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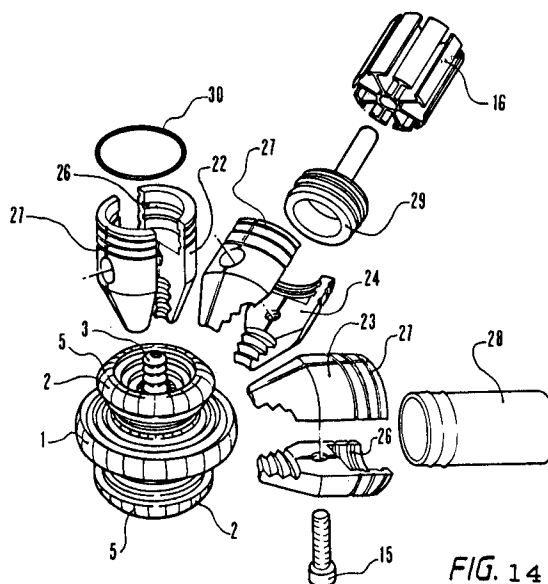
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GR-106 73 Athens (GR)(54) **Discoidal junction and parts for the connection of rods for sectional constructions.**

(57) A system of parts, through which partitions, outdoor shelters, ceilings and constructions for sectional furniture and the similar, are made by assemblage of them.

The main part is a junction (fig. 1), which consists of the disk 1 and the two disks 2, which are assembled to each other by a bolt 3 and a nut 4. On disks 1 and 2, which bear radial lines 5, tighteners 8, 9, 12 and 22, 23, 24 are tightened on which rods 16 or 28 are mounted and by which the partitions, shelves and the similar are formed.

**FIG. 14****EP 0 566 519 A1**

The present invention refers to a system of parts for the manufacturing, by putting them together, of several constructions, such as shelves, partitions, frames, outdoor shelters, artificial ceilings and the similar for use in furnitures for stores, in show rooms, with the addition of appropriate surfaces or other elements.

The main object of the invention refers to a junction, which consists of two or more parts, of a discoidal or other form, on which discoidal junction, are assembled, by tightening on the grooves that it bears, rods through which the desired constructions are formed (such as shelves, partitions, etc).

The prior art regarding sectional constructions, uses junctions for the connection of rods, which junctions normally are of spherical shape or other and bear recesses with grooves, wherein the rods are mounted.

The drawbacks of these junctions and of the whole system are the following.

- a) The starting points for the rods (recesses) are on predetermined positions on the junction and therefore the directions of the rods are predetermined, thus permitting only the productions of given types of constructions.
- b) The recesses on the junction are formed by mechanical way, e.g. by means of known machines. Due to the nature of mechanical processing there is no precision, which is necessary as far as the distances and the angles between the holes are concerned.

Even a slight deviation of a point may cause serious problems to the assemblage of the rods.

All this necessary mechanical processing makes the junctions very expensive and thus the whole construction becomes an expensive one.

The above technical and cost problems have led us to the try of producing a construction, which would be of low production cost and which could have the rods assembled on the junction at any desired point and under any desired angle. Furthermore, with the possibility of using several specific spare parts so that it would give a number of solutions to technical problems.

One more object of the invention is to solve problems having to do with weariness, functionality and life time of the parts, materialising several constructional applications; which will be presented, in detail, below, wherein the aforementioned advantages will become clear.

The invention will be understood by the experts in the field, by reference to the attached drawings, in which are presented some industrial embodiments of same.

Figure 1 shows an oblique aspect of the invented junction consisting of three basic parts.

Fig. 2 shows a cross section of the junction.

Fig. 3 shows the junction in a perspective way.

Fig. 4 shows the parts of the junction one by one.

Fig. 5 shows a cross section of the invented junction with three parts and mounted to this are three fasteners for the tightening of rods.

Fig. 6 shows, in a perspective way, the junction with the parts of the three fasteners one by one.

Fig. 7 shows, in a perspective way a random way of assembling junctions with rods.

Fig. 8 shows a cross section of the junction with two connecting parts (discs) and with decorating ending.

Fig 9 shows a cross section of the junction with two connecting parts (discs) and a part for use as a reception for a supporting rod.

Figures 10, 11, and 12 show the face, the section and the perspection of the two connecting parts (discs) with the specific semicircular disc.

Figures 13 and 14 show the section and the perspection of the dismantled junction with the three parts and mounted to the junction three fasteners of alternative form.

By reference to a chosen example of industrial application of the invention, we shall make hereunder a description of the main parts and of the way of their assemblage, referring to the respective numbers of the parts, as in the drawings, which are presented as in example, without climax, but only with a ratio between the dimensions.

