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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) Road panel

(57) The panel consists of the panel element (1) fastened on the pillar member (4).
The panel member (1) is a piece of cloth (3) in the form of a bag made of elastic material and slid on the frame member (2) or has a shape and dimensions corresponding to those of the frame member (2). The frame member (2) is made of a section and fastened to the pillar member (4) with two generally vertical tubular sections (5) spring loaded in the longitudinal seats (7) resembling a part of sleeve cut off along the plane parallel to its axis, placed opposite to each other on both sides of the tubular pillar (6).
There are holes aligned in the walls of tubular sections (5) and the pillar (6) where a mandrel is passed through (8) with preferably threaded ends on which coil springs (9) are slid with a slight play and blocked against sliding down with the locks (10).
Alternatively, the frame member (2) is made of a section and fastened to the pillar member (4) that in whole or in part has the shape of the section or is U-shaped with extended arms made of a flat bar or elastic band.

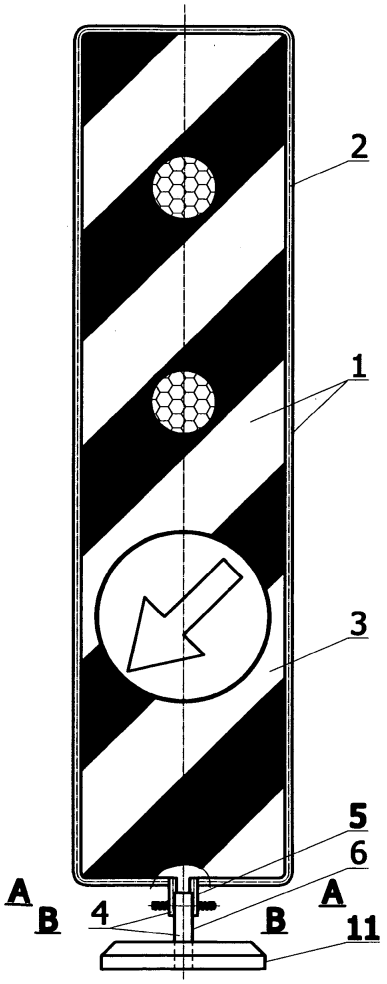


Fig.1

EP 2 025 814 A1

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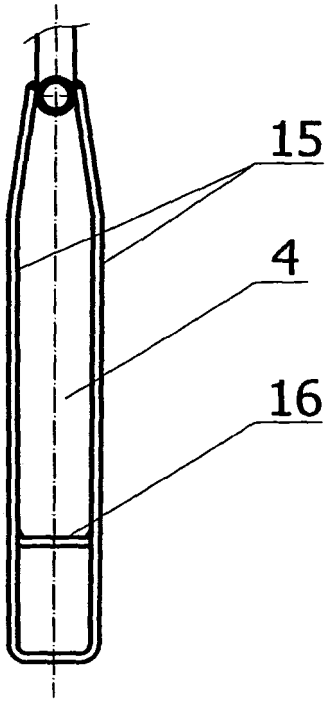


Fig.7

Description

[0001] The subject of this invention is a free-standing road panel that can be used as a road sign or a board used as marking for roads or railways and their infrastructure such as squares, parking lots, viaducts, flyovers, tunnels, railway stations, petrol stations, in particular as a portable panel in the case of overhauls, rebuilding or temporary changes of traffic regulation.

[0002] The essence of the solution according to the first invention consists in the road panel being made of an elastic material that has the form of a bag slid over a frame member, or a cloth in the shape corresponding to that of the frame member and of the same or slightly smaller dimensions than those of the frame member. The frame member is preferably made of a thin-walled tubular lightweight section. This member is fitted to the pillar member with two generally vertical and parallel to each other tubular sections of circular cross-section spring loaded in longitudinal, generally vertical seats. The seat resembles a part of sleeve cut off along the plane parallel to its axis. The seats are placed opposite to each other on both sides in the wall of the tubular pillar of preferably rectangular or hexagonal cross-section. There are aligned holes both in the tubular sections and the pillar in which a through mandrel protruded with preferably threaded ends on which coil springs are slid over with a slight play and then locked with nuts.

[0003] The bag-shaped piece of cloth can be one-sided or two-sided and in addition it preferably can have additional corner reinforcements and separable fastenings in the form of a Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fastener or by using tapes, elastic tapes, laces, buckles and clasps.

