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

(11) Publication number : **0 458 730 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number : **91630035.3**

(51) Int. Cl.^{5} : **E06B 9/01**, E06B 9/02

(22) Date of filing : **24.05.91**

(30) Priority : **24.05.90 IL 94493**

(43) Date of publication of application :
27.11.91 Bulletin 91/48

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

(71) Applicant : **Laor, Ilan**
10 Chana Street
Haifa (IL)
Applicant : **ANAT (R.Z.) LTD.**
63 Derech Hayam Street
Haifa (IL)

(72) Inventor : **Wolach, Gad**
63 Derech Hayam St.
Haifa (IL)

(74) Representative : **Waxweiler, Jean et al**
OFFICE DENNEMEYER S.à.r.l. P.O. Box 1502
L-1015 Luxembourg (LU)

(54) Window jamb security system.

(57) A window jamb security system (10) provided as an adjustable set of spaced-apart, horizontally and vertically extending bars (12,17) for mounting in a window jamb (16) on a set of anchors fixed within the vertically opposite portions of the window jamb (16). The anchors prevent laterally-directed forces from dislodging the bars. Each horizontal bar (12) comprises two sections (20, 21) which are rotatable with respect to one another, one section being threaded on a bolt retained within the other so as to enable lengthwise adjustment. By virtue of this adjustment, an axial force is developed along the bar (12) between the anchors supporting it, insuring a secure and sturdy installation and providing maximum strength of the barrier. Each of the vertically extending bars (17) is retained between a pair of oppositely facing, vertically projecting posts (18, 19), one post formed on each of the horizontal bars (12) at fixed locations thereon. The open ends of the vertical bars (17) are fitted to the posts (18, 19) so as to provide a grid pattern of horizontal and vertical bars (12, 17) forming the window jamb security system (10).

EP 0 458 730 A1

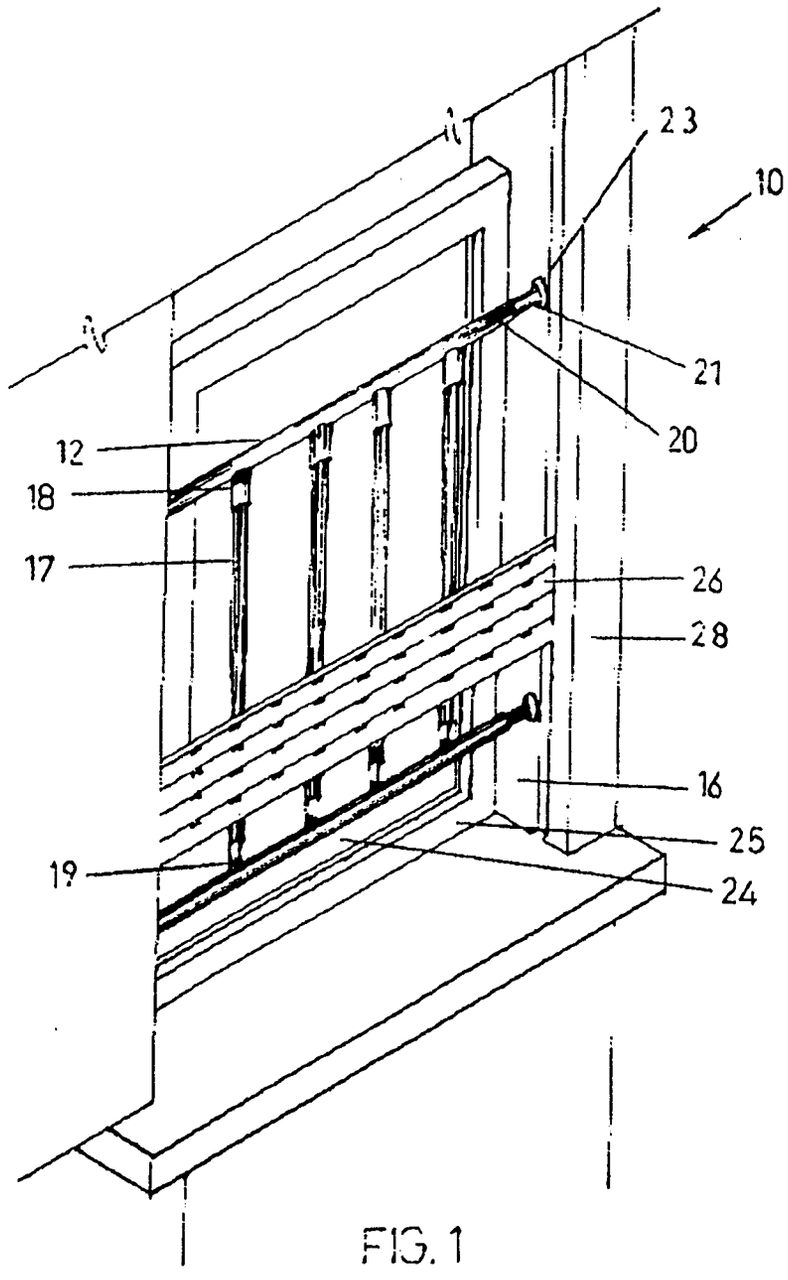


FIG. 1

The present invention relates to security grille and window barrier apparatus for preventing unauthorized entry via windows, and more particularly to novel, adjustable window bars each developing an axial force for window jamb installation.

