United States Patent [19]

Grimm et al.

[11] **3,810,706**

[45] **May 14, 1974**

[54] **PORTABLE SECTIONAL RACETRACK FOR AUTOMOBILES OR MOTORCYCLES**

[76] Inventors: **Henry B. Grimm,** 711 W. California Blvd., South Pasadena, Calif. 91105; **Chickau Matsuo,** 1205 E. Sixth St., Los Angeles, Calif. 90021; **Donald C. Wilborn,** P. O. Box 2011, South Padre Island, Tex. 78578

[22] Filed: **Nov. 13, 1972**

[21] Appl. No.: **305,837**

[52] **U.S. Cl.** ..... **404/1,** 238/10 R, 272/4

[51] **Int. Cl.** **E01b 23/00**

[58] **Field of Search** ..... 238/10 R, 10 A–10 F; 104/69; 272/4; 404/1, 71; 14/1

[56] **References Cited**

UNITED STATES PATENTS

3,445,063	5/1969	Ferentinos	238/10 F
3,301,146	1/1967	Krug et al.	404/1

Primary Examiner—M. Henson Wood, Jr.
Assistant Examiner—Richard A. Bertsch
Attorney, Agent, or Firm—Huebner & Worrel

[57] **ABSTRACT**

A portable racetrack is made up of a plurality of types of sections provided with intercoupling means at each end. The types of sections provided include flat straightaway sections; curved sections which are adjustable to any desired degree of bank; and straight sections which are likewise adjustable to provide any desired degree of bank. Access ramps are provided. The adjustable bankable sections are capable of being skewed into configurations adapting them to be joined either to a flat straightaway section or a banked section at one end and to another differently banked section at the other end. A yieldable safety wall is provided at the high side of each banked section.

7 Claims, 15 Drawing Figures

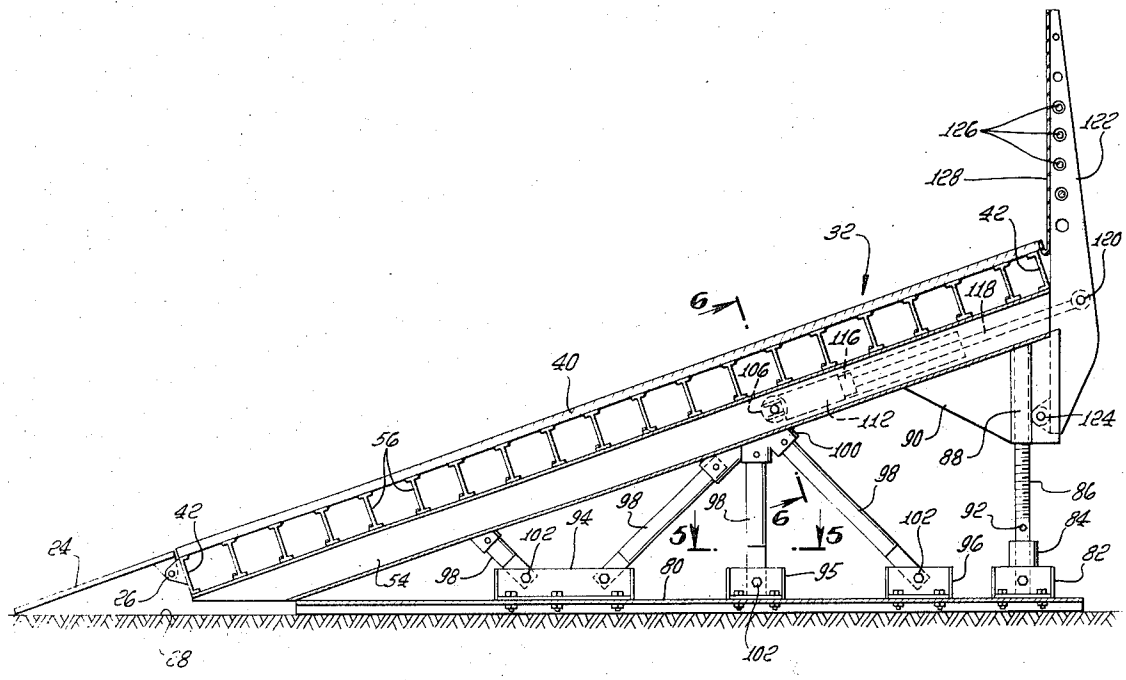


FIG. 1.

