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NL-2517 GK The Hague(NL)(54) **Device for attaching a picket to a rail.**

(57) A device for attaching a picket (3') to a rail (1), particularly suitable for fence assemblies and the like, which rail (1) is at least embodied as a tubular profile and has at least a hole (6) in a wall thereof for receiving the picket (3'), wherein the picket has a transverse through-hole (8) for receiving a pin (9) of a length such that the pin (9) protrudes on either side of the picket (3'), said pin (9) being of sufficient stiffness to connect the picket (3') to the tube without the need of additional heat treatments, such as welding, or complicated assembly operations, in conjunction with screw connections so deminishing transport and assembling costs.

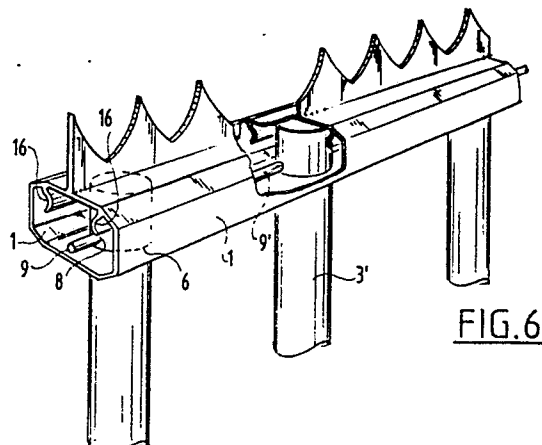


FIG. 6

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DEVICE FOR ATTACHING A PICKET TO A RAIL

The invention relates to a device for attaching a picket to a rail, particularly suitable for fence assemblies and the like, which rail is at least embodied as a tubular profile and has at least a hole in a wall thereof for receiving the picket.

In order to make fence assemblies it is usual to connect rails and pickets to each other by means of welding and the like. These welding operations require much manual work and must as a rule be carried out in the factory in order to subsequently undergo a weather-resistance treatment. The fence assemblies can take different forms, for instance a framework between which mesh is stretched, or a bar fence wherein the pickets are embodied as bars which are carried through the rails. Transport and assembly at the intended location demands much space and manual work as a consequence of the more or less finished state of the fence assembly parts.

The invention has for its object to obviate the above stated drawback and provides to this end a device which is distinguished in that the picket has a transverse through-hole for receiving a pin of a length such that the pin protrudes on either side of the picket.

The invention proposes a coupling wherein the pin is passed through the picket such that the portions protruding on either side of the picket can support on the inner wall of the tube. A connection with bending stiffness is thus achieved without the picket having to be fixed to the rail in other ways. In this way heat treatments, such as welding or complicated assembly operations, in conjunction with screw connections can be dispensed with.

In a further embodiment of the invention the rail has stop means for supporting the picket portion remaining in the rail in a direction perpendicular to the plane through the picket and the rail. In this way the picket is fixed in two mutually perpendicular directions relative to the rail, which increases the bending stiffness of the total fence assembly.

In one embodiment the stop means is formed by a hole in the tube wall which is opposite the said hole in the parallel tube wall and which is suitable for receiving the picket.

In another embodiment the stop means is formed by two parallel ribs on the tube wall located opposite the said hole.

If use is made of pickets in the form of bars, it is then recommended to mutually connect the pins for each picket such that the pins can be threaded through the successive holes. The connection is preferably such that the pins are unified into a continuous rod.

In this latter case it is also possible to place the continuous rod under tensile stress, whereby it can contribute to the bearing construction of the fence assembly.

The invention is further elucidated in the figure description following hereinafter of a number of embodiments. In the drawing:

Fig. 1 shows a perspective view of a portion of a fence assembly provided with a mesh partition,

fig. 2 shows a detail of the connection between picket and rail in the fence assembly from fig. 1,

fig. 3 is a perspective view of a fence assembly similar to fig. 1 provided with a different connection between picket and rail,

fig. 4 is a perspective view of a portion of the fence assembly from fig. 3 according to the arrow IV,

Fig. 5 is a perspective view of a bar fence assembly,

fig. 6 is a perspective view of a detail of the fence assembly from fig. 5 and the connection between bar and rail,

fig. 7 is a perspective view of a bar fence assembly, and

fig. 8 shows a detail of the connection between bar and rail of the fence assembly from fig. 7.

