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## (54) Elastic guardrail

(57) This consists of a modular element for forming roadway fencing which has anchorage to the ground elastically supporting the fence which is formed of: at least one module (1) whose fixation to the ground (7) has deformable elastic means, which holds a portion whose horizontal arrangement is fitted with means for connecting this to adjacent elements, all being covered with a cover of impact-absorbing material (18), so that each fencing unit has impact -absorbing means (13-18) and means for the whole item's recovery after receiving an impact (13-18), formed of springs, tensors or fixations connected to an item joined to the foundations.

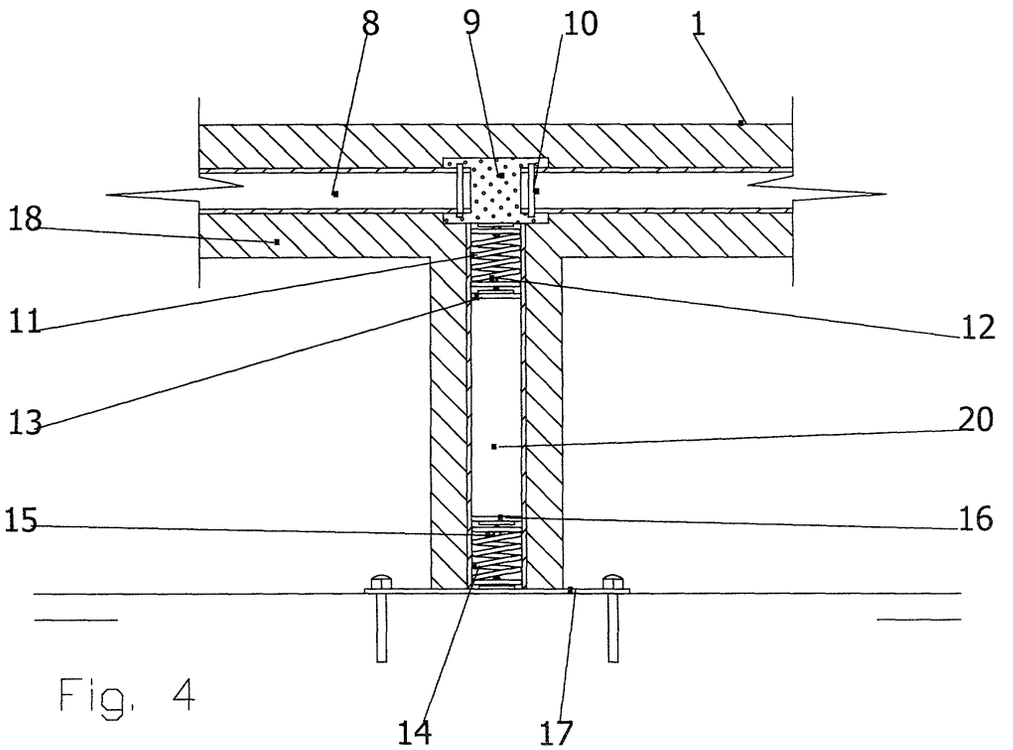


Fig. 4

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## Description

**[0001]** The technical sector involved in this invention is that of protection for limiting movement of vehicles off roads.

**[0002]** It is well-known that when a force opposes another force damage is inevitably done to both masses when the encounter takes place. Until the present time, road protection rails, protection fencing, or lane-limiting items on roads have been structured so as to firmly retain any aggression. It is obvious that they also undergo damage, but normally not as much as the vehicles and particularly persons who hit these. We refer specifically to motor cyclists.

**[0003]** Statement of the prior state of the art. ES1026816U for a road division post is formed of an assembly which comprises a base concealed in the ground and the post itself, which is able to rise and lower depending on a mechanism which acts on its position. It has a core which constitutes the axis of its action and which is joined to the bottom and to the post itself, being telescopic.

**[0004]** ES2088124T3 for an articulated post foot, with elastic deformation for road signalling panels, traffic signs, auxiliary lights for streets and similar, which consists of a base anchored to the ground and fitted with an elastic rubber body on which there is a securing device for the post itself which is again elastic on its inside and which allows the transversal movement of its body, so that the application of a transversal force determines a temporary deformation of the post position which is recovered after this transversal force ceases.

