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(54) Safety barrier for road embankments

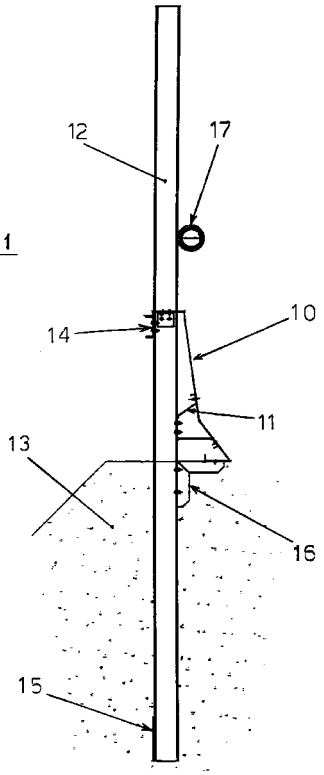
(57) Sheet-steel road safety barrier with a profile of a New Jersey type, adapted to be installed on road embankments. The barrier is formed by modular elements, each one of which is constituted by a cover wall (10) made of folded sheet-steel and provided with a rear longitudinal reinforcing rib (11).

The elements are fixed to vertical beams (12) that are stuck deep in the ground and are linked with each other by means of longitudinal tension rods (14).

The beams are provided with plates (15, 16) in their portion sticking in the ground.

The barrier is effectively anchored to the ground and provides a high extent of integration of its component parts.

FIG. 1



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Description

[0001] The present invention refers to a sheet-steel safety road barrier of the New Jersey type, adapted for installation on road embankments.

[0002] Sheet-steel road barriers of the New Jersey type are already largely known in the art and are currently used on bridges and viaducts, since they actually have such low-weight, strength and elasticity properties as to be usually preferred to traditional concrete barriers.

[0003] The European patents 0 428 097 and 0 575 705 describe road barriers of steel of the above cited kind, which are attached to the road-bed by means of suitable fastening means. These fastening means generally comprise screws and bolts which are accomodated in appropriate recesses provided in the base of the barrier and which, by passing through openings provided in the same base, stick into or get anyway anchored in the road-bed.

[0004] Solutions of this kind are however conditioned by the relatively limited depth of the raod-bed on bridges and viaducts, whereas a much deeper and stronger anchorage would be needed in these cases owing to the possibility of very violent blows and collisions in case of accidents.

[0005] Road barriers are also known which are provided with sound-deadening elements adapted to reduce the ability of the traffic-caused noise to propagate towards the environment surrounding the roadway. These sound-deadening elements may either be constituted by a panel mounted vertically above each barrier element or consist of a structure sustaining a plurality of panels mounted in an overlapping arrangement, suitably spaced and variously inclined, so as to be able to intercept and trap the sound waves generated by the intensity of the traffic. Both solutions call for assemblies to be first constructed separately from the actual barrier and then assembled on to the same barrier at a later moment, thereby contributing to a greater complexity and a lower safety of the final structure.

[0006] It therefore is a main purpose of the present invention to provide a steel safety road barrier with a profile of the New Jersey type, adapted to be installed on road embankments, capable of being effectively anchored to the ground and ensuring the highest possible extent of integrated construction of its component parts.

[0007] A further purpose of the present invention is to provide a road barrier of the above cited kind which, while being very simple in its construction, is anyway capable of ensuring the desired and required extent of strength and safety.

[0008] According to the present invention, these aims are reached in a barrier that is constituted by a plurality of modular elements, each one of which is formed by a cover wall made of folded sheet-steel and provided with a longitudinal reinforcing rib, said elements being fixed to vertical posts, or beams, that are stuck deep in the ground and are mutually connected by longitudinal tension rods, so as recited in the appended claims.

[0009] Features and advantages of the present invention will anyway be more clearly and readily understood from the description that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a partially cross-sectional side view of a barrier according to the present invention;
- Figure 2 is a partially cross-sectional rear view of a portion of the barrier illustrated in Figure 1; and
- Figure 3 is an enlarged-section side view of a detail of the barrier according to the present invention.

[0010] The barrier according to the present invention is substantially constituted by a plurality of modular elements 10 (Figures 1 and 2), each one of which comprising a cover wall made of sheet-metal bent to a profile of the New Jersey type facing the roadway and provided on the rear side with a longitudinal reinforcing rib 11.

[0011] Each element 10 is fixed, at its end portions, on to vertical posts or beams 12 that are stuck deep in the road embankment 13 and are linked with each other by means of at least a longitudinal tension rod 14. In a preferred manner, the posts or beams 12 have a cross-section in the shape of a double T, while the tension rods 14 have a C-shaped cross-section. The fastening means used to connect cover walls, beams and tension rods to each other are usually in the form of bolts, nuts or welds.