[0004] The panel in the shape of a piece of cloth of the same shape and dimensions as those of the frame member is preferably fastened with it by using adhesive, Velcro, magnetic, snap fasteners or by using self-adhesive tapes.

[0005] The piece of cloth of dimensions smaller than those of the frame member is preferably slit over it by using tapes, laces, Velcro or metal strings.

[0006] The piece of cloth of dimensions greater than those of the frame member has preferably edges bent around the frame member sections and these edges are fastened with each other or the rear part of the piece of cloth with Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners and also by using tapes, elastic tapes, laces, buckles and clasps. The edges of the piece of cloth are preferably reinforced.

[0007] The surface of one-sided or two-sided piece of cloth has preferably reflective and/or luminescent features in whole or in part.

[0008] The mandrel is a single-piece or two-piece part, while both parts of the divided mandrel have a lock on its ends.

[0009] The essence of the solution according to the first invention consists in road panel being made of an elastic material that has the form of a bag slid over a frame member or a cloth of the shape corresponding to that of the frame member and of the same or slightly smaller or greater dimensions than those of the frame member. The frame member is preferably made of a thin-walled tubular section of low specific gravity. This member is fitted to a pillar member that has a section or 'U' shape of extended arms made of a flat bar or spring strip.

[0010] The piece of cloth in the form of a bag is one-sided or two-sided and preferably has additional corner reinforcements. The panel preferably is fastened with a Velcro, adhesive, magnetic, hook and eye, button, lace and clasp fastener or tapes, elastic tapes, laces, buckles and clasps.

[0011] The panel in the shape of a piece of cloth of the same shape and dimensions as those of the frame member is preferably fastened with it by using adhesive, Velcro, magnetic, snap fasteners or by using self-adhesive tapes.

[0012] The piece of cloth of dimensions smaller than those of the frame member is preferably slit over it by using tapes, laces, Velcro or strings.

[0013] The piece of cloth of dimensions greater than those of the frame member has preferably edges bent around the frame member sections and these edges are fastened with each other or the rear part of the piece of cloth with Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners and also by using tapes, elastic tapes, laces, buckles and clasps. The edges of the piece of cloth are preferably reinforced.

[0014] The surface of one-sided or two-sided piece of cloth has preferably reflective and/or luminescent features in whole or in part.

[0015] The arms of the pillar member are preferably pulled apart in the upward direction and then convergent to each other and, in addition, there is a stiffening member in the form of a bar, bars or flat bar fitted perpendicularly do the symmetry axis of the pillar member in the lower part of the pillar member.

[0016] The main advantage of the solution presented above is its light weight and susceptibility to elastic strains, and in extreme cases to damage, limited to individual replaceable components. This considerably reduces both hazards and effects of vehicle running into the panel. In addition, light weight and unfold possibilities facilitate panel transportation, erection and handling as well as part replacing.

[0017] The subjects of these inventions are shown in more detail on sample embodiments presented in Fig. 1, where the front view of the panel according to the first invention is shown, Fig. 2: A-A cross-section of the pillar member indicated in Fig. 1, Fig. 3: B-B cross-section of the pillar indicated in Fig. 1, Fig. 4: rear view of the frame member with a panel in the form of a piece of cloth with dimensions smaller than the frame member inner dimensions, Fig. 5: rear view of the panel with a piece of cloth with dimensions larger than the frame member outer dimensions, Fig. 6: front view of the panel according to the

second invention, Fig. 7 - side view of the panel pillar member shown in Fig. 6.

[0018] Both embodiment examples and related drawings do not restrict the scope of the present inventions and the protection rights resulting in particular from patent claims.

Example I

[0019] The panel consists of the panel member 1 and the pillar member 2 connected in a vertical arrangement. The pillar member is a load-bearing component to which a piece of cloth 3 is fastened as a base for visual or verbal information carrier. The frame member 2 is made of a thin-walled aluminum tube in the form of upright rectangular frame with rounded corners. There is a piece of cloth 3 in the form of a double-sided bag made of elastic and non-absorbing material slid from the top onto the frame member 2. There are reinforcements made of the same material in the upper corners of the panel 3 to protect it against tear and wear during prolonged use. The panel 3 in the form of a double-sided bag has four exposition surfaces carrying information elements made of self-adhesive reflective foil.