**[0005]** ES1011625U for a device for defending private parking spaces, which consists of a base anchored to the ground which has an articulation which is connected to a body which takes basically two positions, one vertical and one horizontal, the whole assembly being fitted with a rod tautened by a spring whose resistance makes a locking system trigger when it turns to the vertical position, and frees the lock when it is manipulated with a latchkey.

**[0006]** This invention covers a modular element for forming roadway fencing, consisting of an assembly which, apart from not requiring installation by building work, constitutes as a whole or individually an elastic means of resistance to a force applied by a vehicle or person which has the initial purpose of restoring such a vehicle or person to the road lane from which they came, and in an extreme case, that of preventing the impact from being made against an inert and rigid mass but instead against a flexible one with a soft texture.

**[0007]** In order to make the explanation to follower clearer, four sheets of drawings are supplied which represent the essence of this invention in six figures.

Figure 1 shows a diagram of how a road protection fence consisting of several modules is formed.

Figure 2 shows an upper schematic view of the assembly.

Figure 3 shows a section view according to Figure 2.

Figure 4 shows a schematic view which shows details of how the assembly covered in this explanation is formed.

Figure 5 shows an embodiment of the elastic fixation assembly.

Figure 6 shows another embodiment of the elastic fixing assembly.

**[0008]** In these figures 1 represents the module itself, 2 the adjacent modules, 3 the connection between modules I, 4 the connection between modules II, 5 the ground, 6 the fixations to the ground, 7 the anchorage by long bolts, 8 the interior horizontal tube also known as a bar, 9 the central join, 10 the pin. 11 to 13 indicates the upper elastic fixation assembly, 11 representing the open spring, 12 the chain, 13 the coupling crossbar of the chain and the spring support. 14 to 17 indicate the lower elastic fixation assembly, and 14 shows the open spring, 15 the chain, 16 the coupling crossbar. 17 represents the lower reinforcement of the module sustaining the fixations 6, 18 the padded casing covering each of the modules or external jacket which is joined with no breaks right over the whole assembly up to the ends or final modules, 19 being the final module, oblique towards the ground and with an internal configuration similar to the ones indicated by 11 to 17, 20 being the vertical internal tube. One possible configuration of the same assembly as regards its elastic fixation is formed by a chain set out joined to a closed spring, so that the latter's tension restores the position of the module and with this that of the fence. A reinforced version of this makes use of two chains and two closed springs occupying opposite positions, meaning that the force of the whole assembly is doubled.

**[0009]** As this is arranged, the module has the purpose of providing flexible resistance to a force opposing it, ameliorating or eliminating the effect stemming from a contact between two parts whose inertia together necessarily determines deformations and consequent damage due to the rigidity of both parts. For this reason, although the fixation to the ground, intended to be simplified by being attached by means of bolts and by couplings that do not require building work in most cases, is rigid, the assembly of each module is not. Its flexibility characteristics are produced by two parts. One is the external configuration of the module which provides a surface of elastic nature. Another is the internal configuration of the module which determines a mode of deflection with recovery to its initial position. This form of deflection is aided by the other modules which together unitarily oppose their own resistance, so that for small deformations it acts gently; for medium deformations, which modify the position of the vertical tube 20 under 15°, it behaves in a resistant way and for deformations which involve a greater modification of the position of

the vertical tube it acts increasingly rigidly, after having reached this position by resisting and absorbing a good deal of the energy applied.

**[0010]** For this reason, the assembly is built forming horizontal tubes 8 properly endowed with a cover which on one hand is joined to the adjacent tubes forming the fence and on the other are joined together by means of a pin 10 to the central coupling 9 connected to the vertical tube 20 fixed to the absorption devices.

**[0011]** These absorption devices are a set of two chains and two open springs, as has been shown with 11 to 16, so that any tensions attempting to modify the initial vertical position of the tube 20 are absorbed by the open springs 11 and 14 located at the upper and lower ends of each tube 20.

**[0012]** As has been described, this does not prevent the tension being provided by a closed spring tautened by a chain as is shown in figure 3 by 20 to 22, nor said assembly of closed spring and chain resisting its tension from being double, according to figure 4 shown as 23 to 25.

**[0013]** An explanation of one form of execution has been extensively indicated in the content of the preceding report.

