 carry the engagement member hinge pin 7 at their upper ends. The engagement member 800 has a heel constituted by two spaced apart flanges F through which the hinge pin 7 passes. A toe T of the engagement member 800 is forked for biting into an aperture wall. The screw 10 which operates on the engagement member 800 in the same way as the screw 10 in the fastener of Figures 1 and 2 is in screw-threaded engagement with the base web B of the channel 600. Thus the side walls W of the channel 600 act as struts between the engagement member hinge pin 7 and the screw-threaded anchorage, in the base web B, of the screw 10 whereby the force which the screw 10 can exert on the engagement member 800 is maximised. It is to be understood that the engagement member 8 of Figures 1 and 2 could be mounted as is the engagement member 800 of Figures 4 and 5, and that the engagement member and freely rotating screw arrangement 80/100 of Figure 3 could be mounted as are the engagement member 800 and screw 10 in Figures 4 and 5. Use and operation of the fastener of Figures 4 and 5 is as described with regard to the fastener of Figures 1 and 2, the engagement member 80 being shown in withdrawn position in Figure 4 and in extended position in Figure 5.

The fasteners of Figure 6 has a channel 600 and engagement member 800 as shown in Figures 4 and 5 but its portion 5 is extended across the top of the heel of the member 800 and upwardly, as shown at 5C. Each side portion of the extension 5A is bent over to form opposed open channels 5D that can be engaged with a suitable lug depending from a sink. The extension 5A terminates in a bent over lip 5E that will bear against the sink.

In all cases the screw 10 or 100 serves to lock the engagement member 8 or 80 or 800 in its extended position.

Claims

1. A fastener comprising a body having a portion (5) for securing to a first member (1), an engagement member (8,80,800) movable with respect to said portion (5) from a withdrawn position, in which the first member (1) with the fastener secured thereto can be entered in a prepared aperture (3) in a second member (2), to an extended position to engage the second member (2) to hold the first member (1) secured to the second member (2), and means (10) for applying cam action to the engagement member (8,80,800) to move the engagement member (8,80,800) into its extended position.

2. A fastener as claimed in claim 1, wherein the means (10) for applying cam action also serves to lock the engagement member (8,80,800) in its extended position.

3. A fastener as claimed in claim 1 or 2, wherein the engagement member (8,80,800) in moving to its extended position pivots, with respect to the portion (5) of the fastener that is secured to the first member (1), so that after engagement with the second member (2) the engagement member (8,80,800) acts to draw the first member (1) onto the second member (2).

4. A fastener as claimed in claim 1, 2 or 3, wherein the means for applying cam action is a screw (10) in screw threaded engagement with a part (9,B) of the body and bearing on the engagement member (8, 800) such that by rotating the screw (10) with respect to the body, the screw (10) can be advanced to move the engagement member (8,800) into its extended position.

5. A fastener as claimed in claim 1, 2, or 3, wherein the means for applying cam action is a screw (10) that is captive but freely rotatable in

a part (9)of the body and has its screw-threading in engagement with the engagement member (80) such that by rotating the screw (10) the engagement member (80) can be moved into its extended position.

6. A fastener as claimed in claim 4 or 5, wherein the engagement member (8,80,800) is carried by walls (W) of the body that extend from said part of the body (9,B) and that act as struts when the screw (10) is rotated to apply said cam action to the engagement member (8,80,800) with the engagement member (8,80,800) engaged with the second member (2).

7. A fastener as claimed in any one of claims 1 to 6, wherein said portion (5) includes a clip (5A) for engaging the first member (1).

8. A fastener as claimed in any of claims 1 to 7, wherein said portion (5) is provided with holes (5B) for receiving attachment means for securing the fastener to the first member (1).

9. A fastener as claimed in any one of claims 1 to 6, wherein said portion (5) is formed as a channel for engaging a lug of the first member (1) for securing the fastener to the first member (1).

