

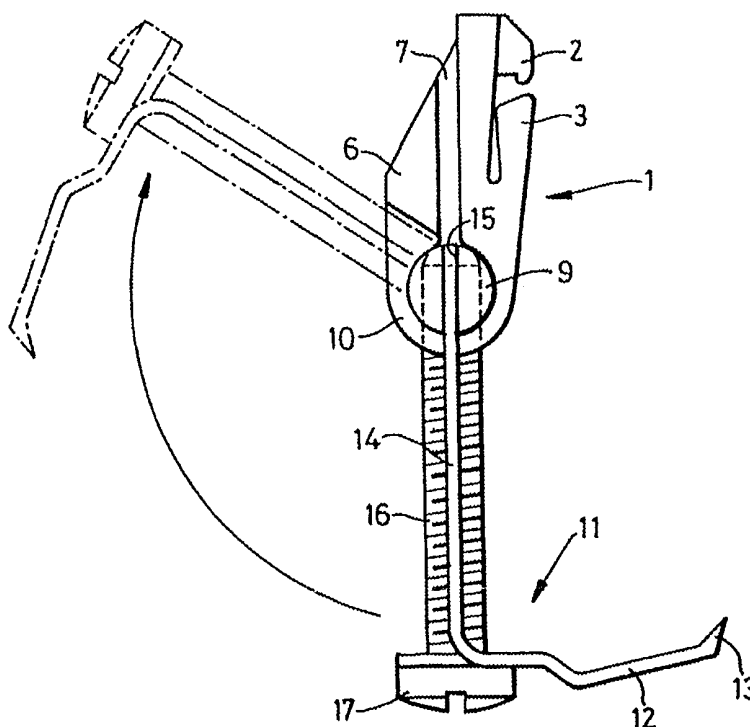


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : E03C 1/33	A1	(11) International Publication Number: WO 00/55437 (43) International Publication Date: 21 September 2000 (21.09.00)
(21) International Application Number: PCT/GB00/00954 (22) International Filing Date: 15 March 2000 (15.03.00) (30) Priority Data: 9905876.0 16 March 1999 (16.03.99) GB 0003438.9 16 February 2000 (16.02.00) GB (71) Applicant (for all designated States except US): SPRINGFAST LIMITED [GB/GB]; Southbrook House, Southbrook Road, Eastern Avenue, Gloucester GL4 3YY (GB). (72) Inventor; and (75) Inventor/Applicant (for US only): PARKER, Gary [GB/GB]; 41 Selwyn Close, Kingstanley, Stonehouse, Gloucestershire GL10 3LH (GB). (74) Agents: LAINE, Simon, James et al.; Wynne-Jones, Laine & James, 22 Rodney Road, Cheltenham, Gloucestershire GL50 1JJ (GB).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: IMPROVEMENTS RELATING TO FASTENERS**(57) Abstract**

A fastener for receiving a sink unit in a worktop has a plastics clip (1) for attaching to a tab or rail (4) and a hinged clamping member (11) which is tightened up against the underside of the worktop by a screw (16). The screw can be pressed through a bore (19) in the hinge pin and self-tap into a non-threaded passage (8) in the clip (1) when the clamping member (11) is hinged to engage under the worktop. The bore (19) through the hinge pin (9) has small flexible tags (20) projecting into it past which the screw thread can snap, but which retain the screw (16) when that is not engaged with the clip (1). The hinge pin (9) and the clip have mutually engageable detents (22, 23, 24) which locate the pin (9), and thus the clamping member (11), in either the operative position, for engaging the worktop, or the non-operative position with the clamping member swung back free of the worktop.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

Improvements relating to Fasteners

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 fitting underneath the sink or basin. It is a development of the fastener described in our Patent EP-B-0128772.

That fastener has a clip for attachment to a rail and a hinged clamping member which is tightened up against the underside of the worktop by a screw. This threads through the hinge pin, and when undone allows the clamping member to swing back to and stay in an inoperative position where it will clear the edge of the hole of the worktop as the unit is lowered in. Doing up the screw causes the clamping member to swing and project a portion under the worktop. The clamping member has guide fingers which engage diametral slots in the ends of the hinge pin.

