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(54) Roadside guardrail post impact absorber

(57) An impact absorber for roadside guardrail posts (2) which is constituted by a cover (3) composed by a thin wall which surrounds the post (2) and is internally provided with support means (4) on said post (2); the wall of which is axially subdivided into two halves, a first half (5) and a second half (6) the opposing edges of which are provided with a first clamping means (7) which are configured such that the two halves (5, 6) that compose the wall rotate one with respect to the other along a vertical axis and a second clamping means (8) which comprise a double flap arranged along the edge of the first half (5), a flap (11) arranged along the edge of the second half (6) and a closing element (12).

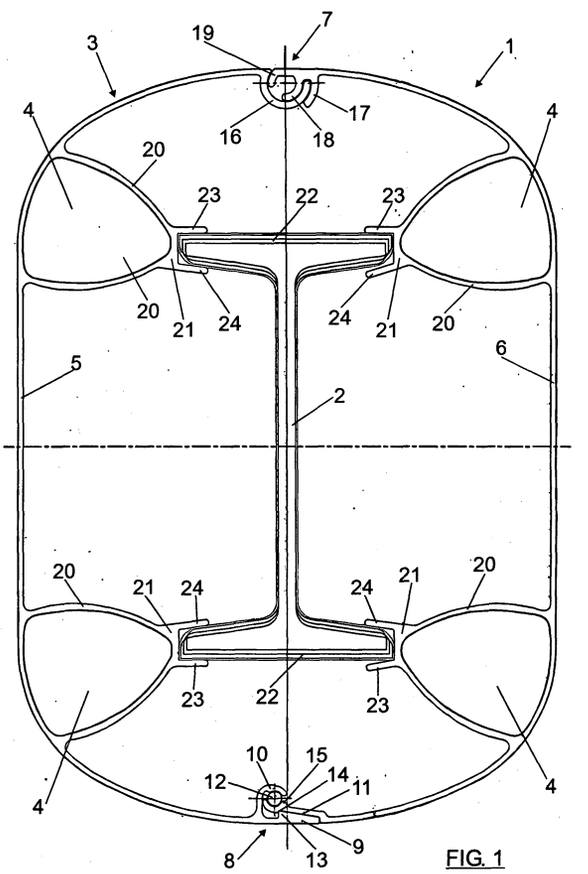

FIG. 1

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Description

Field of the invention

[0001] The present invention refers to an impact absorber for roadside guardrail posts and more specifically to some improvements introduced in European Patent number 03380151.5 relating to an impact absorber for roadside guardrail posts, especially applicable on posts constituted of open sections with longitudinal wings, such as double T sections, C-shaped sections, or closed tubular sections.

Background of the invention

[0002] Both the roadside rail guards and the road medians are usually constituted by a transversally corrugated metallic band, which is supported by vertical posts which are anchored to the ground. These posts are generally constituted by open sections, with longitudinal wings, usually double T sections. These guardrail posts, with the constitution set forth, present a great danger to motorists, who may roll or slide until impacting against these posts in the event of an accident, possibly hitting against the edge of one of the wings of these posts, which act as blades dissecting any member due to the strength of the impact. Furthermore, the great rigidity of the post makes the impact so strong that in many cases it becomes mortal.

[0003] There exist known protections to the end set forth based on materials of a more or less cushioned nature wrapped around the post.

[0004] This type of protection may not be very effective in certain cases, especially when high intensity or high force impacts occur.

[0005] The object of the present improvements is to resolve the problems set forth by means of an impact absorber of simple constitution and that may be easily fitted on the posts of existing guardrails, offering suitable protection.

[0006] An impact absorber has been designed to this end which is axially divided two halves linked by clamping means. Said clamping means are composed by a first clamping means configured as to allow one half to hinge with respect to the other and a second clamping means for joining the two parts by locking elements.