[0020] The sill of the frame member 2 has a gap in the center. The free ends of this sill are welded to one ends of tubular sections 5 in upright position, placed in longitudinal seats 7 machined in the opposite walls of the tubular pillar 6 of square cross-section. The seat 7 resembles a part of sleeve cut parallel to its axis, whereas the depth of the seat 7 is lower the half of the seat width. There are coil springs 9 secured with locks 10 in the form of nuts slid freely onto threaded ends of the mandrel 8 placed pass-through the holes of the pillar walls 6 and holes of tubular sections 5 on the same crosswise axis of the pillar 6 .

[0021] The end of the mandrel 8 is mounted with a minimum play in the seat of the base 11.

Example II

[0022] In the embodiment in this example there are differences related to the panel member 1, otherwise this example is identical with Example I.

[0023] As shown in Fig. 4, a piece of cloth 3 has dimensions smaller than those of the frame member 2 and is of rectangular shape with edges bent rearwards and glued to its surface, thus forming the reinforcement 13. In the panel 3, in the same place as the reinforcement 13 there are holes made, through which and around the frame member 2 laces 12a are threaded, and in addition the panel 3 in the middle of its height is fastened to the frame member 2 from two opposite sides with Velcro fasteners 12b.

Example III

[0024] An example of embodiment shown in Fig. 5, presents differences related to the panel member 1 compared to those of Example I and Example II, while no other differences occur.

[0025] The Figure presents the situation in which the shape of panel 3 corresponds to that of the frame member 2, while its size is greater. The panel 3 is slid onto the frame member 2 with edges bent rearwards by 180°, while several fastening options are presented. In the upper corners of the frame member 2 the snap fastener 12c is shown, while the lower corners are fastened with buttons 12 h. Additionally, the fastening of two opposite edges of the panel 3 is presented. Looking from the top downwards, the uppermost drawing presents the fastening with a rubber tape 12d, and below lace fastening 12e, Velcro12f and strings 12g are shown.

Example I according to the second invention

[0026] The panel shown in Fig. 6 comprises of the panel member 1 and the pillar member 4 fastened in a vertical arrangement. The panel member 1 consists of the frame member 2 and the panel 3 fastened to it which is the base for the information carrier in the graphical or verbal form.

[0027] The frame member 2 is made of a thin-walled aluminum tube bent in the shape of rectangular frame with rounded corners. The panel 3 in the form of a bag made of elastic material is slid from the top onto the frame member 2. There are reinforcements made of the same material glued from inside of the panel 3 to protect it against tear and wear during prolonged use. The panel 3 has two exposition surfaces on which the road sign elements or other information elements made of a luminescent foil, connected by pressure welding.

[0028] The sill of the frame member 2 is fastened to the pillar member 4 in the form of a tube of hexagonal cross-section, mounted in the base 11.

[0029] There are holes made in the upper sill of the frame member 2 for screws that fix the warning lamp 17.

Example II according to the second invention

[0030] The panel consists of the panel member 1, shown in Fig. 4, and the pillar member 4 presented in Fig. 7, arranged vertically. The dimensions of the panel 3 are smaller than those of the frame member 2 and are of rectangular shape with edges bent rearwards and glued to its surface, thus forming the reinforcement 13. At reinforcement 13 there are holes made, through which and around the frame member 2 laces 12a are threaded, and in addition the panel 3 in the middle of its height is fastened to the frame member 2 from two opposite sides with Velcro fasteners 12b.

[0031] The sill of the frame member 2 is connected with the U-shaped pillar member 4 with extended arms 15 made of metallic band with elastic properties. The arms 15 are slightly obtuse from bottom upwards and then convergent to each other. There is a stiffening member 16 in the form of a flat bar fitted perpendicularly do

the symmetry axis of the pillar member 4 in the lower part of the pillar member.

Example III according to the second invention

[0032] The panel consists of panel member 1 as shown in Fig. 5 and pillar member 4 presented in Fig. 7.

[0033] The shape of the panel 3 corresponds to the frame member 2 but its dimensions are greater. The panel 3 is slid onto the frame member 2 with edges bent rearwards by 180° and several fastening options are shown. In the upper corner of the frame member 2 clasp fastenings 12c are presented, with fastening with buttons 12h in the bottom corners. In addition, the fastening of two opposite edges of the panel 3 is presented. Looking from the top downwards, the uppermost drawing presents the fastening with a rubber tape 12d, and below lace fastening 12e , Velcro12f and strings 12g are shown. The pillar member 4 is identical with that of Example II according to the second invention.

