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(54) System for assembling an apparatus for sports, games and gymnastics.

(57) The invention provides a system for assembly out of components of an apparatus for use in sports, games, gymnastics, gymnastics performing and the like, comprising

a carrier beam (1) with means for supporting thereof, and

at least one runner (16) displaceable in lengthwise direction of this carrier beam and which can be fixed in position thereon, which runner is furnished with means (19) for attachment of accessories.

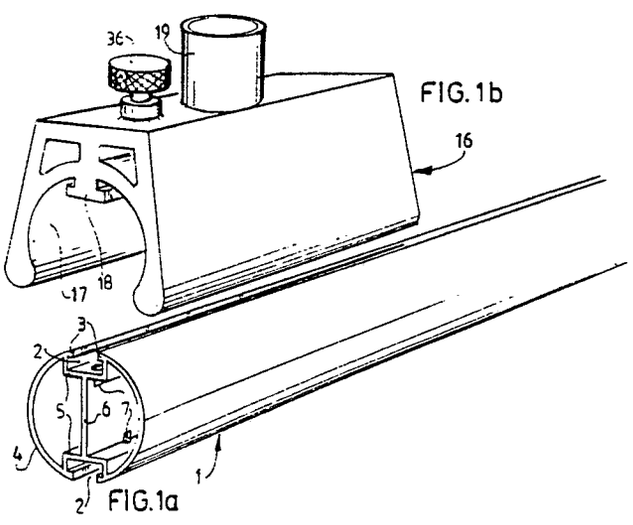

FIG.1b

FIG.1a

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A system for assembling an apparatus for sports, games, gymnastics and gymnastics performing

The invention lies in the field of apparatus for sports, games, gymnastics, gymnastics performing and the like. Such apparatus is generally known. It has been usual up to the current time to use for each specific purpose an apparatus especially designed for that purpose. Such apparatuses were either displaceable or fastened to floor and/or walls of a sports hall. The use of an apparatus for only one purpose has the drawback that the apparatus in question has a comparatively limited application, while furthermore, in order to realize a large number of functions, many different apparatuses are needed, which entails taking up of space and may involve high costs.

The invention now has for its object to obviate the above stated drawbacks and limitations of the known art and provides with a view thereto a system for assembly out of components of an apparatus for use in sports, games, gymnastics, gymnastics performing and the like, comprising

a carrier beam with means for supporting thereof, and

at least one runner displaceable in lengthwise direction of this carrier beam and which can be fixed in position thereon, which runner is furnished with means for attachment of accessories.

In order to ensure a positive positioning, with a view to the safety of an apparatus assembled using the system, the embodiment is recommended whereby the runner is lockable against rotation round the carrier beam. With an eye thereto the system can be embodied such that the carrier beam possesses a constant profiling at least over its functional length and the runner has a complementary profiling adapted thereto.

In a preferred embodiment the system according to the invention displays the feature that the supporting means for the carrier beam comprise two similar, parallel support members on both sides of the carrier beam, which members can be set at the same discrete supporting levels. It is possible with this embodiment to achieve for example that without performing measurements on the support members the beam can always be set simply in for instance a horizontal position.

In contrast to known apparatus the system according to the invention lends itself to a modular arrangement.

In a variant the system according to the invention has the feature that the supporting means are connectable to the carrier beam by means of a runner.

In order to effect a very good rotation locking between a runner and a carrier beam using as little force as possible, also with a view to ensuring safety and reliability, an embodiment is preferred which displays the feature that a runner and a carrier beam engage each other over a considerable part of the half of the periphery of the carrier beam.

The invention also relates to components evidently intended for a system as described above.

The annexed drawing shows by way of example only a very limited number of embodiments. It is however stressed that the system according to the invention not only enhances flexibility and is cost and space saving, but that it also opens up a very wide area of applications. The drawing only serves therefore as elucidation on the basis of several examples. In the drawing:

The figures 1a, 1b and 1c show in perspective view the basic components of the system according to the invention;

Fig. 2 shows a badminton net;

Fig. 3 a tennis net;

Fig. 4 shows a portion of a tennis net in another embodiment;

Fig. 5 is a partly broken away perspective view of a detail of a simpler alternative;

Figures 6a, 6b and 6c are views corresponding to the figures 1a, 1 and 1c of a variant;

Fig. 7 shows a view corresponding to fig. 2 and fig. 3 of a tennis net with folded in legs;

Fig. 8 is a partly broken away perspective view of the block carrying the legs;

Fig. 9 is a perspective view of the block from fig. 8 from the bottom;

Fig. 10 is a perspective exploded view of another embodiment;

Fig. 11 shows on enlarged scale the detail XI from fig. 10 in perspective view;

Fig. 12 shows on enlarged scale the detail XII from fig. 10 in cross sectional view;

Fig. 13 is a perspective view of an applied embodiment; and

Fig. 14 is a partly broken away perspective view on an enlarged scale of the detail XIV from fig. 10.

Fig. 1a shows an aluminium profile beam 1 which has the same profile over its entire length. Both on the top and on the bottom the beam 1 displays a slot 2 with flanges 3 which connect onto the body 4 of the substantially circular symmetrical carrier beam 1. The bottoms 5 of the slots 2 are connected to each other by a partition 6. This construction ensures great bending and torsional rigidity of support beam 1; this beam 1 is nevertheless comparatively light.

Arranged in the bottoms 5 at discrete points are holes 7 which extend partially into the partition

6. These holes serve as retaining holes for receiving the locking pin 8 shown in fig. 1c. This locking pin 8 forms part of a bearing member 9 to be described later with reference to figures 2 and 3. This bearing member 9 comprises a carriage 10 with a hollow supporting face 11, the form of which possesses a profile adapted to the shape of the profile of the aluminium beam 1 and complementary thereto. Thus extending in the centre of the supporting face 11 is a ridge 12 which is more or less T-shaped in cross section and which fits into slot 2.

Connected to the carriage 10 via a hinge pin 14 is a supporting leg 13.

The pin 8 carries a hand-grip 15 for retracting of locking pin 8 inside the outer surface of ridge 12. This locking pin 8 is spring mounted such that in its position of rest it protrudes outside said face, the situation shown in fig. 1c. In this position the free outer end of locking pin 8 can engage in one of the holes 7 in the carrier beam 1 shown in fig. 1a. In this situation the carriage 10 is completely fixed relative to support beam 1. Owing to the complementary profile of carriage 10 and beam 1 no rotation between the both of them is possible, while as a result of the engagement of the pin 8 in a hole 7 a lengthwise displacement of carriage 10 relative to beam 1 is also blocked.

Fig. 1b shows a runner 16 which consists of plastic and which displays a hollow supporting face 17, the form of which is adapted to the profile of the aluminium carrier beam 1. In the same way as in the case of carriage 10, extending in the middle of the hollow supporting face 17 of runner 16 is a ridge 18 which is by and large T-shaped in cross section and which possesses a form such that it fits into the slot 2 of beam 1. It will hereby be apparent that the runner 16 is locked against rotation round carrier beam 1. As is shown in fig. 1b the hollow supporting face extends round the carrier beam 1 over a greater angle than 180 degrees.

The runner 16 bears a sleeve coupling 19 for connection of accessories.

Runner 16 can be fixed in any required position relative to carrier beam 1 by means of a clamping screw 36.

Fig. 2 shows a badminton net 20. This net is an apparatus built up on the basis of the system according to the invention. It comprises the aluminium carrier beam 1, two runners 16 and the bearing members 9 attached on either side of the beam. Placed on the runners 16 are posts 21, between which is stretched a net 22.

The supporting leg 13 of each bearing member 9 is supported by a block 23 with fold-out legs 24 in order to ensure good stability.

The supporting leg 13 carries a hinge 25 to which is connected a support 26 which is coupled at its other end to a hinge 27 that is firmly connected to carrier beam 1.