**[0014]** This is for use in industrial applications in making protection for roadways.

## Claims

1. A modular element for forming roadway fencing, of the type that constitute a safety limitation on the verges of roads, **characterised by** consisting of:

   - at least one module (1)
   - a fixation to the ground (7)
   - a horizontal configuration endowed with means for connecting to adjacent elements
   - a cover of impact-absorbing material (18)
   - means for absorbing impacts (13-18)
   - means for recovery of the whole item after receiving an impact (13-18).

2. A modular element, according to claim 1, **characterised in that** the means for absorbing impacts consists of an assembly formed of longitudinal bars (8) linked together (9, 10), fitted with at least one coupling on each item.

3. A modular element, according to claims 1 and 2, **characterised in that** the means for joining each element is a pin or rod (10) set between each two parts (8, 9) that are linked together.

4. A modular element, according to claim 1 and one of claims 2 to 3, **characterised in that** the means for absorbing impacts consist at least of one assembly formed of a chain (15), a spring (14) and a crossbar (16) for securing the chain and retaining the spring.

5. A modular element, according to claims 1 and 4, **characterised in that** the chain-spring assembly and crossbar consists of an open spring.

6. A modular element, according to claims 1 and 4, **characterised in that** the chain-spring assembly and crossbar consists of a closed spring.

7. A modular element, according to claims 1 and 4, **characterised in that** it has two chain-spring and crossbar assemblies, the springs being open.

8. A modular element, according to claims 1 and 4, **characterised in that** it has two chain-spring and crossbar assemblies, the springs being closed.

9. A modular element, according to claim 1 and any of claims 2 to 8, **characterised in that** the connection to adjacent modules consists of the coupling of the internal bars (8), and the external covers (18).

10. A modular element, according to claim 1 and any of claims 2 to 9, **characterised in that** it has a final or terminal element (19), which has:

    - A join to the bar of the modular element to which this is connected
    - One end joined to the ground
    - Means for absorbing impacts.

11. A modular element, according to claim 1 and any of claims 2 to 10, **characterised in that** the fixation (6) to the ground is carried out by means of long bolts.

12. A modular element, according to claim 1 and any of claims 2 to 10, **characterised in that** its fixing (6) to the ground is carried out by means of cementing.