Claims

1. A road panel consisting of a panel element mounted on the pillar member, preferably mounted in the base in a separable manner, **characterised by** that the panel member (1) is a panel (3) made of elastic material in the form of a bag slid over the frame member (2) or a piece of cloth of the shape corresponding to the frame member (2) and of the same dimensions or slightly smaller or greater than those of the frame member (2) that is preferably made of a thin-walled tubular lightweight section fitted to the pillar member (4) with two generally vertical and parallel to each other tubular sections (5) of circular cross-section, spring loaded in longitudinal, generally vertical seats (7) that resemble a part of sleeve cut off along the plane parallel to its axis, placed opposite to each other on both sides of the tubular pillar (6) having preferably rectangular or hexagonal cross-section, while both in the walls of tubular sections (5) and the pillar (6) there are holes aligned in which a mandrel (8) with preferably threaded ends is passed through, on which coil springs (9) are slid with a slight play and blocked against sliding down with nuts (10).

2. The panel according to claim 1, **characterised by** that the panel (3) in the form of a bag is one-sided or two-sided and has preferably additional reinforcement in its corners.

3. The panel according to claim 1, **characterised by** that the panel (3) in the form of a bag has preferably separable Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners or fastenings using tapes, elastic tapes, laces, buckles and clasps.

4. The panel according to claim 1, **characterised by** that the panel (3) in the form of a piece of cloth and with the same dimensions as those of the frame member (2) is preferably fastened with it with glue, Velcro, magnetic, snap fasteners or with self-adhesive tapes.

5. The panel according to claim 1, **characterised by** that the panel (3) with dimensions smaller than those of the frame member (2) is spread over it with use of tapes, laces, Velcro or metal strings.

6. The panel according to claim 1, **characterised by** that the panel (3) with dimensions greater than those of the frame member (2) has edges bent around the frame member sections (2) and these edges are fastened with each other or with the rear part of the piece of cloth (3) with Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners and also with tapes, elastic tapes, laces, buckles and clasps.

7. The panel according to claim 5 or 6, **characterised by** that the panel edges (3) have reinforcements (12).

8. The panel according to claim 1, **characterised by** that the whole or parts of surface of one-sided or two-sided panel (3) is reflective and/or luminescent.

9. The panel according to claim 1, **characterised by** that the mandrel (8) is a one-piece or divided part, whereas the two parts of the divided mandrel (8) have a lock (10) on both ends.

10. A road panel consisting of a panel element mounted on the pillar member, preferably mounted in the base in a separable manner, **characterised by** that the panel member (1) is a panel (3) made of elastic material in the form of a bag slid over the frame member (2) or a piece of cloth of the shape corresponding to the frame member (2) and of the same dimensions or slightly smaller or greater than those of the frame member (2), that is preferably made of a thin-walled tubular lightweight section fitted to the pillar member (4) which in whole or in part has the form of the section or from the side-view is U-shaped with extended arms (15) made of a flat bar or a resilient band.

11. The panel according to claim 10, **characterised by** that the bag panel (3) is one-sided or two-sided and has preferably additional reinforcement in its corners.

12. The panel according to claim 10, **characterised by** that the bag panel (3) has preferably separable Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners or fastenings using tapes,

elastic tapes, laces, buckles and clasps.

13. The panel according to claim 10, **characterised by** that panel (3) in the form of a piece of cloth of the shape and with the same dimensions as those of the frame member (2), preferably is fastened with glue, Velcro, magnetic, snap fasteners or with self-adhesive tapes.

14. The panel according to claim 10, **characterised by** that the panel (3) with dimensions smaller than those of the frame member (2) is spread over it with use of tapes, laces, Velcro or strings.

15. The panel according to claim 10, **characterised by** that the panel (3) with dimensions greater than those of the frame member (2) has edges bent around the frame member (2), and these edges are fastened with each other or the rear part of the piece of cloth (3) with Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners and also with tapes, elastic tapes, laces, buckles and clasps.

16. The panel according to claim 14 or 15, **characterised by** that the edges of the panel (3) have reinforcements (13).

17. The panel according to claim 10, **characterised by** that the whole or parts of surface of one-sided or two-sided panel (3) is reflective and/or luminescent.

18. The panel according to claim 10, **characterised by** that the arms (15) of the pillar member (4) are pulled apart in the upward direction and then convergent to each other.

19. The panel according to claim 11, **characterised by** that there is a stiffening member (16) in the form of a bar, bars or flat bar fitted perpendicularly to the symmetry axis of the pillar member in the lower part of the pillar member (4).