It will be apparent without further explanation from studying the figures 2 and 3 how a very easy height adjustment of the aluminium carrier beam 1 can be achieved with this hinge construction of the bearing member 9. Since for both identical bearing members 9 the holes 7 in beam 1 are always at the same distance relative to hinge 27, by choosing corresponding holes on both sides a perfect horizontal setting of the beam 1 can, without taking height measurements, always be obtained, this being a requirement for a net for sporting purposes.

In order to facilitate placing of beam 1 in a higher position two gas springs 28 extend between the support 26 and the upper part of supporting leg 13.

Fig. 4 shows an embodiment wherein the aluminium beam 1 is disposed vertically carrying two runners 16 which together perform the same function as a post 21 as in figures 2 and 3. Runners 16 can be fixed in place relative to the beam 1 using clamping screws 29.

Fig. 5 shows for the sake of completeness a highly simplified embodiment. A carrier beam 30 of rectangular cross section carries a runner 31 which consists of two clamping cheeks 33 which can pivot on a hinge 32. These clamping cheeks can be fixed in position relative to each other by means of screw means 34. The runner 31 carries a connecting stump 35 for accessories. Attention is drawn to the fact that this embodiment is only mentioned to make it clear that the invention is not restricted to the above described embodiments.

Fig. 6 shows the same configuration as shown in fig. 1. Corresponding parts are therefore designated with the same reference numerals as in fig. 1.

In the embodiment as in fig. 6b a runner 37 with the same function as the runner 16 according to fig. 1b is furnished with a recessed socket coupling 38 for the connecting of accessories. A clamping screw 39 is countersunk into runner 37 in the manner shown in fig. 6b. The screw 39 can be tightened or loosened using a socket head screwdriver.

The embodiment as according to fig. 6b displays no protruding parts on the upper surface, in contrast to the embodiment of fig. 1b. The embodiment as in fig. 6b is therefore preferred from a safety viewpoint.

Fig. 7 shows how the legs 24 can be folded in from the position shown in fig. 3 such as to ensure the minimum use of space. The blocks 23 can if required be furnished with rolls or wheels, which results, in the situation shown in fig. 7, in the whole apparatus being mobile. This can be of advantage, particularly with an eye to use by children. It is also

remarked that the construction according to the invention enables very rapid setting up, disassembly or changing of a configuration.

Fig. 8 shows block 23 in more detail. By means of hinge pins 40 the legs 24 can swivel in cut away spaces 41 between the two extreme positions shown respectively in fig. 2 and fig. 7. In both these extreme positions the legs 24 provided with retaining holes 42 can be fixed in place by means of spring-mounted locking pins 43 and 44 respectively. These pins can be operated from outside.

Fig. 9 shows block 23 from the bottom. Arranged on the bottom face of block 23 are three supports 45 which ensure a stable position in the situation shown in fig. 7. No rolls or wheels are present in this embodiment.

Fig. 10 shows an embodiment of a system according to the invention, this having two possible alternatives. In this embodiment a more or less semi-round profile beam 51 bears a slightly curved work top 52 with a greater transverse measurement than profile beam 51. Particular reference is made in this respect to fig. 12, in which the local construction is drawn in more detail.

As can be seen in fig. 10 the profile beam 51 is connectable to runners 53, which are coupled to a carrier 54 with side brackets 55, or to a plurality of runners, 56, 57 connected to one another and to a carrying frame 58, which comprises: a block 59, legs 60 which are connected to that block and which can fold out sideways, a first supporting leg 61 connected for swivelling to block 59 and a second supporting leg 62 connected for swivelling to this first supporting leg 61. The legs 61 and 62 are also coupled to each other via gas springs 63.

At variance with the previously discussed embodiments and as will be particularly apparent from fig. 12, the runners 53, 56, 57 and the profile beam 51 engage each other over a considerable part of the half of the periphery of the carrier beam.

The work top 52, which in this embodiment is manufactured from aluminium, is covered with a more or less resilient covering layer 64.

A runner 65 can be fitted onto the top 52, 64. This runner 65 displays a form adapted to that of the top 52, 64 and can be fixed in position by means of straps 66 with stretchers 67 and hooks 68, making use of a hook-like rib 69 which is formed on the aluminium work top 52.

It will be apparent that runner 65 is only a simple example of the many application possibilities.

In the case of coupling of profile beam 51 to carrier 54, the construction thus obtained can be placed on the ground on the brackets 55, which results in a very robust and stable entity being obtained. If the carrier 54 is provided on its underside with bearing means (not drawn) similar to the carrying frames 58, an elevated construction can then be obtained, whereby the brackets 55 can for instance serve for coupling with other elements, such as beams, ladders or the like provided with mounting brackets or hooks.

Fig. 11 shows the detail XI from fig. 10. The runners 57 are screwed into place using strips 70 to a coupling member 71 that is carried for pivoting by the second supporting leg 62. A spring-mounted retaining pin 72 serves for fixing runners 57 in the required positions relative to the carrier beam, which is shown in fig. 11 in another embodiment and is designated with the reference numeral 73. Accommodated for this purpose in the recess 74 of carrier beam 73 is a steel strip 75 with holes 76, which holes 76 are situated at regular intervals and which can serve to receive the active end 77 of the retaining pin 72.

Fig. 13 shows a profile beam 73 suspended from a ceiling 79 by means of runners 78, and ropes 80 with rings likewise suspended on runners 78 from the underside of this profile beam. Here once again is an example of an embodiment to which the invention is not restricted.

Fig. 14 shows the block 59. This block comprises up and downward movable swivel castors 81. These four wheels 81 are supported by frames 82. These frames are guided for up and downward sliding in the housing 59. As a result of the actual weight of the construction carried by the supporting leg 61, the block 59, in disengaged position, will rest stably on the ground. The wheels can however be set into a stable position protruding outside the block by rotation of a handgrip 83 which is connected to a shaft 84 with cams 85, which, as a result of this rotation, come to lie in a downward directed position, in which they press the frames 82 downward in relation to block 59. In this position the wheels 81 protrude downward so that the block, together with the construction carried thereby, can travel. Not drawn are the means for the swivelling and fixing in determined positions of the legs 60 and 61.

Claims

1. System for assembly out of components of an apparatus for use in sports, games, gymnastics, gymnastics performing and the like, comprising

a carrier beam with means for supporting thereof, and

at least one runner displaceable in lengthwise direction of this carrier beam and which can be fixed in position thereon, which runner is furnished with means for attachment of accessories.

2. System as claimed in claim 1, **characterized in that** the runner is lockable against rotation round the carrier beam.

3. System as claimed in claim 2, **characterized in that** the carrier beam possesses a constant profiling at least over its functional length and the runner has a complementary profiling adapted thereto.

4. System as claimed in any of the foregoing claims, **characterized in that** the supporting means for the carrier beam comprise two similar, parallel support members on both sides of said carrier beam, which members can be set to the same discrete supporting levels.

5. System as claimed in any of the foregoing claims, **characterized in that** the supporting means are connectable to the carrier beam by means of a runner.

6. System as claimed in any of the foregoing claims, **characterized in that** a runner and a carrier beam engage each other over a considerable part of the half of the periphery of said carrier beam.