The prior art of window barrier apparatus includes many designs featuring dimensional adjustability for installation in window openings, casements and window jambs of varying dimensions, so that the overall cost of the installation is reduced by use of a standard design. An example of this approach is disclosed by US Patent 4,837,974 to Jokel, in which a barrier apparatus of gridwork panels is mounted on adjustable-length bars which are fit within a window jamb and locked by setscrews. In US Patent 4,817,334 to Badger et al, a window bar security system is disclosed featuring telescoping tubular bars which are permanently secured in position by use of a piercing device to crimp outer and inner wall portions together.

A window intrusion barrier comprising telescoping gridwork panels is disclosed in US Patent 4,680,890 to Jokel, in which horizontal bars in the panels are padlockable together at a fixed position relative to each other. Anti-burglar window bars are disclosed in US Patent 4,633,612 to Forkish, which features freely telescoping bars having bolt openings enabling them to be locked in relative position using transversely inserted bolts.

US Patent 4,624,072 to Zilkha discloses an adjustable security window gate having vertically adjustable and horizontally adjustable portions which are secured to the window opening by bolts. A set of square, telescopically adjustable bars is shown in US Patent 4, 437, 265 to Turro et al, and a lock is provided to maintain the sliding bars in fixed relation.

Various window barrier bar designs are also available which do not feature bar length adjustability, as follows:

US Patent 4,723,388 to Zieg;
" " 4,694,608 to Lambert;
" " 4,653,226 to Woodrow;
" " 4,593,492 to Lumenello;
" " 4,575,965 to Iversen;
" " 4,514,932 to Janis;
" " 4,467,574 to Falge et al;
" " 3,460,289 to Toth; and
Can. Patent 1,146,016 to Evans.

Another group of window barriers does not relate to bars, but instead uses a metal screen or wire mesh as an intrusion barrier, such as described in US Patents 4,573,285 and 4,532,734 to Jokel, US Patent 4,272,922 to Prager and US Patent 3,871,434 to Hance.

In US Patent 4,545,248 to Shaw there is disclosed a window shield comprising a plastic material covering the window opening. US Patents 4,077,167 to Rieder and 3,918,202 to Smith disclose security windows with bar-reinforced frames. A panic bar safety plate for protecting glass window panes is disclosed in US Patent 3,834,077 to Meyer, and a window safety guard is disclosed in US Patent 3,566,538 to McCallum.

While prior art bar designs for window barriers are known, the adjustability of individual bars remains limited, limiting the overall strength and versatility of the design.

Accordingly, it is a principal object of the present invention to overcome the above-described disadvantages of prior art security window designs and provide a window jamb security system featuring individually adjustable bars each developing an axial force within a window jamb for achieving maximum barrier strength an adaptability for all window jamb dimensions.

In accordance with a preferred embodiment of the present invention, there is provided a window jamb security system comprising:

a first set of spaced-apart parallel bars extending horizontally in lengthwise adjustable fashion between vertically opposite portions of the window jamb and being supported at opposite ends thereof, each of said bars being substantially hollow and comprising a first and a second section, said first and second sections having cross-sections enabling said second section to be inserted in and retracted from said first section in telescopic fashion by rotation therebetween, an end portion of said second section terminating in a threaded nut and engaging within said first section a threaded bolt at a free end thereof during said rotation, the other end of said bolt being supported circumferentially within said first section, each of said first set of parallel bar opposite ends being shaped as an open-ended receptacle;

a set of anchors each mounted on a respective one of the vertically opposite window jamb portions for supporting said first set of parallel bars at said open-ended receptacles, such that when said first and second sections are adjusted lengthwise, an axial force is applied along each of said first set of parallel bars between the window jamb portions; and

a second set of spaced-apart parallel bars having open ends and being supported vertically between ›rizontally extending ones of said first set of parallel bars, each of said second set of parallel bars engaging at one of said open ends thereof a post extending from a respective first section of said first set of parallel bars at a fixed location,

said first and second sets of parallel bars forming a grid within said window frame for maintaining a barrier to intrusion.

In the preferred embodiment, the window jamb security system is provided as an adjustable set of spaced-apart, horizontally and vertically extending bars for mounting in a window jamb on a set of anchors fixed within the vertically opposite portions of the window jamb. The anchors prevent laterally-directed forces dislodging the bars. Each horizontal bar comprises two sections which are rotatable with respect to one another, one section being threaded on a bolt retained within the other so as to enable lengthwise adjustment. By virtue of this adjustment, an axial force is developed along the bar between the anchors supporting it, insuring a secure and sturdy installation and providing maximum strength of the barrier.

Each of the vertically extending bars is retained between a pair of oppositely facing, vertically projecting posts, one post formed on each of the horizontal bars at fixed locations thereon. The open ends of the vertical bars are fitted to the posts so as to provide a grid pattern of horizontal and vertical bars forming the window jamb security system.

A feature of the invention is the provision of a locking screw on a section of the horizontal bar, to maintain the relative position between the sections once the horizontal length adjustment is made.

Another feature of the inventive design relates to the assembly of the vertical bars onto the retaining posts such that the vertical bars are not subjected to the possibility of moisture or rain entering and corroding them. The arrangement is such that the lower post is covered over by the lower end of the vertical bar, while the vertical bar upper end is covered over by the upper post.

In an alternative design, the vertical bars are welded between the horizontal bars once the latter are adjusted after installation. Other vertical bar assembly approaches are possible.