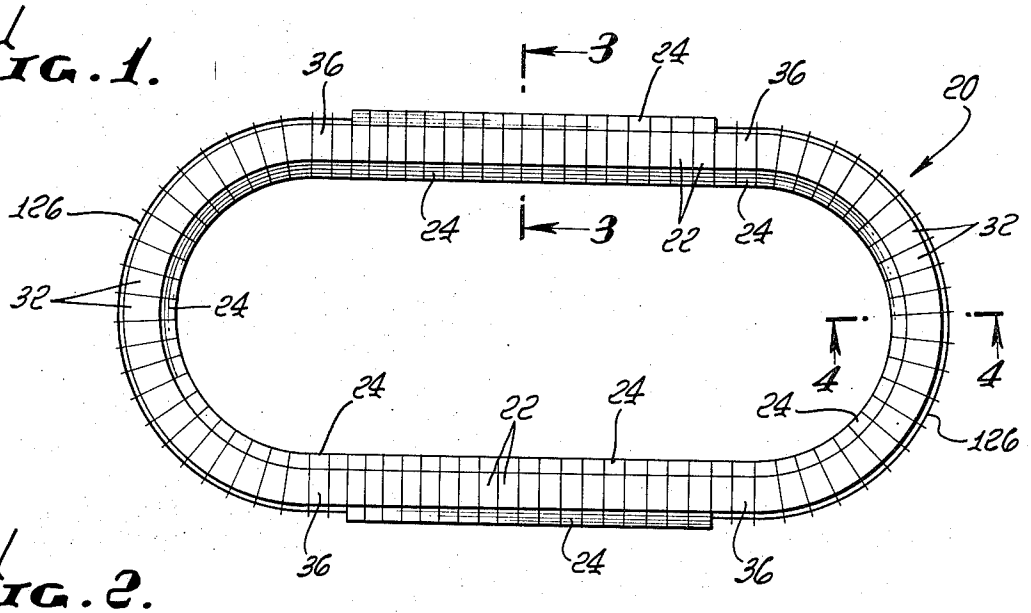


FIG. 2.

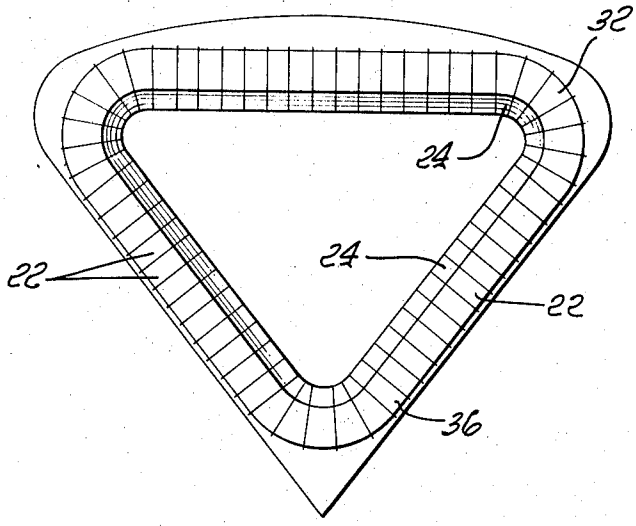


FIG. 7.

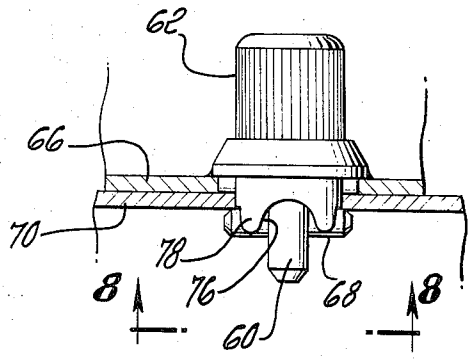


FIG. 8.

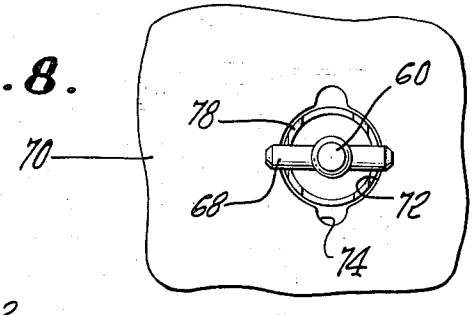
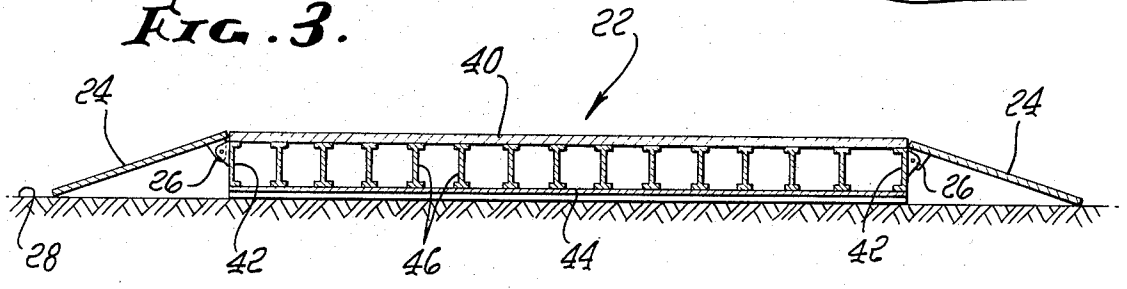


FIG. 3.



