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(54) **Interconnection device**

(57) The present invention refers to an interconnection device for fence elements, in particular for provisional fence nettings, completely eliminating the need to use strings and/or pieces of wire in order to fasten the pro-

tective netting to the supporting posts. Hence, this entails a higher safety of the installation and more rapid and effective erection/disassembly modes, not requiring the use of any tool.

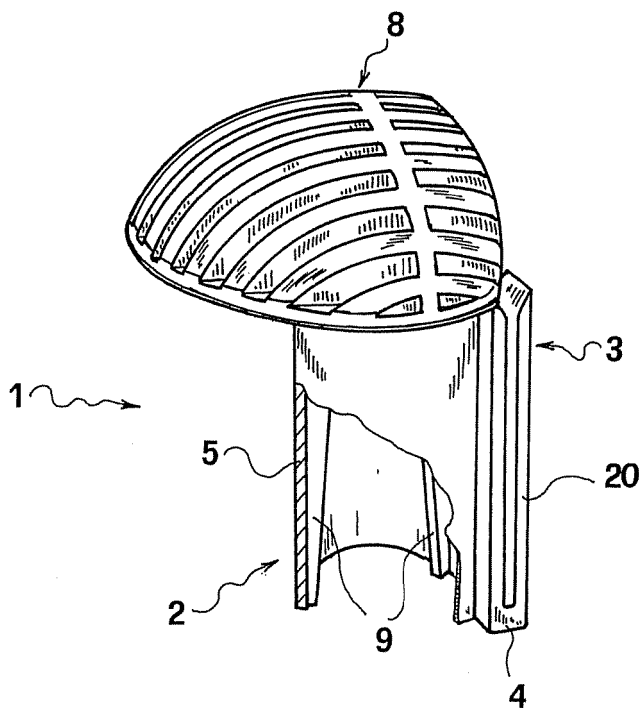


FIG.1

Description

[0001] The present invention refers to an interconnection device for fence elements. In particular, the invention stems from the need to simplify the procedures for the erection of fences and/or space delimitations, typically of a provisional type. Let us consider, e.g., situations like those that may be found in building or road yards.

[0002] Arranging a provisional and temporary fence in order to delimit the work area and prevent the fortuitous and/or accidental entrance into the yard by unauthorized persons is typical of said situations.

[0003] It is also evident that there may be several other occasions in which the installation of a light-weight temporary fence is necessary. Hence, it is understood that the present invention should not be construed as limited to the specific application that will hereinafter be described purely by way of example.

[0004] Therefore, making reference to a yard's work area, it may be frequently seen how it is often fenced by means of a fence made by a row of posts, typically metal rods driven into the ground, to which it is coupled a netting that may be metallic or preferably of a plastics material.

[0005] The problems related to this type of installation and faced by the present invention are essentially linked to the modes of fastening the netting to the posts. In fact, in such installations, it is customary to fasten the netting to the posts by means of strings and/or pieces of wire, arranged on various points of each post in order to satisfactorily secure the netting to the post itself. Finally, onto the top of the posts, which are often made by iron rods, mushroom-shaped protection elements are placed to prevent somebody from getting injured by accidentally knocking against a post.

[0006] However, evidently such an installation procedure is particularly toilsome. In fact, those in charge of such a job should fasten the netting with wire, then they should get hold of pieces of wire to be used with various tools (pliers, wire cutters or other). Moreover, also in order to remove the fence, it will be necessary to remove all wire ties, always making use of suitable tools. Lastly, the presence of said projecting wire pieces, scattered substantially along the whole stretch of the protective netting, constitutes also a cause of danger of wounds and/or injuries to persons and/or things accidentally coming into contact therewith. In that sense, it should be considered that, obviously, such fences are often used on public places (roads or other) where they are easily accessible even by unauthorized persons.

[0007] Hence, object of the present invention is to solve said problems, by providing an interconnection device for elements of a fence as defined in the independent claim 1.

[0008] Secondary features of the present invention are defined in the corresponding dependent claims.

[0009] The present invention, by overcoming the mentioned problems of the prior art, entails several evident advantages.

[0010] In particular, it completely eliminates the need to use strings and/or pieces of wire in order to fasten the protective netting to the supporting posts. Hence, this entails a higher safety of the installation and more rapid and effective erection/disassembly modes, not requiring the use of any tool.

[0011] Moreover, the present invention integrates different functions in a single system, by comprising elements and devices concomitantly acting both as elements for fastening fence portions and as protection elements.