In an alternative embodiment, the horizontal bars are adjusted by hydraulic or pneumatic pressure.

The inventive window jamb security system is easily assembled and is easily adjusted to a wide variety of window openings, making it readily applicable to security needs in both residential and commercial locations.

Other features and advantages of the invention will become apparent from the drawings and the description contained hereinbelow.

For a better understanding of the invention with regard to the embodiments thereof, reference is made to the accompanying drawings, in which like numerals designate corresponding elements or sections throughout, and in which:

Fig. 1 is a perspective drawing of a preferred embodiment of a window jamb security system constructed in accordance with the principles of the present invention;

Figs. 2a-b are alternative arrangements of the security system of Fig. 1, as viewed from outside and inside a room;

Fig. 3 is a perspective view of a portion of the security system of Fig. 1;

Fig. 4 is detailed view of a window jamb anchor for supporting a horizontally extending bar in the system of Fig. 1;

Fig. 5 illustrates a sectional view of mating component bar sections used in the system of Fig. 1;

Fig. 6 shows an assembled portion of the system of Fig. 1, featuring vertical bar assembly details;

Fig. 7 shows an assembled portion of the system of Fig. 1, featuring a set of vertical bars; and

Fig. 8 is an alternate horizontal bar assembly layout.

Referring now to Figs. 1-2, there are shown, respectively, perspective and front outside and inside views of a preferred embodiment of a window jamb security system 10 constructed in accordance with the principles of the present invention. System 10 comprises a first set of spaced-apart horizontal bars 12 which are supported between vertically opposite portions of a window jamb 16. A second set of spaced-apart vertical bars 17 is supported between upper and lower posts 18 and 19, each associated with one of horizontal bars 12. In the preferred embodiment, each horizontal bar 12 comprises first and second sections 20 and 21 which are telescopically adjustable by rotation for lengthwise adjustment of the overall bar 12 length.

When properly adjusted, bar 12 exerts pressure against the vertically opposite portions of window jamb 16, due to the axial force developed between first and second bar sections 20 and 21 . The axial force insures that system 10 provides a strong barrier against intrusion. As further described herein, a set of anchors 22 (Figs. 5-8) is mounted in the vertical portions of window jamb 16, to position the receptacle-shaped ends 23 of sections 20 and 21, and further insure that horizontal bars 12 cannot be dislodged.

Typically, window jamb security system 10 is mounted outside a window 24 between the window frame 25 and a track-mounted window shutter 26, or it may be mounted between the window shutter 26 and the outside

building wall 28. System 10 is designed to be assembled within the window jamb 16 and adjusted for the dimensions thereof as needed, allowing for wide adaptability of system 10 to various requirements, in residential and commercial installations.

An additional horizontal bar may be provided in certain applications above the grid-like arrangement of horizontal and vertical bars 12 and 17, to close a top space in the window opening, and this may be arranged for quick removal, so that in an emergency, fire and rescue personnel may gain access to the window.

In Figs. 2a-b, there are shown alternative arrangements of window jamb security system 10 as viewed, respectively, from outside and inside a room, showing window frame 25 in the open position. In Fig. 2a, four horizontal bars 12 are shown, and several sets of shorter vertical bars 17 are used between them, while in Fig. 2b, only two horizontal bars 12 are shown and a single set of longer vertical bars 17 is used between them. The choice of arrangements will depend on several factors, including the bar spacing and level of security desired for the particular installation, to which system 10 may be adapted as needed.

System 10 is designed for easy assembly, which typically begins with the placement of a single horizontal bar 12 in window jamb 16, which is then tightened into place by rotation of section 21. A set of vertical bars 17 is then assembled over lower posts 19, and then a second horizontal bar is positioned so that its upper posts 18 fit within the vertical bars, before the second horizontal bar 12 is tightened in position.

Fig. 3 shows a perspective view of a portion of the security system 10, illustrating further construction details. As shown, horizontal bars 12 are formed with upper and lower posts 18 and 19, typically welded or press-fit at fixed locations thereon. Upper post 18 is shaped so that vertical bar 17 may be fitted within it, while the shape of lower post 19 is such that vertical bar 17 fits over it. Vertical bar 17 may be welded to posts 18 and 19. Since the opening of the joint 30 between vertical bars 17 and posts 18 and 19 faces downward, rain or moisture is prevented from entering joint 30 to cause corrosion.

Also visible in Fig. 3 are the first and second sections 20-21 of horizontal bars 12, and their ends 23 which are supported by the vertical portions of window jamb 16. As shown in Fig. 4, each of ends 23 is receptacle-shaped and fits over an anchor 22 which is shaped as a disc and is mounted to window jamb 16 by a screw 34 or other fastener. The disc-shaped anchor 32 fits within the receptacle-shaped end 23, and prevents the bar 12 from becoming dislodged once sections 20 and 21 are adjusted to develop an axial force, exerting pressure against window jamb 16.

In Fig. 5, a sectional view of mating component bar sections 20 and 21 is shown, illustrating a preferred embodiment of a design which enables lengthwise adjustment between them. Section 20 contains a threaded bolt 36 hold axially therewithin at its head 38 against the inner walls 40 of section 20. Section 21 is fabricated with a diameter which enables it to mate with section 20 by means of a nut 42 mounted at its end. When nut 42 is threaded onto bolt 36 and section 21 is rotated, a telescopically adjustable arrangement is provided which enables lengthwise adjustment of horizontal bar 12. As stated previously, the rotational adjustment of section 21 with respect to section 20 develops an axial force which exerts pressure against the vertical portions of window jamb 16, providing a strong barrier.