We have now developed a plastics clip to replace the metal one of earlier models and this allows for some improvements. In particular, reliance now does not now have to be placed entirely on the hinge pin for engagement by the screw, and more certain operative and non-operative positions for the clamping element can be held. In particular, when swinging the clamping element into the ready-to-use operative position, correct alignment for the arms of the clamping element to move upwardly can be

automatically obtained.

According to one aspect of the present invention there is provided a fastener for holding basins or sinks in worktops, the fastener comprising a clip for engagement with
5 a formation on the underside of the basin or sink adjacent the periphery thereof, a clamping element hinged by a pin to the clip to be engageable under the worktop or to be swung clear thereof when the basin or sink is positioned therein, and a screw engaged through the pin and with the clamping
10 element by which that element can be urged upwardly, wherein the aperture in the pin is not screw threaded but has at least one flexible tag for co-operating with the screw thread, whereby the screw can be retained by pressing it axially into the aperture for the tag to snap over at least
15 one turn of its screw thread, and wherein the clip is of plastics material and presents a non-threaded bore into which the screw self-taps when the fastener is tightened.

Preferably, several tags, for example four, are regularly spaced circumferentially of the aperture.

20 Thus, all the pin does, apart from providing the facility for hinging, is to hold the screw lightly, and the load when clamping is completed is taken by the engagement between the screw and the bore in the clip.

According to another aspect of the present invention
25 there is provided a fastener for holding basins or sinks in worktops, the fastener comprising a clip for engagement with a formation on the underside of the basin or sink adjacent the periphery thereof, a clamping element hinged by a pin to

the clip to be engageable under the worktop or to be swung clear thereof when the basin or sink is positioned therein, and a screw engaged through the pin and with the clamping element by which that element can be urged upwardly, the
5 clamping element having guide fingers parallel to the screw and engaged in diametral slots in the ends of the pin, wherein the clip in which the hinge pin is journalled is of plastics material, and the pin and clip have mutually co-operating detents which allow the pin to rotate but which
10 register the pin in two positions, one the operative position for the clamping element engaged under the worktop with the slots in the ends of the pin upright and the other the non-operative position with the pin rotated to a position where the clamping element is swung clear of the
15 worktop.

Conveniently, the detents are angularly spaced recesses in the pin and a projection into the cylindrical bore through the plastics clip which receives the pin. This projection will be small, sufficient to snap into either
20 recess and positively locate the parts, but small enough to be snapped out again and not to impede rotation significantly.

Preferably, one recess is a groove parallel to the axis of the pin and joining the end slots. There may be two
25 other recesses, symmetrically positioned on either circumferential side of that groove. Only one will actually be used, but it is convenient to have two since it then does not matter which way around the pin is entered.

Instead of the guide fingers merely co-operating with a face of the clip as in EP-B-0128772, the clip preferably has grooves to receive those fingers when the pin is in the operative position.

5 These aspects of the invention may be combined in a single fastener.

For a better understanding of the invention, one embodiment will now be described, by way of example, with reference to the accompanying drawings, in which:

10 Figure 1 is a side elevation of a hinged fastener for sinks;

Figure 2 is a front view of the fastener of Figure 1;

Figure 3 is a rear view of the fastener of Figure 1;

Figure 4 illustrates, in steps, how the fastener is
15 attached to a sink;

Figure 5 shows a hinge pin used in the fastener;

Figure 6 shows the pin in axial section with the engagement of a screw, and

Figure 7 is a cross-section through the hinge pin and
20 the surrounding part of the fastener.

The upper part of the fastener is a clip 1 integrally moulded in plastics material. It is generally square in face view, and on its front face, centrally at the top, there is a hooked lug 2. Lower down there is an upwardly
25 projecting tongue 3 generally parallel to the main body of the clip but being capable of outward flexure. This hook and tongue arrangement enables the clip to be secured to a tab or rail 4 projecting downwardly from just inside the rim

5 of a sink, the tab or rail having an aperture into which the lug 2 can engage. The fitting sequence is illustrated in Figure 4.

