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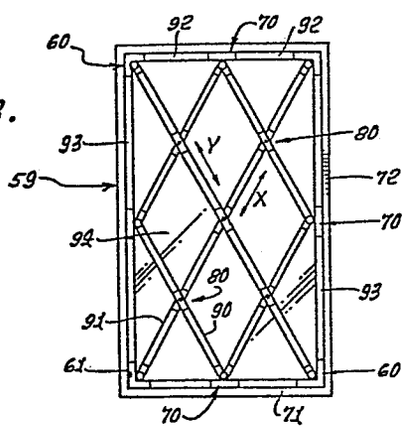
(54) Grid for windows and the like.

(57) A grid, the size of which is selectable to conform to a window opening, or the like and which is used for window decoration, comprises multiple couplings (60,70,80) and elongated grid members (90,91,92,93) of flat hollow section having slidable telescopic interfit with tongues of said couplings to define a peripheral frame (92,93) and crossing members (90,91) which extend between the frame members to form the grid. The grid members are of extruded plastics and may be cut to length as required. The peripheral frame couplings (60,70) comprise fixed and pivoted tongues and the couplings (80) of the grid are of cross shape and comprise tongued parts pivoted together. One piece L, T and cross shaped couplings (21,22,23) (see Figure 1) may be used to form a rectangular grid of any required size.

Fig. 8.



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GRID FOR WINDOWS AND THE LIKE

This invention relates generally to window framing, and more particularly to grids or grilles that are easily installed onto existing window glass to impart what is termed in the U.S.A. a "Colonial appearance" to such windows, at low cost.

There is a need for grids or grilles of the above type. However, problems exist in that window openings are of many different sizes, and premanufactured grilles cannot easily be enlarged or reduced in size to fit many different window or pane sizes. Thus, premanufactured grilles are typically of one size only, so that they do not accurately fit many windows of odd size, even though such grilles themselves may be made in different standard sizes. Also, disassembly and re-assembly of such grilles is extremely difficult.

There is, therefore, a need for a grid or grille and parts of same, which enable easy grid assembly from a kit, easy forming of the grid parts to size as dictated by particular windows, and low-cost construction of the components.

Basically, according to one aspect of the present invention, the grid or grille comprises:

a) multiple elongated members extending in X or Y directions which have intersections,

b) means interconnecting said members at said intersections, and

c) said members having slat-like cross sections in planes normal to the lengths of said members, the members each having parallel opposite walls.

Preferably, said members consist of synthetic resin.

As will appear, the members may advantageously be hollow and consist of extruded synthetic resin, facilitating light weight construction and enabling ready cutting to length; the means interconnecting the members may comprise couplings that may have flat, parallel opposite side walls, the corresponding side walls of the couplings and members being in substantially the same planes; or such interconnections may comprise pivots allowing the members to pivot to change the angles between said X and Y directions. The grid may be assembled, sized, and installed adjacent a window pane to create a "Colonial" appearance.

In that form of the invention employing fixed couplings the latter typically have telescopic interfit with frame members and other members, which may be cut to length to create the accurately sized grid.

Such members may have slat-like cross sections in planes normal to the lengths of said members, and

may be hollow as described.

The couplings may also consist of synthetic resin and be provided with slat-like tongues to slidably and frictionally interfit the cut-to-length frame and other elongated members; and the couplings may have flat elbow, tee and cross shape, as will appear.

The present invention also provides couplings have intermediate portions and first tongues projecting therefrom and integral therewith, and second tongues having associated bases pivotally connected to said intermediate portions; two of the second tongues and associated bases may be pivotally connected to a single intermediate portion, so that said two tongues may be pivoted into alignment with other members extending in different directions. Accordingly the X and Y directions may be established with desired angularity therebetween.

The present invention still further provides a kit of parts for a grid, the size of which is selectable to conform to a given window opening, or the like, characterized by:

a) multiple couplings, and

b) elongated members severable to form grid members of predetermined length to have slidable

telescopic interfit with said couplings to define

i) peripheral frame members, and

ii) other members which extend between the frame members.

