United States Patent [19]

Hale

[11] **3,849,935**

[45] **Nov. 26, 1974**

[54] **IMPACT-ABSORBING BOUNDARY STRUCTURE FOR SPORTS ARENAS**

[75] Inventor: **Creighton J. Hale,** Williamsport, Pa.

[73] Assignee: **Little League Baseball, Inc.,** Williamsport, Pa.

[22] Filed: **Apr. 16, 1973**

[21] Appl. No.: **351,531**

[52] **U.S. Cl.** **49/34,** 256/24, 272/3

[51] **Int. Cl.** **E01f 13/00**

[58] **Field of Search** ..... 49/34, 9; 256/13.1, 24; 272/60 R, 3, 55 R, 26; 273/26 A, 29 B

[56] **References Cited**

UNITED STATES PATENTS

1,549,139	8/1925	Maudlin	256/13.1
1,711,898	5/1929	Meaker	256/13.1
1,903,725	4/1933	Sweeney	256/13.1
1,913,690	6/1933	Teetor	256/13.1
1,913,715	6/1933	MacDonald	256/13.1
1,922,445	8/1933	MacDonald	256/13.1 UX
1,922,878	8/1933	Boyle	256/13.1
2,675,197	4/1954	Hospers	49/9 X

FOREIGN PATENTS OR APPLICATIONS

312,960	6/1929	Great Britain	256/13.1

Primary Examiner—Dennis L. Taylor

Attorney, Agent, or Firm—Eyre, Mann & Lucas

[57] **ABSTRACT**

A boundary structure formed of a supple sheet secured to a series of spaced-apart support members, with the support member at one end being secured to a fixed structure such as a post or a wall by turnbuckles, and the support member at the other end of the sheet being secured to another fixed structure by springs under tension. Intermediate support members may be disposed between the end support members and connected by one or more tensioned ropes or cables to a fixed structure spaced rearwardly from the boundary structure, so as to dispose the boundary structure in a series of chordal segments.

6 Claims, 3 Drawing Figures

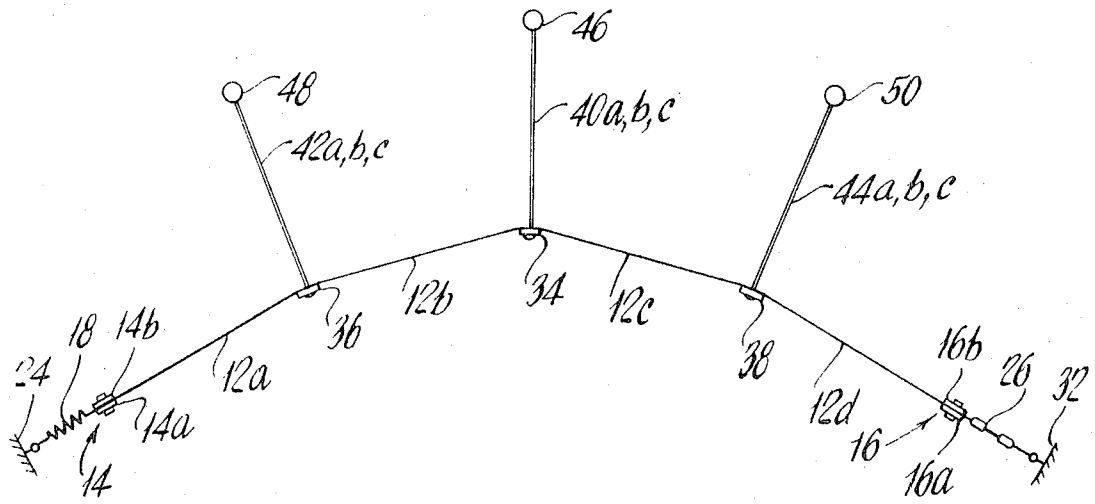


Fig. 1.