On the rear face of the clip, the central portion 6 is thickened and this enables two grooves 7 to be formed in opposite vertical edges. It also provides for a smooth bore 8 parallel to and mid-way between those grooves. At the lower end, the clip has a transverse bore for receiving a hinge pin 9, but on the rear face corner portions 10 are cut away to allow hinging of a clamping member 11 as described below.

This clamping member 11 is similar to the one described in our Patent No. EP-B-0128772. It is generally L-shaped in side view with a stepped lower flange 12 having upturned corners 13 for engaging under a worktop. The upright portion comprises two fingers 14 which engage in diametral slots 15 in opposite ends of the hinge pin 9 and which can be guided up the grooves 7. A screw 16 has its head 17 engaging under a central lug 18 at the root of the flange 12 and extends upwardly parallel to and mid-way between the fingers 14.

Referring now to Figure 5, the aperture 19 through the pin 9 is not threaded, but has a plain bore other than four small tags 20 equispaced around and projecting into the bore. They are integrally moulded with the plastics pin, and are small and thin enough to be flexible. As shown in Figure 6, the screw can simply be pushed into the aperture, and the tags 21 will snap over the crests of the thread to

retain the screw. There could be fewer tags, and indeed just one might suffice.

Referring now to Figure 7, the pin 9 has axially parallel grooves 22 and 23 spaced circumferentially through an arc of about 120°. One of these grooves 23 may be aligned with the end slots 15 and join them, although being interrupted by one mouth of the aperture 19. The other groove 22 will be just offset from the other mouth of the aperture 19 through the pin. The bore of the clip 1 in which the pin is entered has a small rib 24, and this can positively engage in either groove 22 or 23. But while it will impose some frictional resistance on rotation of the pin, it will not stop it. Thus, the pin can be positively located in either of two positions, one being with the arms 15 aligned with the grooves 7 and the other with the clamping element swung well out of the way as indicated in broken lines in Figure 1.

There can be a third groove 25 in the pin 9, as indicated in outline in Figure 7, which would allow the pin to be put in either way around.

For use, the fastener is fitted to the sink and the latter lowered into place with the clamping member 11 swung out of the way and held by the rib 24 and groove 23. Then the clamping member is rotated back so that its fingers 14 are vertical, this being ensured by engagement of the rib 24 and the groove 22. Such rotation cannot be achieved, as in EP-B-0128772, by driving the screw and thus forcing the tips of the fingers 14 to engage the clip 1 and wedge the

clamping member 11 into the worktop engaging position. However, the clamping member just requires a tap with a screwdriver to snap it from one located attitude to the other. Finally, the screw is driven up and self-taps into
5 the bore 8, the fingers 14 being guided by the grooves 7.

CLAIMS

1. A fastener for holding basins or sinks in worktops, the fastener comprising a clip (1) for engagement with a formation on the underside of the basin or sink adjacent the periphery thereof, a clamping element (11) hinged by a pin (9) to the clip (1) to be engageable under the worktop or to be swung clear thereof when the basin or sink is positioned therein, and a screw (16) engaged through the pin (9) and with the clamping element (11) by which that element can be urged upwardly, characterised in that the aperture (19) in the pin is not screw threaded but has at least one flexible tag (20) for co-operating with the screw thread, whereby the screw (16) can be retained by pressing it axially into the aperture (19) for the tag (20) to snap over at least one turn of its screw thread, and in that the clip (1) is of plastics material and presents a non-threaded bore (8) into which the screw (16) self-taps when the fastener is tightened.

2. A fastener as claimed in Claim 1, characterised in that there is a plurality of tags (20) regularly spaced circumferentially of the aperture (9).

3. A fastener for holding basins or sinks in worktops, the fastener comprising a clip (1) for engagement with a formation on the underside of the basin or sink adjacent the periphery thereof, a clamping element (11) hinged by a pin (9) to the clip (1) to be engageable under the worktop or to

be swung clear thereof when the basin or sink is positioned therein, and a screw (16) engaged through the pin (9) and with the clamping element (11) by which that element can be urged upwardly, the clamping element (11) having guide
5 fingers (14) parallel to the screw (16) and engaged in diametral slots (15) in the ends of the pin, characterised in that the clip (1) in which the hinge pin (9) is journaled is of plastics material, and the pin (9) and clip (1) have mutually co-operating detents (22,23,24) which
10 allow the pin (9) to rotate but which register the pin (9) in two positions, one the operative position for the clamping element (11) engaged under the worktop with the slots (15) in the ends of the pin (9) upright and the other the non-operative position with the pin (9) rotated to a
15 position where the clamping element (11) is swung clear of the worktop.