[0012] Further advantages, as well as the features and the operation modes of the present invention, will be made apparent from the following detailed description of preferred embodiments thereof, given by way of example and not for limitative purposes. Reference will be made to the figures of the annexed drawings, wherein:

figure 1 is a partially sectional perspective view of a first embodiment of a device according to the present invention;

figure 2 is a further perspective view of the device of figure 1;

figure 3A and 3B are sectional views along lines A-A and B-B, respectively, of the device of figure 1;

figure 4 is a perspective view of a second embodiment of a device according to the present invention;

figure 5 is a further perspective view of the device of figure 4;

figure 5A is a sectional view of the device of figure 5, along line C-C;

figures 6A and 6B show the use of the devices of the preceding figures;

figure 7 is a partially sectional view of figure 6B, along line D-D;

figure 8 is a perspective view of a third embodiment of a device according to the present invention;

figure 9 is a perspective view of a fourth embodiment of a device according to the present invention;

figure 10 illustrates the use of the devices of figures 8 and 9;

figures 11 and 12 show respective variant embodiments of the devices of figures 8 and 9;

figure 13 is a perspective view of a fifth embodiment of a device according to the present invention; and figure 14 illustrates the use of the device of figure 13.

[0013] The present invention will hereinafter be described in detail making reference to the above-indicated figures.

[0014] In particular, figure 1 refers to a first embodiment of the device according to the present invention.

[0015] A fence is generally comprised of a plurality of fence elements interconnected thereamong so as to attain a predetermined operative configuration.

[0016] A device 1 comprises first of all a portion 2 for anchoring the device to a first fence element and a portion 3 for coupling to the device of a second fence element.

[0017] Moreover, the coupling portion 3 comprises a hook-like element 4 shaped so as to be apt to receive said second fence element.

[0018] In order to better describe said first embodiment, reference will be made to the exemplary case of a fence, typical of road yards, made by means of first fence elements that are comprised of vertical supporting posts 10 driven into the ground, typically iron rods, to which it is anchored a second fence element that is a protective netting 11, typically of plastics material. Such a fence is exemplarily illustrated in figures 6A and 6B.

[0019] According to said embodiment, the anchoring portion 2 comprises a substantially cylindrical hollow body 5. In the example depicted, said body is shown of circular section, yet it is evident that the same could have a section compatible with that of the post, in case a supporting post having a non-circular section were used.

[0020] Advantageously, the hollow body 5 has a first bottom end 6 open for the insertion on a free end of said supporting post 10, and a second closed top end 7. Such a mode can be seen in figure 7.

[0021] Preferably, at the closed end 7, the device further comprises a protection element 8, preventing injuries to persons and/or things accidentally knocking against the fence.

[0022] Preferably, the protection element 8, is substantially mushroom-shaped and it has a side shaped so as to leave free access to the coupling portion 3, as it will be better described hereinafter.

[0023] One or more inward-projecting longitudinal ribs 9 are present in the internal portion of the hollow body 5.

[0024] According to the preferred embodiment, the cylindrical body 5 internally has three longitudinal ribs 9, inward-projecting and arranged at 120° the one with respect to the other.

[0025] These ribs have a variable thickness lengthwise. In particular, they are thicker at the closed end of the device than at the open end thereof, so as to create an inlet raiser at the open end of the cylindrical body itself.

[0026] Thus, as it is evident in figure 7, the device could be used with iron rods within a given diameter range, ensuring anyhow a good interference with the metal and thereby preventing an accidental unthreading of the former.

[0027] Always according to said embodiment, the hook-like element 4 is special-purpose for supporting a protective netting. In particular, the hook-like element 4 comprises one or more tongues 20 for holding the netting 11.

[0028] Each of the tongues 20 has a free end 21 and an elongate shape apt to hold the netting when the latter is coupled, as it is shown in figure 7.

[0029] Advantageously, the hook-like element 4 further comprises a detent 22, apt to interfere with the netting when the latter is coupled, in order to prevent the involuntary uncoupling thereof.

[0030] On the other hand, since the device, and particularly the hook-like element is made of a sufficiently

elastic material, the voluntary uncoupling of the netting, e.g. when it has to be removed, is made especially easier. In fact, it will suffice to exert a slight force on the tongues 21, in the opening sense thereof, to simply unthread the netting, preventing the interference with the detent.

[0031] According to the preferred embodiment, the hook-like element 4 comprises two holding tongues 20, arranged parallelly therebetween, and a detent 22 arranged between said two tongues.

[0032] Figures 4, 5, and 5A refer to a second embodiment of the device according to the present invention.

[0033] According to said embodiment, the device 30 differs from the one described hereto in the anchoring portion 31, whereas it comprises a coupling portion 3, in all identical to that described at the first embodiment, whose description therefore will not be repeated.

[0034] The anchoring portion 31 comprises a band-like element 32, having a substantially open C-shaped section, compatible with that of the supporting post. In the exemplary case, in which reference continues to be made to an iron rod, the section will be round C-shaped, such as to be fixedly inserted in a middle position along the supporting post, as it is shown by way of example in figures 6A and 6B.

[0035] Said second embodiment could advantageously be used in conjunction to the first one, in order to complete a system for anchoring a protective netting to the supporting rods thereof, with all of the advantages highlighted in the foregoing.

[0036] The band-like element 32 will preferably be made of a material having a certain degree of elasticity and shaped so as to have a preferential inlet region 33 on the rod, such that once the latter is inserted, the band partially embraces the rod itself, the device being thereby satisfactorily anchored onto the supporting post.