Amended claims in accordance with Rule 137(2) EPC.

1. A road panel consisting of a panel element mounted on the pillar member, mounted in the base, **characterised by** that the panel member (1) is a panel (3) made of elastic material in the form of a bag slid over the frame member (2) or a piece of cloth of the shape corresponding to the frame member (2) and of the same dimensions or slightly smaller or greater than those of the frame member (2) made of section that is preferably tubular, thin-walled and lightweight; the frame member (2) is fitted to the pillar member (4), which consists of two generally vertical and mutually parallel tubular segments (5) and a pillar (6), connected with a joint with each other, while tubular segments (5) are of circular cross-section and are placed with a spring pressure in longitudinal, generally vertical seats (7), that resemble a part of sleeve cut off along the plane parallel to its axis, placed opposite to each other on both sides in the walls of the tubular pillar (6) having preferably rectangular or hexagonal cross-section, and moreover both in the walls of tubular sections (5) and in the pillar (6) there are holes aligned in which a mandrel (8) with preferably threaded ends is passed through, on which coil springs (9) are slid with a slight play and blocked against sliding down with nuts (10).

2. The panel according to claim 1, **characterised by** that the panel (3) in the form of a bag is one-sided or two-sided and has preferably additional reinforcement in its corners.

3. The panel according to claim 1, **characterised by** that the panel (3) in the form of a bag has preferably separable Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners or fastenings using tapes, elastic tapes, laces, buckles and clasps.

4. The panel according to claim 1, **characterised by** that the panel (3) in the form of a piece of cloth and with the same dimensions as those of the frame member (2) is preferably fastened with it with glue, Velcro, magnetic, snap fasteners or with self-adhesive tapes.

5. The panel according to claim 1, **characterised by** that the panel (3) with dimensions smaller than those of the frame member (2) is spread over it with use of tapes, laces, Velcro or metal strings.

6. The panel according to claim 1, **characterised by** that the panel (3) with dimensions greater than those of the frame member (2) has edges bent around the frame member sections (2) and these edges are fastened with each other or with the rear part of the piece of cloth (3) with Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners and also with tapes, elastic tapes, laces, buckles and clasps.

7. The panel according to claim 5 or 6, **characterised by** that the panel edges (3) have reinforcements (12).

8. The panel according to claim 1, **characterised by** that the whole or parts of surface of one-sided or two-sided panel (3) is reflective and/or luminescent.

9. The panel according to claim 1, **characterised by** that the mandrel (8) is a one-piece or divided part,

whereas the two parts of the divided mandrel (8) have a lock (10) on both ends.

10. A road panel consisting of a panel element mounted on the pillar member, preferably mounted in the base in a separable manner, **characterised by** that the panel member (1) is a panel (3) made of elastic material in the form of a bag slid over the frame member (2) or a piece of cloth of the shape corresponding to the frame member (2) and of the same dimensions or slightly smaller or greater than those of the frame member (2) made of section that is preferably tubular, thin-walled and lightweight; the frame member (2) is fitted to the pillar member (4) which in whole or in part has the form of the section or from the side-view is U-shaped with extended arms (15) made of a flat bar or a resilient band.

11. The panel according to claim 10, **characterised by** that the bag panel (3) is one-sided or two-sided and has preferably additional reinforcement in its corners.

12. The panel according to claim 10, **characterised by** that the bag panel (3) has preferably separable Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners or fastenings using tapes, elastic tapes, laces, buckles and clasps.

13. The panel according to claim 10, **characterised by** that panel (3) in the form of a piece of cloth of the shape and with the same dimensions as those of the frame member (2), preferably is fastened with glue, Velcro, magnetic, snap fasteners or with self-adhesive tapes.

14. The panel according to claim 10, **characterised by** that the panel (3) with dimensions smaller than those of the frame member (2) is spread over it with use of tapes, laces, Velcro or strings.

15. The panel according to claim 10, **characterised by** that the panel (3) with dimensions greater than those of the frame member (2) has edges bent around the frame member (2), and these edges are fastened with each other or the rear part of the piece of cloth (3) with Velcro, zip, adhesive, magnetic, hook and eye, button, lace and clasp fasteners and also with tapes, elastic tapes, laces, buckles and clasps.

16. The panel according to claim 14 or 15, **characterised by** that the edges of the panel (3) have reinforcements (13).

