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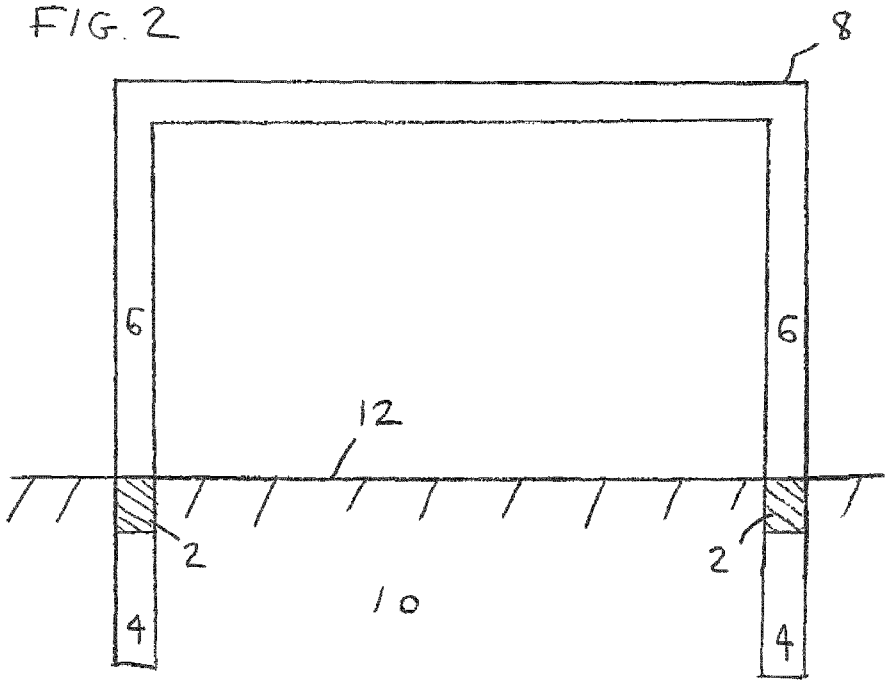
(54) Title: POST AND BARRIER SAFETY DEVICE

FIG. 2



(57) Abstract: A post safety device for a rigid structure with vertical rigid support posts, the safety device having a flexible, resilient insert attached below ground level between the lower end of the vertical posts, and the upper end of a rigid anchor attached below each insert, and a safety device for a rigid structure with vertical rigid wall elements, the safety device having a flexible, resilient strip attached below ground level between the base of each rigid wall element and a rigid anchor attached below each strip.

[Continued on next page]

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to the identity of the inventor (Rule 4.17(i))*
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *with international search report (Art. 21(3))*

POST AND BARRIER SAFETY DEVICE

Field of the Invention

[0001] The present invention relates to safety equipment. In particular, the present invention relates to a device and system for improving safety during sports, recreation, and other activities which require use of rigid posts or rigid barriers.

Background of the Invention

[0002] In sports such as soccer or basketball, participants are frequently moving at high speed in proximity to rigid vertical posts such as goal posts or hoop posts. The risk of a participant colliding with a rigid post is significant, and the result may be serious injury or worse for the participant.

[0003] Similarly, parks, roads and other areas often install rigid posts or other rigid barriers. As these areas are used by runners, children playing, cyclists, and others moving past the rigid posts, a similar risk of injury exists.

[0004] It is known in the prior art to provide means for reducing the risk of injury from collisions with rigid posts. For example, padding or a crash resistant shell may be externally wrapped around the post in a zone of likely collision to reduce injury. The presence of padding may change the shape of the post which may alter function. In some cases, posts are made of non-rigid, flexible materials to give way during a collision.

[0005] None of the prior art provides a solution which permits rigid posts to absorb collision energy to reduce risk of injury, while also maintaining rigidity and original shape of the post.

[0006] As will be described below, the post safety device and system of the present invention provides these features.

Brief Description of the Drawings

[0007] A detailed description of the preferred embodiments is provided by way of example only and with reference to the following drawings, in which:

[0008] Fig. 1 is an isometric view of the post safety device of one embodiment of the present invention for use in a soccer goal post;

[0009] Fig. 2 is a front plan view of a soccer goal incorporating two post safety devices; and

[00010] Fig. 3 is a side plan view of a soccer goal incorporating two post safety devices.

[00011] In the drawings, one embodiment of the invention is illustrated by way of example. It is to be expressly understood that the description and drawings are only for the purpose of illustration and as an aid to understanding, and are not intended as a definition of the limits of the invention.