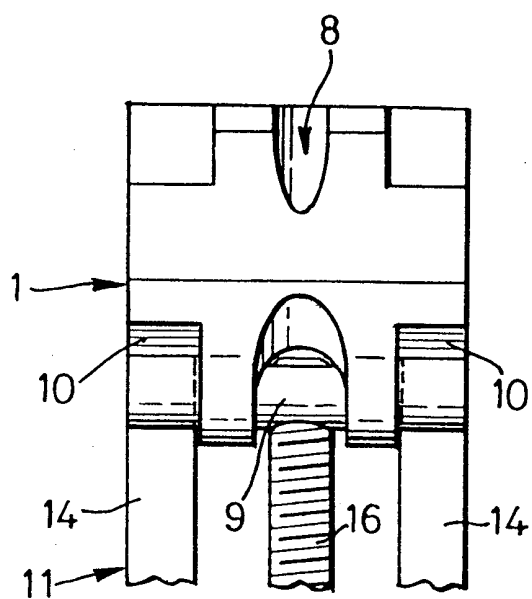
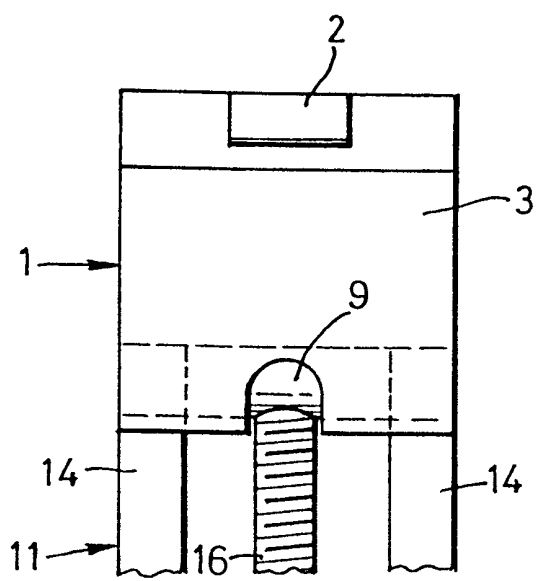
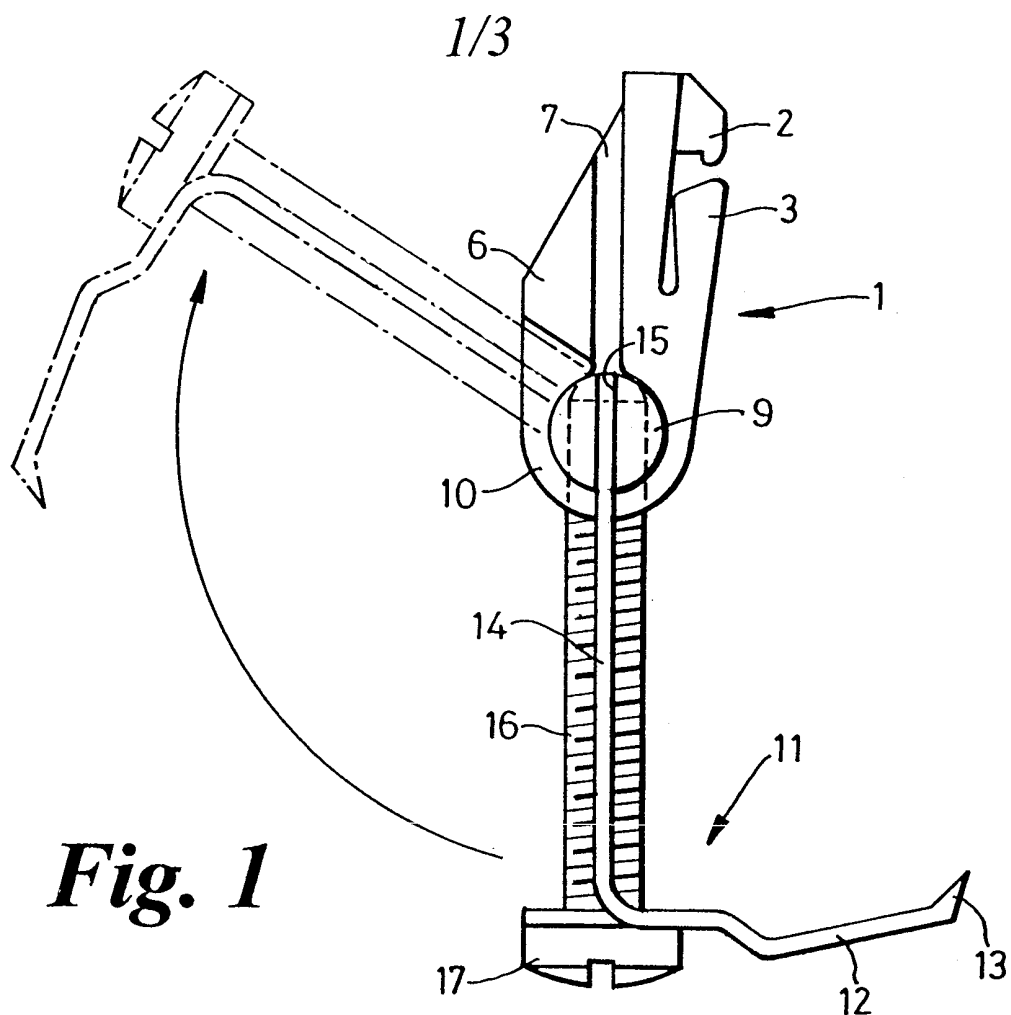
4. A fastener as claimed in Claim 3, characterised in that the detents are angularly spaced recesses (22,23) in the pin (9) and a projection (24) into the cylindrical bore through
20 the plastics clip (1) which receives the pin (9), the projection (24) having snap engagement with either recess (22,23).