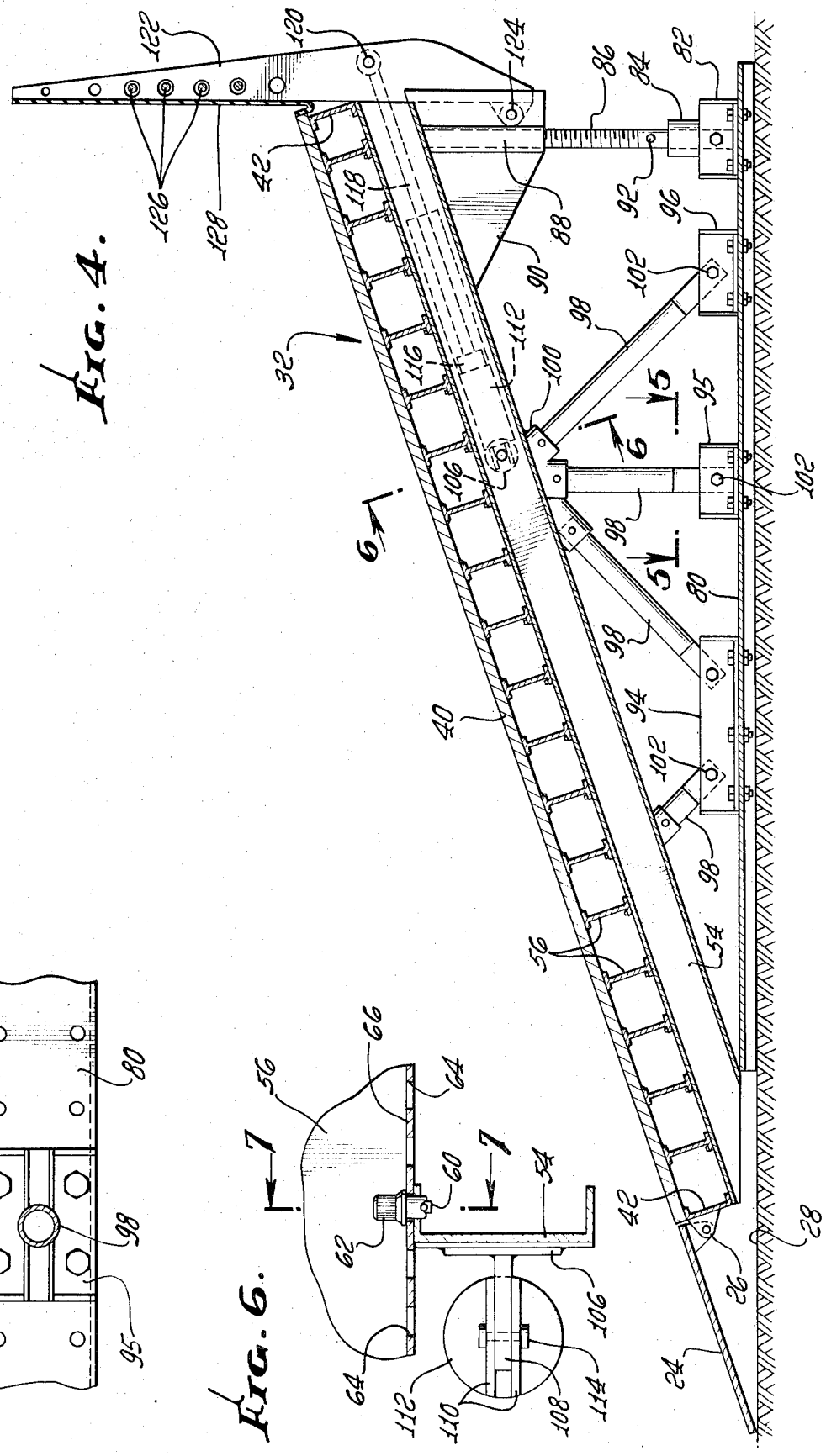


FIG. 4.

FIG. 5.

FIG. 6.

FIG. 9.