Also shown in Fig. 5 are construction details of anchor 22 and mounting screw 34 for attaching it to window jamb 16. Receptacle-shaped end 23 may be provided with a decorative color and may be fastened or welded onto section 21, for a sturdy construction. As shown, the axial force developed between sections 20 and 21 of bar 12 is evenly distributed over the circumferentially shaped end 23, while a space 43 is maintained between end 23 and jamb 16. Lower post 19 is also visible, and this may also be welded or otherwise fastened to section 21.

Referring now to Fig. 6, there is shown an assembled portion of the security system 10, illustrating the vertical bar 17 assembly details on upper and lower posts 18 and 19, by which joints 30 face downward to avoid the entry of water or moisture. Another feature of the invention is the provision of a locking screw 44 on section 20, which may be tightened to bring it into contact with section 21, once the latter is threaded on bolt 36 and after telescopic adjustment of the horizontal bar 12 length. Screw 44 does not penetrate section 21, but locks it in position.

Figs. 7 shows an assembled portion of system 10, illustrating a set of vertical bars 17 between a pair of horizontal bars 12. Fig. 8 shows an alternative horizontal bar 12 arrangement, in which horizontal bar 12 is provided as three sections, an end section 46, a middle section 20, which mates with section 46, and an extension section 48, which can be mated with another end section of appropriate size. As before, the threaded bolt arrangement of horizontal bar 12 sections is used to join the sections.

It will be appreciated that while the drawings indicate a tubular shape for horizontal and vertical bars 12 and 17, other shapes are possible, including rectangular or polygonal shapes. In addition, axial force developed by the threaded arrangement of horizontal bar 12 sections 20 and 21 may be achieved in other ways, including use of hydraulic or air pressure in a suitable piston arrangement fitted within the horizontal bar sections.

Having described the invention with regard to certain specific embodiments thereof, it is to be understood

that the description is not meant as a limitation, since further modifications may now suggest themselves to those skilled in the art, and it is intended to cover such modifications as fall within the scope of the appended claims.

Claims

1. A window jamb security system comprising:
   a first set of spaced-apart parallel bars extending horizontally in lengthwise adjustable fashion between vertically opposite portions of the window jamb and being supported at opposite ends thereof, each of said bars comprising a first and a second section, said first and second sections having cross-sections enabling said second section to be inserted in and retracted from said first section in telescopic fashion, each of said first set of parallel bar opposite ends being shaped as an open-ended receptacle;
   a set of anchors each mounted on a respective one of the vertically opposite window jamb portions for supporting said first set of parallel bars at said open-ended receptacles, such that when said first and second sections are adjusted lengthwise, an axial force is applied along each of said first set of parallel bars between the window jamb portions; and
   a second set of spaced-apart parallel bars being supported vertically at fixed locations between horizontally extending ones of said first set of parallel bars,
   said first and second sets of parallel bars forming a grid within said window frame for maintaining a barrier to intrusion.

2. The system of claim 1 wherein each of said horizontal bars is substantially hollow, an end portion of said second section terminating in a threaded nut and engaging within said first section a threaded bolt at a free end thereof, the other end of said bolt being supported circumferentially within said first section, such that said second section is telescopically adjustable within said first section by rotation therebetween.

3. The system of claim 1 wherein each of said horizontal bars is substantially hollow, and said second section is telescopically adjustable within said first section by pneumatic pressure.

4. The system of claim 1 wherein each of said horizontal bars is substantially hollow, and said second section is telescopically adjustable within said first section by hydraulic pressure.

5. The system of claim 1 wherein each of said second set of parallel bars has an open end which engages a post extending from a respective first section of said first set of parallel bars at said fixed location.

6. The system of claim 5 wherein said open end engages said post to form a joint facing downward which prevents the entry of moisture therein.

7. The system of claim 1 wherein said second set of parallel bars is welded between respective first sections of said first set of parallel bars.

8. The system of claim 1 wherein a locking screw is provided on one of said horizontal bar sections, to maintain the relative horizontal adjustment position between said sections.

9. The system of claim 1 wherein said anchors comprise disc-shaped pieces each of which is mounted to said window jamb vertical portion by a screw.

10. The system of claim 9 wherein said open-ended receptacle fits over said disc-shaped piece, the latter having a thickness which maintains the end of said open-ended receptacle slightly spaced apart from said window jamb vertical portion.

11. The system of claim 1 wherein said first and second sets of parallel bars have a cylindrical cross-section.

12. The system of claim 1 wherein said first and second sets of parallel bars have a rectangular cross-section.

13. The system of claim 1 wherein said first and second sets of parallel bars have a polygonal cross-section.

14. The system of claim 1 further comprising an extension section mating with either of said first and second horizontal sections for extending the overall length.