According to a preferred embodiment of the invention the main part of it, the discoidal junction (fig. 1) consists of three discs. The disc 1 is positioned in the centre and the discs 2, which are positioned on both sides of disc 1. They are tightened and assembled to a junction together with a bolt 3 and the nut 4. Discs 1 and 2 bear circular two-side grooves 7 and cams 6, for the stable mounting on the discs 1 and 2, of the connecting tighteners 8, 9 or 12. The tighteners 8, 9 or 12 define the connecting mechanism of the rods 16 on the junction, and they bear cams of similar form as well as grooves 10, 11 and 13, so that they fit to the respective grooves 7 on discs 1 and 2 and to the bolt 3 and nut 4. There are three types of tighteners.

a) 9 with grooves 10 for the disc 1.

b) 12 with grooves 13 for the disc 2.

c) 8 with grooves 11 for the bolt and the nut 4.

The design of the discs (diagonal) 2 provides for cams 6 and grooves 7 so that there are no negative recesses on the required mould for their casting, which would cause problems of overflow to the cast material during the retrogression of the two plates of the mould.

Discs 1 and 2 bear on their outer surface radial lines 5, equally spaced between them (15° or other) so that it is easy to define the desired angle for positioning the rods 16, between them. For the

same reason the tighteners 8, 9 and 12 bear radial lines only at each central line 5. The tighteners 8 is intended to be assembled by threading to the bolt 3 with the threaded recess 11, for the purpose, to drive the rod 16 (on it) perpendicularly to the junction (upwards or downwards). The tightener 9 is intended to be assembled with the cams and grooves 10, in the grooves 7 of disc 1. The tightener 12 is intended to be assembled with cams and grooves 13 in grooves 7 of the diagonal disc 2. All the tighteners 8, 9 and 12 bear, on their outer end which is towards the junction, a threaded recess 11, within which the projecting bolt 14 of rod 16 is threaded. Each tightener 8, 9 and 12 comprises two uniform parts which are mounted to each other and are connected to a body by means of the laterally threaded bolt 15.

The alternative tighteners 22, 23 and 24, which in their front end have the same grooves with the corresponding ones 8, 9 and 12 but in their back part end to a cylindrical recess 25, are made for the quick tightening of rods 28, which are substantially of smaller diameter than the rods 16. However, the alternative tighteners may also be used for the tightening of rods 16 by means of a part 29. The tighteners 22, 23 and 24 bear, in the inner part of their cylindrical recess 25, grooves 26 for better support of rod 28, relaxing its end by use of a specific relaxing tool with cams of corresponding shape, or of the support of part 29, which bears cams of corresponding shape. Accordingly, the tighteners 22, 23 and 24 bear on their outer surface grooves 27, which may be used for the positioning in them of flexible decorating coloured rings 30.

If the junction comprises of two discs 1 and 2, then on the bottom surface of disc 1, which surface is open, there is assembled a spherical element 17 which is threaded on the projecting bolt 3 (projects under the free surface of the disc 1).

The receiving part 18 is assembled by threading the bolt 3, which projects under the disc 1, for positioning on it a support 19, which is tightened by bolt 20 to the receptor 18.

The special semicircular disc 21 is assembled by threading the bolt 3 which projects under the disc 1 and is used in case of construction where we need the possibility of connecting rods under angles different than the ones offered by discs 1 and 2. Specifically, the semicircular disc 21 is positioned in a perpendicular way in relation with the disc 1 and therefore a rod may be rotated on the circumference of the disc 21 by 135° and around the axis 22 of fig. 11. The disc 21 does not make a full semicircle of 180° but of 135° defining passages of circular sector so that it enables the rod, which is supported on disc 1, to rotate by 360° and to be conveniently positioned on the points of the two circular sectors.

The production of all the parts 2 (except for the bolts) is obtained by casting and expensive mechanical processes are not involved. In this way, low production cost is succeeded, which is one of the targets of the invention.

The positions that the rods 16 may acquire, which rods are assembled, on tighteners 8, 9 and 12, with the bolt 14, are innumerable since any point on the circumference of the disks 1 and 2 may be the point of support and tightening for the rod 16. Each rod 16 may rotate on the circumference of disks 1 and 2 by 360° and to be stabilised on a point of this. The angles between the rod may range depending on the chosen starting points. The same happens with the specific semicircular disk 21 which provides for the rotation on its circumference by 135° around the axis 22 in this way, the invented junction provides the possibility of constructing partitions, shelves, and other elements of any type and form. An example of such a construction is shown in fig. 7.

The invented parts provide for the easy and quick assemblage of the desired constructions, as well as for their easy and quick dismantle. This makes the cost of the objects made by the invented parts, even smaller.

The invented junction and the relevant parts may receive the assemblage of other parts, which may be invented in the future and be an addition to this invention.

It is herein noted that the present invention refers to only some examples and embodiments. Therefore, any modification or improvement regarding the shape, the form, the dimensions, the materials and the connecting parts are included in the aim of this invention.