Some ways of carrying the present invention into effect will now be described by way of example, and not by way of limitation, with reference to drawings which show specific embodiments of the grid in accordance with the invention and in which :

FIG. 1 is a side elevation showing a gridwork incorporating the invention, installed in a window opening; and FIG. 1a shows a dwelling with a window having an installed Colonial grid;

FIG. 2 is an end elevation taken on lines 2-2 of Fig. 1;

FIG. 3 is a bottom plan view taken on lines 3-3 of Fig. 1;

FIGS. 4 to 6 are enlarged fragmentary views in the chain-dotted line circles and of Fig. 1;

FIG. 7 is a section on lines 7-7 of Fig. 6;

FIG. 8 is an elevation showing a modified grid in accordance with the present invention;

FIG. 9 is a side elevation showing an elbow shaped coupling usable in the Fig. 8 grid;

FIG. 10 is an end elevation on lines 10-10 of Fig. 9;

FIG. 11 is a side elevation showing a bore and tongue pivotally connectible to the Fig. 9 coupling;

FIG. 12 is an edge elevation taken on lines 12-12 of Fig. 11;

FIG. 13 is a side elevation showing a T-shaped coupling usable in the Fig. 8 grid;

FIG. 14 is an end view taken on lines 14-14 of Fig. 13;

FIG. 15 is a side elevation showing a bore and tongue pivotally connectible to the Fig. 13 coupling;

FIG. 16 is an edge elevation taken on lines 16-16 of Fig. 15;

FIG. 17 is a view like Fig. 16, showing a modified bore and tongue;

FIG. 18 is a side elevation showing a coupling member usable in a cross connection shown in Fig. 8;

FIG. 19 is an edge view of the Fig. 18 coupling members; and

FIG. 20 is a view like Fig. 19, showing a complementary coupling member.

With reference to the drawings, the basic grid 10, or gridwork, in Fig. 1 is adapted to be easily formable or size controllable, to conform to a predetermined window size opening 11, as for example is associated with a dwelling 12, seen in Fig. 1a. The

intention is that the amateur installer can work from a kit of frame and other elongated members, and couplings, to easily install a "Colonial", or other grid-like window pattern adjacent a large, "gridless" glass window pane, to create the desired Colonial window appearance. Such a grid 10, installed next to a glass pane 13, is seen in Fig. 1a. Adhesive may be used to bond the grid to the window pane if desired.

The grid 10 basically comprises multiple elongated members extending in X and Y directions which have intersections; means interconnecting the members at the intersections; the members consisting of synthetic resin (such as extruded polyvinyl chloride); the construction being such as to readily adapt to layering adjacent a glass window pane, as referred to; and the members being easily formable to different size window openings (for example, the elongated plastics members can be cut at any location to reduce their lengths, i.e. reduce the grid size in either or both of the X and Y directions). Typically, the X and Y directions may be horizontal and vertical as shown by arrows in Fig. 1, with 90^{o} angularity, therebetween. See in this regard, a scissors or knife 14 in Fig. 4, readied to cut frame member 20 at location 14a, to

reduce the length of that member by the amount D, or other amount, as desired.

More specifically, and referring to Figs. 2 to 7, the grid 10 is made up of multiple couplings, as indicated by for example L-shaped corner couplings 21, T-shaped intermediate couplings 22, cross-shaped intermediate couplings 23; and elongated grid, members having slidable telescopic interfit with the couplings. The grid members may be considered to include:

i) peripheral frame members, as at 20, and

ii) other members, as at 25 and 25a which extend between the frame members 20.

The frame members 20 and other members 25 and 25a all have slat-like cross sections in planes normal to their lengths, as for example is seen in Fig. 7. These slat-like cross sections are hollow along the lengths of the members, so as to make it easy to cut them to length, as by a scissors or knife, as referred to. They consist of synthetic resin, such as extruded polyvinyl chloride; they have opposite side walls 26, and curved or outwardly convex endwalls 27, and their widths are substantially greater than (at least about three times greater than) their thickness; for example, the width "W" is typically between 1/2 and 1 inch; and section thickness "t" is between 1/8 and 1/4 inch.

The couplings 21, 22 and 23 have corresponding main body portions 21a, 22a and 23a and tongues protruding from the latter to slidably and closely fit, telescopically, the ends of members 20, 25 and 25a. Such tongues 21b, 22b, and 23b may have oval or slat-like cross sections with matching interfit to the openings defined by the ends of the members 20, 25 and 25a. That interfit is characterized as frictional and slidable, for ease of assembly, and retention of the grid elements in assembled relation. The couplings may consist of molded synthetic resin such as PVC. Stop shoulders 50 and 51 engage, as shown.