[0037] Figures 8, 9 and 10, refer instead to further embodiments of the present invention.

[0038] In particular, a third embodiment is that of a device 40 shown in figure 8. In this case, the anchoring portion 41 is in all alike that already described in connection with the first embodiment, i.e. of the type apt to be anchored at a top end of a vertical supporting post. Hence, also this embodiment could advantageously have all of the hereto-described features, and also a protection element 42.

[0039] On the contrary, the hook-like element of said third embodiment was expressly studied and designed for those cases in which the second fence element to be interconnected is not a protective netting, but rather a tubular element 50, e.g. a second iron rod to be arranged horizontally or in a skew position with respect to the vertical supporting post 10.

[0040] According to said embodiment, the hook-like element 43 of the device 41 comprises a region 44 for housing the rod 50. Preferably, such a region will be U-shaped, with the open region of a smaller width with respect to the rod diameter, so as to allow a partial fixing of the rod when the latter is coupled.

[0041] The hook-like element 43 is set, with respect to the anchoring portion, so as to support said second element according to a predetermined operative configuration; in particular, it could be set horizontally, at 90° with respect to the anchoring portion, or set at about 45° with respect thereto, as it can be seen in figures 11 and 12.

[0042] Analogously to what has hereto been described in connection with the preceding embodiments, it is possible to provide a fourth embodiment, illustrated in figure 9.

[0043] In this case, a device 60 is made so as to have a hook-like element 63 of the hereto-described type, apt to support a tubular element 50. On the other hand, the device 60 comprises instead an anchoring portion 61, in all alike that described with reference to the second embodiment, hence of a type apt to be anchored at a middle position of a vertical supporting post 10.

[0044] Therefore, the devices 40 and 60, described last, could advantageously be used in conjunction, as illustrated in figure 10.

[0045] Finally, figure 13 refers instead to a fifth embodiment of a device according to the present invention.

[0046] In that case, a device 70 is specifically contrived for those instances in which the fence comprises horizontal supporting elements 69 used in conjunction with vertical supporting posts 100 apt to support them. Such a fence is exemplarily shown in figure 14, where the vertical posts are iron rods having a U-shaped portion for supporting wooden boards arranged transversally between successive posts.

[0047] In that case, the device 70 according to the present invention has an anchoring portion 71 comprising a band-like element 72, having a substantially open C-shaped section, compatible with that of the horizontal supporting element, and such as to be fixedly inserted in a middle position along said horizontal supporting element.

[0048] The hook-like element 4 of said embodiment is preferably that described in connection with the first embodiment, i.e., such as to support a protective netting 11.

[0049] Of course, it is understood that the different embodiments described hereto could advantageously be used according to different combinations thereof, depending on the desired fence configuration. For this purpose, the present invention also refers to a kit for the assembling of provisional fences, comprising two or more of the devices according to one or more of the embodiments described.

[0050] The present invention has hereto been described according to preferred embodiments thereof, given by way of example and not for limitative purposes.

[0051] It is understood that other embodiments may be envisaged, all to be construed as falling within the protective scope thereof, as defined by the appended claims.

Claims

1. Interconnection device (1; 30; 40; 60; 70) for two or more elements of a fence, comprising a portion (2; 31; 41; 61; 71) for anchoring the device to a first fence element (10; 69) and a portion (3; 43; 63) for coupling to the device of a second fence element (11; 50), the arrangement being such that said first and second fence elements be interconnected therewith in a predetermined operative configuration.
2. Device (1; 30; 40; 60; 70) according to claim 1, wherein said coupling portion (3; 43; 63) comprises a hook-like element (4; 43; 63) shaped so as to be apt to receive said second fence element (11; 50).
3. Device (1; 30; 70) according to claim 2, wherein said second fence element is a protective netting (11) and said hook-like element comprises one or more tongues (20) for holding said netting (11), said tongues (20) having each a free end (21) and an elongated shape apt to hold said netting (11) when coupled.
4. Device (1; 30; 70) according to claim 3, wherein said hook-like element comprises a detent (22), apt to interfere with said netting (11) when coupled, in order to prevent the involuntary uncoupling thereof.
5. Device (1; 30; 70) according to claim 4, wherein said hook-like element comprises two tongues (20) for holding said netting (11), arranged parallelly therebetween, and a detent (22) arranged between said two tongues.
6. Device (40; 60) according to claim 2, wherein said second fence element is a tubular element (50) and said hook-like element comprises a region (43; 63) for housing said tubular element (50) apt to hold said tubular element (50) when the latter is coupled.
7. Device (40; 60) according to claim 6, wherein said tubular element is a metal rod (50) and said hook-like element has a substantially U-shaped sectional shape, with the open region of a smaller width with respect to the rod diameter, so as to allow a partial fixing of the rod.
8. Device (40; 60) according to claim 6 or 7, wherein said hook-like element is set, with respect to said anchoring portion, so as to support said second element according to said predetermined operative configuration.
9. Device (40; 60) according to claim 8, wherein said hook-like element is set at 90° with respect to said anchoring portion.