17. The panel according to claim 10, **characterised by** that the whole or parts of surface of one-sided or two-sided panel (3) is reflective and/or luminescent.

18. The panel according to claim 10, **characterised by** that the arms (15) of the pillar member (4) are pulled apart in the upward direction and then convergent to each other.

19. The panel according to claim 11, **characterised by** that there is a stiffening member (16) in the form of a bar, bars or flat bar fitted perpendicularly to the symmetry axis of the pillar member in the lower part of the pillar member (4).

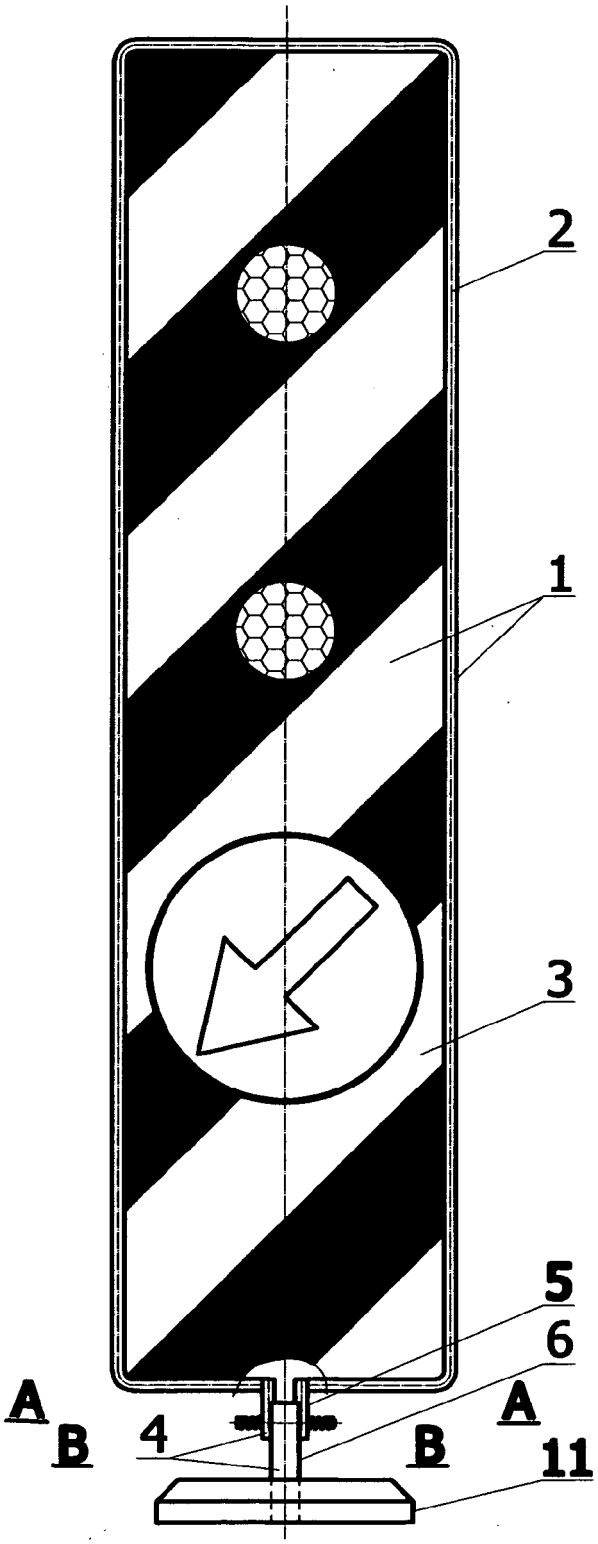