Accordingly, the grid is easily packaged and shipped in dis-assembled state, and readily assembled by the amateur builder or carpenter, to result in an appealing, low-cost, "Colonial look" window.

Fig. 8 shows a modified grid having multiple couplings indicated by corner couplings 60, side (T-shaped) couplings 70, and intermediate (cross-shaped) couplings 80. Couplings 60 fit adjacent the corner 61 of window frame 59; couplings 70 fit adjacent the frame members 71 and 72, as shown; and couplings 80 are located in the window opening space to interfit diagonally extending grid members 90 and 91. Peripherally extending frame members 92 and 93 extend

between couplings 60 and 70. All of these members are located adjacent a glass pane 94 carried as by frame 59.

Referring to Figs. 9 to 12, corner coupling 60 has an elbow shaped intermediate portion 62, and a circular tab 63 at the elbow inside corner to define a pivotal connection. Tongues 64 project from elbow arms 65, and correspond to tongues 21b. A second tongue 66 has an integral base 67 that fits sidewardly against tab 63 (see Fig. 10), and a central pivot 68 on tab 63 is received in bore 69 in base 67. Therefore, tongue 66 can pivot to locate member 91 at a desired adjusted angle, in Fig. 8, to fit frame 59.

Referring to Figs. 13 to 17, side coupling 70 has endwise projecting tongues 71 to interfit side frame members 92 or 93. A side tab 72 defines a pivot opening 73. Members 74 and 75 define tongues 74a and 75a that interfit elongated members 90 and 91. Bases 74b and 75b are shaped to fit flatly against opposite sides 72a and 72b of tab 72, and a pivot pin 76 passes through opening 75c in base 75b, through hole 73, and into a sleeve 77 on base 74b, to establish the connection. X and Y directions may be non-perpendicular as shown, or perpendicular; but the grid members 90 and 91 run diagonally.

Referring to Figs. 18 to 20, cross piece coupling 80 includes elongated base members 81 and 82 that interfit and have pivoted connection as via a pin 83 on member 82 interfitting a hole 84 in member 81. Tongues 85 and 86 on the members extend endwise oppositely to interfit grid members 90 and 91. Pivotability of members 81 and 82 permits selected adjustment of the diagonal angularity of grid members 90 and 91, in directions X and Y.

The components of a window grid kit typically contain enough connectors and extruded strip material to achieve a wide variety of grid patterns and window shapes and size. The easily assembled grid is light in weight and can be affixed to the window glass with Velcro (Trade Mark) strips or simple clip retainers, which would penetrate the wood or slide under a rubber window seal. The assembly can be easily removed for cleaning the glass or repainting the window and grids. Assembly is made easy since each connector has a fixed length, so that a simple subtraction from window dimensions can determine length of material needed between connectors. A press fit design eliminates need for gluing or screw attachment. Additionally, the assembly can be produced to a thickness of less than 1/4 inch, to eliminate interference in most sliding

window configurations.

Since the product fits any size window it allows retailer to stock grids rather than special order, and permits the homeowner to purchase without the need to obtain precise window measurements.

CLAIMS:

1. A grid, the size of which is selectable to conform to a given window opening, or the like, characterized by:

a) multiple couplings (21,22,23; 60,70,80) and

b) elongated grid members (20,25; 91,92,93) having slidable telescopic interfit with said couplings to define

i) peripheral frame members (20,92,93) and

ii) other members (25,90) which extend between the frame members.

2. The grid of claim 1 wherein said grid members have slat-like cross sections in planes normal to the lengths of said members.

3. The grid of claim 1 or 2 wherein said couplings and members have flat, parallel opposite side walls, the corresponding side walls of the couplings and members being in substantially the same planes.

4. The grid of claim 3 wherein the widths of said members are at least about three times the thicknesses of said members in directions normal to said side walls.

5. the grid of any preceding claim wherein said grid members are hollow along lengths of said members

and said couplings define tongues receiving the ends of said members.

6. The grid of claim 5 including interengaged stop shoulders on said couplings and members near the bases of the tongues.

7. The grid of any preceding claim wherein said couplings (21,22,23) have L-shape, T-shape and cross shape.

8. The grid of any preceding claim wherein said couplings (21,22,23) are of one-piece construction.

9. The grid of claim 6 wherein certain couplings (60,70) have intermediate portions and first tongues projecting therefrom and integral therewith, and second tongues having associated bases pivotally connected to said intermediate portions.