10. Device (40; 60) according to claim 8, wherein said hook-like element is set at about 45 ° with respect to said anchoring portion.
11. Device (1; 40) according to one of the claims 1 to 10, wherein said first fence element is a vertical supporting post (10) and said anchoring portion (2; 41) comprises a substantially cylindrical hollow body (5), having a section compatible with that of the post and apt to be inserted at a free end of said supporting post.
12. Device (1; 40) according to claim 11, wherein said cylindrical body has a first bottom end (6) open for the insertion on said supporting post (10) and a second closed top end (7).
13. Device (1; 40) according to claim 12, further comprising a protection element (8; 42) arranged at said closed end.
14. Device (1; 40) according to claim 13, wherein said protection element (8; 42) is substantially mushroom-shaped.
15. Device (1; 40) according to one of the claims 11 to 14, wherein said cylindrical body internally has one or more inward-projecting longitudinal ribs (9).
16. Device (1; 40) according to claim 15, wherein said cylindrical body internally has three inward-projecting longitudinal ribs (9), arranged at 120° the one with respect to the other.
17. Device (1; 40) according to claim 15 or 16, wherein said longitudinal ribs (9) have a variable thickness lengthwise, so as to create an inlet raiser at the open end of the cylindrical body.
18. Device (30; 60) according to one of the claims 1 to 10, wherein said first fence element is a vertical supporting post (10) and said anchoring portion (31; 61) comprises a band-like element (32; 62), having a substantially open C-shaped section, compatible with that of the supporting post (10), and such as to be fixedly inserted in a middle position along said supporting post (10).
19. Device (70) according to one of the claims 1 to 10, wherein said first fence element is a horizontal supporting element (69) and said anchoring portion (71) comprises a band-like element (72) having a substantially open C-shaped section, compatible with that of the horizontal supporting element (69), and such as to be fixedly inserted in a middle position along said horizontal supporting element (69).
20. A kit for the assembling of provisional fences, characterised in that it comprises two or more devices according to any one of the preceding claims.