The fence assemblies shown in the figures consist generally of a section filled by an upper and lower rail 1 and 2 respectively, and these rails connect the pickets 3 of which at least one, preferably two and, according to another embodiment, a plurality are present.

Each section is attached along the vertical side edges to a post 4 which can be anchored in the ground in any suitable manner by means of a footing 5. The post 4 normally has connecting means 5 for fixing of the rails 1, 2 such that the fitting of the fence assembly can take place in a simple manner.

A feature of the invention is the connection between the pickets 3 and the respective rails 1 and 2. Such a connection is shown in fig. 2, wherein it is noted that each picket 3 is placed through a hole 6 arranged in the bottom wall of the rail 1 embodied as a tubular profile, wherein in the embodiment of fig. 2 a hole 7 is likewise arranged in the opposite top wall. The holes are such that the inner diameter thereof is large enough to receive the pickets 3 in slide fitting. In the embodiment shown the picket has a cylindrical outer periphery and the hole is therefore circular, but it is equally possible to arrange holes with other

shapes.

Because of the slide fitting the picket 3 has to be attached in a vertical sense relative to the rail 1, for which purpose a transverse hole 8 is arranged in the picket 3, through which hole a pin-like element can be placed. The length 1 of the pin is greater than the diameter d of the picket so that both ends of the pin protrude on either side of the picket 3. In the embodiment according to fig. 2 the pin is moreover elongated with a hook-shaped portion 10, whereof the bent free end 11 fits into a second through- or blind hole 12 of the picket arranged at an interval from the hole 8.

With the embodiment shown the picket 3 is completely enclosed vertically relative to the rail 1 because the pin portion 9 comes to lie against the top wall of the tube and the hook-shaped lower end 10 against the bottom wall thereof.

Assembly is therefore greatly simplified, because the components can be transported separately to the intended location, and subsequently assembled on site by inserting a picket 3 at a time into the holes 6, 7 through a sliding movement, by then fixing it into position by means of the pin 9, whereafter the mesh grating can be stretched between upper and lower rail 1 and 2. After this pre-assembly the upper and lower rail 1 and 2 can be fixed to the posts 4 by means of the fastening means 5. With the exception of the final operation, any test or welding operation can be dispensed with here and the essential components of the fence assembly can be well protected against the effects of weather.

Referring to the other figures it is noted that the same parts are designated with the same reference numerals.

In the figures 3 and 4 the picket 3 is fixed in the lower rail 2 in a different way, see fig. 4. That is, the pin 9 has an elongated form, wherein the pin 9 is placed through the transverse hole 8 and has a length such that it extends on either side of the picket 3. The pin 9 can be easily arranged via one of the ends of the rail 2. The tubular lower rail 2 is only provided with a through-hole 6 in the top wall thereof, whereby the bottom end of the picket 3 supports on the inside of the bottom wall of the tubular rail 2. A like connection can be envisaged at the top end of the picket 3 and the upper rail 1. Because the upper and lower rail are attached to the post 4 at fixed locations via the fastening means 5, the picket 3 is completely enclosed, and no picket can come loose from the tubular rails 1, 2 through bending of the rails 2 because of the fact that the pin 9 holds the end fixedly in the tubular rail.

Fig. 5 and 6 show a bar fence, which means that no mesh grating 15 is used, but that a large number of pickets is attached at equal mutual

intervals to the lower and upper rails 2 and 1 such that the section is formed only by bars and rails. Once again the rails are here attached to posts 4 placed beforehand in the ground and fixed thereto by suitable fastening means 5.

The connection between a bar 3' and for instance the upper rail 1 is shown in fig. 6. For this purpose the upper rail is again embodied with only one through-hole 6, through which the picket 3' is arranged in close-fitting manner. Fed through a transverse hole 8 of the picket 3' is a pin 9 which corresponds with the pin 9 from fig. 4. Arranged on the inside of the tube 1 and extending in lengthwise direction thereof are two longitudinal ribs 16. The interval between the longitudinal ribs corresponds with the diameter of the picket 3'. Since the location of the ribs 16 is situated opposite the through-hole 6, the head end of the picket 3' can be received in close-fitting manner between the ribs 16, whereby the picket 3' is locked by the ribs 16 in a direction perpendicular to the plane through picket 3' and the rail 1. Because the pin 9 is situated in a hole extending closely above the top side of the bottom wall of the tubular rail, the ends of the pin 9 protruding outside the picket 3' rest on this top side and provide a blocking of the movement of picket 3' relative to the rail 1 in that plane through these elements. In this way each picket 3' is locked in all directions relative to the rail 1.