10. The grid of claim 6 wherein there are either three or four tongues carried by each coupling (60,70,80) one or two of which is or are angularly adjustable relative to a third tongue of the coupling.

11. The grid of claim 10 wherein certain couplings (80) have a first pair of tongues extending endwise oppositely in the X direction, and a second pair of tongues extending endwise oppositely in the Y direction.

12. A kit of parts for a grid, the size of which is selectable to conform to a given window

opening, or the like, characterized by:

a) multiple couplings (21,22,23; 60,70,80) and

b) elongated members severable to form grid members (20,25; 91,92,93) of predetermined length to have slidable telescopic interfit with said couplings to define

i) peripheral frame members (20,92,93) and

ii) other members (25,90) which extend between the frame members.

FIG. 1.

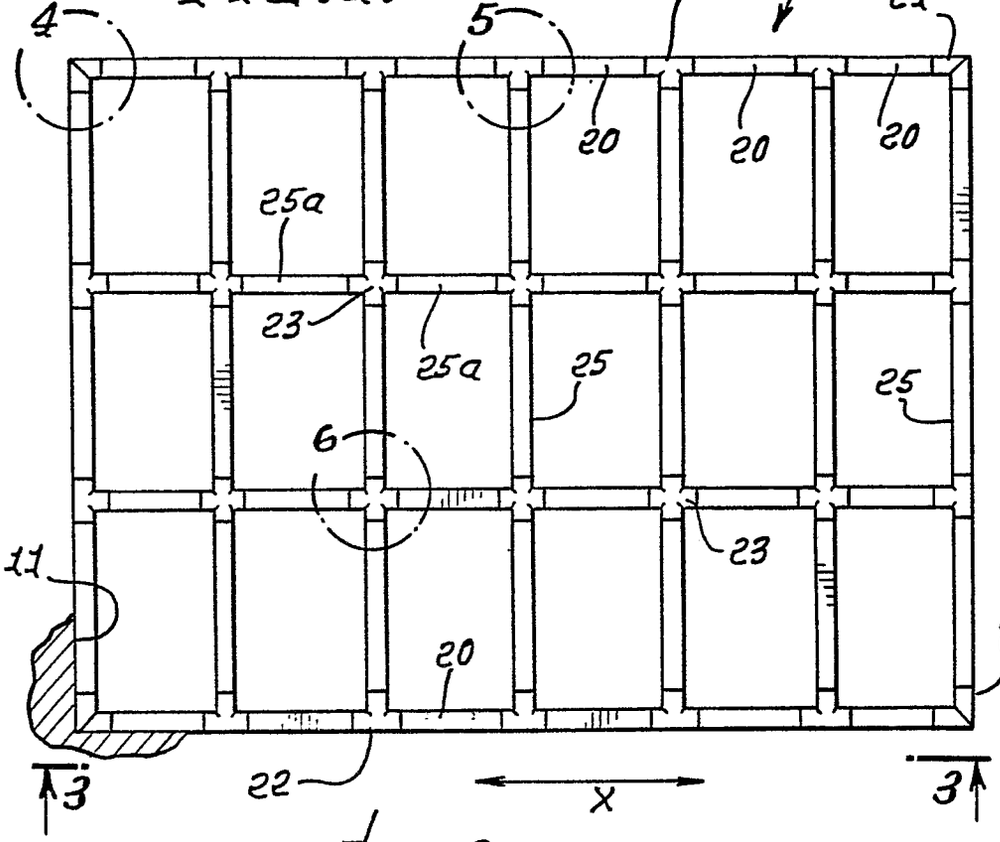


FIG. 2.

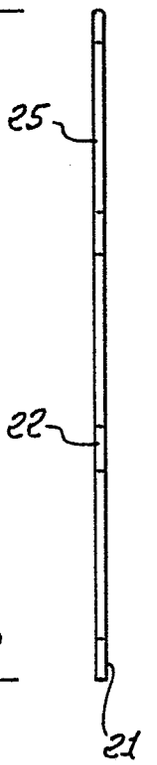


FIG. 3.

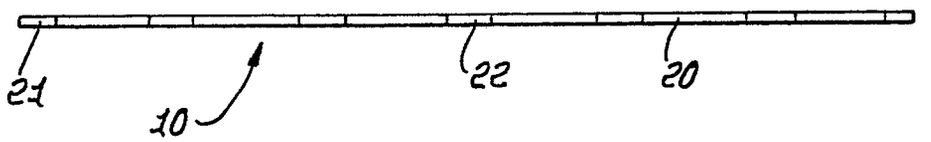


FIG. 1a.