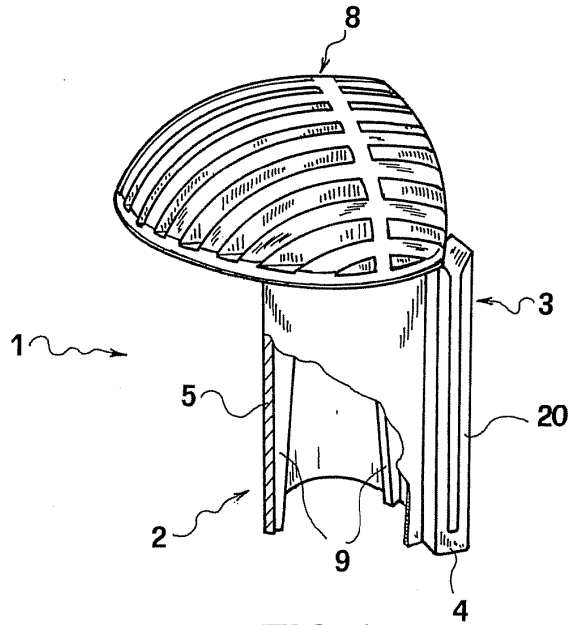


FIG. 1

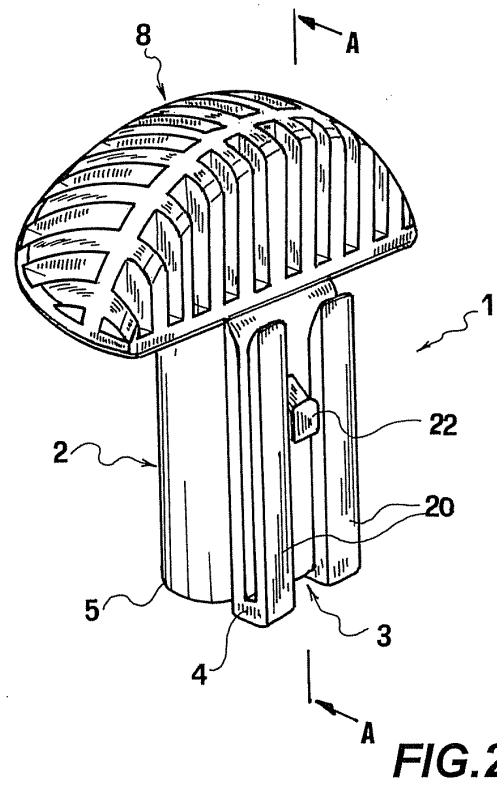


FIG. 2

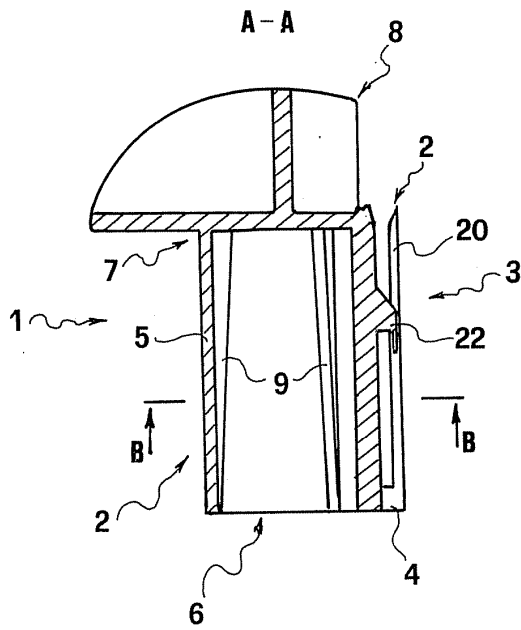


FIG. 3A

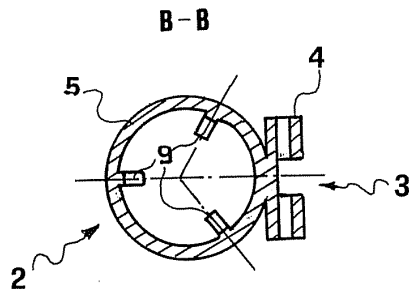


FIG. 3B

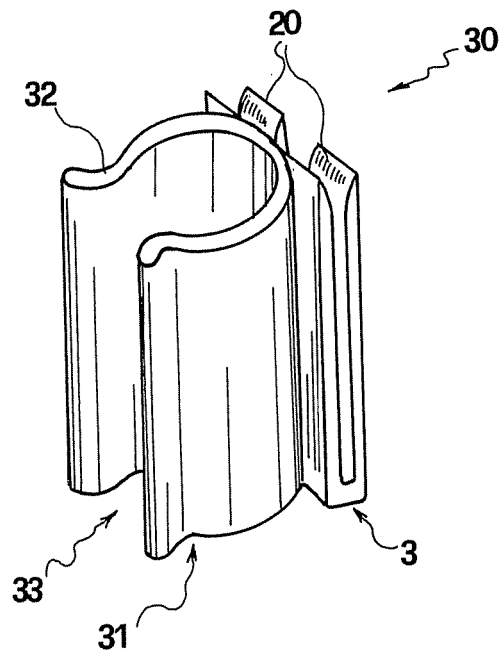


FIG. 4

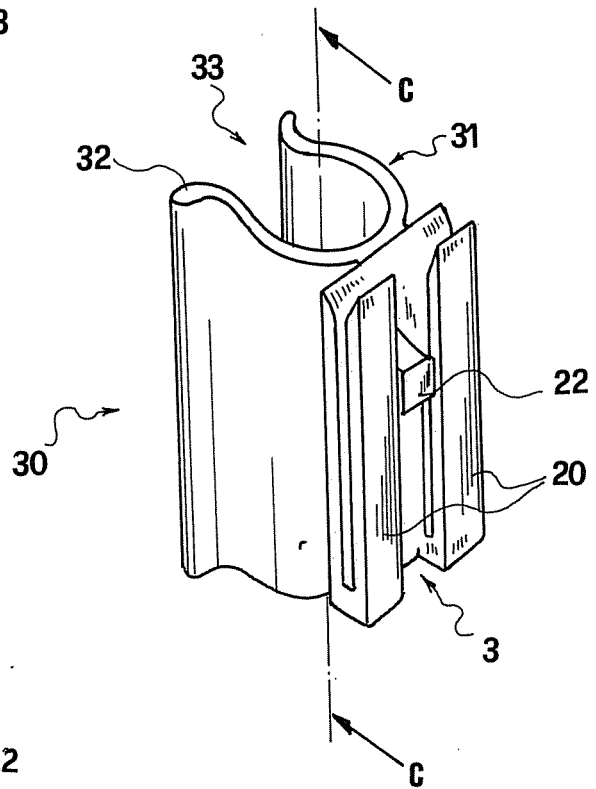


FIG. 5