FIG. 1

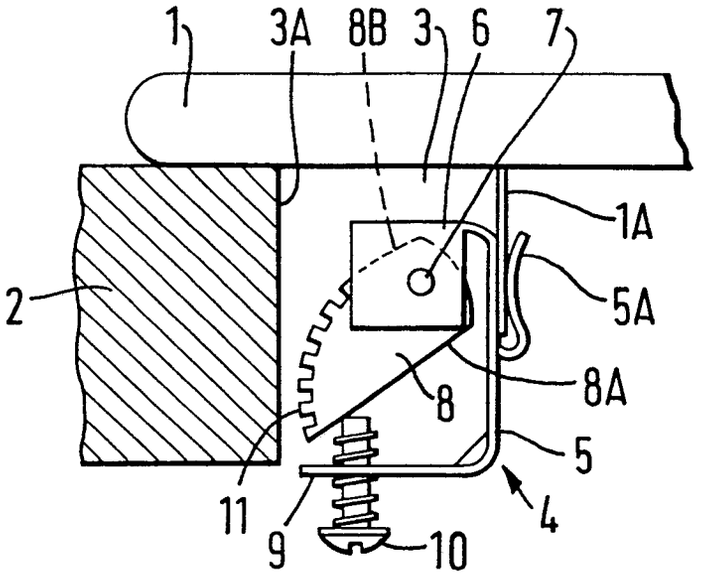


FIG. 2

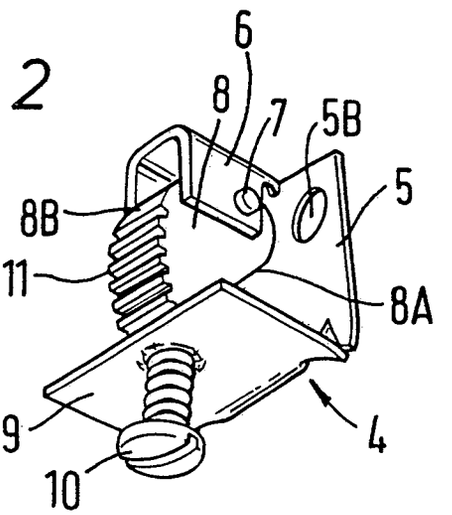


FIG. 3

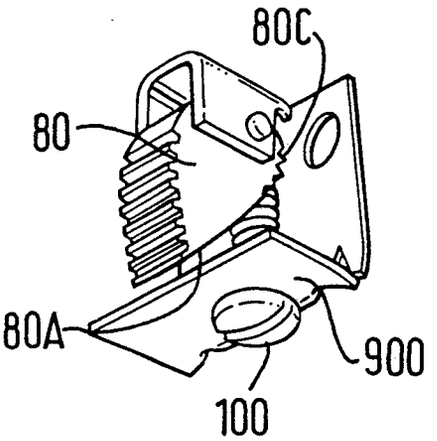


FIG. 4

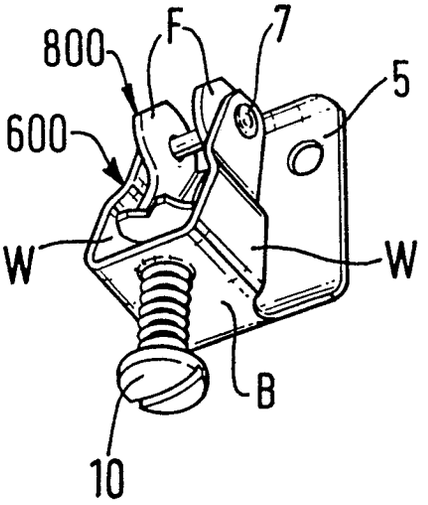
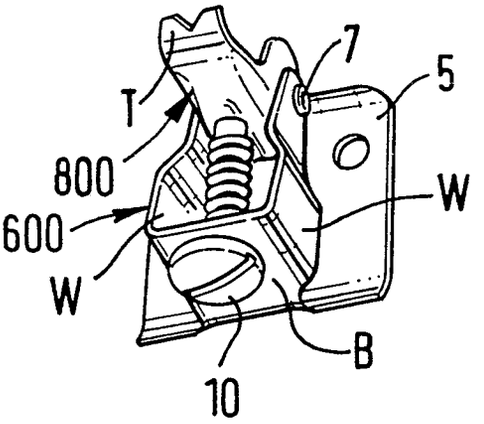


FIG. 5



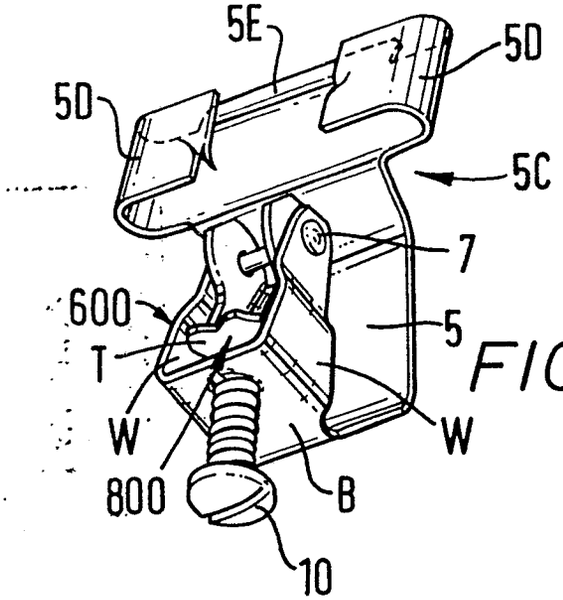


FIG. 6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 30 4495

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.4)
X	US-A-4 016 608 (A.U. KHAN) * Figure 3; column 2, line 63 - column 4, line 16; claim 1 *	1,2	E 03 C 1/33
Y		3,4	
Y	FR-A-2 260 970 (GEBRUDER THIELMANN AG) * Page 5, line 2 - page 6, line 9; figures 1-3 *	3,4	
A	US-A-3 034 148 (G.A. LYON) * Column 3, line 49 - column 4, line 18; figure 2 *	1-5	
A	US-A-3 982 287 (H. MILLER)		
A,D	EP-A-0 128 772 (SPRINGFAST LTD)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

E 03 C
A 47 B
F 16 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	08-08-1989	BIRD,C.J.

CATEGORY OF CITED DOCUMENTS

- X : particularly relevant if taken alone
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& : member of the same patent family, corresponding document

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