Summary of the Invention

[00012] There is provided a post safety device for a rigid structure having one or more vertical rigid support posts, the safety device comprising a flexible, resilient insert attached below ground level between the lower end of each of the one or more vertical posts, and the upper end of a rigid anchor attached below each insert.

[00013] The structure may be a sports structure such as soccer goalposts, hockey goals, football uprights, basketball hoop supports, tennis nets, and field hockey goals, or a roadway structure such as traffic lights, light standards, road signs, bus stop signs, barriers, and guardrails.

[00014] The safety device may be for a rigid structure having one or more vertical rigid wall elements, the safety device having a flexible, resilient strip attached below

ground level between the base of each rigid wall element and a rigid anchor attached below each strip.

[00015] The safety device insert or strip may be manufactured of plastic, a hard rubber compound, or other recyclable materials. The insert or strip may be a unitary component, or it may be made up of multiple layers of flexible, resilient materials.

[00016] The invention is also a safety post comprising a rigid upper portion attached at its lower end to an upper end of a flexible insert, and a rigid anchor attached at its upper end to a lower end of the flexible insert. The safety post may be for installation in a support surface, wherein the post is installed with the upper portion above the installation surface, and the flexible insert and anchor installed below the installation surface

Detailed Description of the Invention

[00017] There is provided a post safety device comprising a flexible insert manufactured of a hard rubber compound, plastic, or other resilient material having a cross-sectional area approximately equal in size to the cross sectional area of a post into which the post safety device is to be integrated.

[00018] The insert may be a solid, unitary piece, or it may be manufactured of stacks of multiple layers of rubber, plastic or other resilient material glued or compressed together to form an expansion joint.

[00019] The system of the invention comprises a post safety device insert 2 connected at its lower end to an anchor 4, and at its upper end to a rigid post 6. For example, as shown in Figs. 1, 2, and 3, each insert is connected at its upper end to the bottom of the above ground portion of a soccer goal post 8, and at its lower end to an anchor. The soccer goal post is installed in such a manner that the anchors and flexible inserts are placed below the ground 10 of the playing surface 12, and the

above ground portions of the soccer goal posts extend upwardly from the inserts above the ground of the playing surface.

[00020] In operation, when a player collides with the rigid soccer goal post, the insert permits the goal post to absorb more of the energy of the collision than is the case with a soccer goal post lacking flexible inserts. The result to the player is a greatly reduced risk of injury. Post-collision, the soccer goal posts quickly return to their resting position to permit continued play of the game.

[00021] The device and system of the invention may be incorporated into a wide variety of rigid posts used in various sports such as tennis and rugby and other field sports, recreation, workplaces, roads, and other locations. For example, metal roadside barriers or guardrails along highways could incorporate the system to cushion vehicle impacts in order to reduce vehicle damage and passenger injury. Similarly, rigid posts used for traffic signs, traffic lights, light standards, and bus stop signs, as well as postal boxes could all incorporate the post safety device and system of the invention to permit flexibility during collisions.

[00022] According to another embodiment for use in hockey, a flexible strip may be placed along the bottom edge of the rink boards to absorb the energy of players colliding with the boards.

[00023] It will be appreciated by those skilled in the art that other variations of the preferred embodiment may also be practiced without departing from the scope of the invention.

Claims

1. A post safety device for a rigid structure having one or more vertical rigid support posts, the safety device comprising a flexible, resilient insert attached below ground level between the lower end of each of the one or more vertical posts, and the upper end of a rigid anchor attached below each insert.

2. The post safety device of claim 1, wherein the structure is a sports structure selected from the group of structures comprising soccer goalposts, hockey goals, football uprights, basketball hoop supports, tennis nets, and field hockey goals.

3. The post safety device of claim 1, wherein the structure is a roadway structure selected from the group of roadway structures comprising traffic lights, light standards, road signs, bus stop signs, barriers, and guardrails.

4. The post safety device of claim 1, wherein the flexible, resilient insert is manufactured of a hard rubber compound.

5. The post safety device of claim 1, wherein the flexible, resilient insert is manufactured of plastic.

6. The post safety device of claim 1, wherein the flexible, resilient insert is comprised of a unitary structure.

7. The post safety device of claim 1, wherein the flexible, resilient insert is comprised of multiple layers of flexible, resilient material.

8. A safety device for a rigid structure having one or more vertical rigid wall elements, the safety device comprising a flexible, resilient strip attached below ground level between the base of each rigid wall element and a rigid anchor attached below each strip.