Claims

1. A discoidal junction for connecting rods on it for the construction of sectional systems, characterised in that it consists of three successive disks, which are assembled and tightened to each to each other by means of a bolt, and on the circumferences of which disks, as well as on their sides, where cams and grooves are provided, tighteners are mounted which receive rods with which, partitions, bases and shelves are made, as well as frames and shelters.
2. Disk 1, which bears on its sides cams 6 and grooves 7, on both sides of which disk are assembled angular disks 2, by means of a bolt with a nut, which passes through the centre of the three disks and this the discoidal junction of claim 1, is obtained.

3. Angular disk 2, which, on its sides, bears cams 6 and grooves 7, characterised in that it is assembled on one or both sides of disk 1 of claim 2. Similarly, a semicircular disk 21, which bears, on its sides, cams 6 and grooves 7, characterised in that it is assembled on one or both sides of disk of claim 2. 5
4. Tighteners 8, 9, 12 and 22, 23, 24 each consisting of two pieces, assembled to each other by a bolt and which bear on one end cams and grooves, which are fixed to the cams of disks of claims 2 and 3 and they receive, in their other end, the rods 16 or 28. 10

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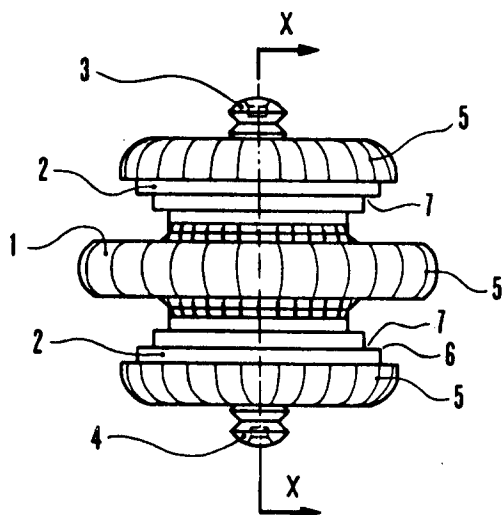