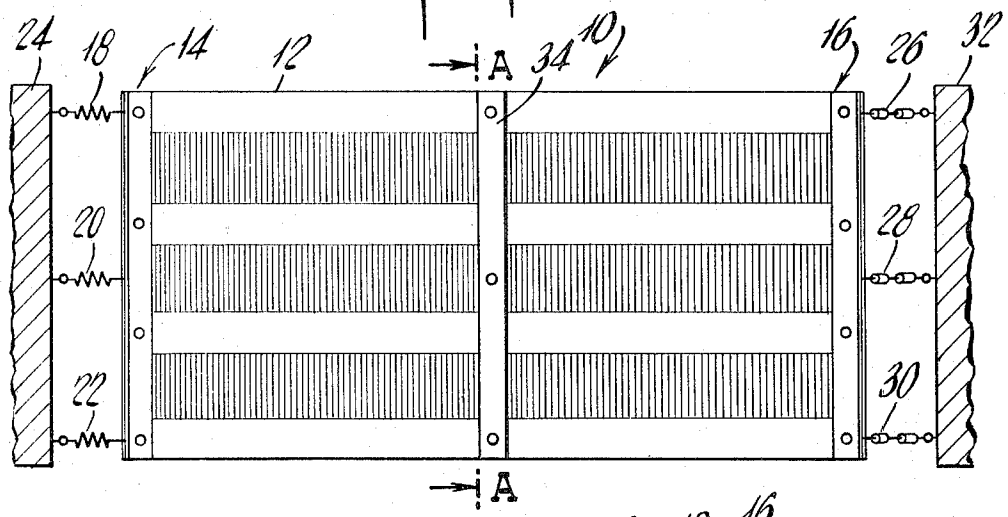


Fig. 2.

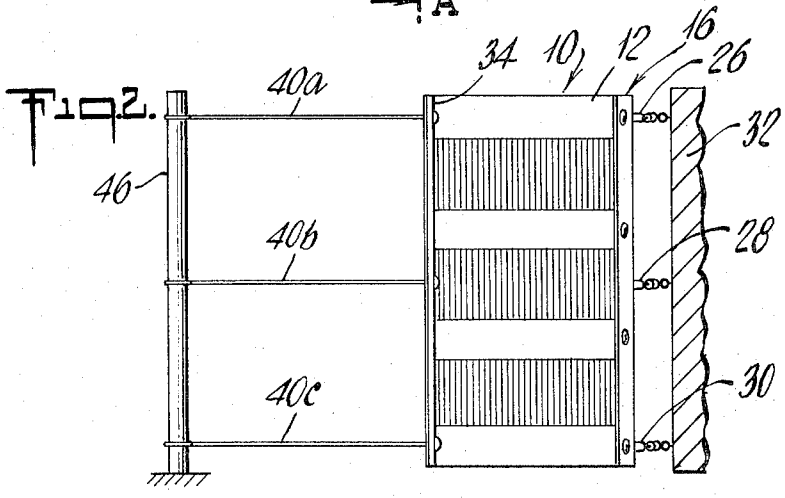
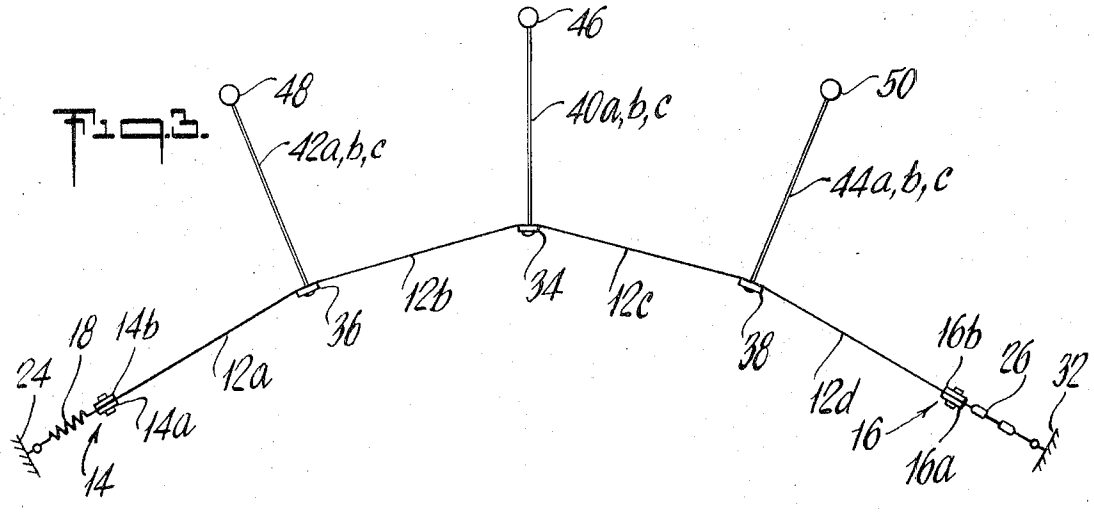