9. The safety device of claim 8, wherein the flexible, resilient insert is manufactured of a hard rubber compound.

10. The safety device of claim 8, wherein the flexible, resilient insert is manufactured of plastic.

11. The safety device of claim 8, wherein the flexible, resilient insert is comprised of a unitary structure.

12. The safety device of claim 8, wherein the flexible, resilient insert is comprised of multiple layers of flexible, resilient material.

13. A safety post comprising a rigid upper portion attached at its lower end to an upper end of a flexible insert, and a rigid anchor attached at its upper end to a lower end of the flexible insert.

14. The safety post of claim 13 for installation in a support surface, wherein the post is installed with the upper portion above the installation surface, and the flexible insert and anchor installed below the installation surface.

15. The safety post of claim 13, wherein the flexible, resilient insert is manufactured of a hard rubber compound.

16. The safety post of claim 13, wherein the flexible, resilient insert is manufactured of plastic.

17. The safety post of claim 13, wherein the flexible, resilient insert is comprised of a unitary structure.

18. The safety post of claim 13, wherein the flexible, resilient insert is comprised of multiple layers of flexible, resilient material.

FIG. 1

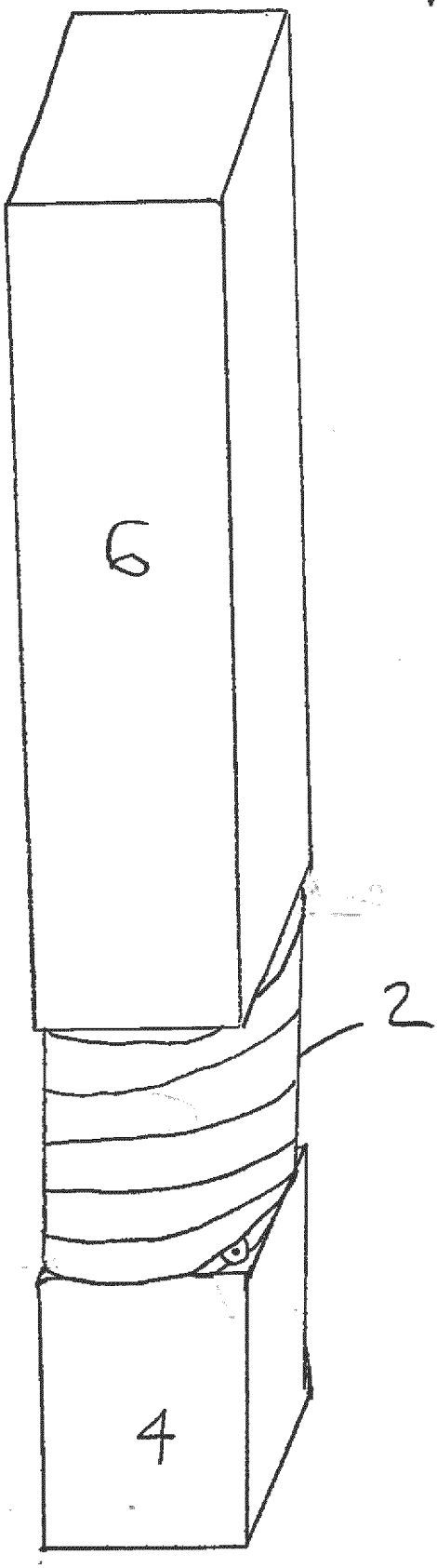


FIG. 2

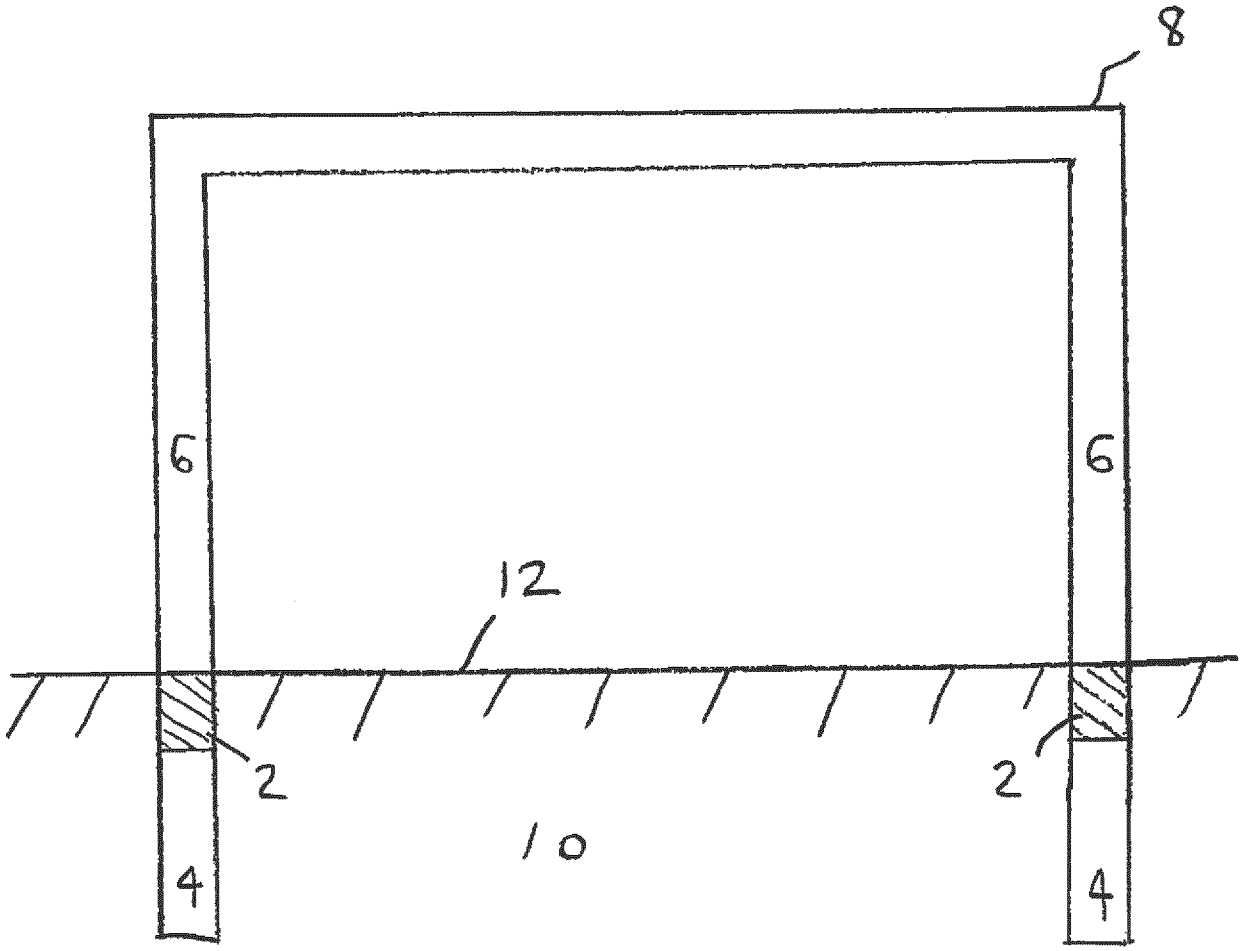
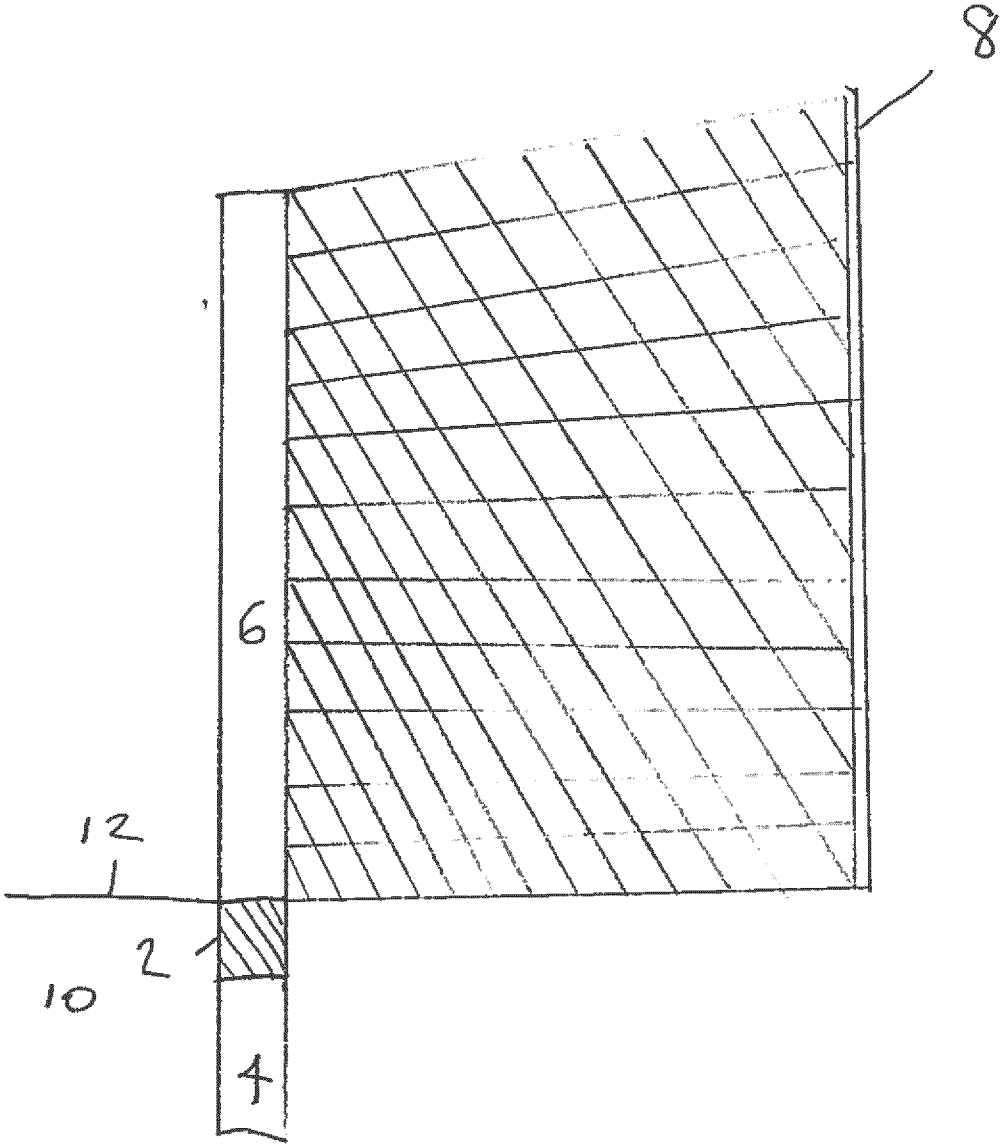