The connecting of the picket 3' to the lower rail 2 can be carried out in corresponding manner.

Finally, it is remarked that in the embodiment shown the pin 9 is joined to an adjoining pin 9' of the neighboring picket 3' to form a continuous rod. Because of the many pickets 3' to be arranged adjacent each other, this rod can be passed more easily through the holes 8.

Shown in the figures 7 and 8 is a bar fence wherein each bar 3' is passed straight through the rail 1, 2. That is, the top and bottom wall of the rail 1 in fig. 8 is provided with a through-hole 6, 7 for receiving the top end of the picket 3'. The diameter of the holes 6, 7 is similar to the diameter of the pickets 3'. Each picket is again provided with a transverse through-hole 8 through which can be placed a pin 9. In this embodiment the pins are again mutually connected by a connecting piece 17 which may or may not be flexible and which has a smaller diameter than the pin 9. All this serves for easy passage of the pins 9 through the successive holes 8 of the adjacent pickets 3'.

In the embodiment wherein the pins 9 are unified into a single continuous body, for instance the continuous rod in fig. 6, it is possible to connect the ends of this rod with for instance the fastening means 5 in fig. 4. By then applying a tensile stress in the rod 9 not only can these fastening means 5 be locked relative to the picket

2, but a more favorable bias in the tube 2 can also be effected by a correct location of the rod 9 in the tube profile 2.

The invention is not limited to the above described embodiments.

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Claims

1. Device for attaching a picket to a rail, particularly suitable for fence assemblies and the like, which rail is at least embodied as a tubular profile and has at least a hole in a wall thereof for receiving said picket, **characterized in that** said picket has a transverse through-hole for receiving a pin of a length such that said pin protrudes on either side of said picket.

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2. Device as claimed in claim 1, **characterized in that** the rail has stop means for supporting the picket portion remaining in said rail in a direction perpendicular to the plane through the picket and said rail.

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3. Device as claimed in claims 1 and 2, **characterized in that** the stop means is a hole in the tube wall which is opposite the said hole in the parallel tube wall and which is suitable for receiving the picket.

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4. Device as claimed in claims 1 and 2, **characterized in that** the stop means is formed by two parallel ribs on the tube wall located opposite the said hole.

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5. Device as claimed in claims 1-4, wherein more than one picket is attached to the rail, **characterized in that** the pins for each picket are mutually connected.

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6. Device as claimed in claim 5, **characterized in that** the pins are unified into a single continuous rod-like body.

7. Device as claimed in claim 6, **characterized in that** the rod-like body can be tensioned by means of elements to be supported on the rail.