[0012] Each beam 12 is provided with a plate 15, which is fixed to the lower end portion thereof in a vertical position parallelly to the road axis, to the purpose of distributing in the ground the pushing force imparted by a motor vehicle colliding with the barrier in the case of an accident. Furthermore, in order to further improve such an effect, each beam 12 is connected to the lower border of the corresponding cover wall 10 by means of a second plate 16. In an advantageous manner, this plate 16 is therefore bent at a right angle, substantially with a vertical wing and a horizontal one.

[0013] The beams 12 may prolong upwards and may sustain a possible handrail 17 having preferably a circular cross-section.

[0014] In Figures 1 and 2, the longitudinal reinforcing rib 11 of the strip is constituted by a folded sheet-metal profile that is fixed to both the cover wall 10 and the beams 12 with commonly known means, such as nuts and bolts or welds.

[0015] The barrier according to the invention may furthermore be provided with a sound-deadening coating or cladding in order to reduce the ability of the noise generated by the intensity of the traffic to propagate towards the environment surrounding the road embankment. In an advantageous manner, such a cladding

(Figure 3) is provided as a panel that is fully integrated in the cover wall 10 which therefore constitutes the rear closing, ie. backing wall of the same panel. The panel is formed by a layer 20 of sound-deadening material, such as glass wool, protected on the side facing the roadway by a micro-perforated thin sheet 21, which is preferably made of aluminium. This thin sheet 21 is attached to the cover wall 10 by means of nuts and bolts. Between the glasswool layer 20 and the cover wall 10 there are inserted elastic shock-absorbing pads or buffers 22 of a material such as for instance neoprene.

[0016] From the above description it clearly emerges that the barrier according to the present invention, for application to road embankments, is very simple in its construction, but is anyway able to ensure the full extent of strength and safety required to adequately cope with the impacts imparted by motor vehicles colliding therewith.

Claims

1. Sheet-steel road safety barrier with a profile of a New Jersey type, adapted to be installed on road embankments, constituted by a plurality of mutually connected modular elements, each element comprising a cover wall (10) made of sheet-steel bent to a profile of the New Jersey type facing the roadway and provided with a rear longitudinal reinforcing rib (11), characterized in that said elements are fixed at their end portions on to vertical beams (12) that are stuck deep in the ground, said beams (12) being linked with each other by at least a longitudinal tension rod (14) and being further provided, in their portion stuck in the ground, with at least a plate (15) arranged parallelly to the axis of the road embankment (13).

2. Road barrier according to claim 1, characterized in that said plate (15) is fixed to the lower end portion of each beam (12).

3. Road barrier according to claim 1 or 2, characterized in that a further plate (16), bent substantially at a right angle, is fixed to each beam (12), in the portion thereof which is stuck in the ground, and is adapted to connect the beam with the lower border of the corresponding cover wall.

4. Road barrier according to any of the claims 1 to 3, characterized in that at least the upper portion of said cover wall (10) forms the rear wall of a sound-deadening panel (20, 21) which is integrated in each element of the barrier.