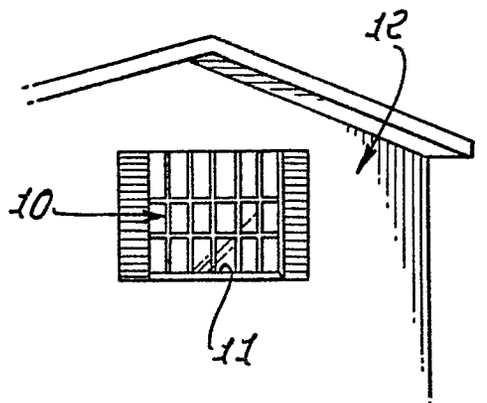


FIG. 4.

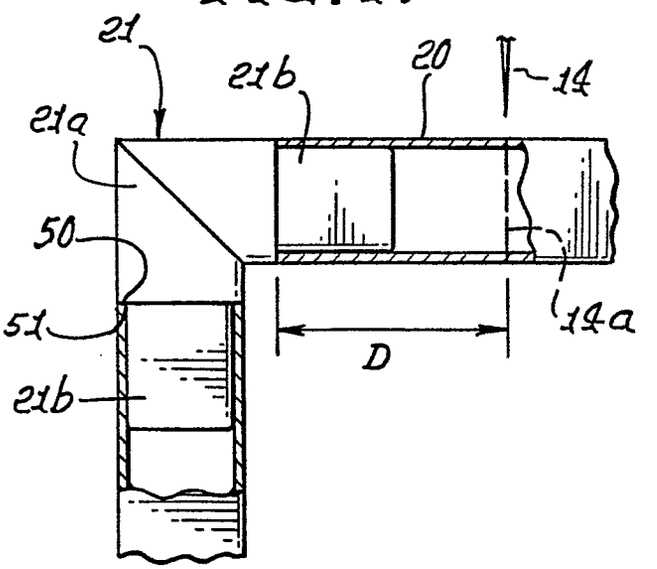


FIG. 5.

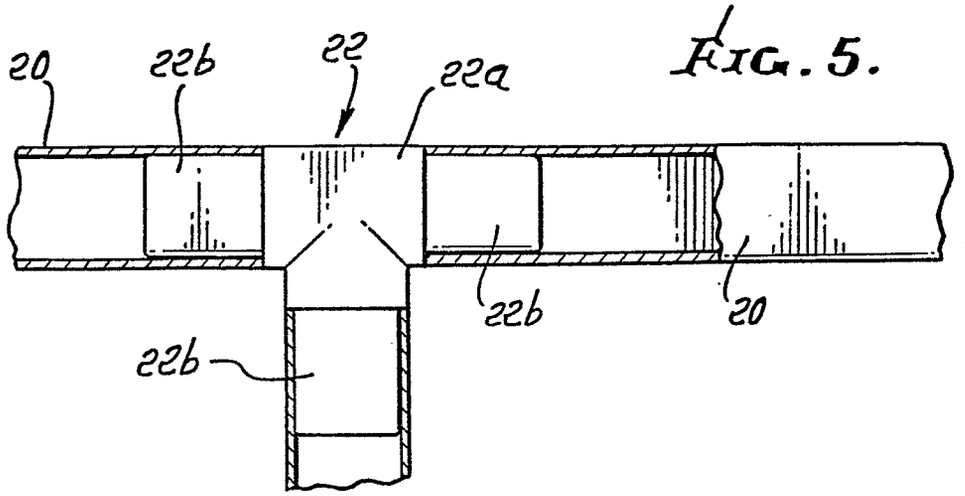


FIG. 6.