FIG. 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2017/050841

A. CLASSIFICATION OF SUBJECT MATTER
IPC: ***E01F 9/627*** (2016.01) , ***A63B 63/00*** (2006.01) , ***E04H 17/18*** (2006.01) , ***E04H 17/20*** (2006.01) , ***E04H 17/22*** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC: ***E01F*** (2016.01) , ***A63B*** (2006.01), ***E04H*** (2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
Questel-Orbit, Canadian Patent Database, Google Patents
Keywords: post, safety, rigid, flexible, resilient, insert, ground, level, anchor

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US7954289 B2 (Evans D. R.) 07 June 2011 (07-06-2011) *Fig. 1*	1-3,5,7,8,10,12-14,16,18
X	US5597262 A (Beavers et al.) 28 January 1997 (28-01-1997) *col. 5, line 43; Fig. 5*	1,3,5,6,8,10,11,13,14,16,17
X	US5186119 A (Hlavin D. J.) 16 February 1993 (16-02-1993) *Fig's 4, 5, 8*	1,2,4-6,8-11,13-17
X	US5165663 A (Wells R. L.) 24 November 1992 (24-11-1992) *col. 1, line 55; Fig. 3*	1,3,5,6,8,10,11,13,14,16,17

☐ Further documents are listed in the continuation of Box C.

☑ See patent family annex.

*	Special categories of cited documents:
"A"	document defining the general state of the art which is not considered to be of particular relevance
"E"	earlier application or patent but published on or after the international filing date
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"O"	document referring to an oral disclosure, use, exhibition or other means
"P"	document published prior to the international filing date but later than the priority date claimed
"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

Date of the actual completion of the international search 28 September 2017 (28-09-2017)	Date of mailing of the international search report 27 October 2017 (27-10-2017)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 819-953-2476	Authorized officer Goran Basic (819) 635-8017

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2017/050841

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US7954289B2	07 June 2011 (07-06-2011)	US2009025332A1	29 January 2009 (29-01-2009)
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		ZA200805690B	27 May 2009 (27-05-2009)
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		CA2172866A1	29 September 1996 (29-09-1996)
US5186119A	16 February 1993 (16-02-1993)	None	
US5165663A	24 November 1992 (24-11-1992)	None	