7. Components evidently intended for a system as claimed in claims 1-6.

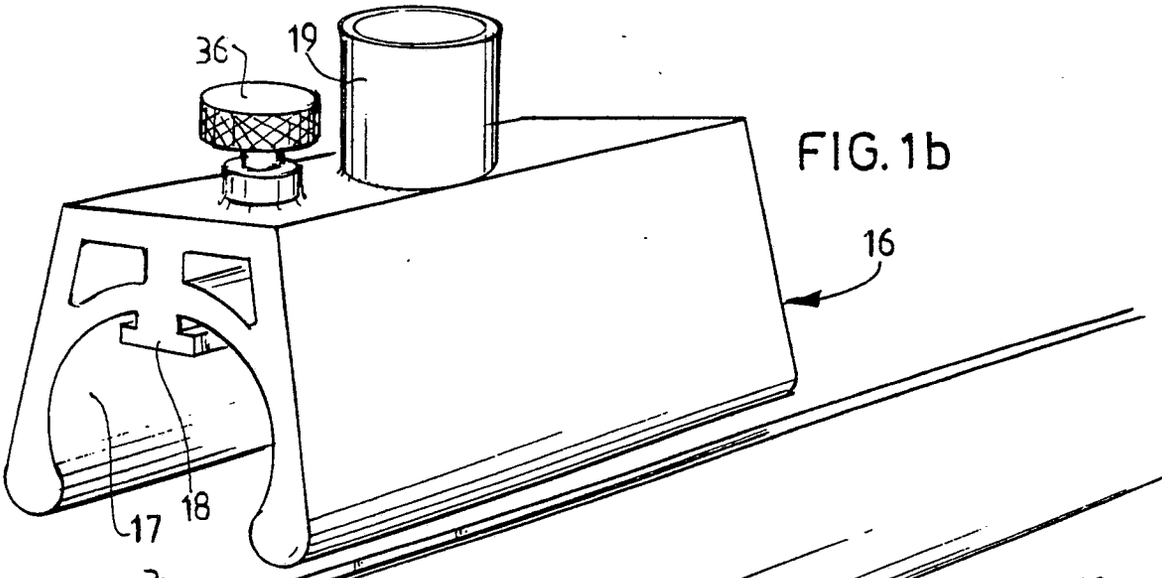


FIG.1b

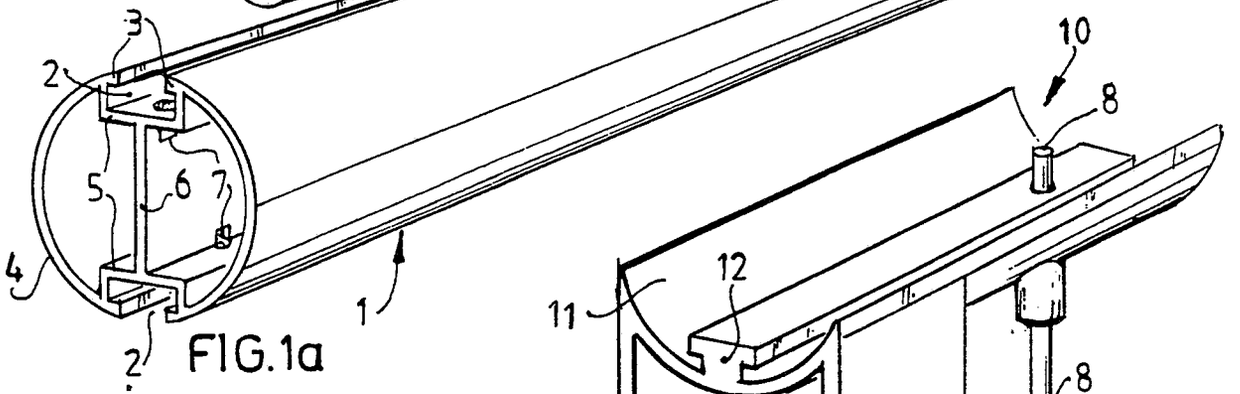
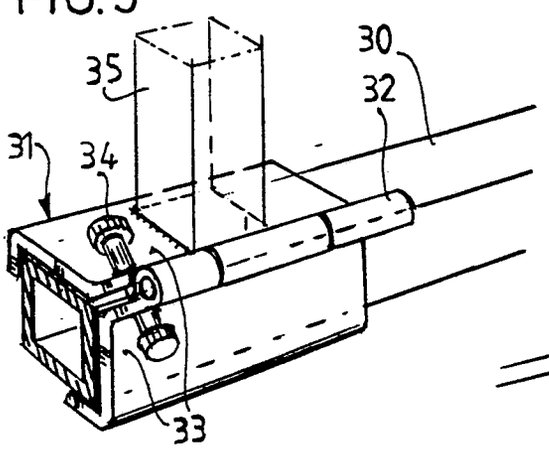