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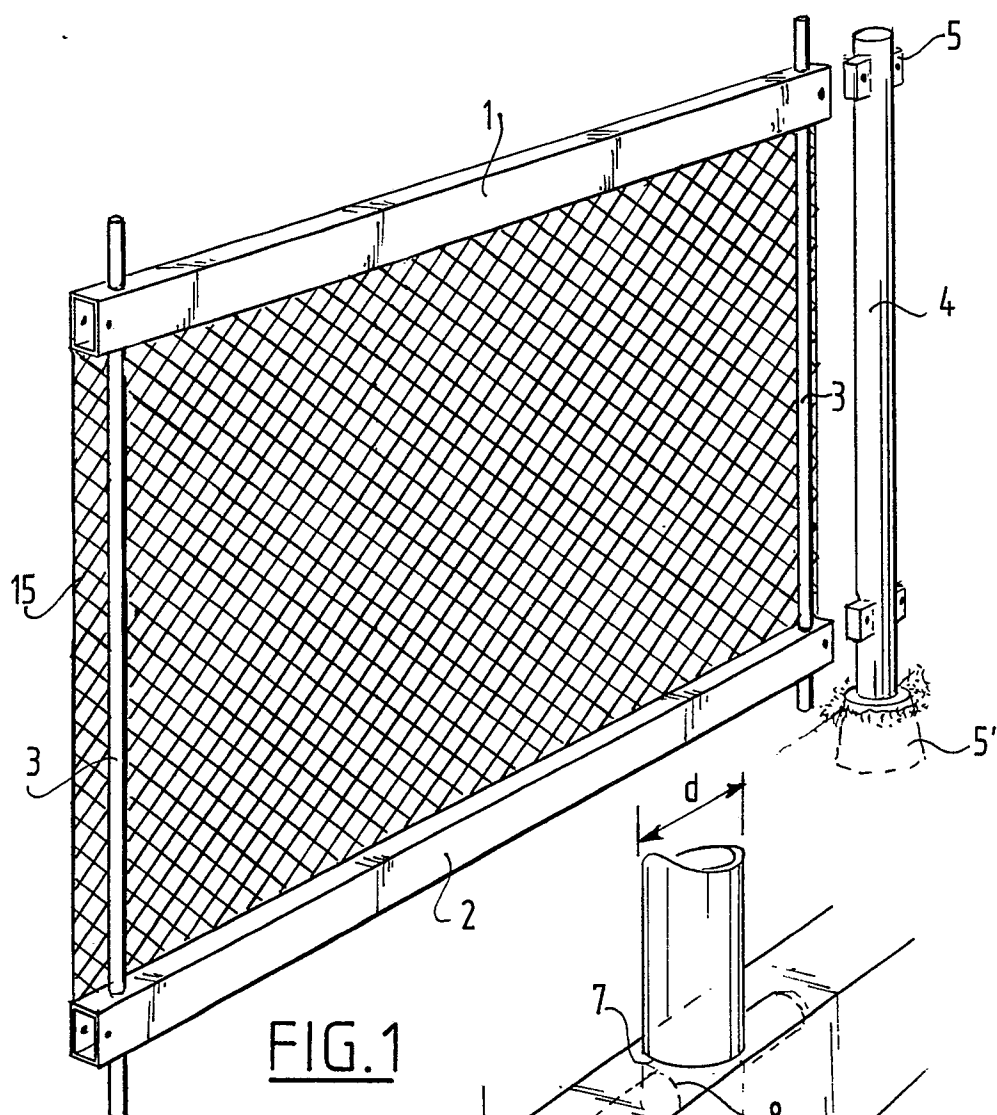