Fig. 3.



IMPACT-ABSORBING BOUNDARY STRUCTURE FOR SPORTS ARENAS

BACKGROUND OF THE INVENTION

It has long been a problem in various competitive sports, both amateur and professional, to provide boundaries for the sports arena (any playing field or court) which will effectively fence off the arena from intrusion by spectators, define a boundary of the arena, and not cause injury to a player running out of bounds. Various approaches to this problem have been tried in the past. Where the boundary is a fixed, rigid structure such as a baseball outfield fence, the use of a warning track extending a short distance into the field from the boundary has been employed to give a running outfielder a sensory warning to indicate his proximity to the outfield fence. However, a player's concentration on his role in the sport may be so great that he is heedless of such sensory warnings, and injury may result from his impact with the rigid boundary. Manay variations of the technique of padding rigid boundaries have been employed, but this is an unsatisfactory palliative; injuries have resulted in spite of the use of padded boundaries. In addition, padding for rigid boundaries is costly to install and maintain, particularly in outdoor arenas.

I have devised a boundary structure which is inexpensive, durable, and highly effective in absorbing the impact of an on-rushing player. This novel boundary structure is highly adaptable in that it may be formed in a manner suitable for virtually every known type of sports arena. It is easily installed and removed, and requires little or no maintenance. Because it is supple, it may be rolled or folded into a compact bundle for storage in a relatively small space.

SUMMARY OF THE INVENTION

The present invention is embodied in and carried out by a resilient boundary structure formed of a sheet of durable material having good tensile strength and preferably webbed or netted, with support members connected at least to the ends thereof for attachment of the boundary structure to a fixed structure. Preferably, this attachment is through spring connectors on at least one end of the boundary structure, and through adjustable mounting apparatus on the other end.

BRIEF DESCRIPTION OF THE DRAWING

The present invention may be better understood by reading the written description thereof with reference to the accompanying drawing, of which:

FIG. 1 is a front view of a boundary structure embodying the present invention;

FIG. 2 is a sectional side view of the boundary structure shown in FIG. 1 taken along line A—A; and

FIG. 3 is an overhead or plan view of another boundary structure embodying the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawing, the same reference numbers are employed to indicate the same elements appearing in the different figures. The boundary structure **10** shown in FIGS. **1** and **2** preferably comprises a length of material in the form of a supple sheet **12** having good tensile strength, viz., on the order of 300 pounds per square inch. The sheet **12** is attached at opposite ends to first and second end supports **14** and **16**, each of which includes front and back sections **14***a*, **14***b* and **16***a*, **16***b* (FIG. **3**) between which the ends of sheet **12** are compressed. These front and back sections are connected by any suitable means such as a series of bolts extending therethrough and secured by associated nuts. A series of vertically-spaced springs **18, 20** and **22** are secured at one end to one end support member **14** and at another end to a fixed structure **24** by any one of a variety of suitable means. At the other end of the boundary structure, the end support member **16** is connected through a series of vertically-spaced adjustable connecting means such as turnbuckles **26, 28** and **30** to another fixed structure **32.** An intermediate support member **34** is vertically disposed along the front face of the sheet **12** and is connected thereto by any one of a variety of suitable means. Extending through the sheet **12** is a series of vertically-spaced non-rigid connecting means such as tensioned ropes or cables **40***a*, *b*, *c* attached to the intermediate support member **34** at levels corresponding substantially to the levels of attachment of the spring means **18, 20** and **22** to end support member **14** and adjustable connecting means **26, 28** and **30** to end support member **16.** These ropes or cables **40***a*, *b*, *c* extend rearwardly as shown in FIG. **2,** and are connected to a pole **46** or some other fixed structure spaced sufficiently far behind the boundary structure **10** so that a player hurtling into the boundary structure **10** will not come into direct contact with the pole **46.**