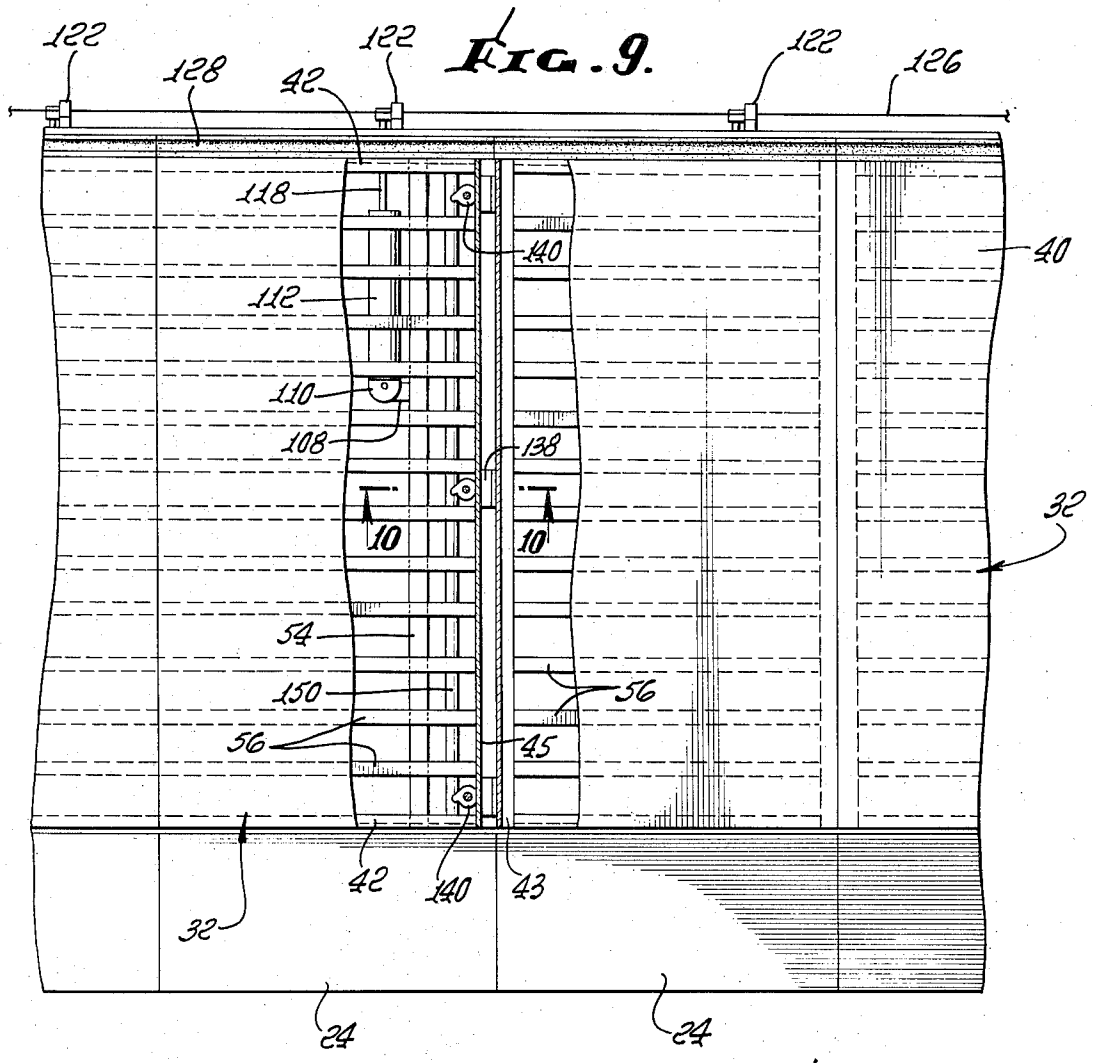


FIG. 11.

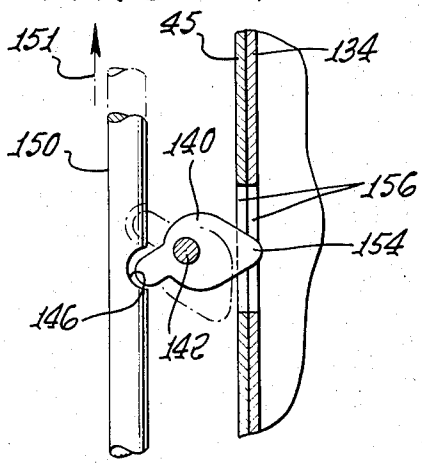


FIG. 10.

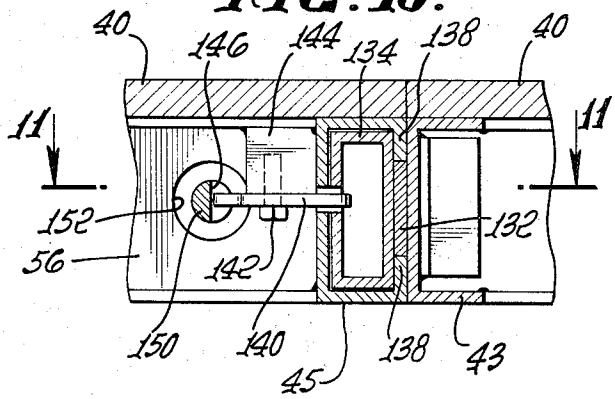


FIG. 13.

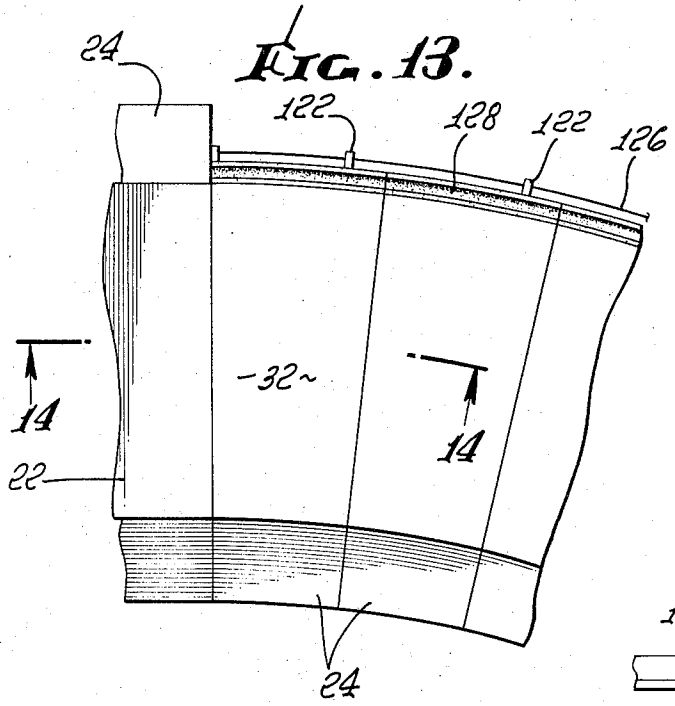


FIG. 15.