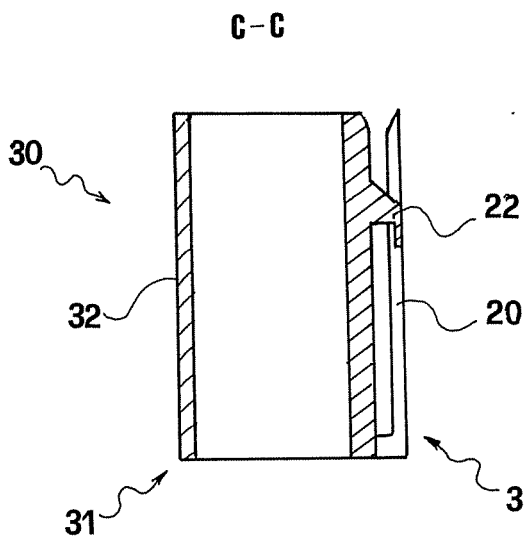


FIG. 5A

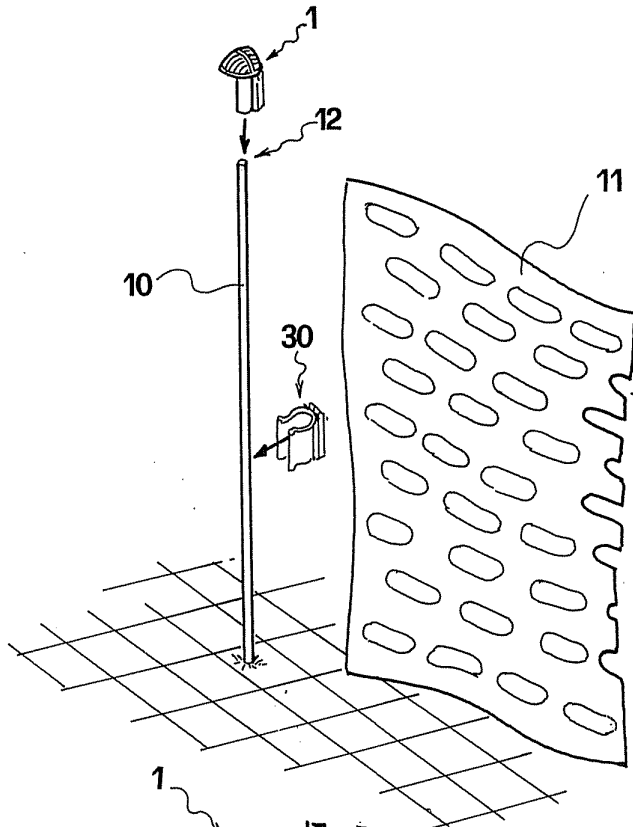


FIG. 6A

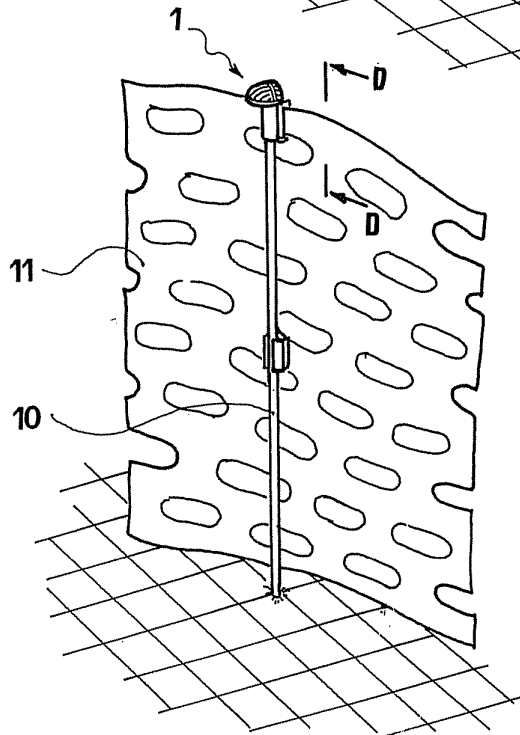


FIG. 6B

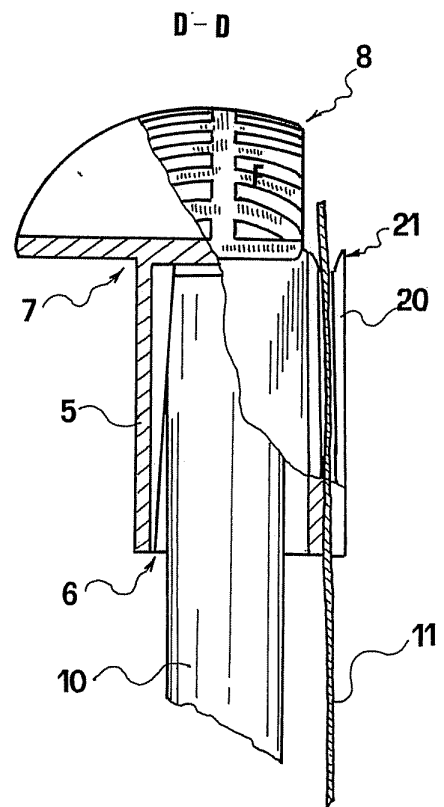


FIG. 7

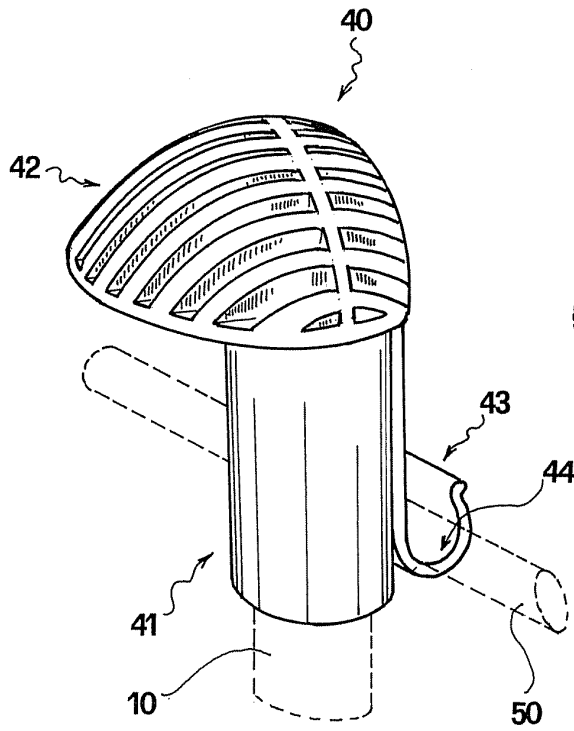


FIG. 8

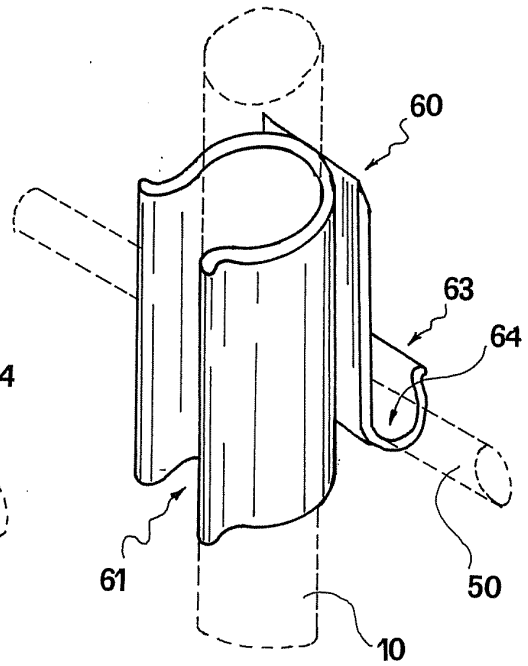


FIG. 9