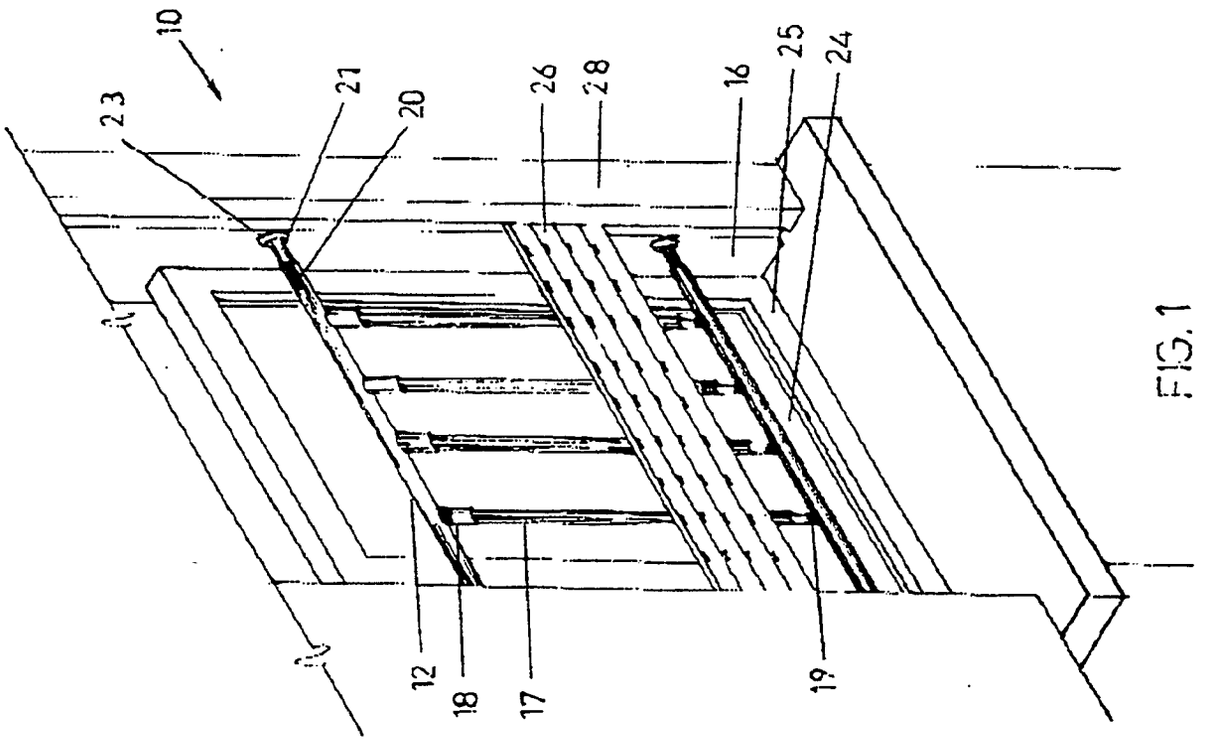


FIG. 1

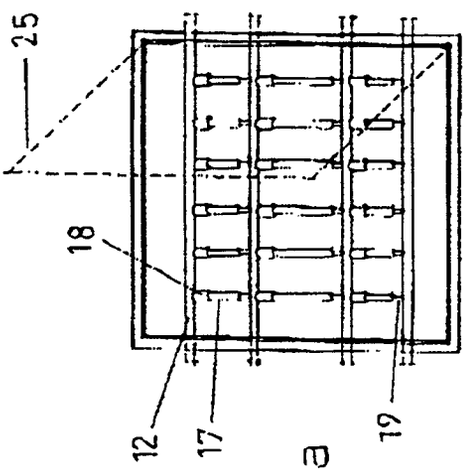


FIG. 2a

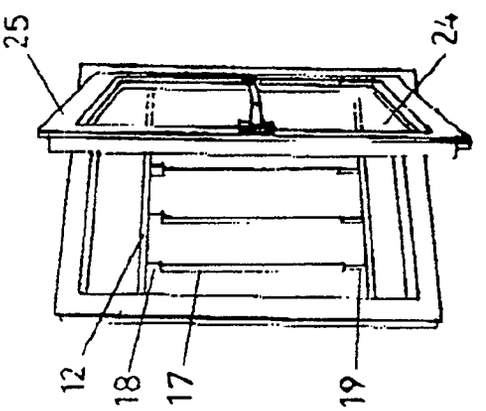