FIG. 1

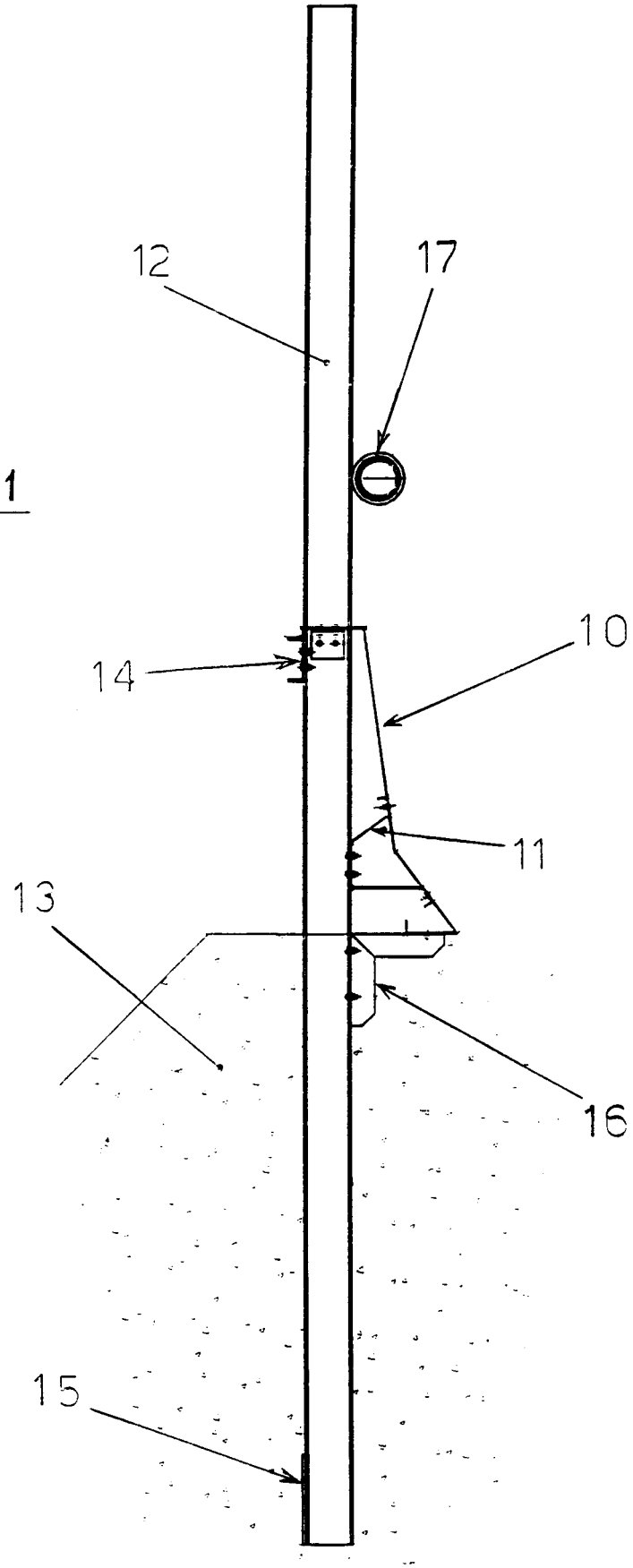
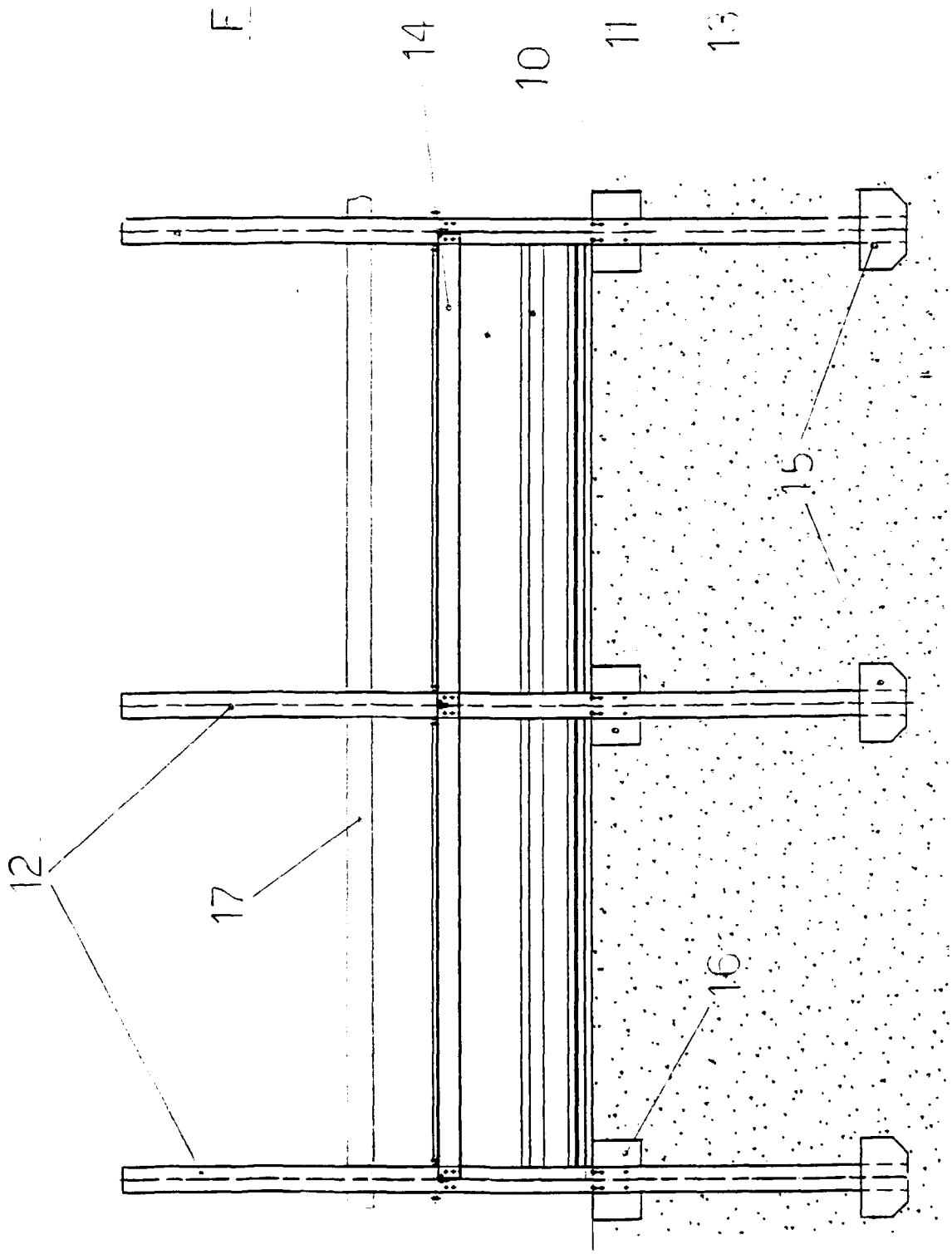