Description of the invention

[0007] The present invention refers to improvements introduced in European Patent number 03380151.5 regarding a roadside guardrail post impact absorber, especially for posts constituted by open sections with longitudinal wings, such as T sections, C sections and tubular sections.

[0008] Said impact absorber is constituted by a cover composed by a thin wall which envelopes the post and has internal means of support against said post, which act as separators between said wall and the post; the means of support and the wall being deformable, absorbing the energy of the impacting body.

[0009] Said wall is axially subdivided in two halves, a first and a second half the opposing edges of which have mutual clamping means.

[0010] The improvements introduced in the clamping means, more specifically, the mutual clamping means comprise first clamping means and second clamping means.

[0011] The first clamping means are configured such that the two halves composing the wall rotate with respect to one another along a vertical axis, allowing the hinged opening of the impact absorber, in order to thus introduce the guardrail post inside.

[0012] The second clamping means comprise a double flap arranged along the edge of the first half, a flap arranged along the edge of the second half and a closing element.

[0013] Said double flap of the first half has an external flap with a projection in its inner face and an internal flap, furthermore, the flap of the second half has a recess on its outer face such that when said flap is introduced between the outer flap and the inner flap, the recess is wedged in the projection of the flap of the first half.

[0014] Between the inner flap of the first half and the flap of the second half a cavity is defined which extends along the edges of both halves, the closing element being introduced in said cavity and, once being introduced in said cavity, preventing dislodging the flaps of both halves as the recess projection cannot be freed, both halves thus being joined with the possibility of disassembly.

[0015] The first clamping means comprise a triple flap arranged along the edge of the second half and a flap arranged along the edge of the first half.

[0016] Said triple flap has a first inner flap, a second inner flap and an outer flap, the second inner flap being arranged after the first inner flap, the former forming a cavity with the outer flap which is enveloped by the flap of the first half and placed such that the end of this last flap is located in the space existing between the first and second inner flaps of the second half, such configuration allowing the rotation of both halves with respect to each other along a vertical axis parallel to the guardrail post itself.

[0017] In this manner it is achieved that, due to the specific design of the clamping means, both halves are joined along one of their common edges, so that the impact absorber doesn't expose the post in the event of an impact, and at the same time achieving a fast assembly of the impact absorber on the post, in order to reduce the installation and substitution time and costs.

Brief description of the drawings

[0018] The constitution, manner of assembly and advantages of the impact absorber of the invention are set

forth below with greater detail in the enclosed drawings, which aid towards a better comprehension of the invention and which are specifically related to embodiments of the invention which are presented as illustrative and non-limiting examples.

Figure 1 shows a cross section of an impact absorber constituted according to the invention, once the impact absorber has been assembled on a guardrail post.

Figure 2 shows a magnified view of the second clamping means of the impact absorber in the closing position.

Description of a preferred embodiment of the invention

[0019] As can be seen in Figure 1, the roadside guardrail post impact absorber (1) object of the present invention will be assembled on posts (2) constituted by open sections with longitudinal wings (22), such as T sections, C sections, etc.

[0020] Said impact absorber (1) is constituted by a cover (3) composed by a thin wall which surrounds the post (2) and has inner means (4) of support on said post which act as separators between said wall (3) and the post (2); the means (4) of support and the wall being deformable by the effects of an impact, absorbing the energy of the impacting body.

[0021] Said wall (3) is axially subdivided in two halves, a first half (5) and a second half (6) the opposing edges of which have mutual clamping means.

[0022] The mutual clamping means comprise a first clamping means (7) and a second clamping means (8).

[0023] The first clamping means (7) are configured so that the two halves (5) and (6) composing the wall (3) rotate one with respect to the other, along a vertical axis, parallel to the post (2) itself, allowing the hinged opening of the impact absorber (1), for an easier assembly of the impact absorber (1) on the guardrail post (2).