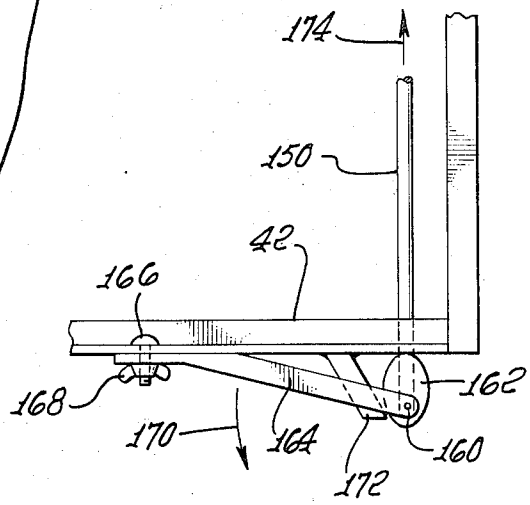
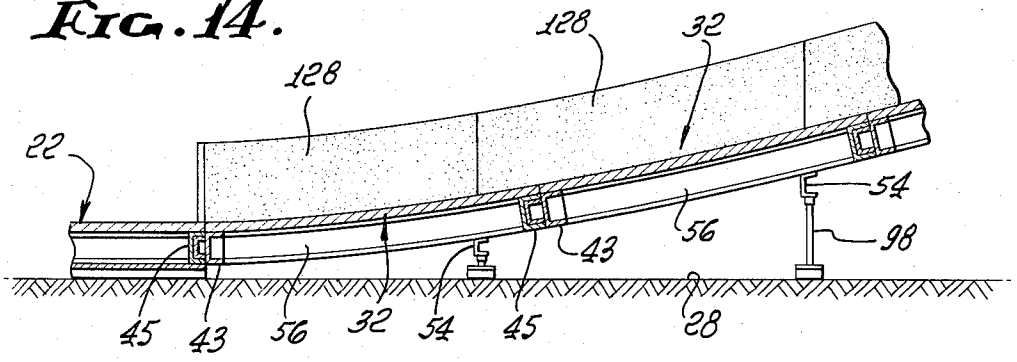


FIG. 14.



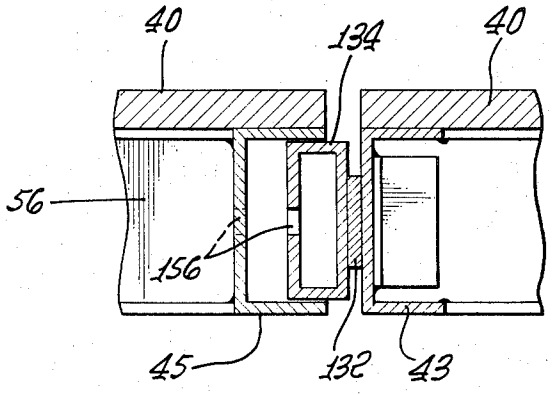


FIG. 12.

PORTABLE SECTIONAL RACETRACK FOR AUTOMOBILES OR MOTORCYCLES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to portable amusement structures, and more particularly to portable sectional racetrack structures adapted for use in racing automobiles, motorcycles or the like.

2. Description of the Prior Art

The desirability of effecting temporary conversions of amusement facilities to adapt them for different sports has led to the design of various structures for such purposes. Structures designed to adapt a facility for racing have usually taken the form of isolated corner structures some of which have been canted or banked.

The provision of a sectional portable uniform racing surface with banked turns, which is capable of being assembled into a wide variety of configurations and course lengths has not heretofore been realized, and it is the primary object of the present invention to provide a portable sectional racetrack having such characteristics.

SUMMARY OF THE INVENTION

According to the present invention, a portable racetrack structure is made up of an assembly of releasably interlockable sections of three kinds; i.e., horizontally disposable straightaway sections; adjustably bankable curving sections; and adjustably bankable straightaway sections.

Each kind of section if provided with a coupling structure at each of its ends whereby it may be locked in end-to-end relationship with either of the other two kinds of sections or with other sections of its own kind.

The adjustably bankable curved and straightaway sections are susceptible of being skewed so that, for example, one end of such a section may be joined to a horizontally disposed straightaway section and the other end to a banked straightaway or curving section. Similarly, one end of such a section may be joined to another straightaway or curving banked section the adjacent end of which is disposed at the same banking angle, while the other end is joined to a straightaway or curving banked section disposed at a different banking angle.