FIG.1

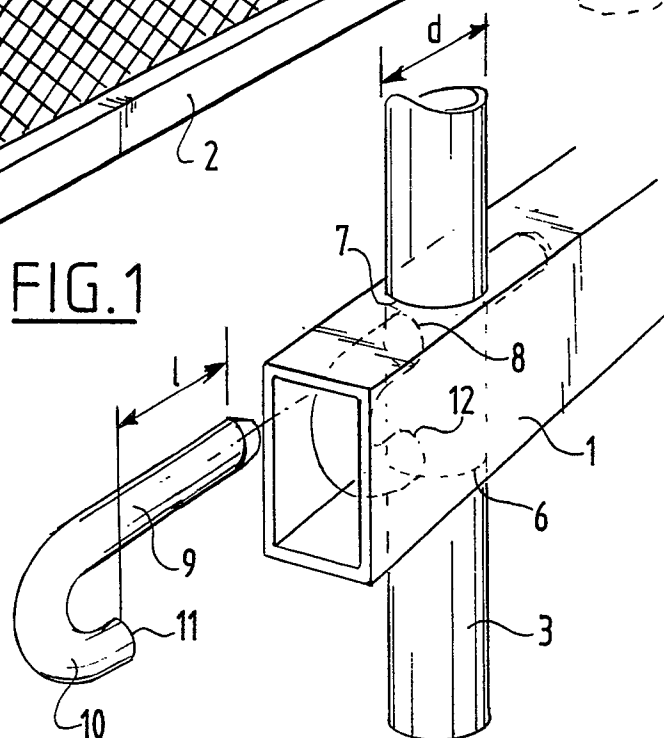