Fig.1

SECTION A-A

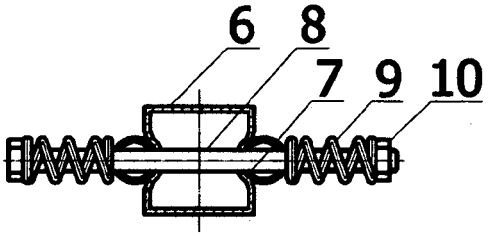


Fig.2

SECTION B-B

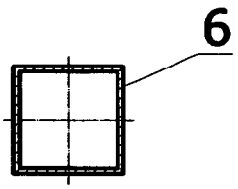


Fig.3

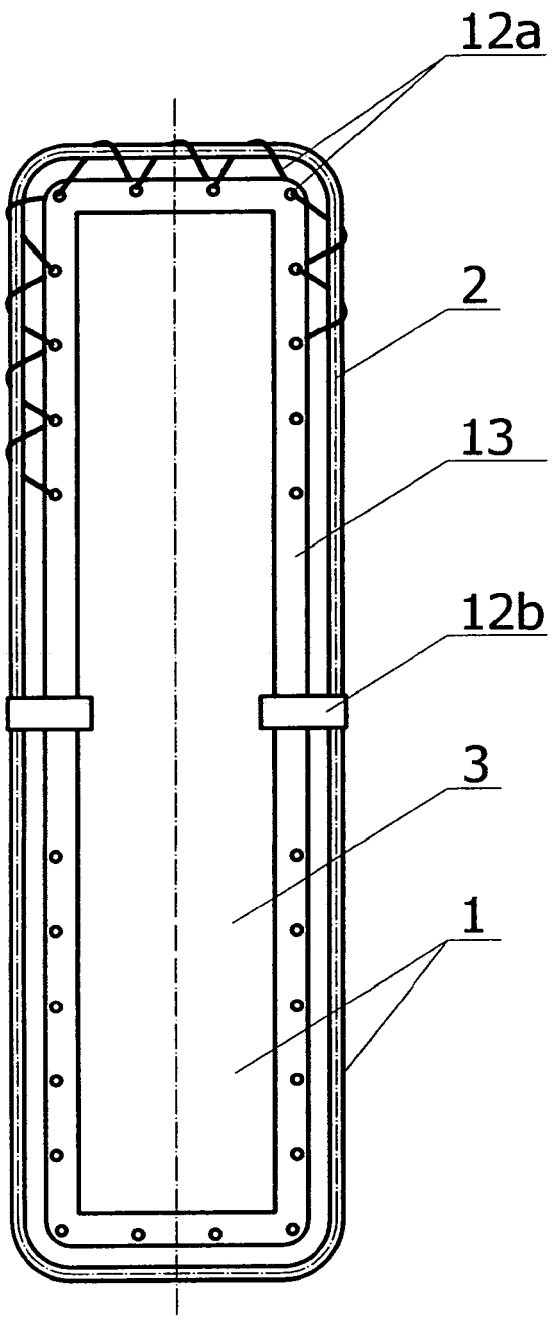


Fig.4

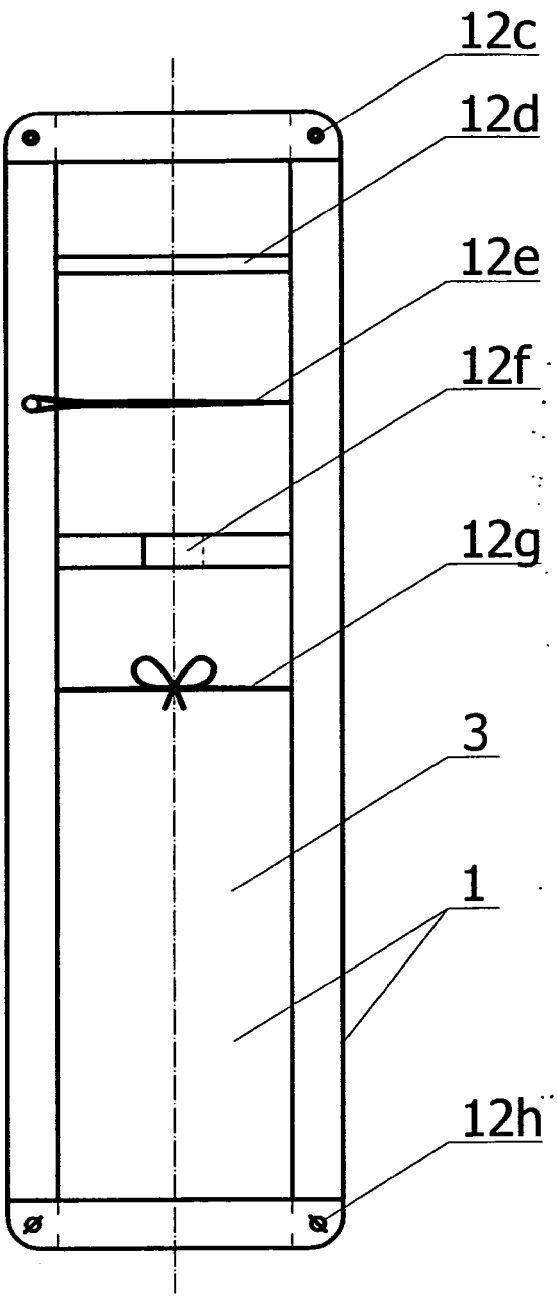


Fig.5

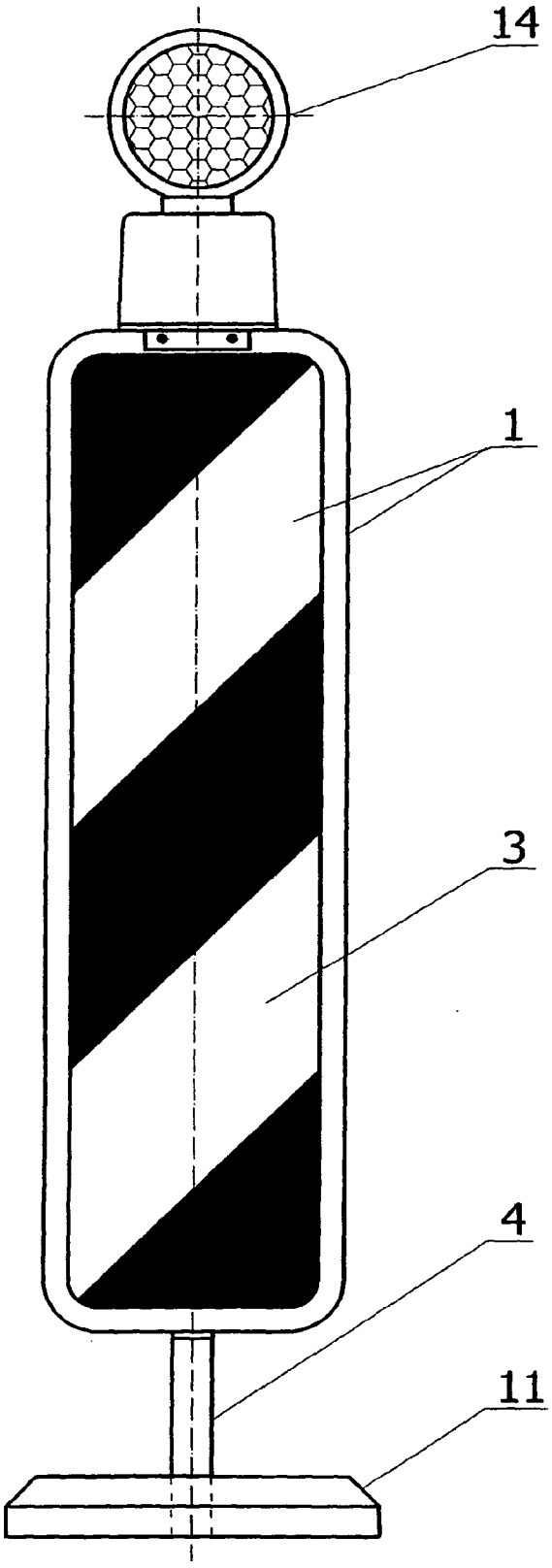


Fig.6

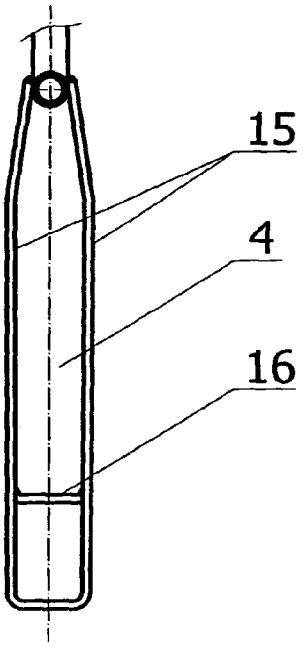


Fig.7

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 46 0018

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 1 350 891 A (NISSEN ADOLF ELEKTROBAU [DE]) 8 October 2003 (2003-10-08) * column 2, line 4 - column 3, line 5; figures 1-3 *	1,10	INV. E01F9/012 E01F9/018
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A	DE 34 41 511 A1 (MAIBACH GERD DIETER) 15 May 1986 (1986-05-15) * page 7, lines 1-14 * * page 15, line 10 - page 16, line 23; figures 5-8 *	1	
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A	FR 2 516 565 A (CORMIER BERNARD [FR]) 20 May 1983 (1983-05-20) * figures 1-6 *		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 January 2008	FLORES HOKKANEN, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 46 0018

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11-01-2008

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