FIG. 2b

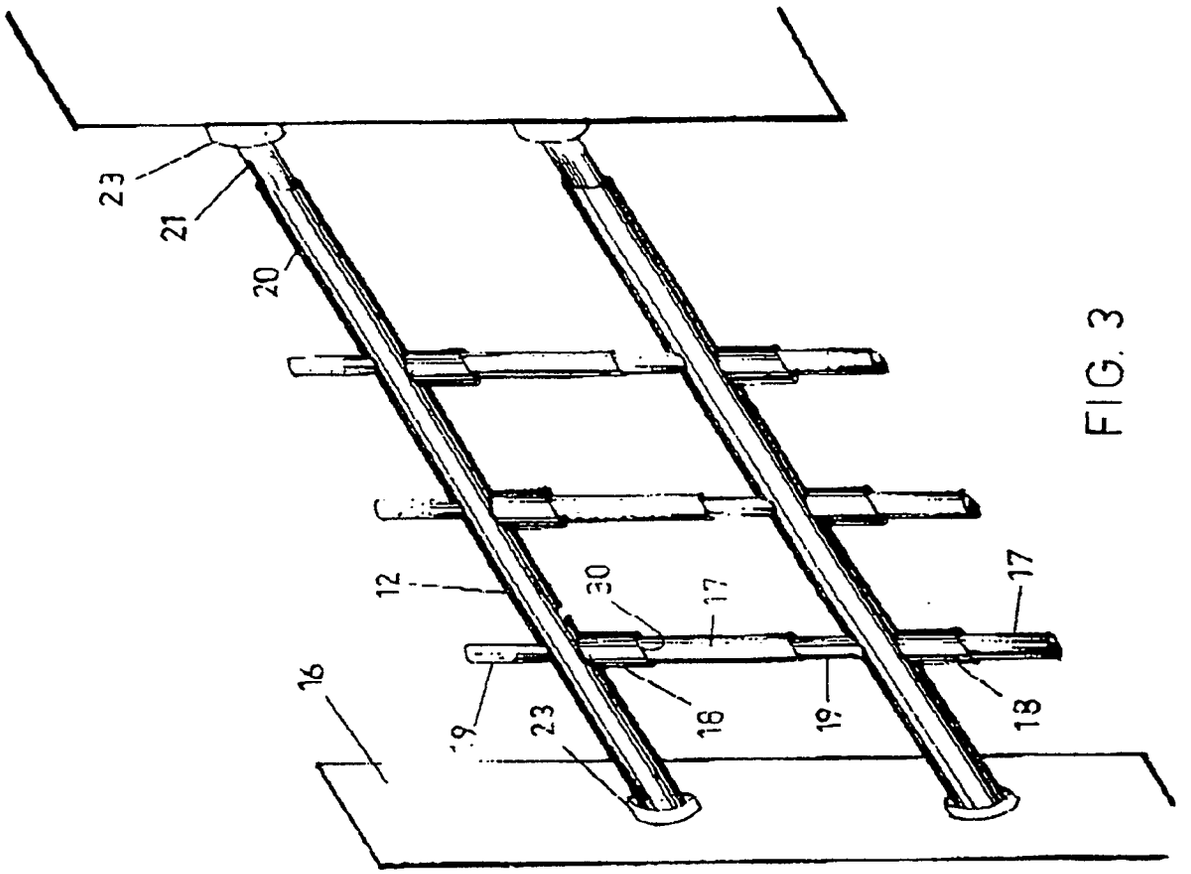


FIG. 3

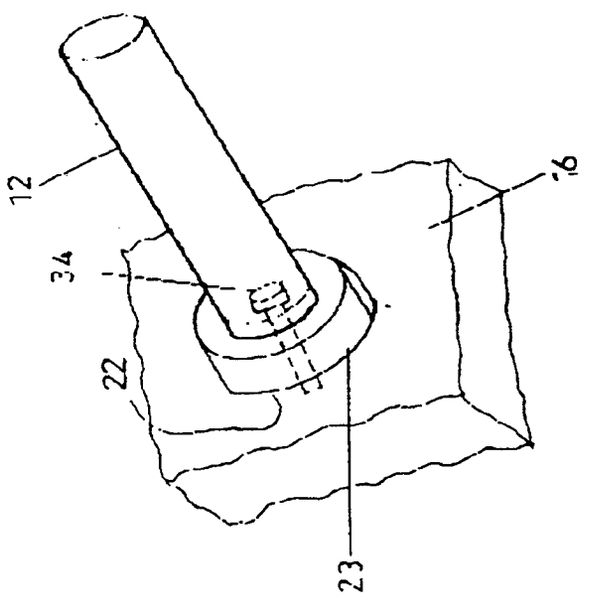
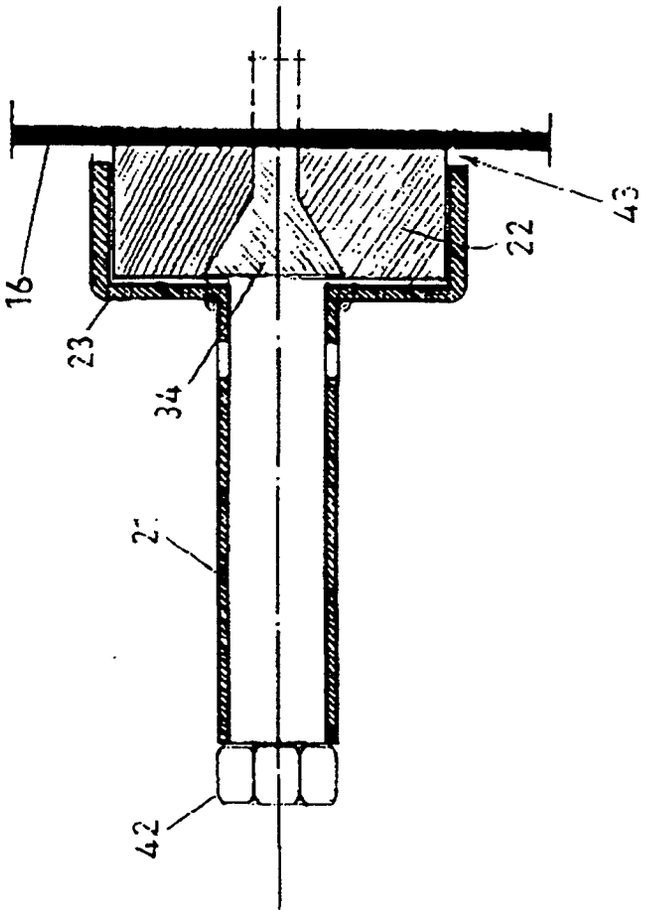