FIG. 1

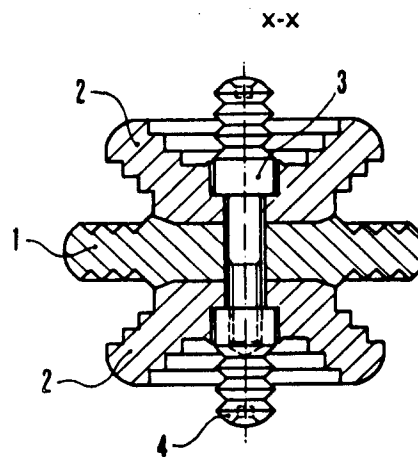


FIG. 2

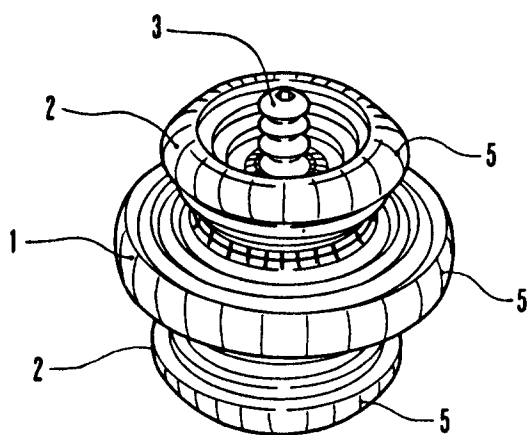


FIG. 3