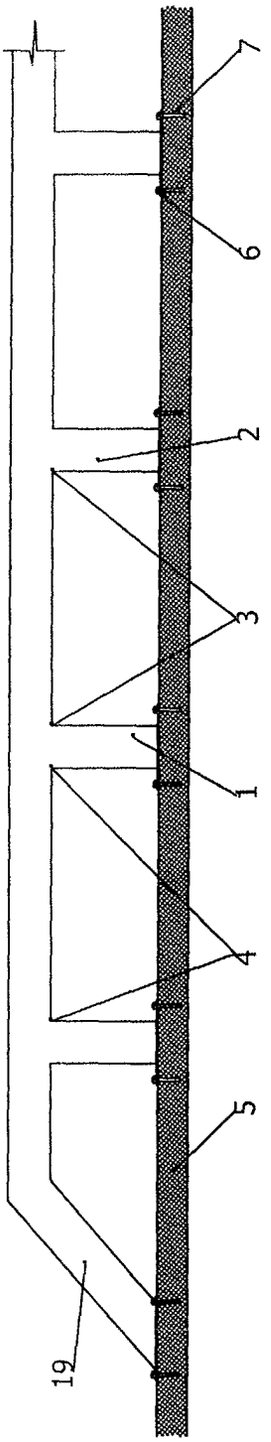


Fig. 1

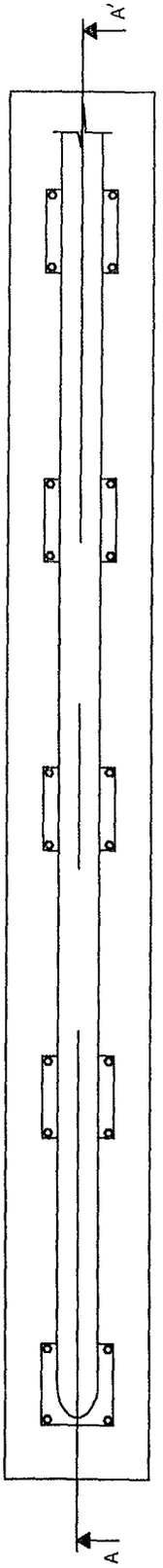


Fig. 2