At the high side of each section which is capable of being banked, a safety wall is mounted by means which render it capable of limited yielding movement under impact for the purpose of absorbing impact forces.

The entire structure is readily capable of disassembly into components which may be readily transported to a new location.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a plan view of an assembled portable racetrack embodying the present invention.

FIG. 2 is a plan view of another configuration of an assembled portable racetrack embodying the present invention.

FIG. 3 is a view in vertical section taken on the line 3—3 of FIG. 1.

FIG. 4 is a view in vertical section taken on the line 4—4 of FIG. 1.

FIG. 5 is a detail view, partly in section, taken on the line 5—5 of FIG. 4.

FIG. 6 is a detail view, partly in section, taken on the line 6—6 of FIG. 4.

FIG. 7 is a detail view, partly in section, taken on the line 7—7 of FIG. 6.

FIG. 8 is a detail view of the locking device of FIG. 7 as viewed from the plane 8—8 of FIG. 7.

FIG. 9 is a plan view, partly in section, of a pair of coupled sections of a portable racetrack embodying the present invention.

FIG. 10 is a detail view, partly in vertical section, taken on the line 10—10 of FIG. 9.

FIG. 11 is a detail view, partly in horizontal section, taken on the line 11—11 of FIG. 10.

FIG. 12 is a detail view, partly in section, of the parts shown in FIG. 10, but in a position approaching that in which they are locked together.

FIG. 13 is a detail view in plan of a series of sections at the beginning of a turn of a portable racetrack embodying the present invention.

FIG. 14 is a view, in vertical section, taken on the line 14—14 of FIG. 13 showing how the sections are skewed in such an arrangement.

FIG. 15 is a detail view of mechanism for actuating the section coupling locking mechanism.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIG. 1 of the accompanying drawing, a portable racetrack embodying the present invention is an assembly 20 comprising a series of detachably coupled sections including horizontally disposed straightaway sections 22 (see also FIG. 3) which are preferably provided with access ramps 24 hinged thereto as at 26 to facilitate movement onto the sections from a surface 28 on which the portable racetrack assembly rests. Also included in the assembly are curving sections 32 (see also FIGS. 13 and 14), the outer edges of which may be elevated as hereinafter described so that the turns may be appropriately banked. Also included in the assembly are bankable straightaway sections 36. These sections 36 are designed to be interposed between the horizontally disposed straightaway sections 22 and the bankable curving sections 32. The outer edges of both types of bankable sections may be elevated by means hereinafter described in detail so that they will effect gradual banking of a vehicle just prior to its entering and during its traversal of a turn. All types of sections 36 also may be provided at their inner edges with access ramps 24.

Sections of the above described types may be assembled into a plurality of alternative configurations, that illustrated in FIG. 2 being an example of a configuration suitable for installation in an area of the size and shape of a standared baseball diamond. In such a configuration in which the margins of the useable area are closely approached by the edges of the track, it is desirable to omit the access ramps 24 which are disposed exteriorly of the track shown in FIG. 1.

As shown in FIG. 3 of the drawing, the flat straightaway sections 22 comprise a flexible sheet 40 of a material such as hard-surfaced plastic or plastic laminate, preferably having a roughened upper surface providing a traction surface for vehicles. This sheet 40 is connected, as by cementing, at its opposite edges to channel members 42 extending longitudinally parallel to the

normal direction of movement of vehicles along the track section. The channels **42** are connected at their edges opposite that to which the sheet **40** is connected by a base plate **44** to which the channels **42** are connected as by welding; at one of their ends by a channel member **43** (see FIGS. **10, 11** and **12**) and at their opposite ends by a channel member **45.** Intermediate the channels **42** the traction surface sheet **40** is supported by a plurality of I-beams **46** which preferably are welded at their ends to the channel members **43** and **45.** Each of the channels **42** has formed integrally therewith hinge elements to which the hinge elements **26** of the ramp members **24** may be detachably connected.

As shown in FIGS. **4, 5** and **6,** the bankable sections **32** (and also the bankable sections **36**) comprise a flexible traction surface sheet **40** corresponding to the traction surface sheet of FIG. **3,** which is connected, as by cementing, to channel members **42** all as in the type of section shown in FIG. **3.** The opposite edges of the channel members **42** are supported on a banking support beam **54** to which a series of I-beams **56** supporting the traction surface sheet **40** may be detachably secured.