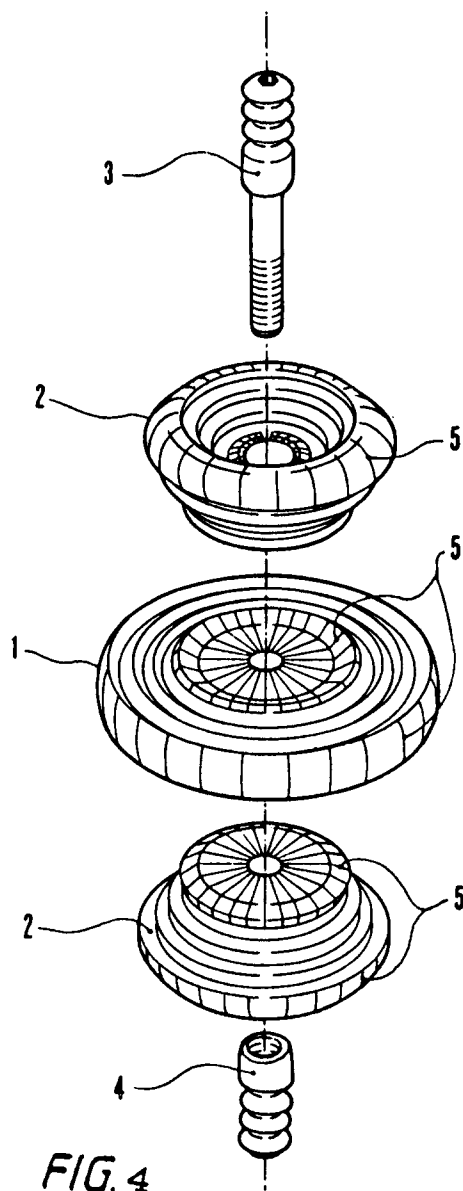
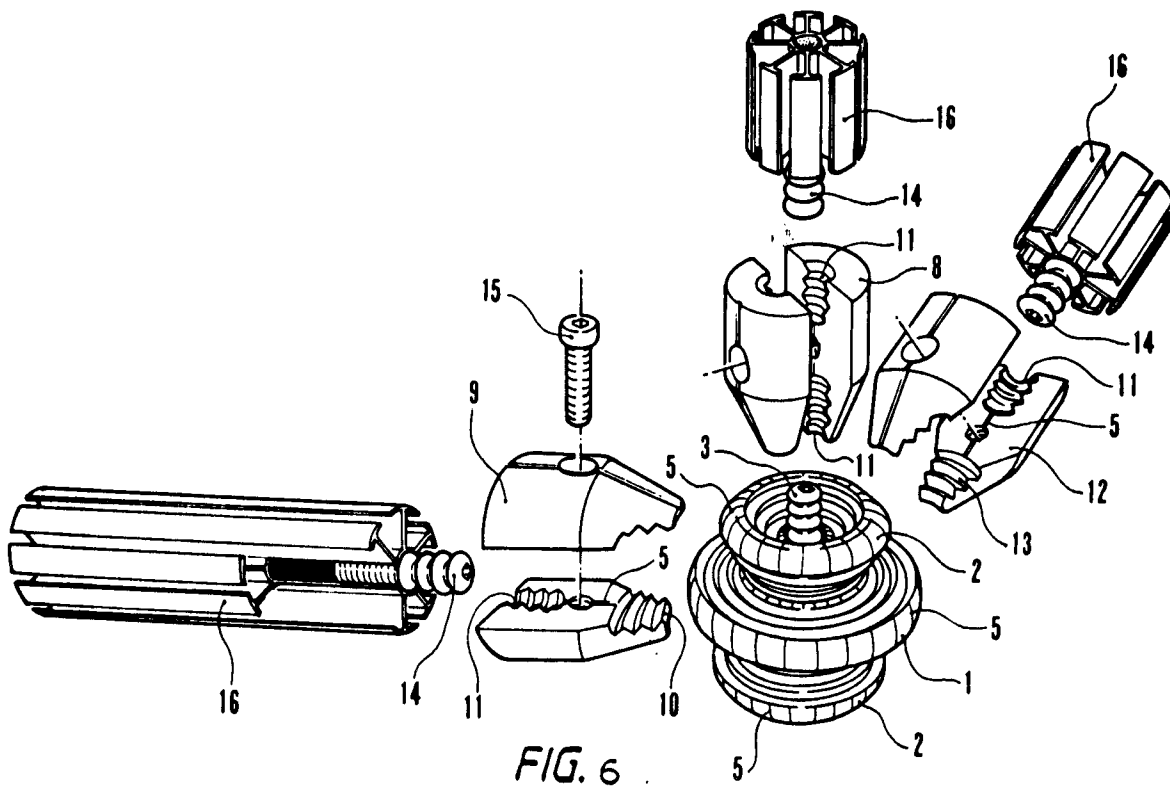
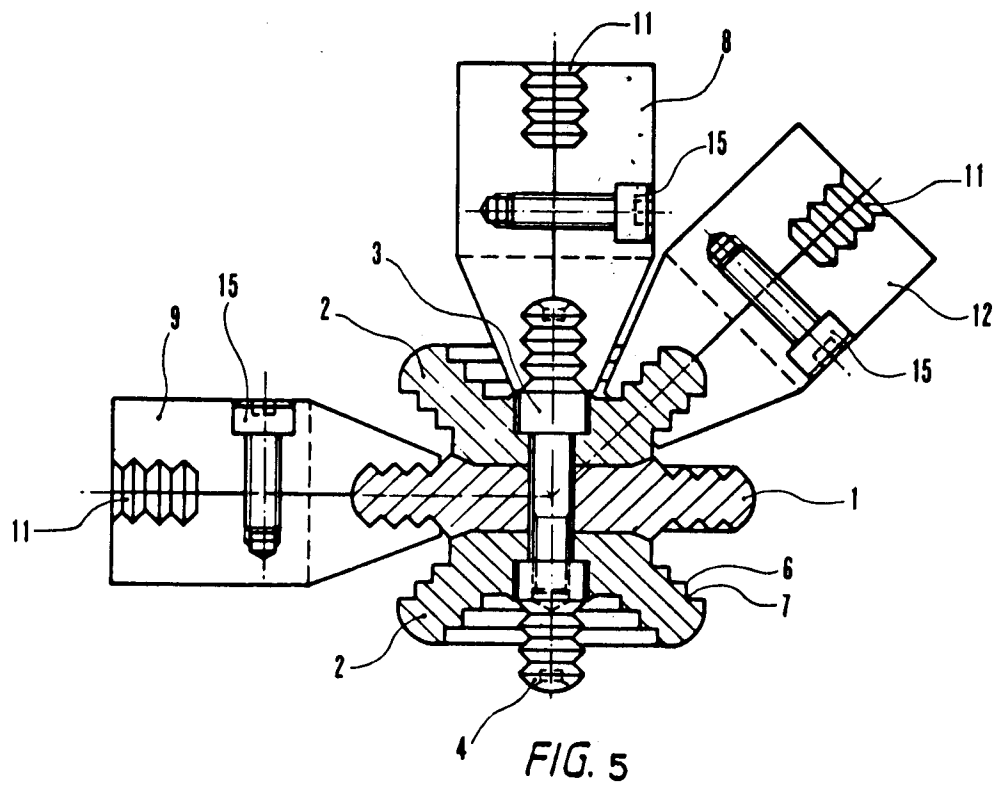