[0024] The second clamping means (8) comprise a double flap arranged along the edge of the first half (5), a flap (11) arranged along the edge of the second half (6) and a closing element (12).

[0025] Said double flap of the first half has an outer flap (9) with a projection (13) on its inner face and an inner flap (10), furthermore, the flap (11) of the second half (6) has a recess (14) on its outer face such that when said flap (11) is introduced between the outer flap (9) and the inner flap (10) of the first half (5), the recess (14) remains wedged in the projection (13) of the outer flap (9) of the first half (5).

[0026] Between the inner flap (10) of the first half (5) and the flap (11) of the second half (6) a cavity is defined extending along the edges of both halves (5) and (6), the closing element (12) being introduced in said cavity such that once it has been introduced in said recess it prevents the unlocking of flaps (9), (10) and (14) of both halves (5) and (6) as the projection (13) of the recess (14) cannot be liberated, because the recess is at that time occupied by the closing element (12), not allowing movement towards the hollow of said cavity of the second half (6) flap (11) recess (14) with respect to the projection (13) of the outer flap (10) of the first half (5) and therefore preventing dislodging of both halves, both halves being therefore joined with the possibility of disassembly, which will be carried out by simply extracting the closing element (12) from said cavity, allowing the liberation of the flap (11) with respect to the outer flap (9).

[0027] Furthermore, the flap (11) is provided with a projection (15) having a retention function, in order to prevent the lateral shifting and possible slipping out of said cavity of the closing element (12), and thus avoiding the accidental opening of the impact absorber in the event of a low intensity impact, with all that this would entail.

[0028] The first clamping means (7) comprise a triple flap arranged along the edge of the second half and a flap (16) arranged along the edge of the first half (5).

[0029] Said triple flap has a first inner flap (17), a second inner flap (18) and an outer flap (19), the first inner flap (17) arranged before the second inner flap (18) which in turn forms with the outer flap (19) a cavity which is enveloped by the flap (16) of the first half, which has an enveloping curved configuration, and which is located such that the end of this last flap (16) is located in the space existing between the first inner flap (17) and second inner flap (18) of the second half (6), allowing by such configuration the possibility of the rotation of both halves with respect to one another, thus allowing the opening of the impact absorber in the event that the disassembly thereof is desired for its repair or replacement in the event of having suffered serious damage.

[0030] As in the case of the main patent, the means (4) of support will consist in longitudinal partitions (20) which project from the inner surface of the wall (3), in positions notably opposing the cross-section wings of the post, such partitions (20) being provided with a longitudinal coupling end (21) on the longitudinal edge of the opposing wing (22).

[0031] Said longitudinal coupling end (21) conformations of the means (4) of support have a double flap, between the lips (23) and (24) of which is housed the corresponding longitudinal edge of each one of the wings (22).

[0032] The partitions (20) may form with the wall (3) internal closed contours which may be of an approximately triangular cross section of curved convex sides, two of the sides of the triangle being defined by as many partitions (20), the intermediate vertex corresponding outwardly with the longitudinal coupling end (21) conformation coupled to the edge of the opposing wing (22) of the section that constitutes the guardrail post (2).