The means by which the I-beams **56** may be detachably secured to the banking support beam **54** is shown in detail in FIGS. **6, 7** and **8** and comprises a pin **60** spring-urged toward and rotatable by means of a knurled head **62.** Pin **60** is adapted to extend through one of a series of holes **64** in the lower flange **66** of each of the I-beams **56** which are sufficiently large in diameter to permit the passage therethrough of a cross-pin **68** fixed in the pin **60.** Formed in the upper flange **70** of the banking support beam **54** immediately below the lower flanges of each of the I-beams **56** is a hole **72** the diameter of which is less than the length of the cross-pin **68.** At diametrically opposite positions, however, the hole **72** is enlarged as at **74** (FIG. **8**) so that when the pin **60** is rotated by means of its knurled head **62** to bring the ends of the cross-pin **68** into alignment with the portion **74,** the pin **68** may pass through the hole **72** into a position underlying the flange **70.** When so positioned, it may be rotated into the position in which it is shown in FIGS. **7** and **8** in which the I-beam **56** is securely locked to the flange **70** of the support channel **54** and retained in this position by engagement in a pair of diametrically opposite notches **76** in a retaining member **78** where it is held by the spring (not shown) within the knob **62** urging the pin **60** inwardly with respect to the knob. The purpose of providing for such an adjustable connection between the I-beams **56** and the banking support beam **54** will be explained hereinafter.

Means including separate jacking mechanisms are provided for supporting each of the banking support beams **54** in any of a series of angularly disposes positions with respect to a base which is usually disposed in a horizontal position. As shown in FIG. **4,** this means comprises a base plate **80** which has secured thereto an anchor plate **82** provided with a socket **84** within which a screw jack post **86** is rotatably seated. The screw jack post **86** extends into a screw jack sleeve **88** which is in threaded engagement therewith and which is formed integrally with a plate **90** secured, as by welding, to its associated banking support beam **54.** Adjacent its lower end the screw jack post **86** is provided with a transverse bore **92** into which a rod may be inserted for the purpose of rotating the screw jack post in either direction to raise or lower the end of the banking support beam **54** with respect to the base plate **80.**

Also secured to the base plate **80** are bracing support plates **94, 95** and **96** to which braces **98** extending from sockets **100** formed integrally with the banking support beam **54** are attached by means such as bolts **102** after the banking support beam **54** has been positioned at the desired banking angle; the braces **98** being chosen from a stock of braces of various lengths according to the banking angle at which the beam **54** is positioned. Alternatively, the braces **98** may be made in telescoping sections in the manner of the screw jack mechanism **86, 88** so that their lengths may be varied in accordance with the angle at which the banking support beam **54** is disposed.

Means constituting a yieldable safety wall is provided at the high side of each banked section. As shown in FIGS. **4** and **6,** each of the banking support beams **54** has secured thereto, as by welding, a member **106** having extending normal thereto a pivotal mounting **108** to which the bifurcated base plate **110** of a pneumatic cylinder **112** is secured by means such as a pin **114.** A piston **116** fitting loosely within the interior of the cylinder **112** is attached to a piston rod **118** the opposite end of which is pivotally connected at **120** to a safety wall support arm **122** pivotally mounted at **124** on a plate **90.** A series of cables **126** passing through holes in a series of adjacent safety wall support arms **122** and securely anchored thereto at their ends provide a safety barrier cushioned by a flexible pad **128** preventing vehicles from leaving the high side of the banked sections; the cylinder and piston assembly functioning as a dash-pot to cushion any impact against the barrier.

The straightaway banked sections **36,** as shown in FIG. **1,** are identical in construction with the curving banked sections **32** shown in FIGS. **1, 2** and **4,** inclusive, and are provided with the same adjustable banking support mechanism shown and described in connection with FIGS. **4** to **8,** inclusive.

All of the types of sections which have been described are provided with identical intercoupling means whereby any of such sections may be locked in coupled relationship with either another section of its own type or with a section of any other type and readily uncoupled therefrom. As shown in FIGS. **9, 10, 11** and **12,** each section is provided at one of its end margins with a channel member **43** which is secured, as by welding, to alternate ones of the previously described I-beams **56.** Secured to the channel member **43,** as by welding, are a series of spacer plates **132,** and secured to each of the spacer plates **132** is a rectangular member **134.**

The opposite margin of each section is provided with a channel member **45** secured, as by welding, to the marginal channel members **42** and to the alternate ones of the I-beams **56** to which the channel member **43** of the same section is not secured. The opening of the channel member **45** is of a proper size to receive the members **134,** as shown in FIG. **12.** At a series of spaced points along its length, the channel member **45** is provided with oppositely disposed lips **138** adapted to fit within the spaces between the channel **43** and the member **134** created by the interposition of the spacer bars **132,** as shown in FIG. **10.** When a pair of sections are to be intercoupled, they are first positioned in offset relation with each other so that the members **134** are

positioned to enter the channel members **45** of the adjacent section, as shown in FIG. **12.** The sections are then moved into exact end-to-end alignment with each other, bringing the members **134** to positions inwardly of the lips **138,** as shown in FIG. **10.**

Manually operable locking means are provided for preventing relative lateral movement of these sections sufficient to effect uncoupling of them after they have been moved into the relative positions in which they are shown in FIG. **10.** This means comprises a series of lock members **140** (FIGS. **9, 10** and **11**) pivotally mounted as at **142** on a lug **144** attached, as by welding, to the channel member **45.** One edge of the member **140** is received in a recess **146** of a lock control rod **150** which passes through a series of aligned holes **152** in the I-beams **56** and is slidably mounted in the marginal channels **42.**