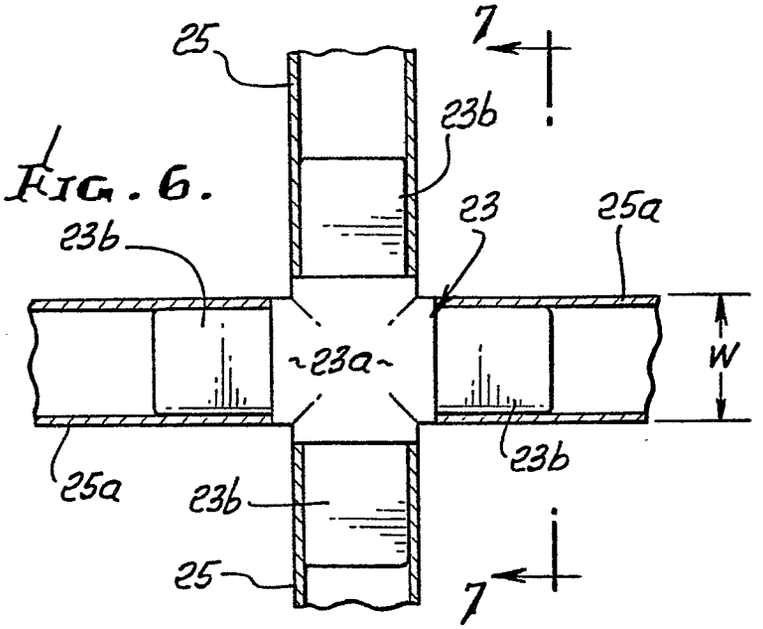


FIG. 7.

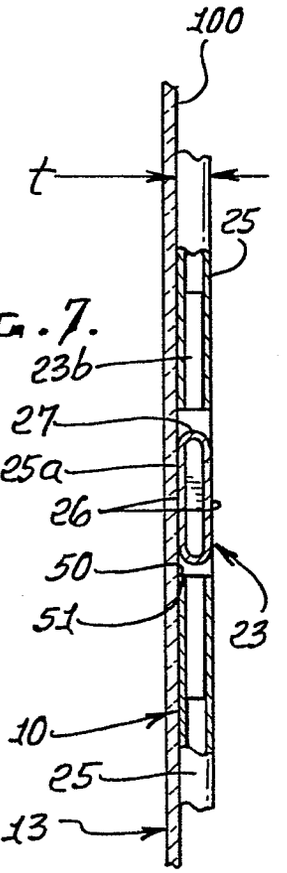


FIG. 9.

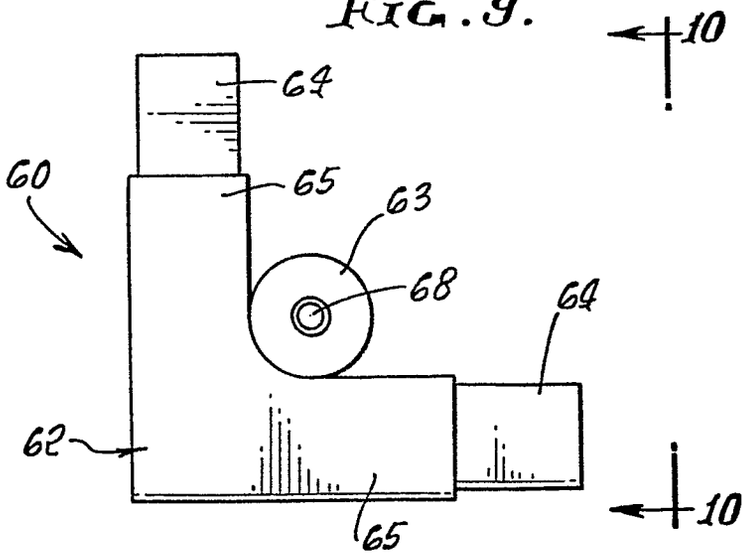


FIG. 10.

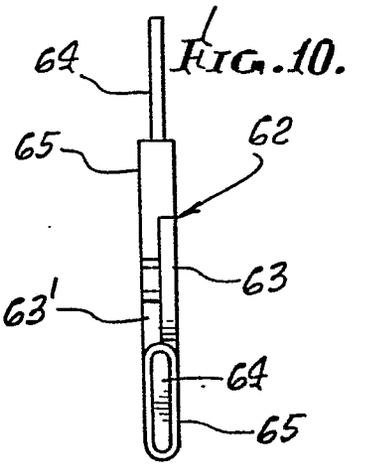


FIG. 8.