Claims

1. A roadside guardrail post (2) impact absorber, especially for posts (2) constituted by open sections with longitudinal wings (22), such as T sections, C sections and tubular sections, which is constituted by a cover (3) composed by a thin wall which envelopes the post (2) and is internally provided with support means (4) on said post (2) which act as separators between said wall and the post (2); the support means (4) and the wall being deformable by the effects of an impact, absorbing the energy of the impacting body; the wall of which is axially subdivided in two halves, a first half (5) and a second half (6) whose opposing edges are provided with mutual clamping means, **characterised in that** the mutual clamping means comprise a first clamping means (7) and a second clamping means (8), the first clamping means (7) are configured such that both halves (5, 6) that compose the wall rotate one with respect to the other along a vertical axis and the second clamping means (8) of which comprise a double flap arranged along the edge of the first half (5), a flap (11) arranged along the edge of the second half (6) and a closing element (12); the double flap of the first half (5) is provided with an outer flap (9) with a projection (13) on its inner face and an inner flap (10), the flap (11) of the second half (6) of which is provided with a recess (14) on its outer face such that when introducing said flap (11) between the outer flap (9) and the inner flap (10) of the first half (5) the recess (14) remains wedged on the projection (13) of the outer flap (9) of the first half (5), thus defining between the inner flap (10) of the first half (5) and the flap (11) of the second half (6) a cavity extending along the edges of both halves (5, 6), being introduced into said cavity the closing element (12) which, once introduced into said cavity, prevents dislodging the flaps of both halves (5, 6) as the projection (13) cannot be liberated from the recess (14), both halves (5, 6) therefore remaining joined with the possibility of disassembly.

2. An impact absorber according to claim (1), **characterised in that** the first clamping means (7) comprise a triple flap arranged along the edge of the second half (6) and a flap (16) arranged along the edge of the first half (5), the triple flap is provided with a first inner flap (17), a second inner flap (18) and an outer flap (19), the second inner flap (18) being arranged after the first inner flap (17), the second inner flap (18) forming in turn with the outer flap (19) a cavity which is enveloped by the flap (16) of the first half (5) and located such that the end of this last flap (16) is located in the space existing between the first inner flap (17) and the second inner flap (18) of the second half (6), allowing by said configuration the possibility of rotation of both sides regarding one another.

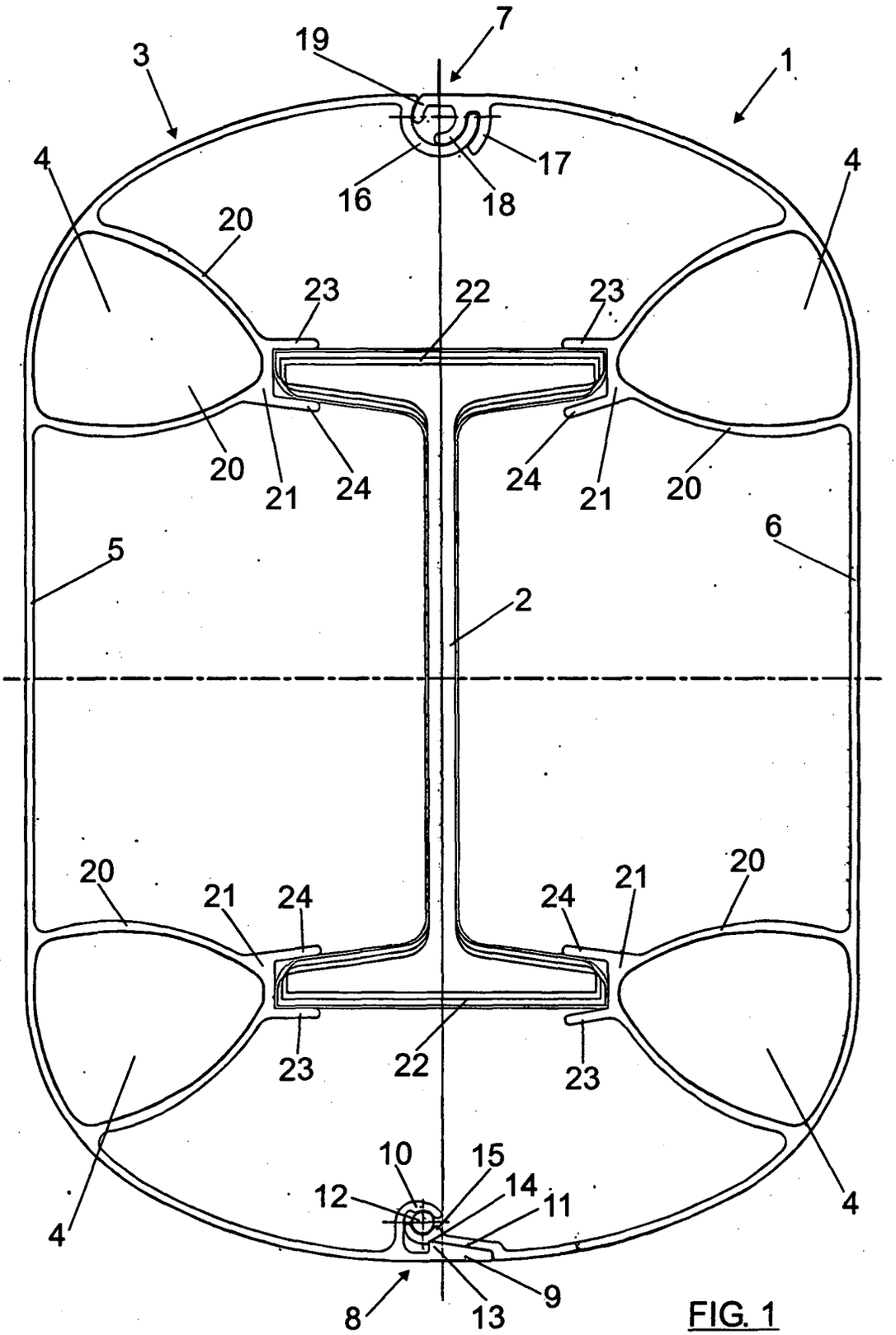
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FIG. 1