Referring now specifically to FIG. **3,** the embodiment consists of the boundary structure **10** of FIGS. **1** and **2** extended and modified by the addition of two more intermediate support members to dispose the boundary structure in a series of chordal segments **12***a*, **12***b*, **12***c* and **12***d* to form a generally arcuate boundary. The additional intermediate support members **36** and **38** have been disposed on either side of the intermediate support member **34** shown in FIG. **1.** These intermediate support members **34, 36, 38** are connected by a series of tensioned guy wires or ropes **40***a*, *b*, *c;* **42***a*, *b*, *c;* and **44***a*, *b*, *c* to rearwardly-spaced poles **46, 48** and **50.**

The advantages of the present invention, as well as certain changes and modifications of the disclosed embodiments thereof, will be readily apparent to those skilled in the art. For example, the sheet **12** may be made of either substantially non-resilient material, or of a suitable resilient material. In an embodiment employing a non-resilient sheet **12,** spring support members may be employed at both ends of the boundary structure, either alone or in combination with an adjustable mounting means such as turnbuckles. In an embodiment employing a resilient sheet **12,** it is possible to have both ends of the boundary structure non-resiliently attached to fixed structures; in other words, the resilient connecting springs **18, 20** and **22** in FIG. **1** could be replaced by connecting means such as the turnbuckles **26, 28** and **30,** or one or both end support members could be directly, non-adjustably and non-resiliently connected to a fixed structure. The vertical and horizontal dimensions of the boundary structure **10** may be varied to suit any sports arena. By employing suitably preformed support members, the boundary structure may be contoured in any one of a variety of shapes. It is the applicant's intention to cover all of these and any other changes and modifications which could be made to the embodiments of the invention

herein chosen for the purposes of the disclosure without departing from the spirit and scope of the invention.

What is claimed is:

1. An impact-absorbing boundary structure for preventing injury to a human body moving into contact with said boundary structure, comprising:

1. a supple boundary sheet;
2. first and second end support means connected to first and second ends of said boundary sheet, respectively, and at least one intermediate support means connected to said boundary sheet at a position intermediate of said first and second ends thereof;
3. at least first and second connecting means attached to said first and second end support means to enable connection of said boundary sheet to first and second end support structures, respectively; and
4. at least one non-rigid connecting means attached to said at least one intermediate support means for tensioned connection to an associated intermediate support structure spaced away from said boundary sheet to exert tension between said boundary sheet and the associated intermediate support structure and thereby dispose said boundary sheet in at least two chordal segments.

2. A resilient boundary structure according to claim **1** wherein said boundary sheet is resilient.

3. A resilient boundary structure according to claim **1** wherein said boundary sheet is non-resilient.

4. A resilient boundary structure according to claim **1** wherein at least one of said first and second connecting means comprises a plurality of turnbuckles spaced apart along one of said first and second ends of said boundary sheet and each separately connected to one of said first and second end support members.

5. A resilient boundary structure according to claim **1** wherein at least one of said first and second connecting means comprises a plurality of spring members spaced apart along one of said first and second ends of said boundary sheet and each separately connected to one of said first and second end support members.

6. A resilient boundary structure according to claim **1** wherein said first and second end support means each comprises connected front and back sections between which said first and second ends of said boundary sheet are retained.

* * * * *