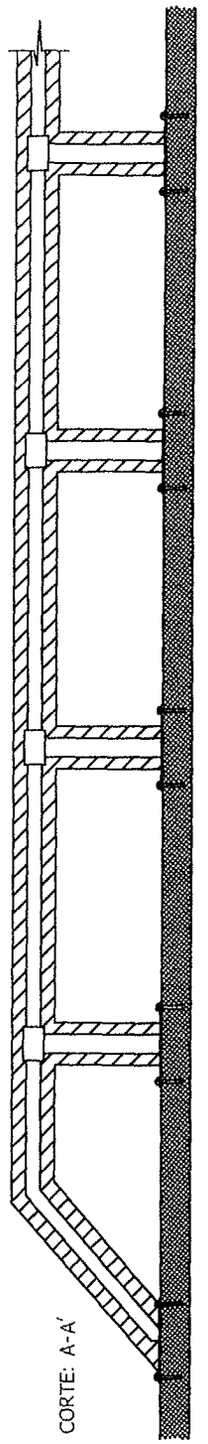


Fig. 3

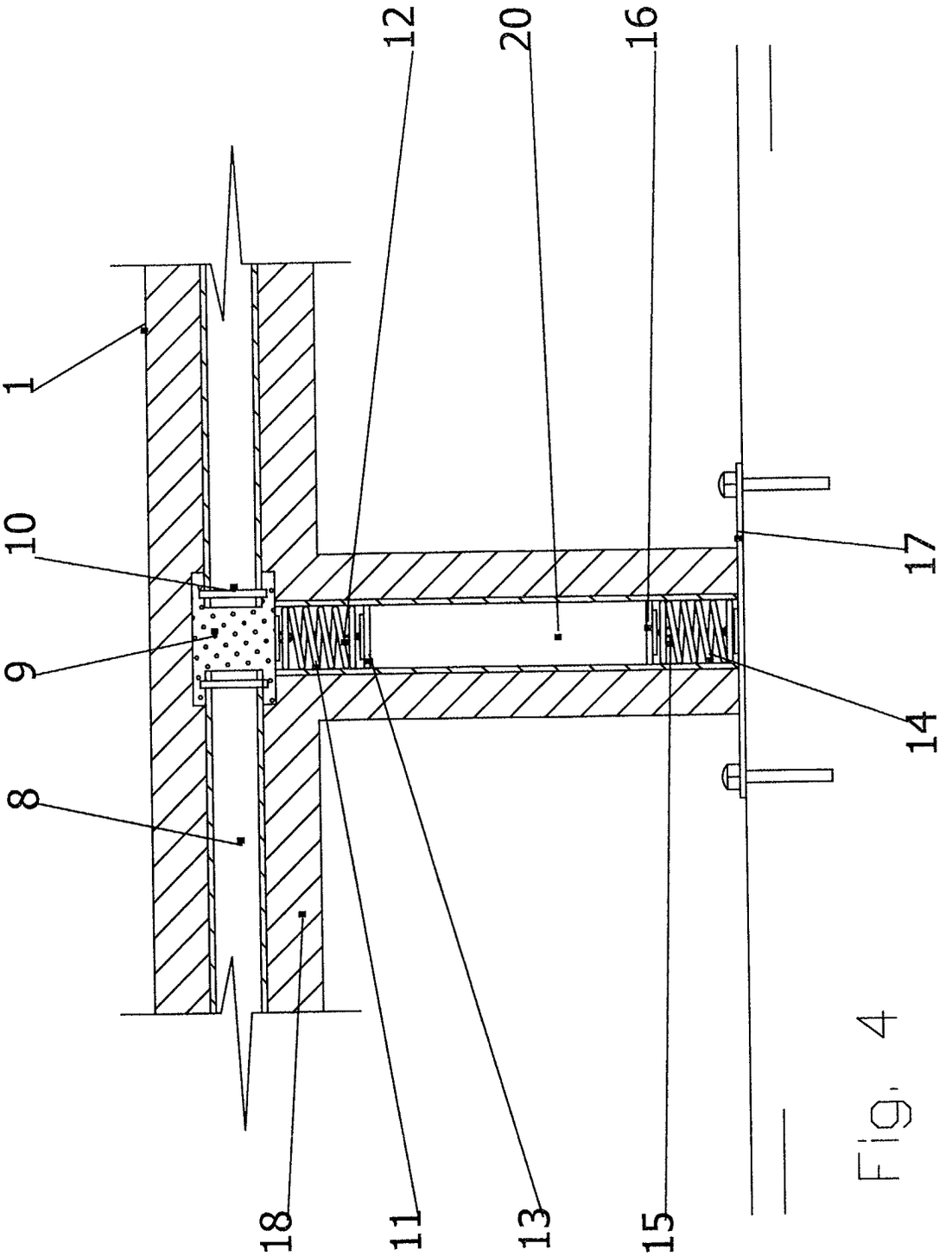


Fig. 4