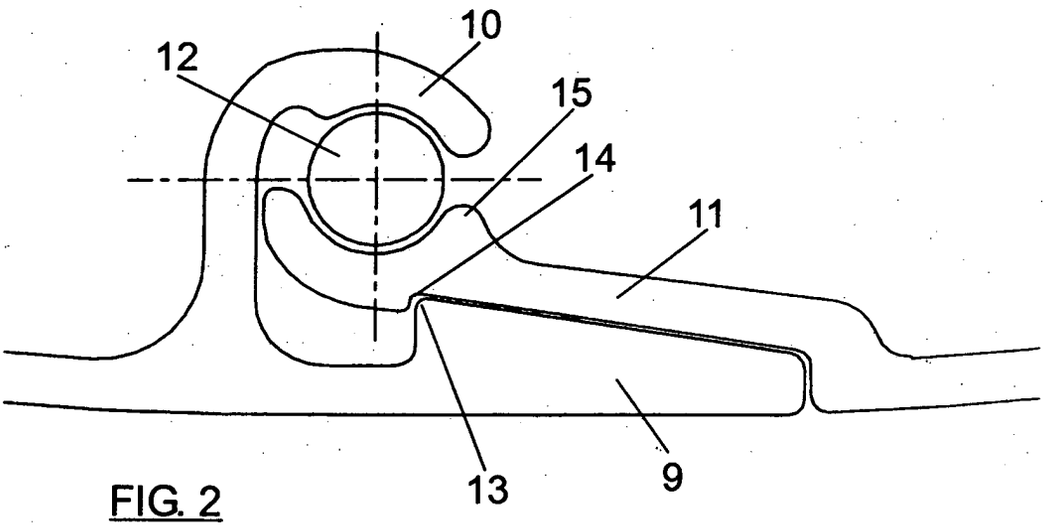

FIG. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 05 38 0040

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.7)
D,A	EP 1 382 747 A (ALCOA EXTRUSION NAVARRA, S.L) 21 January 2004 (2004-01-21) * the whole document *	1,2	E01F15/04 E01F15/14
A	DE 44 25 182 A1 (FUSION KUNSTSTOFF GMBH, 63303 DREIEICH, DE) 25 January 1996 (1996-01-25) * column 5, lines 19-31; figures 12,17 *		
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E01F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 June 2005	Flores Hokkanen, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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01-06-2005

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82