5. A fastener as claimed in Claim 4, characterised in that one recess (22) is a groove parallel to the axis of the pin
25 (9) and joining the end slots (15).

6. A fastener as claimed in Claim 5, characterised in that there are two other recesses, symmetrically positioned on either circumferential side of the groove.

7. A fastener as claimed in any one of Claims 3 to 6, characterised in that the clip (1) has grooves (7) to receive the guide fingers (14) when the pin (9) is in the operative position.

5 8. A fastener as claimed in Claim 1 or 2 and as claimed in any one of Claims 3 to 7.



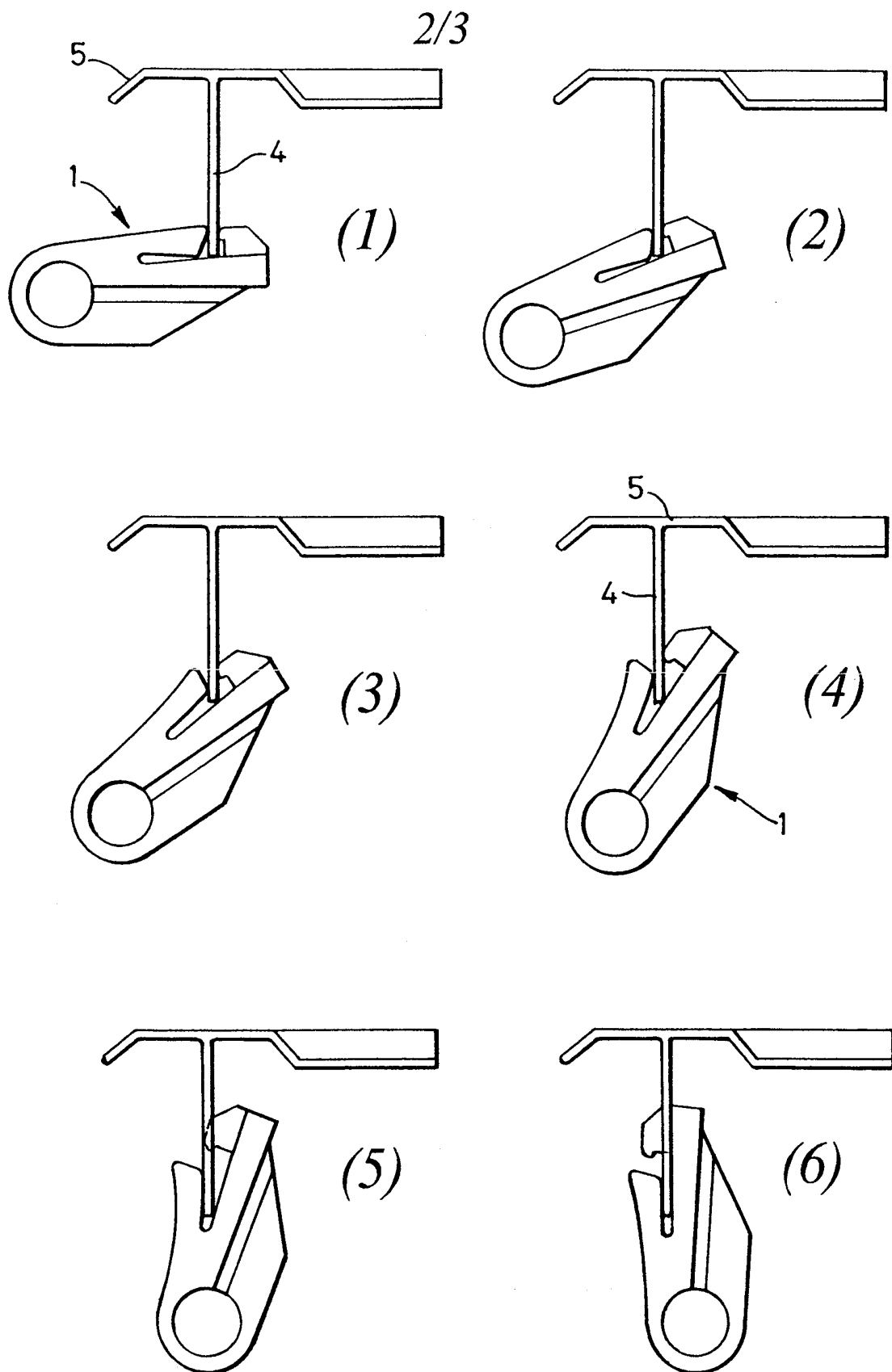


Fig. 4

3/3

Fig. 5

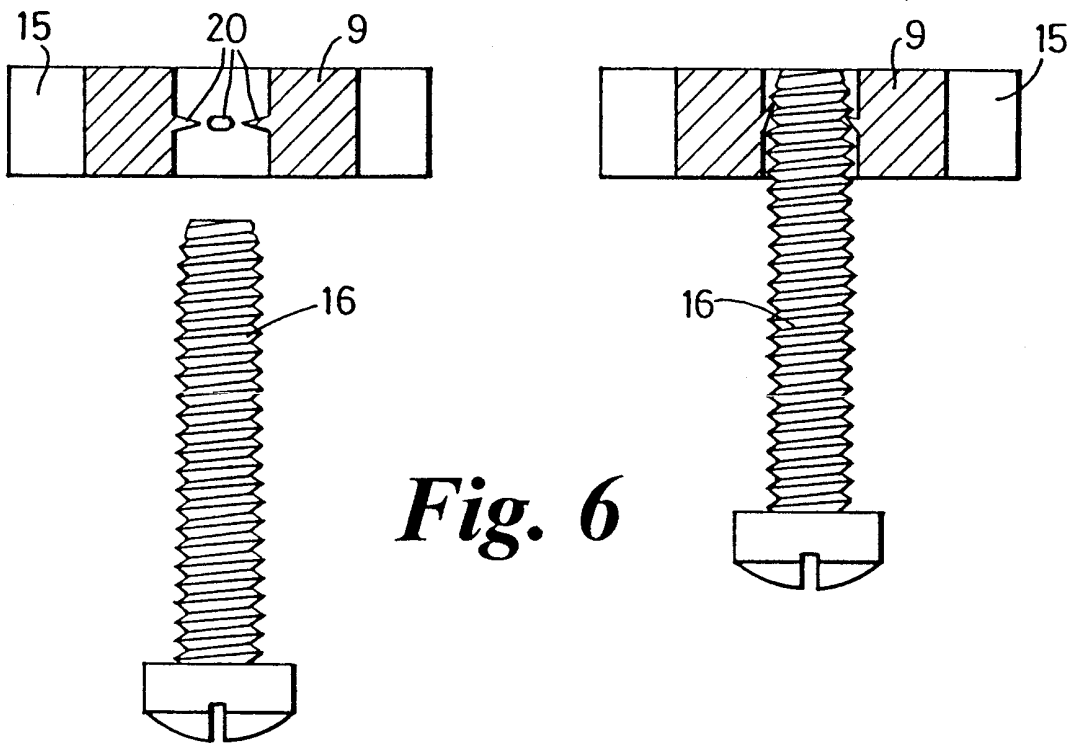