FIG.1a

FIG.1c

FIG.5



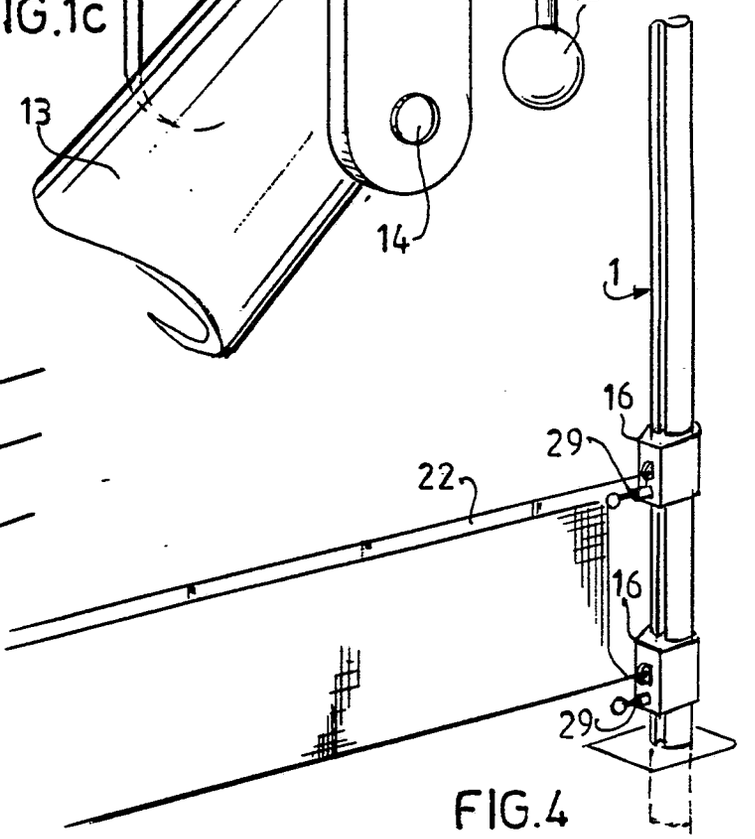


FIG.4

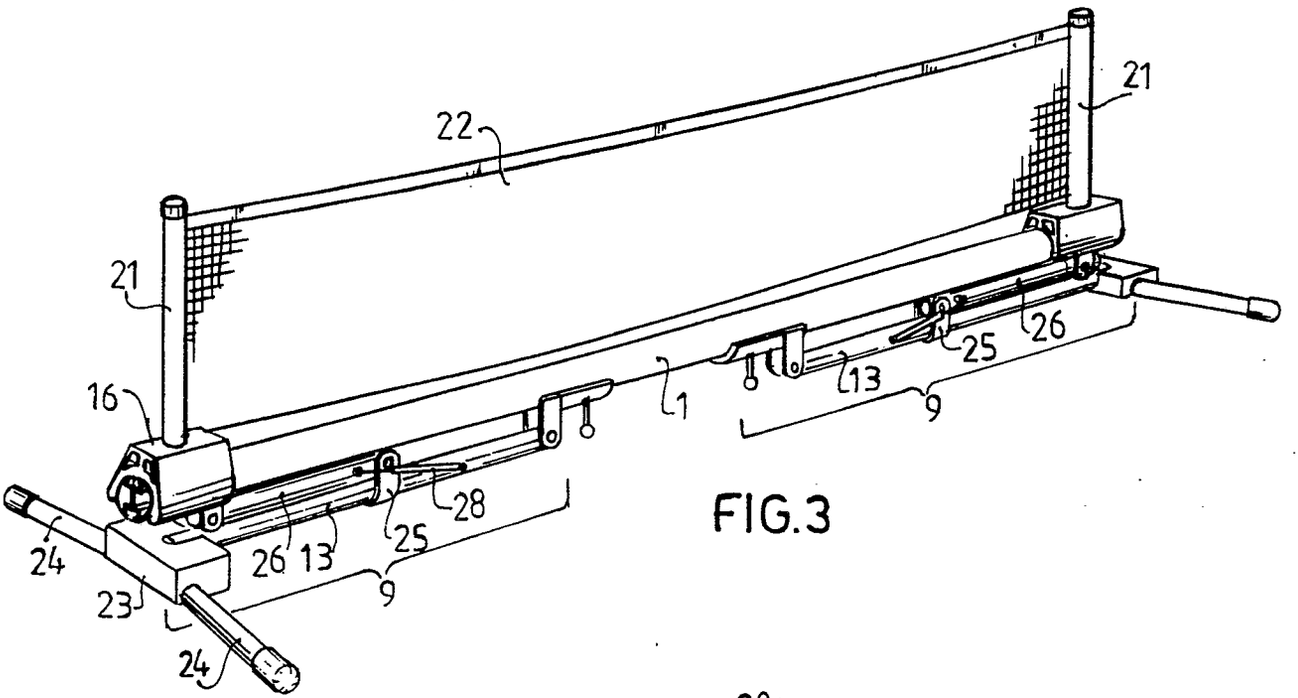

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FIG.3

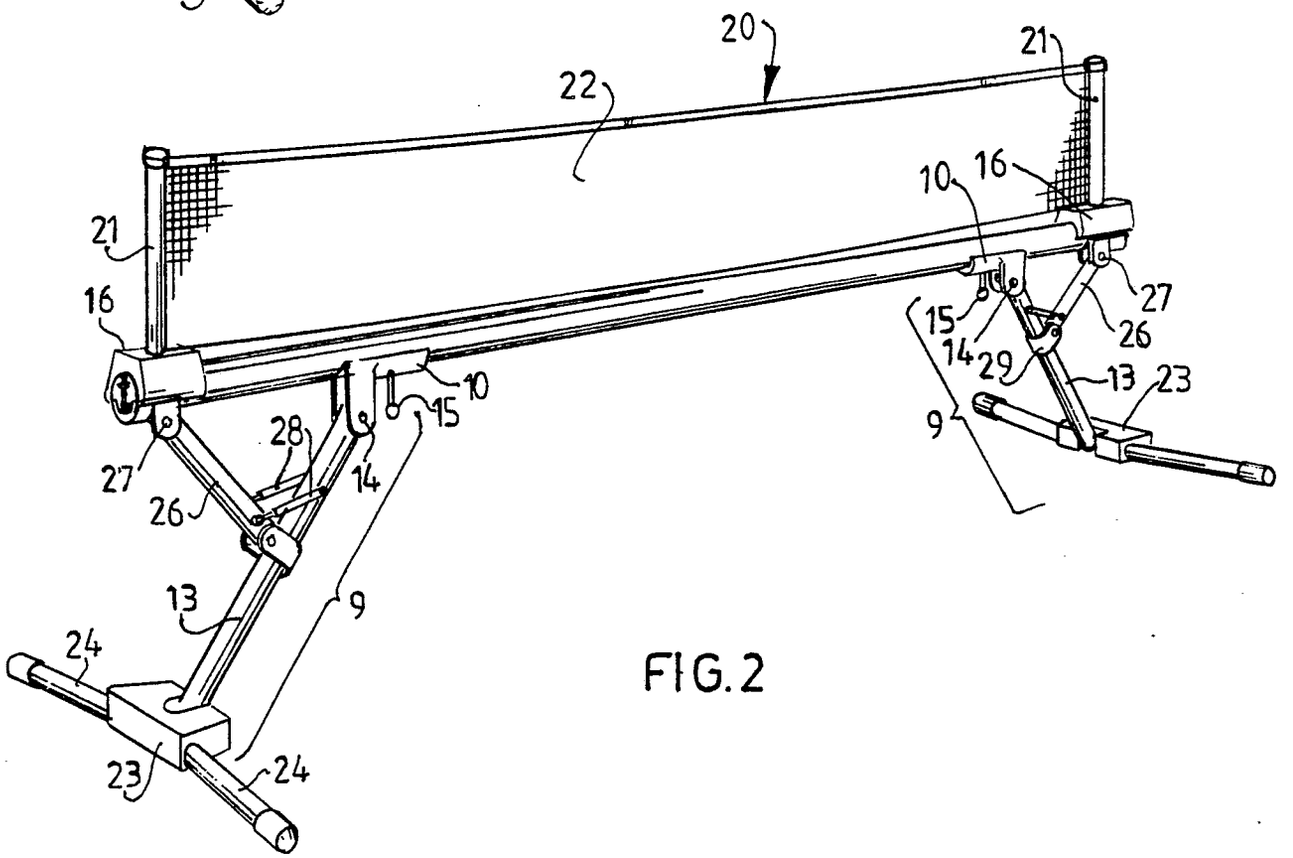
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FIG.2