FIG. 4



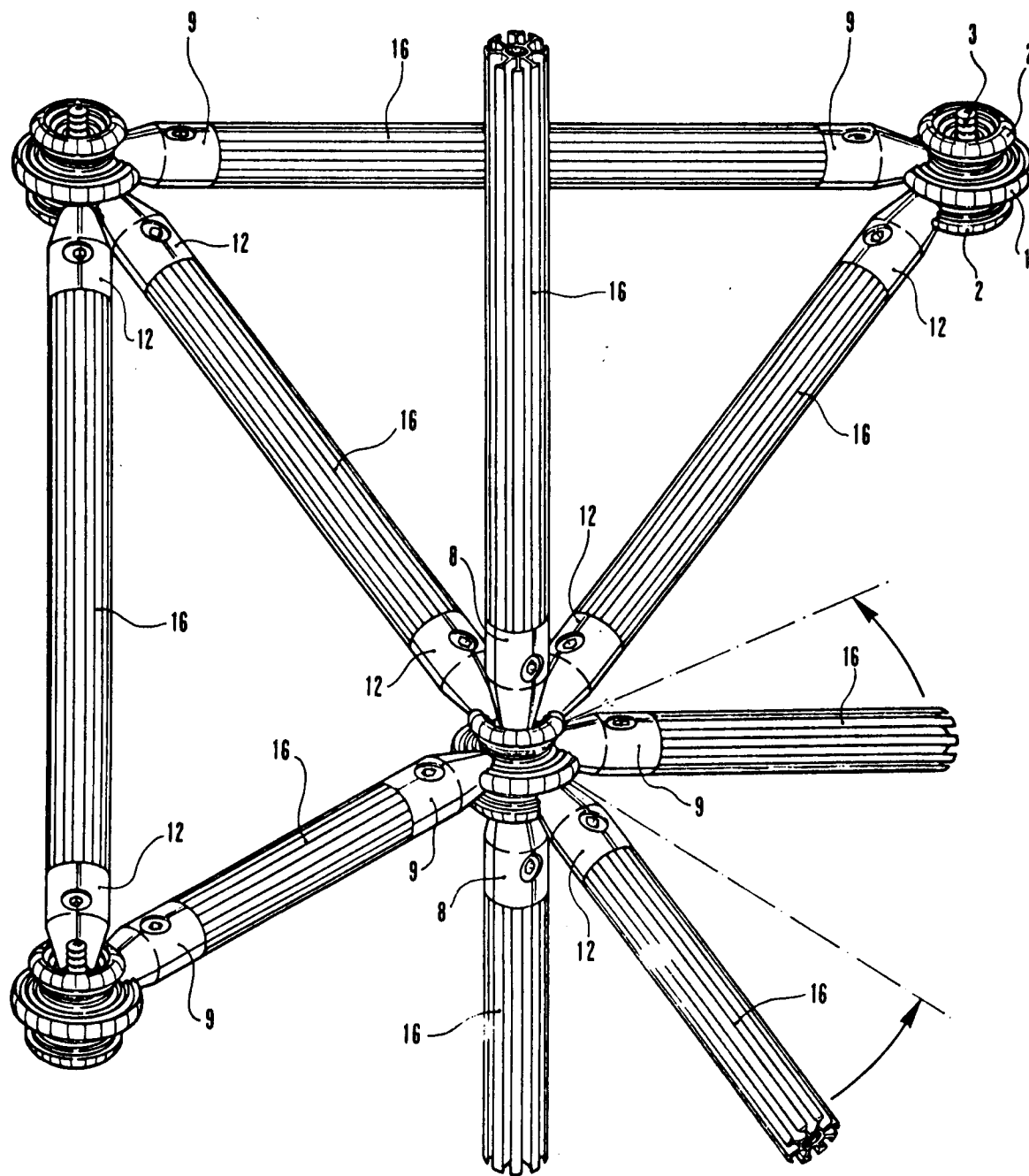


FIG. 7

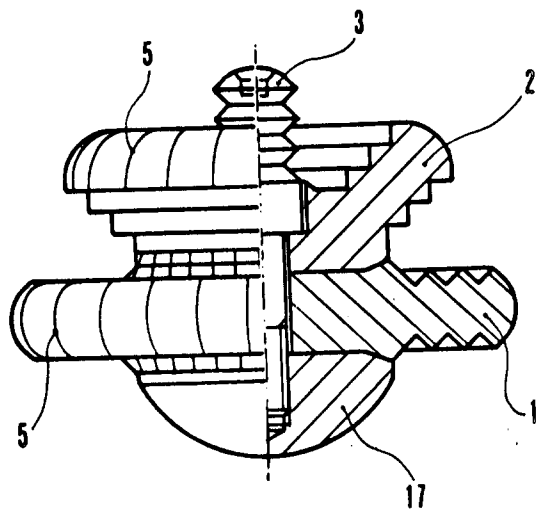


FIG. 8

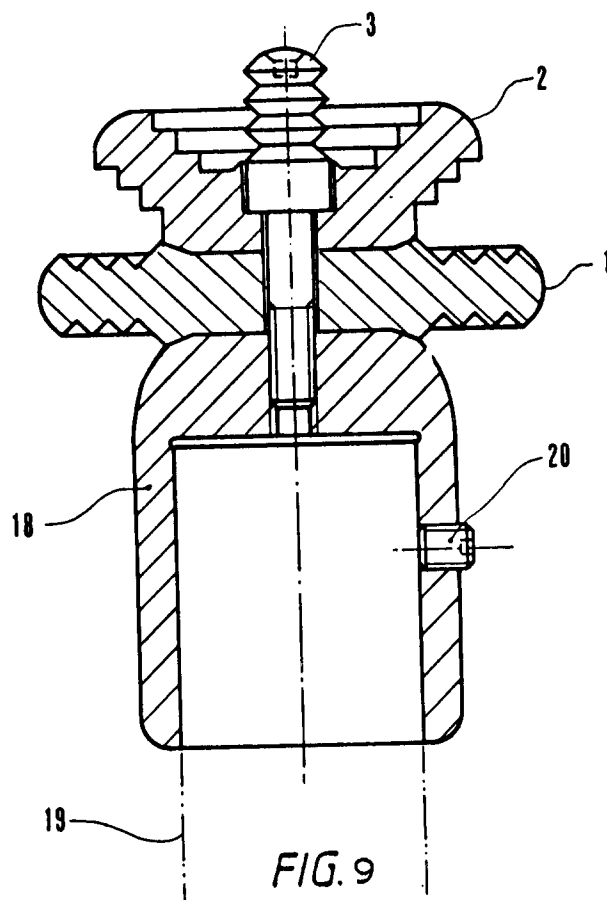


FIG. 9

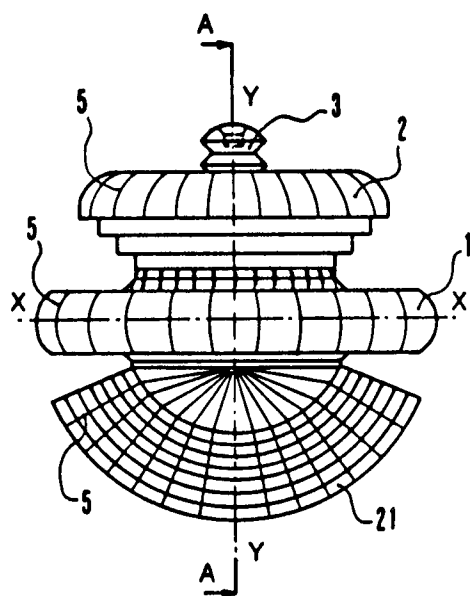


FIG. 10

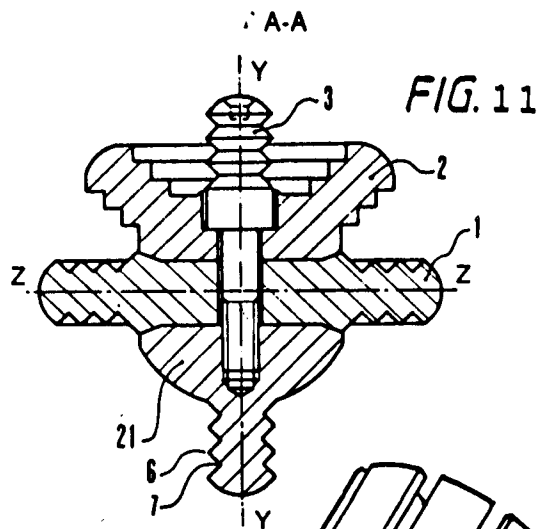


FIG. 11

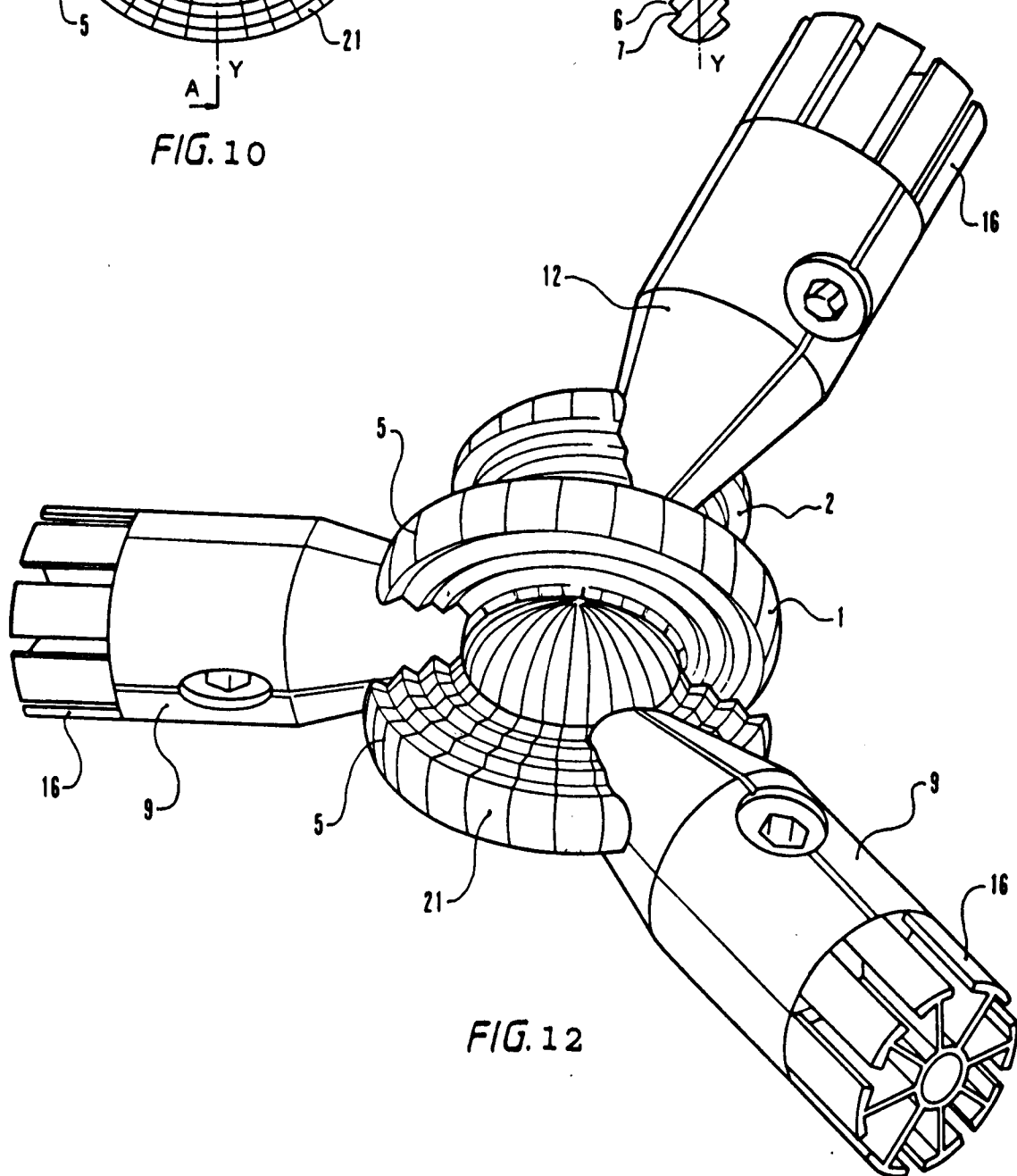
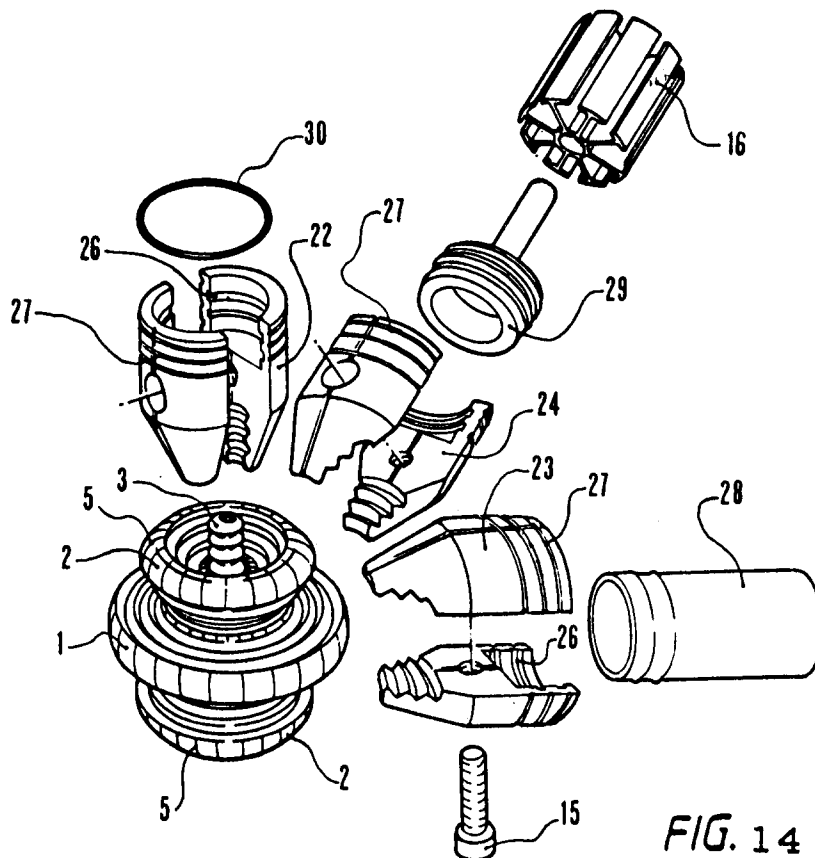