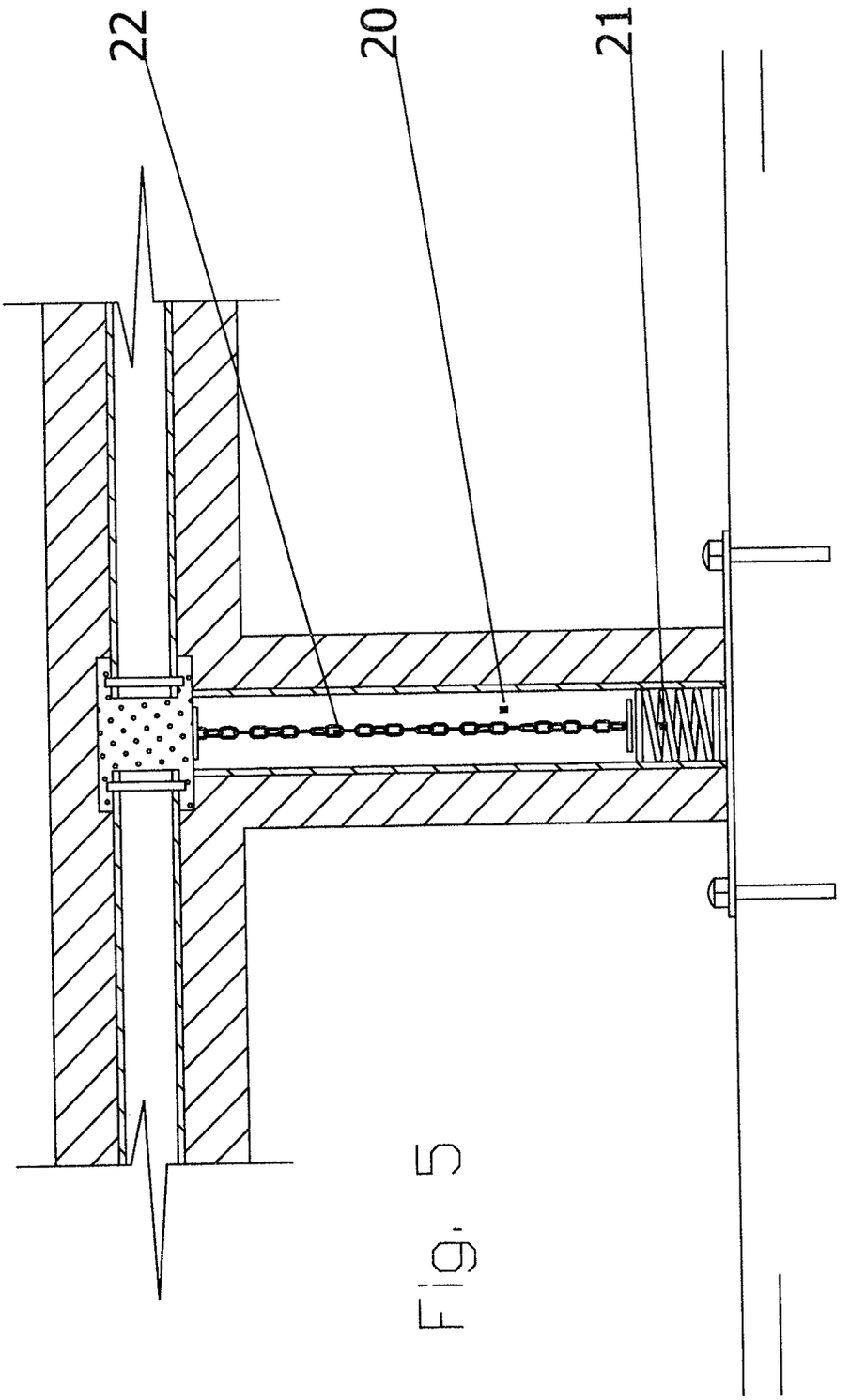


Fig. 5

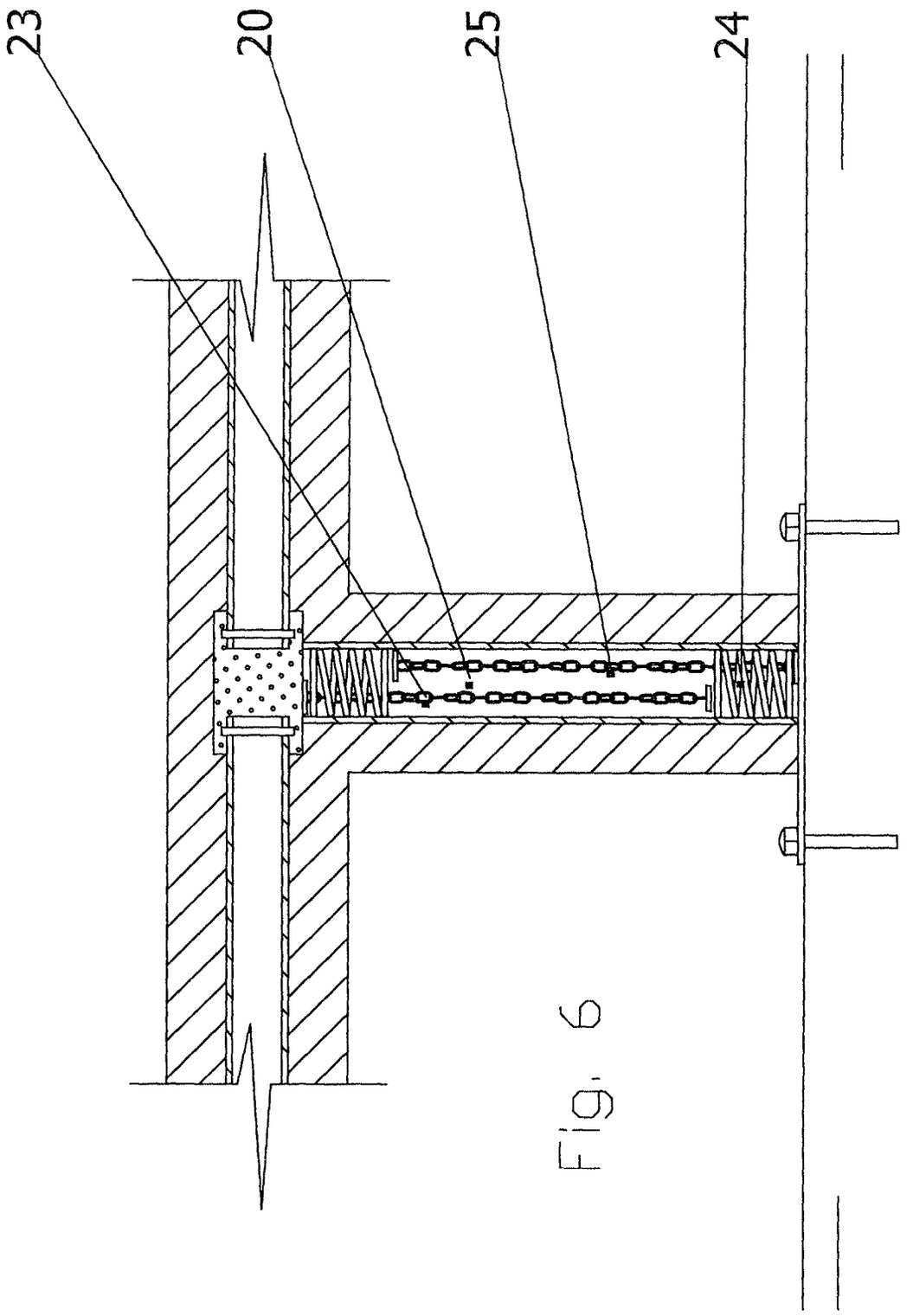


Fig. 6