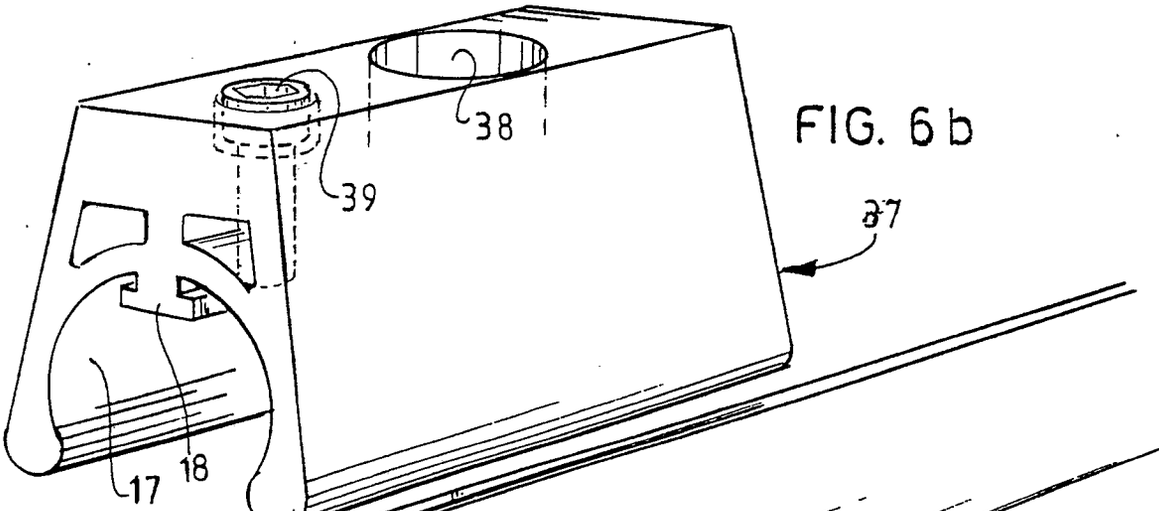

FIG. 6 b

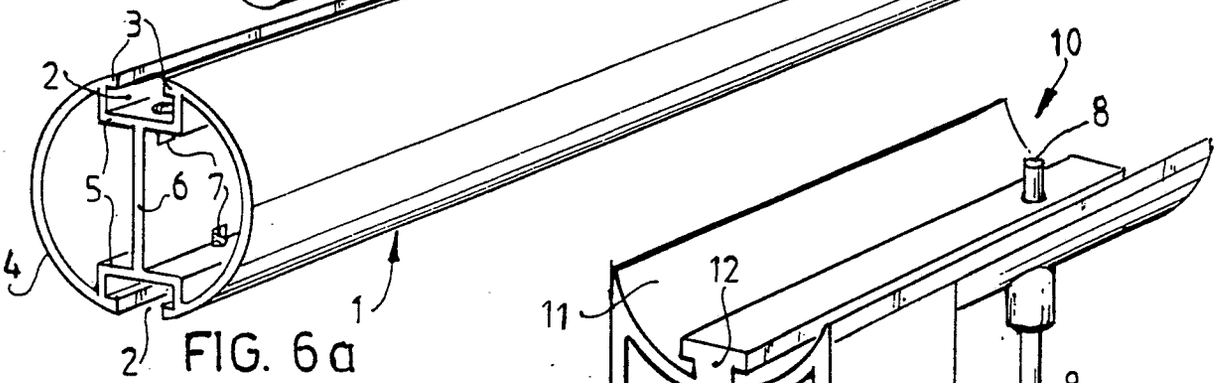

FIG. 6 a

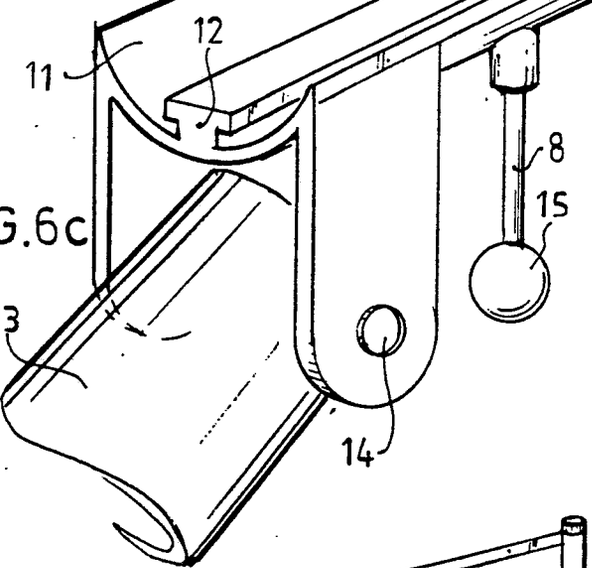

FIG. 6 c

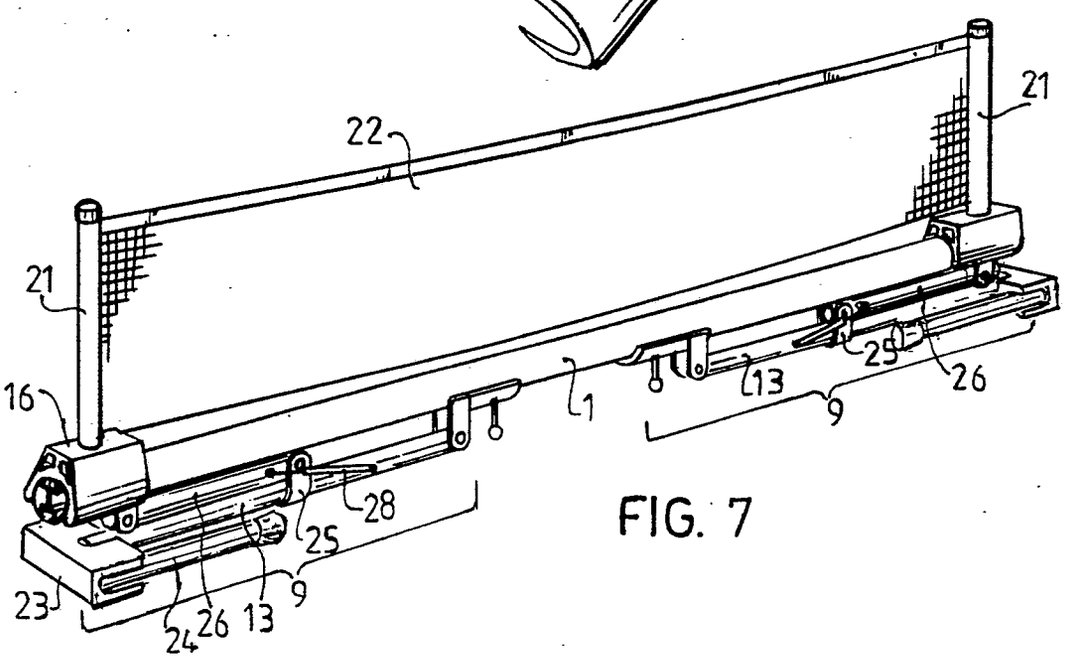

FIG. 7