FIG. 2



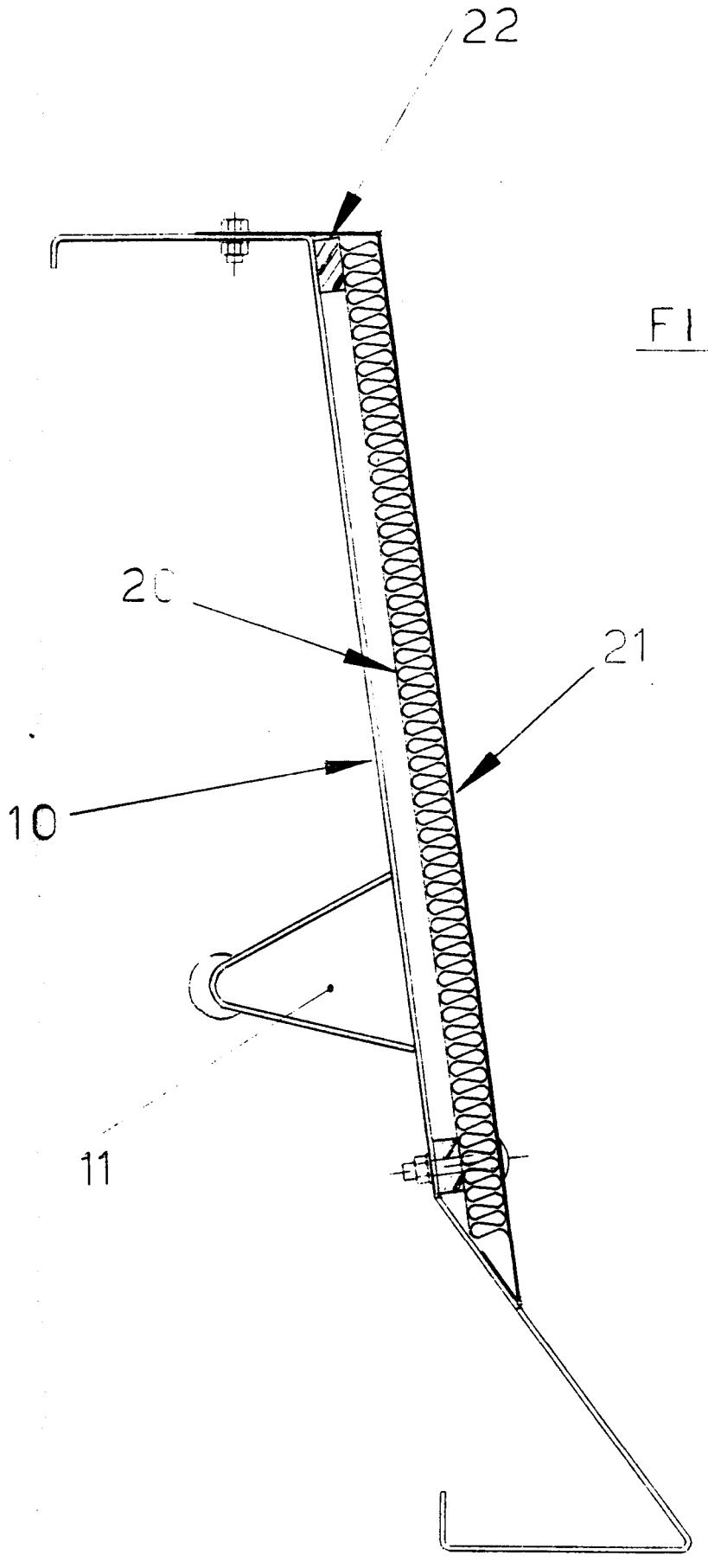


FIG. 3