FIG. 4



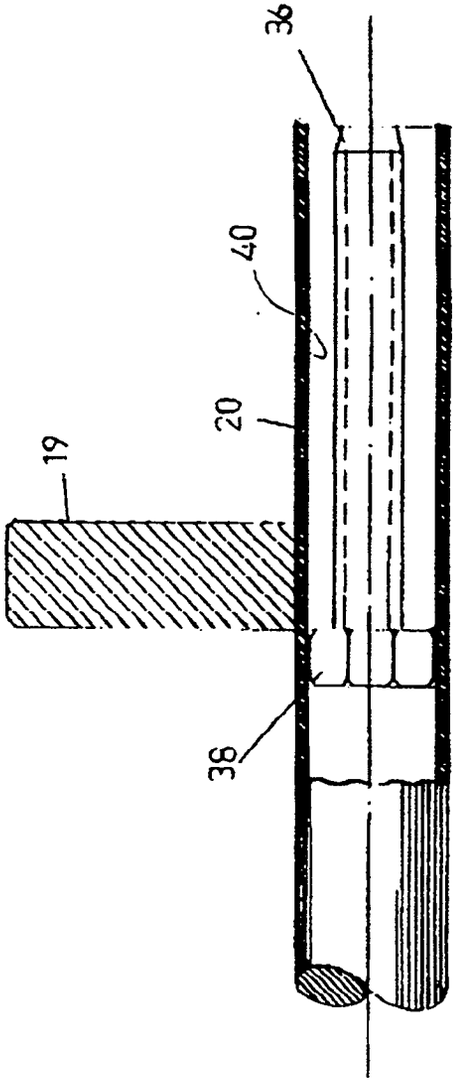


FIG 5

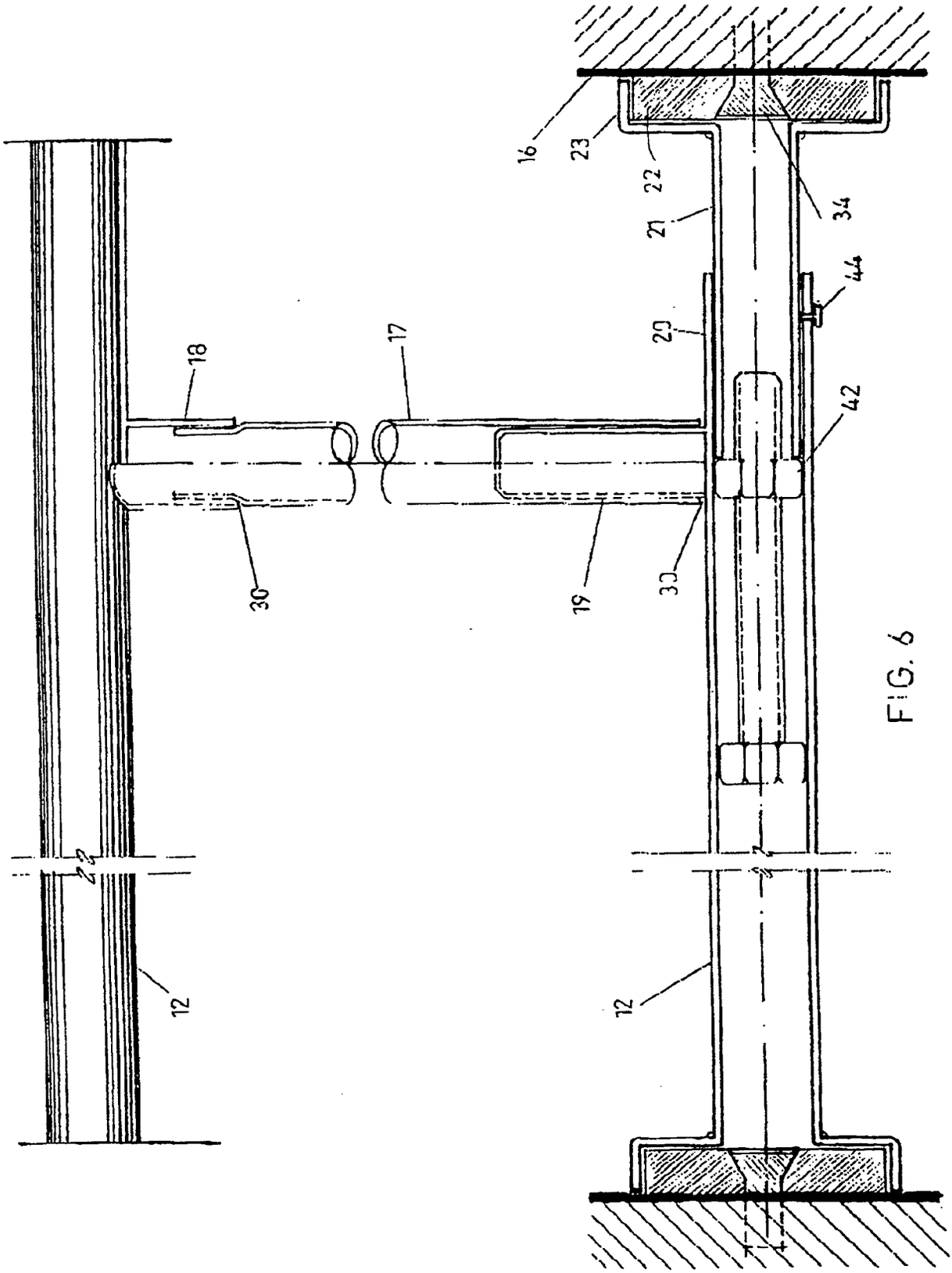


FIG. 6

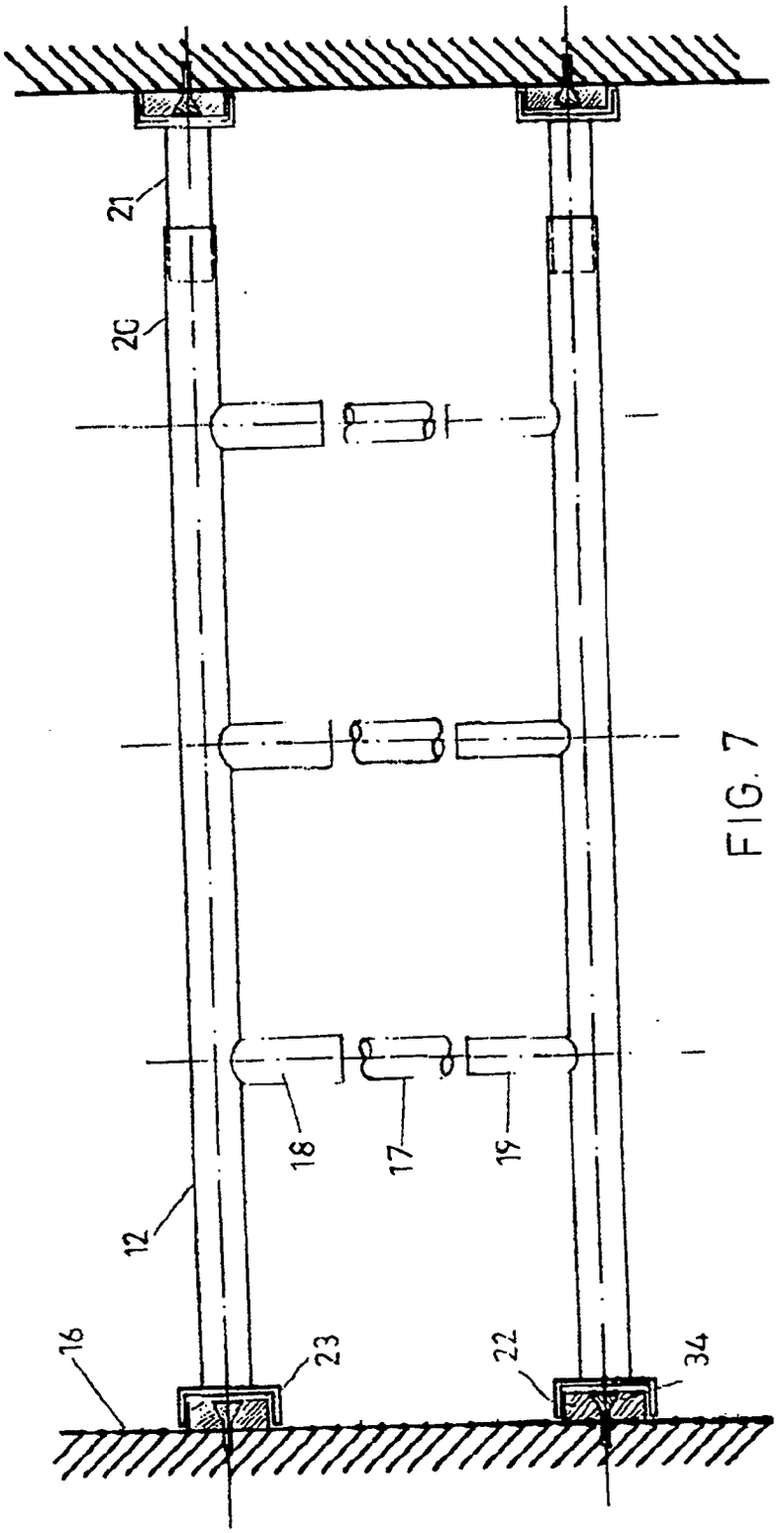
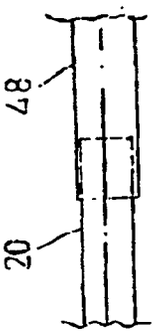


FIG. 7



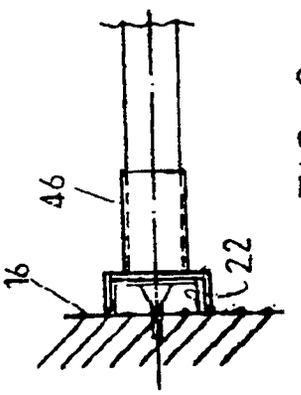


FIG. 8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 63 0035

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.5)
Y	US-A-4 615 142 (REEVES) * column 5, line 47 - line 51; figures *	1,2	E06B9/01 E06B9/02
A		7,11-14	
Y	GB-A-2 198 172 (LUSTY) * page 3, line 25 - page 5, line 13; figures *	1,2	
A		7	
A	DE-A-2 510 727 (STERL) * page 6, paragraph 4 - page 8, paragraph 2 *	3,4	
A	FR-A-2 527 713 (HONGANVIK) * page 2, line 17 - line 35; figures *	8-10	
A	US-A-2 103 130 (WINDLE) * the whole document *	5,6	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29 AUGUST 1991	KUKIDIS S.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)