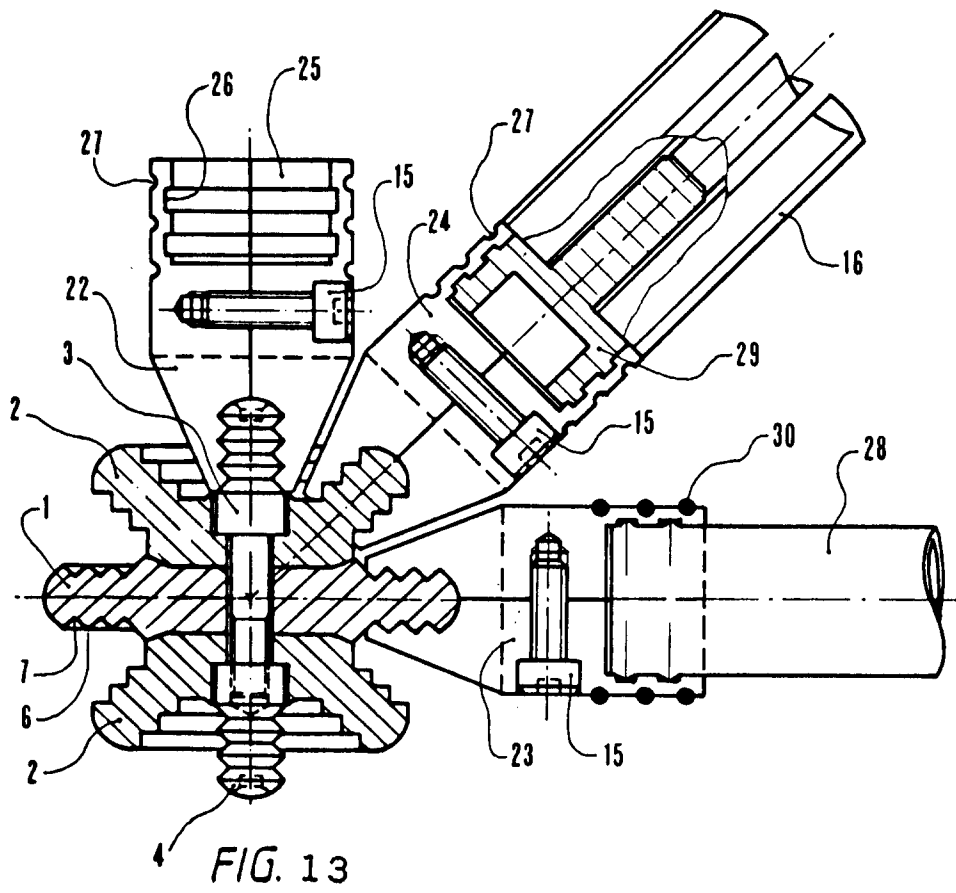


FIG. 12





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EUROPEAN SEARCH REPORT

Application Number

EP 93 60 0010

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	WO-A-8 902 539 (KREUSEL) * page 9, line 24 - page 13, line 6 * * page 14, line 30 - page 15, line 15; figures 1-6,19-21 * ---	1-4	E04B1/19 F16B7/18
Y	EP-A-0 413 235 (GASSLER) * column 4, line 6 - column 6, line 26; figures 1-10 * ---	1-4	
A	GB-A-2 133 108 (ROBINSON) * page 1, line 70 - line 111; figures * -----	1,2	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E04B F16B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 JULY 1993	Examiner HENKES R.
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			