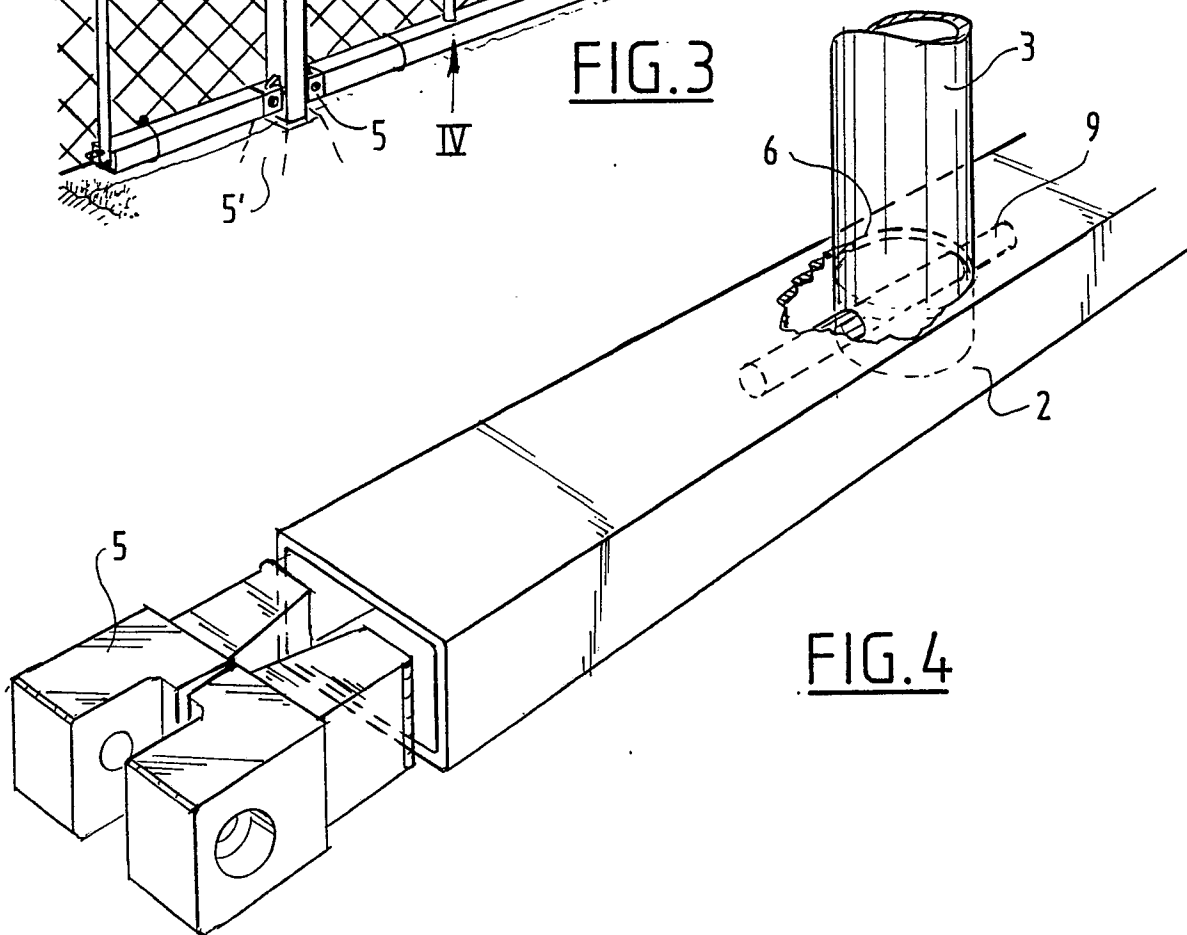
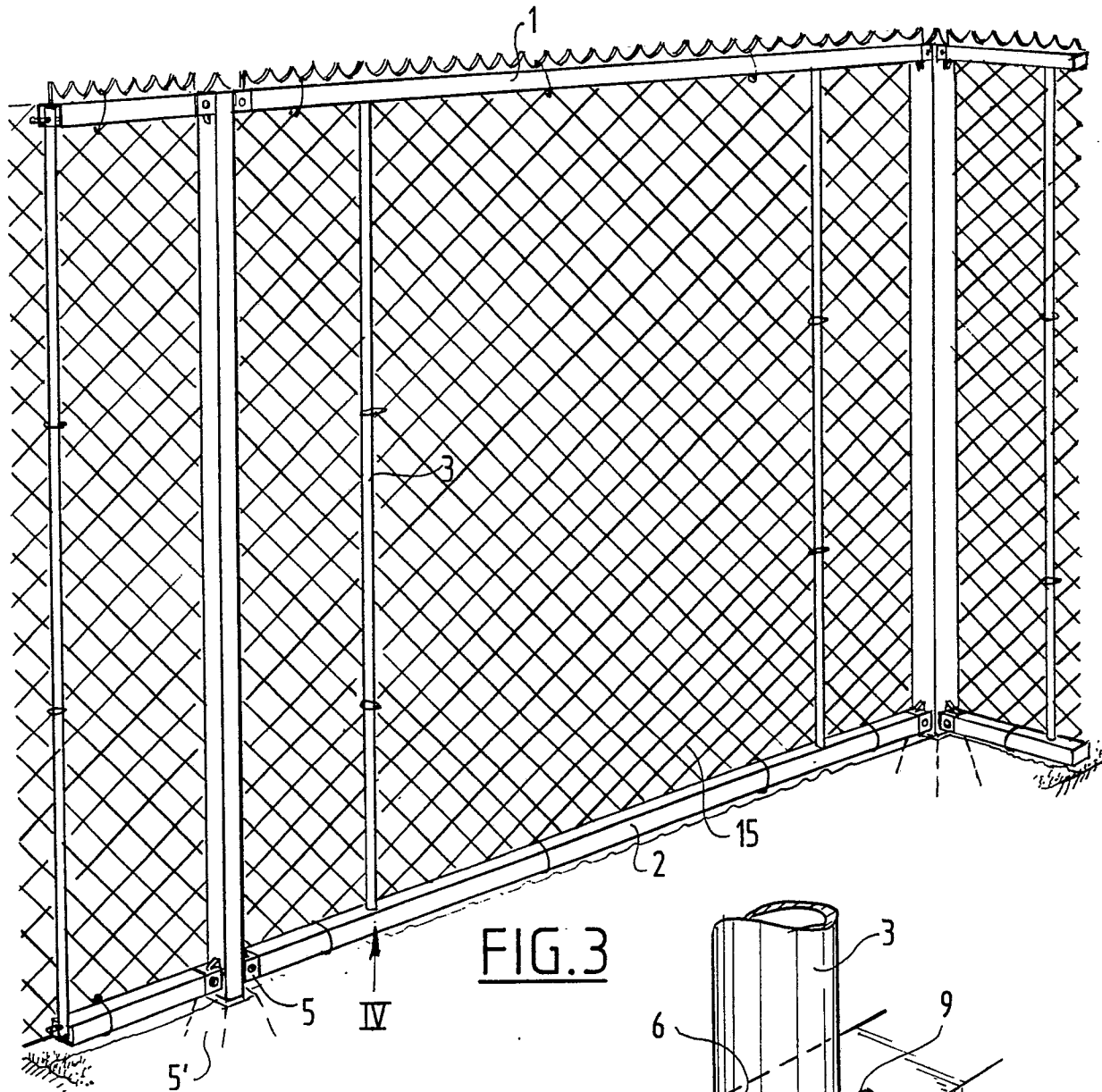