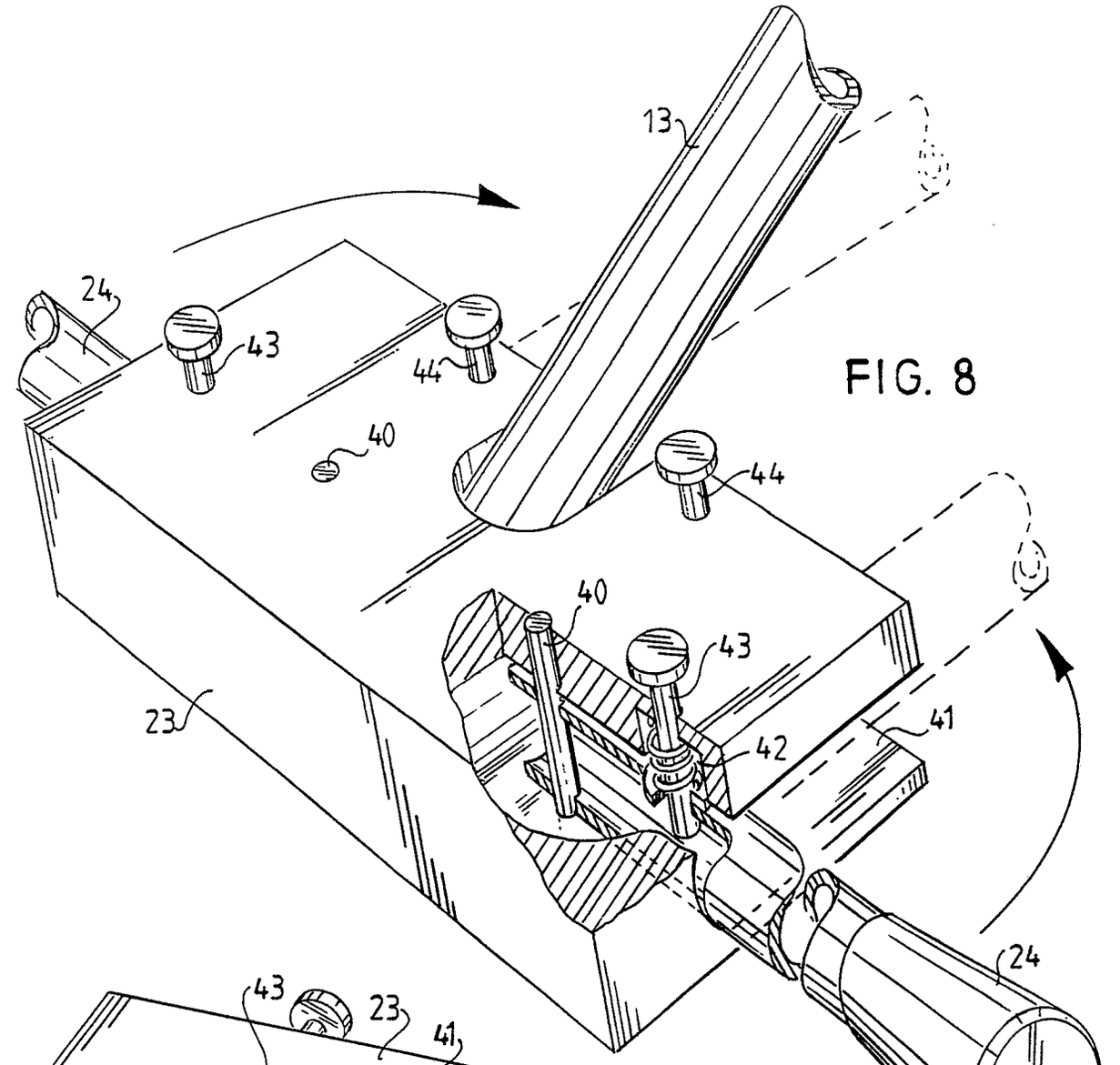

FIG. 8

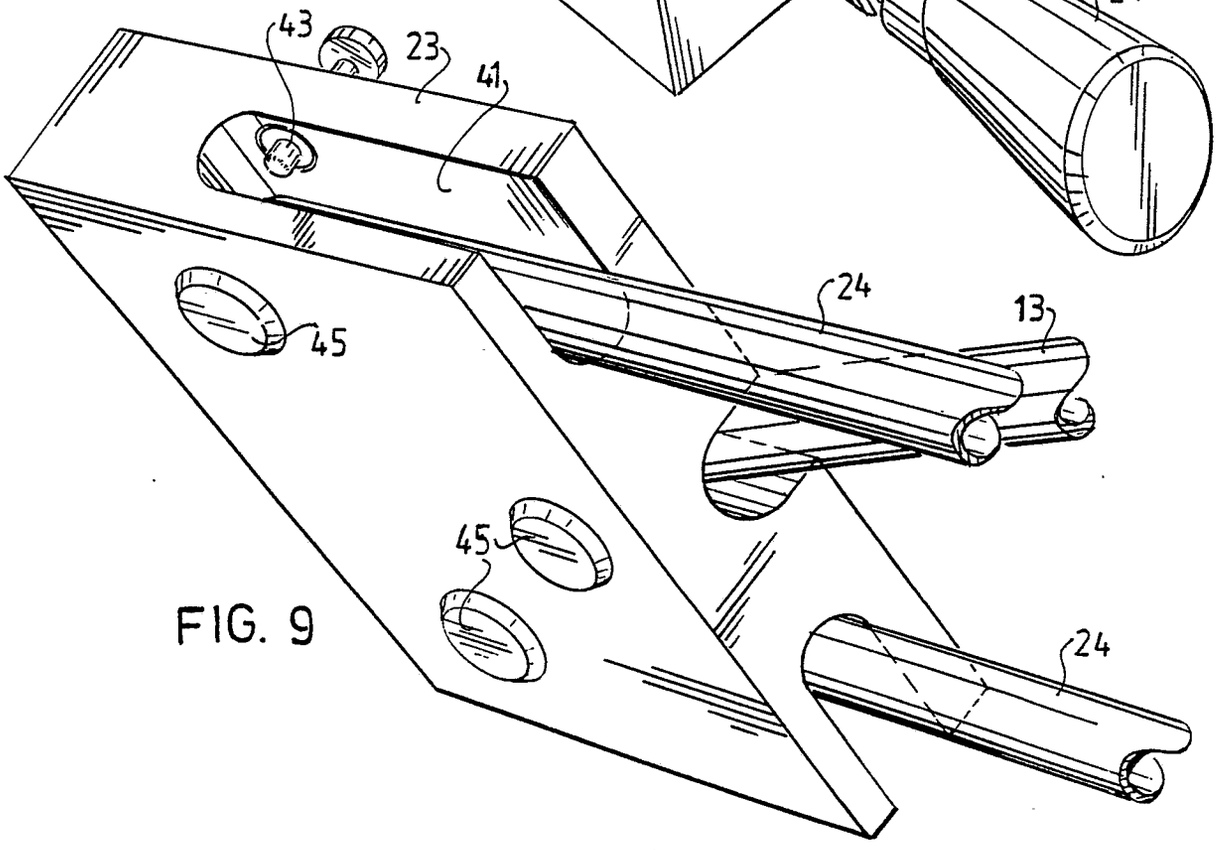

FIG. 9

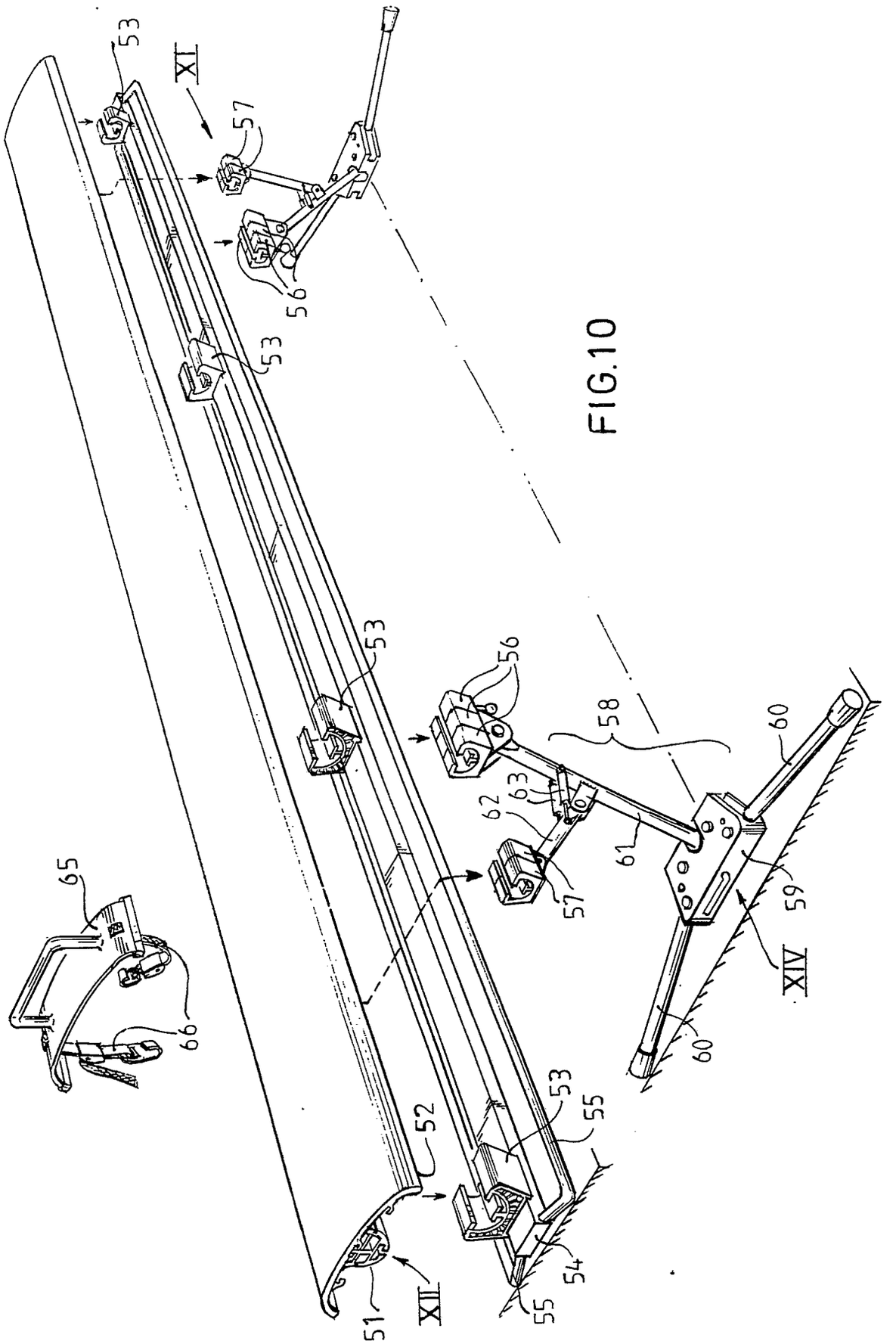
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FIG.10