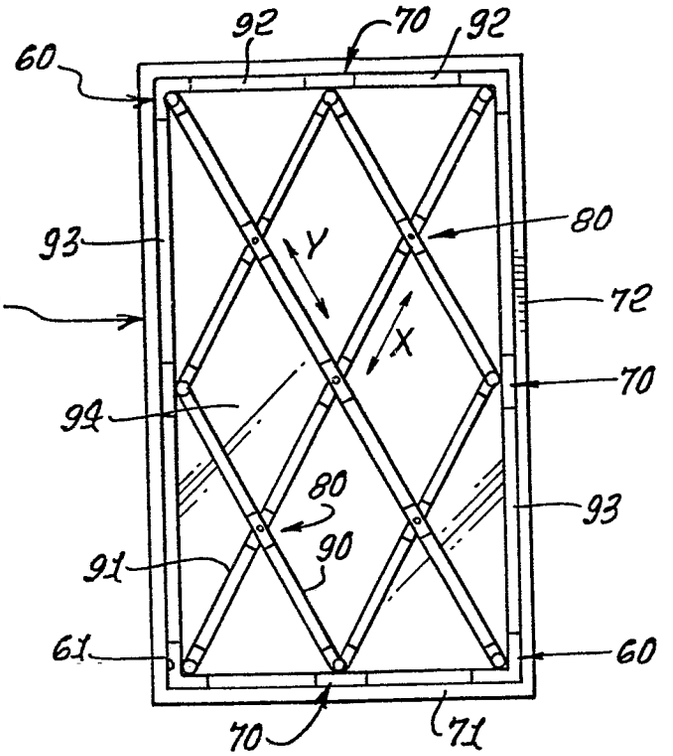


FIG. 11.

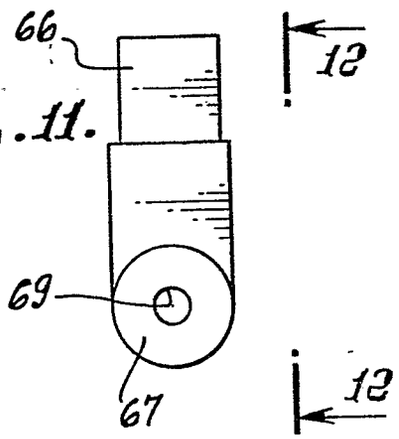


FIG. 12.

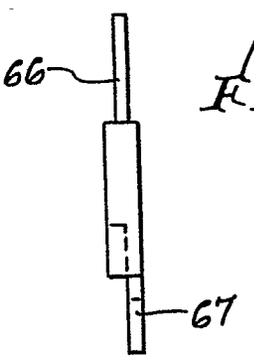


FIG. 13.

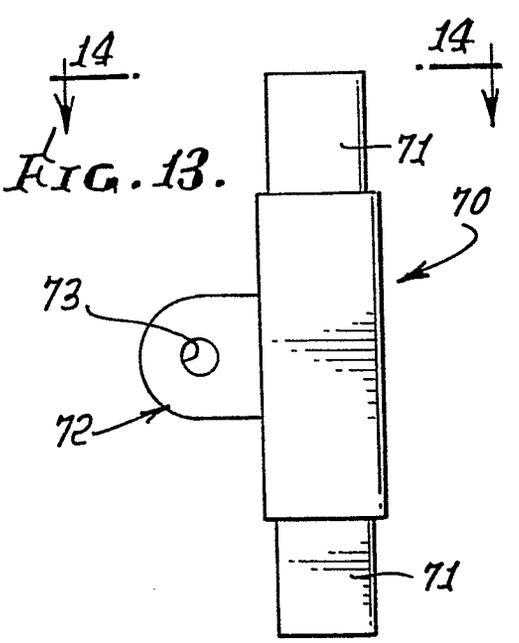


FIG. 14.

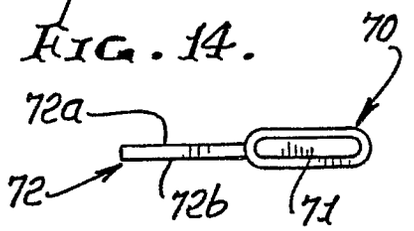


FIG. 15.

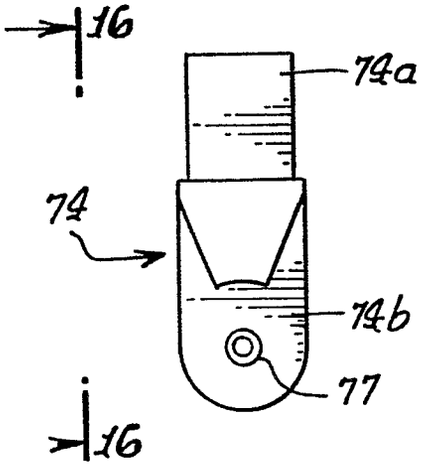


FIG. 16.