FIG.2



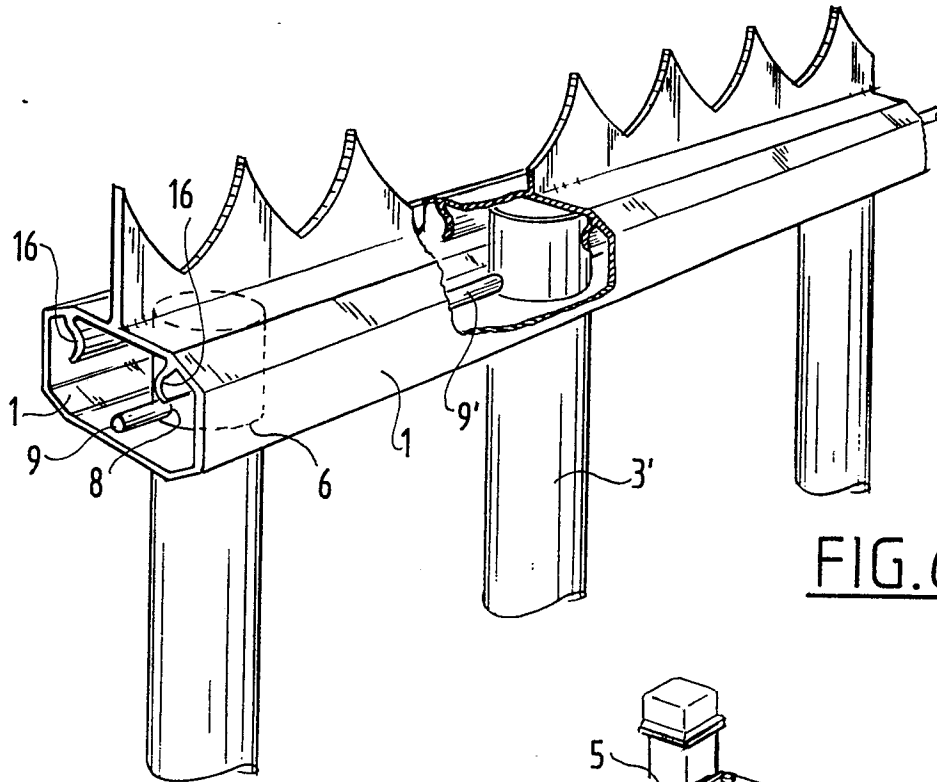


FIG. 6

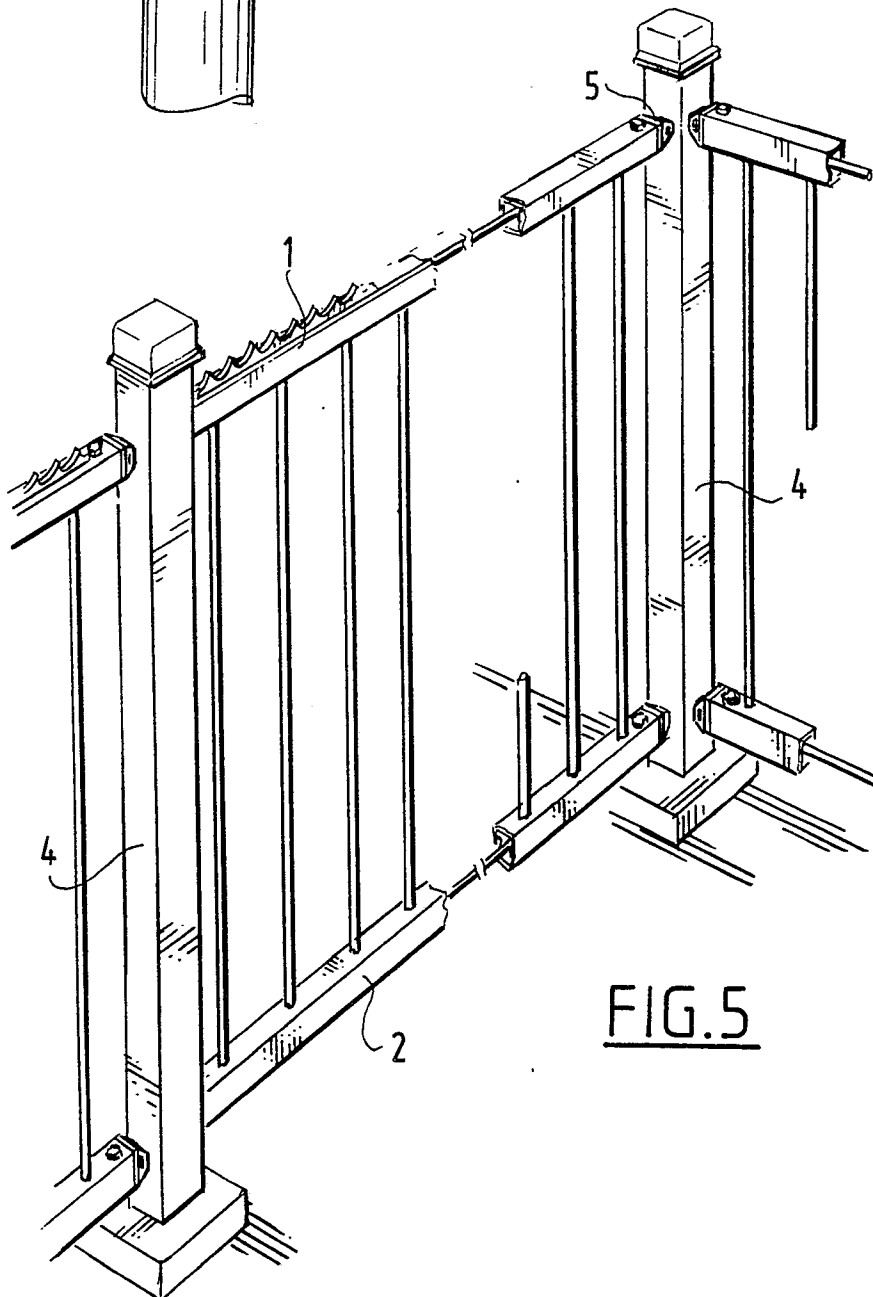


FIG. 5

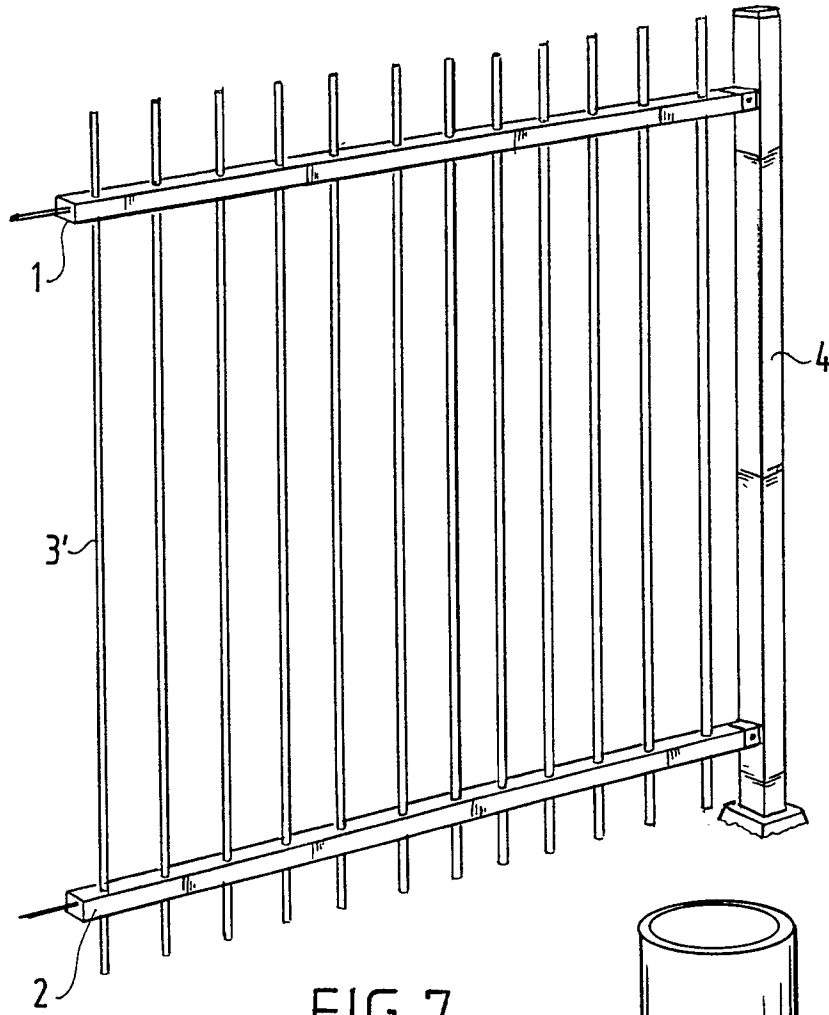


FIG. 7

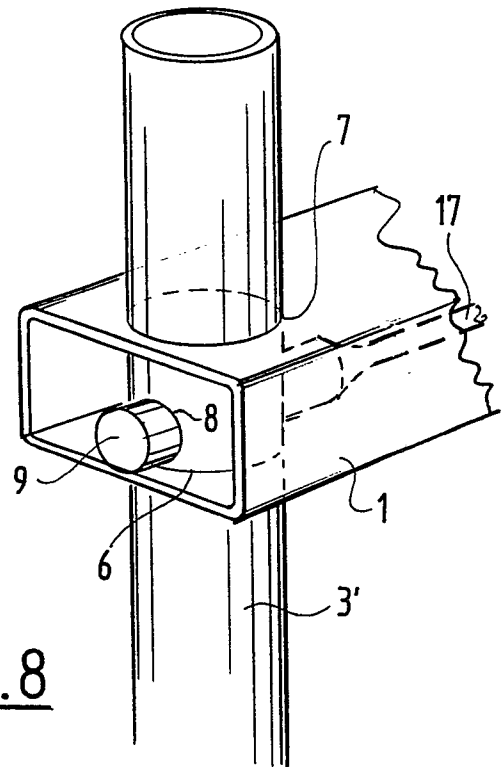


FIG. 8



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EUROPEAN SEARCH REPORT

Application Number

EP 90 20 0221

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)
X	US-A-4 723 760 (O'SULLIVAN) * Column 2, line 59 - column 4, line 20; fig. *	1	E 04 H 17/14
Y	---	2-6	
Y	GB-A-2 070 664 (WILLIAMS) * Page 1, lines 73-116; fig. * -----	2-6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E 04 H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27-04-1990	Examiner LAUE F.M.
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			