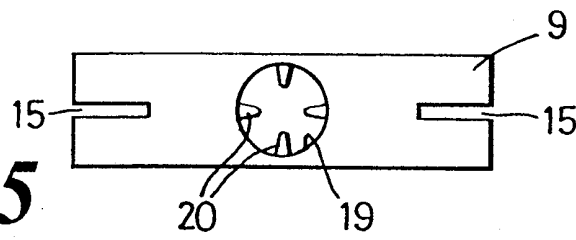
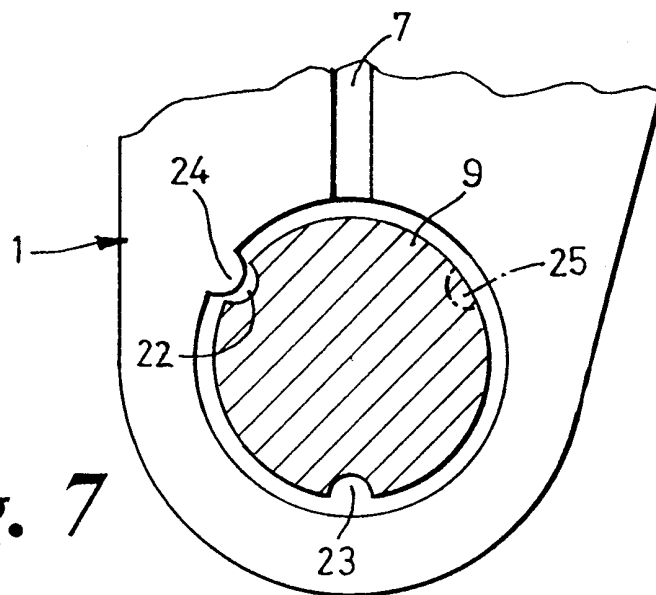


Fig. 6

Fig. 7



INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/00954

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E03C1/33

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E03C E05D F16B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 128 772 A (SPRINGFAST LTD) 19 December 1984 (1984-12-19) cited in the application the whole document	3,4
A	---	1
Y	FR 1 306 254 A (FAVRE) 8 February 1963 (1963-02-08) the whole document	3,4
A	---	3-5
A	EP 0 263 376 A (SIEMENS AG OESTERREICH ;SIEMENS AG (DE)) 13 April 1988 (1988-04-13) column 2, line 26 - line 53; figures	1,2
A	US 5 302 070 A (KAMEYAMA YASUSHI ET AL) 12 April 1994 (1994-04-12) column 1, line 33 - line 43; figure 3	

☐ Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

12 July 2000

Date of mailing of the international search report

20/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

De Coene, P

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/00954

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0128772 A	19-12-1984	AT 25122 T	15-02-1987
		AU 618970 B	16-01-1992
		AU 2561588 A	23-02-1989
		AU 2936584 A	20-12-1984
		CA 1228973 A	10-11-1987
		DE 3462167 D	26-02-1987
		NZ 208515 A	06-03-1987
		US 4589170 A	20-05-1986
FR 1306254 A	08-02-1963	NONE	
EP 0263376 A	13-04-1988	AU 577727 B	29-09-1988
		AU 7906587 A	14-04-1988
US 5302070 A	12-04-1994	NONE	