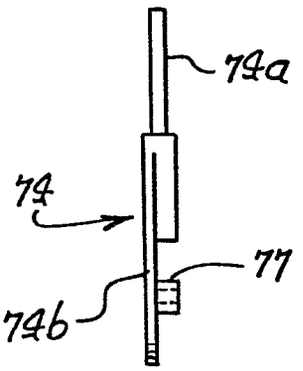


FIG. 17.

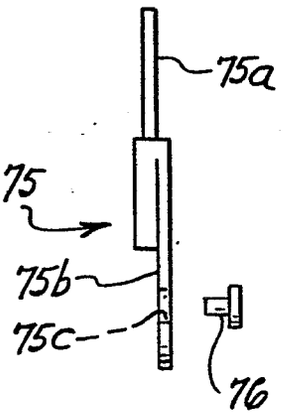


FIG. 18.

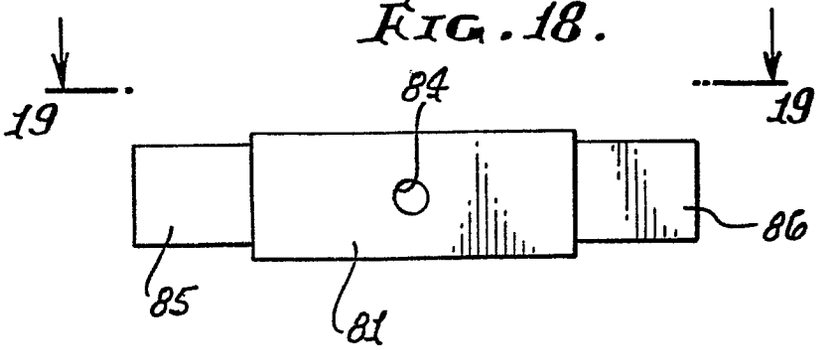


FIG. 19.

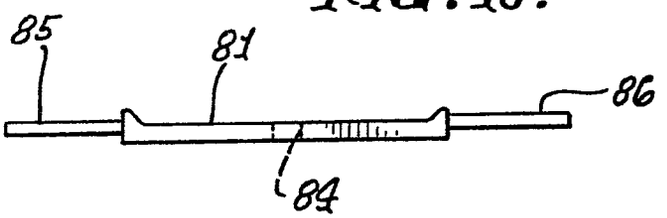
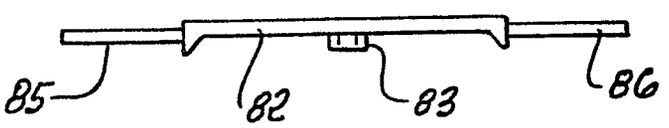


FIG. 20.



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EUROPEAN SEARCH REPORT

0200497
Application number

EP 86 30 3145

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)
Y	FR-A-2 134 920 (MARTINON) * Page 2, line 12 - page 3, line 22; figures 1-3 *	1,3,5-8,12	E 06 B 3/68
Y	FR-A-1 365 809 (I.C.I.) * Page 1, column 1, paragraph 3, column 2, paragraph 4; page 2, column 1, lines 25-46; page 3, column 1, paragraphs 3,5; figures 1A,3,4 *	1,3,5-8,12	
A	US-A-4 060 950 (RACKARD) * Column 2, lines 15,16; column 2, line 67 - column 3, line 2; column 4, lines 3-22; figures 1,3 *	1-5,12	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	GB-A-2 054 716 (LUSCOMBE) * Page 1, lines 7-73; figures 1-5 *	1,3,5-8,12	E 06 B
A	FR-A-1 514 102 (MÖLLER) * Page 2, column 2, paragraphs 2-6; figures 2-5 *	6-9	
A	US-A-3 645 058 (JACOBSON) * Column 4, line 46 - column 7, line 63; figures 1-5 *	9-11	

-/-

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	30-07-1986	DEPOORTER F.

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
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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

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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)
A	US-A-3 175 604 (ROSELLE) * Column 1, lines 31-37; column 1, line 66 - column 2, line 17; figures 1-4 *	9,10	
A	FR-A-2 278 902 (LAPEYRE)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

The present search report has been drawn up for all claims

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THE HAGUE	30-07-1986	DEPOORTER F.

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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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