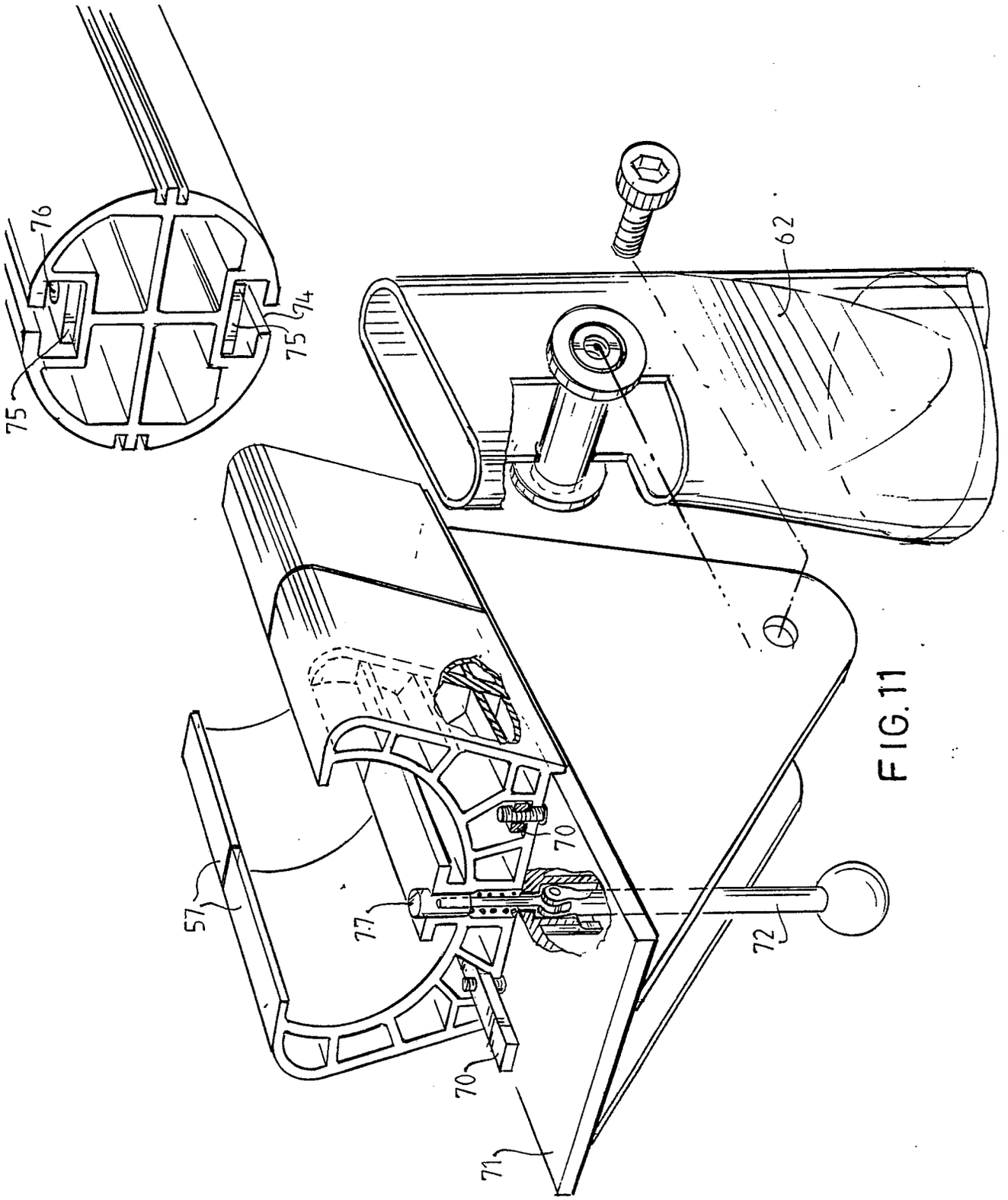

FIG.11

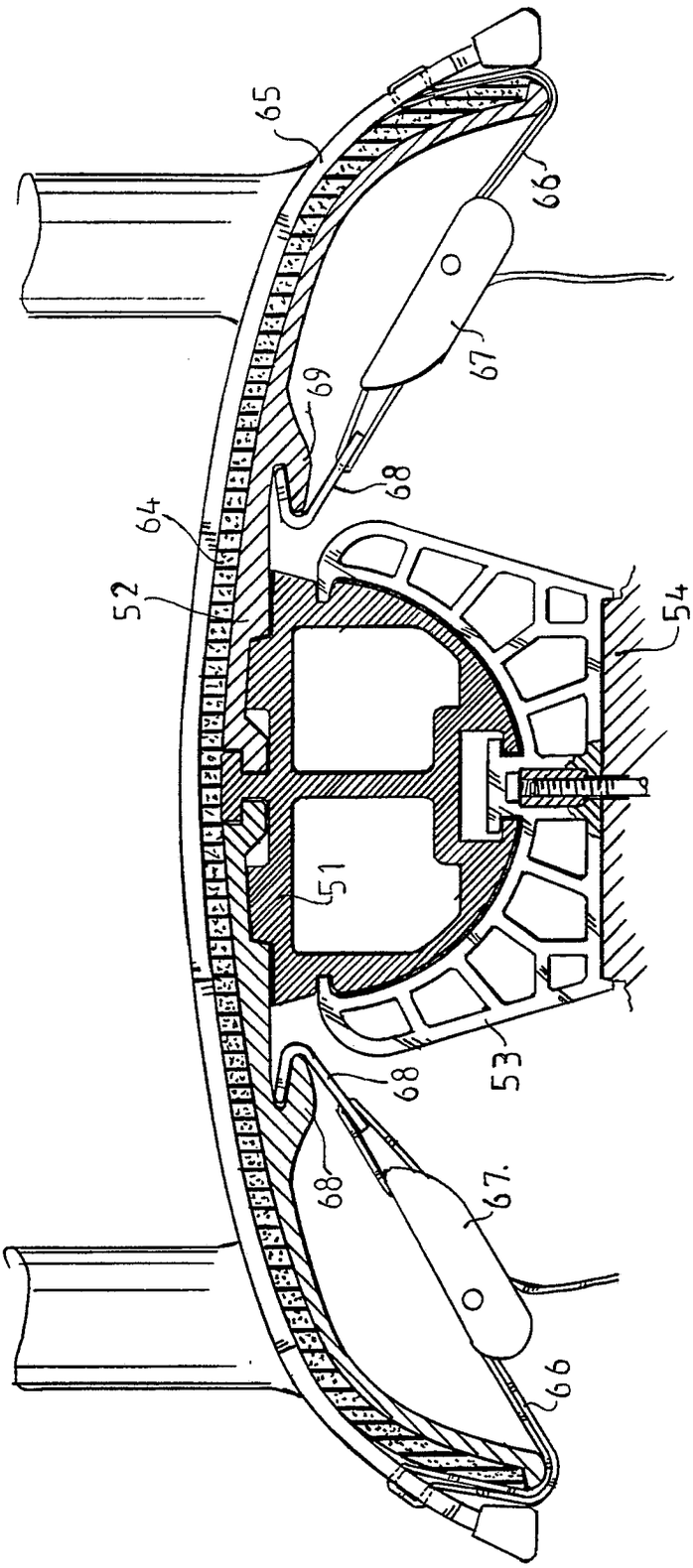

FIG. 12

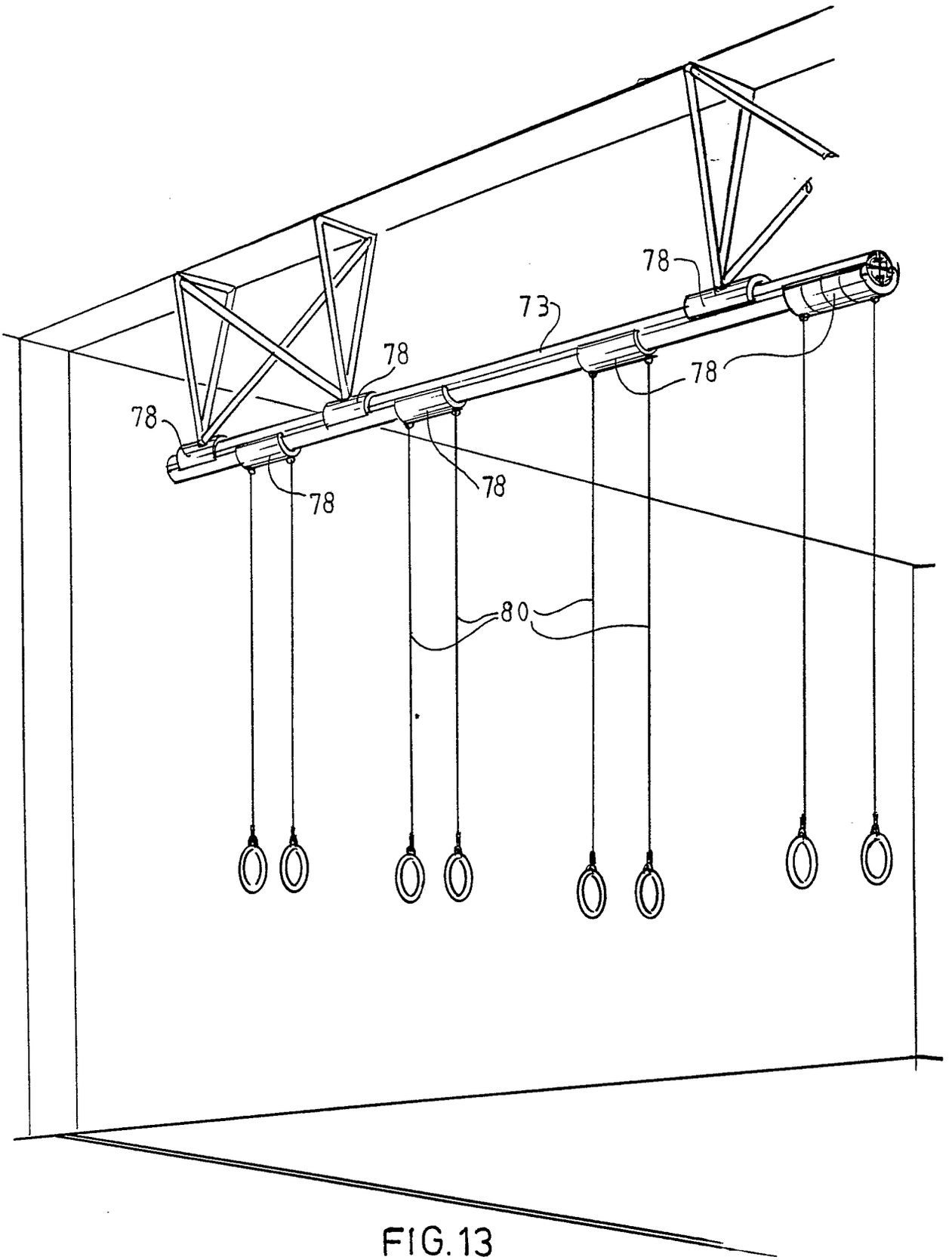

FIG.13

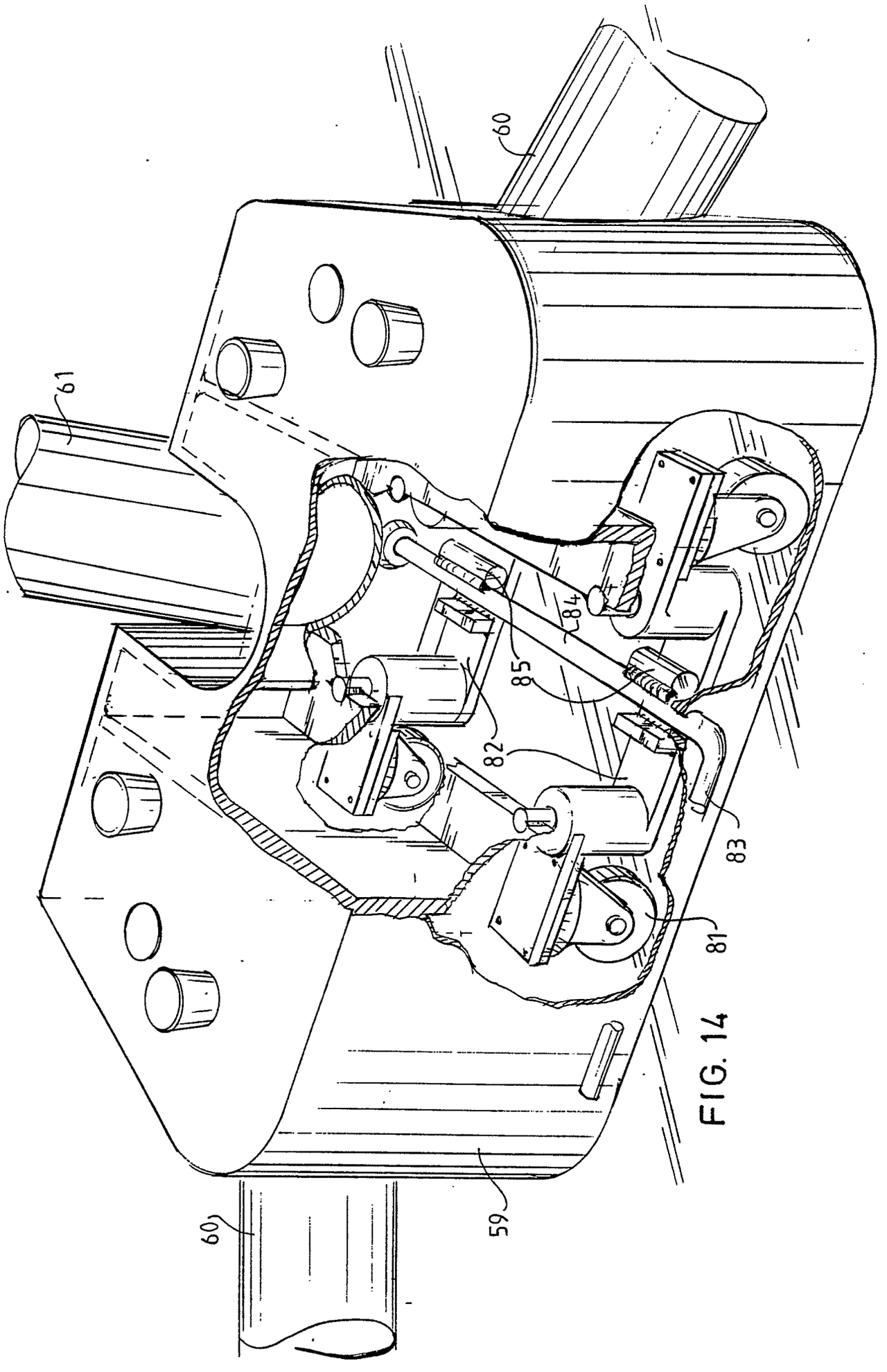

FIG. 14

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 20 1267

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	FR-A-1 305 567 (J. RAYNE) * Figures; page 1, left-hand column, lines 13-33; page 1, right-hand column, lines 4-24,29 *	1	A 63 B 71/00 A 47 B 57/56 // A 63 B 5/12 A 63 B 61/00
X	NL-A-7 512 581 (SYMA INT. SA) * Figures 1-3; page 3, line 6 - page 4, line 29 *	1-3	
X	CH-A- 371 873 (STRUCTURAL PRODUCTS INC.) * Figures *	1,2	
X	US-A-2 023 844 (J. KLEINMAN) * Figures 25-27; page 4, left-hand column, line 56 - right-hand column, line 9 *	1,2	
X	FR-A-2 396 560 (P. LAUNE) * Page 2, line 29 - page 3, line 17 *	1-3	
A	US-A-3 259 079 (P. FREEMAN)		TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	US-A-2 937 766 (A. PENN)		A 63 B A 47 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	22-08-1988	VEREECKE A.

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

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