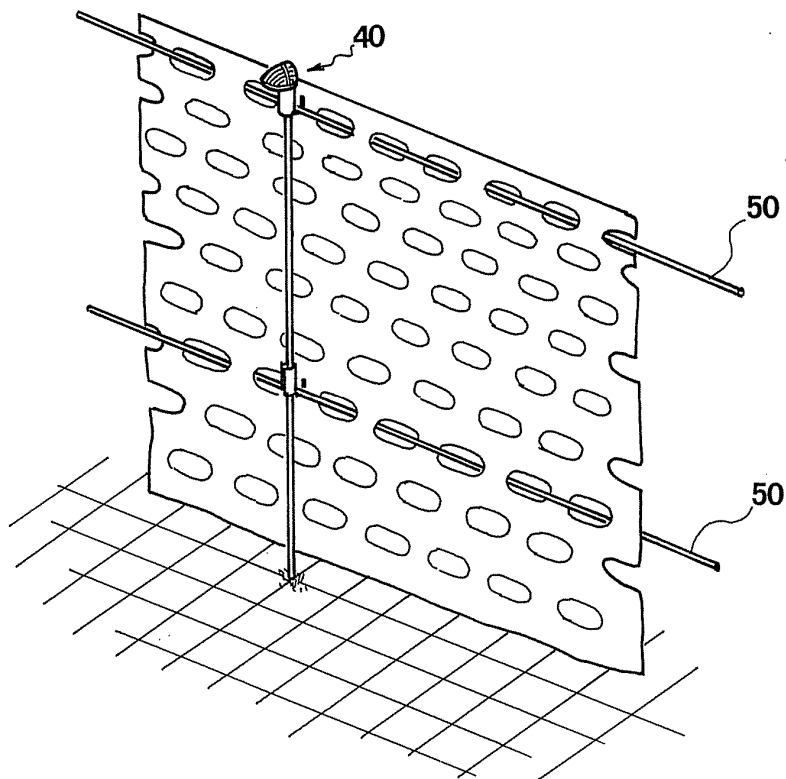


FIG. 10

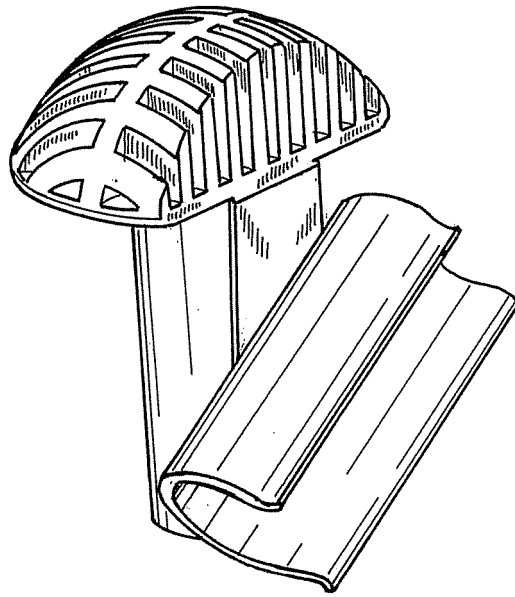


FIG.11

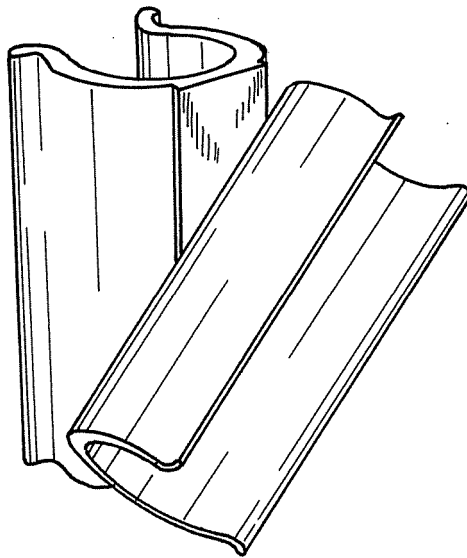


FIG.12

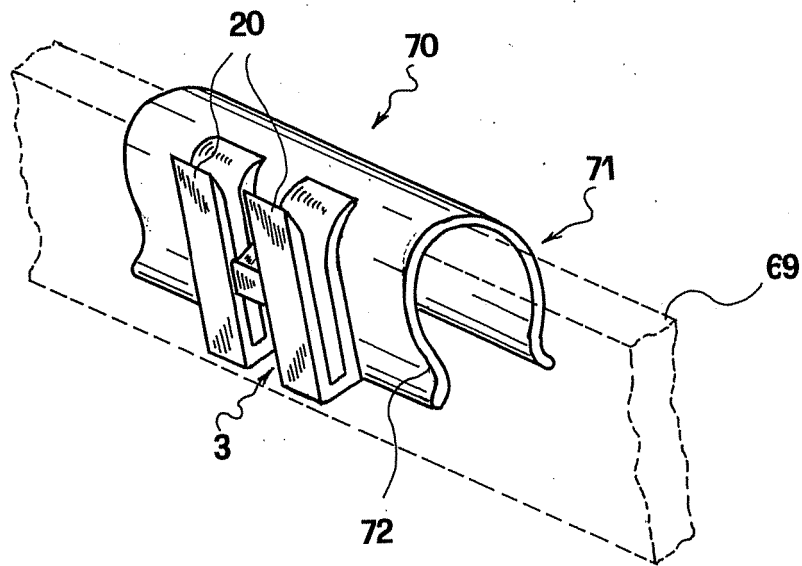


FIG.13

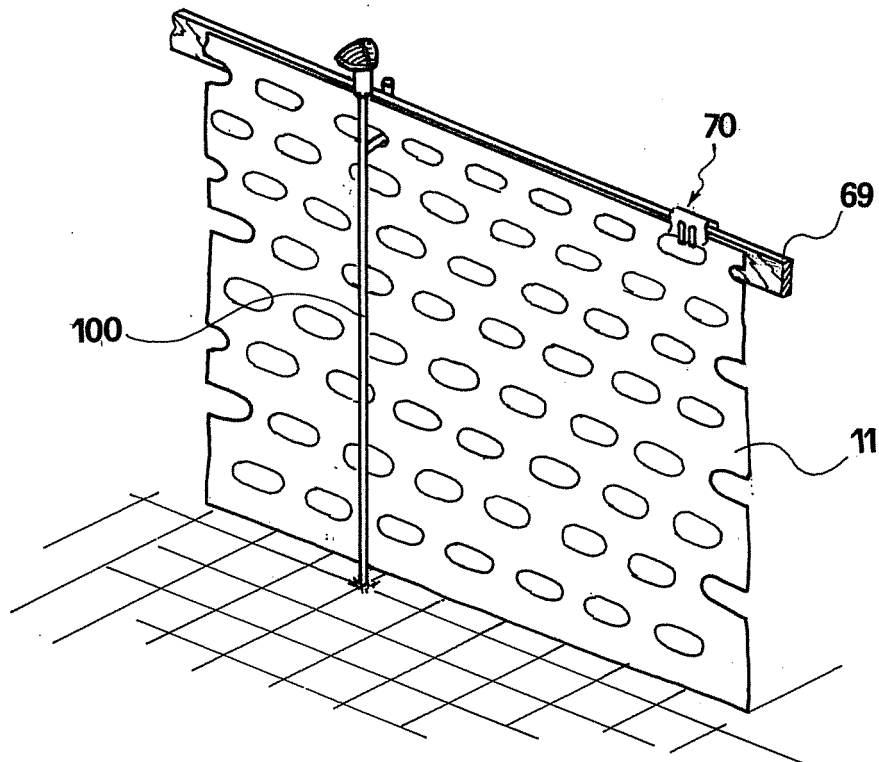


FIG.14



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 12 3148

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Place of search The Hague		Date of completion of the search 21 March 2007	Examiner Tran, Kim-Lien
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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21-03-2007

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