When the rod **150** is slid longitudinally away from the position in which it is shown in FIG. **11** in the direction of the arrow **151,** it moves each of the locking members **140** which are in engagement with it to bring their noses **154** to the position in which they are shown in dotted lines in FIG. **11,** thus permitting the relative lateral movement of the member **134** with respect to the channel member **45** requisite for coupling and uncoupling movement of the sections. However, when the lock control rod **150** is returned to the position in which it is shown in FIGS. **10** and **11,** the locking members **140** in engagement with it are moved to the positions in which they are shown in full lines in FIGS. **10** and **11** in which the nose **154** of each locking member **140** enters recesses **156** in the member **134** and the channel member **45,** respectively, which are aligned with each other when the sections are in the relative positions in which they are shown in FIG. **10.** In this position of the locking member **140,** relative longitudinal movement of the member **134** with respect to the channel member **45** sufficient to bring the members **134** out of engagement with the lips **138** is prevented.

The means for effecting such longitudinal movement of each control rod **150** and retaining it in position to lock the track sections together is shown in FIG. **15.** Pivotally mounted at **160** on one end of each control rod **150** is a cam member **162** to which there is fixed a lever arm **164** the free end of which is releasably secured to an adjacent portion of the channel **42** by means such as a bolt **166** and wing nut **168.**

When the parts are in the position in which they are shown in FIG. **15,** the locking members **140** are in the positions in which they are shown in full lines in FIG. **11.** When it is desired to unlock the sections in order to permit their separation, the wing nut **168** is removed and the lever arm **164** is moved in the direction of the arrow **170** rotating the cam **162** counterclockwise into engagement with an abutment **172** extending angularly, as shown, from the channel **42,** to effect movement of the control rod **150** in the direction of the arrows **174** (FIG. **15**) and **151** (FIG. **11**). When the lever **164** is returned to the position in which it is shown in FIG. **15,** the cam **162** engages the channel **42** and returns the rod **150** to the position in which it is shown in FIG. **11.**

In the assembly of the sections which have been described into a racetrack of one of the configurations shown, for example, in FIGS. **1** and **2,** it is desirable to adjust the jacking mechanisms and braces of the banked sections, illustrated in connection with a banked curving section in FIG. **4,** to progressively differing heights, as shown in FIG. **14,** so that tilting of a vehicle upon its engry into and its departure from a banked section will be gradual. It is for this reason that the traction surface sheets **40** are made flexible to permit them to be skewed as an incident to such banking adjustments. Depending upon the magnitude of the height differences between adjacent sections, more or less lateral movement of the I-beams **56** with respect to their banking support beams **54** may be necessary, and during such adjustment, therefore, it is necessary to remove at least some of the coupling pins **60** in order to permit such relative movement. After the banking adjustment has been completed, each pin **60** can then be reinserted in the one of the series of holes **64** in the I-beams **56** most nearly aligned with a hole in its associated banking support beam **54.** The groups of I-beams attached to the opposite end channels **43** and **45,** respectively, being interspersed, are capable of supporting the traction surface sheet **40** while permitting such relative movement of some of the I-beams with respect to their associated banking support beam.

We claim:

1. A portable, demountable closed loop racetrack assembly for automobiles and motorcylcles comprising a series of detachably coupled sections including at least one horizontally disposed straightaway section and a plurality of banked curving sections; each of said sections including means forming a base, support members mounted on the base, and an unbroken traction surface sheet seating on the support members, means detachably coupling one section to another, and means banking the curving sections, at least one of said banked sections being adjustably skewable for detachable coupling to a horizontally disposed section at one end and to a banked section at the other end.

2. A racetrack assembly as defined in claim **1,** in which the traction surface sheet on at least one of said sections is flexible and that section is adjustably skewable for detachable coupling at its opposite ends to the adjacent ends of others of said sections which adjacent ends are disposed at a vertical angle with respect to each other.

3. A racetrack assembly as defined in claim **2,** in which the banked curving sections each comprising transverse members at opposite ends of the section, means supporting said transverse members at an angle transversely of the track, and longitudinally disposed surface sheet supporting members secured to the transverse members.

4. A racetrack assembly as defined in claim **1** which includes a yieldable safety barrier along the outside of at least some of the banked sections comprising a series of safety wall support arms pivotally carried by said bases and disposed in alignment with each other immediately adjacent the outside edge of said traction surface sheet, a plurality of cables interconnecting said arms, and dashpot means individual to said arms for cushioning movement thereof and of said cables incident to impact of a vehicle against said barrier.

5. A racetrack assembly as defined in claim **4,** additionally including a sheet of flexible material carried by said arms and interposed between said cables and said traction surface sheet.

6. A sectional unit adapted for detachable coupling with similar units into a racetrack assembly comprising a series of traction surface support beams disposed in

parallel alignment with each other, a pair of channel members secured to said beams at opposite ends thereof, a flexible sheet covering said beams and channel members and secured thereto to present an upper traction surface, and means for detachably connecting the channel member of said unit with a channel member of another such unit to present a substantially continuous upper traction surface formed by the flexible sheets of said units.

7. A sectional unit according to claim 6 additionally provided with means for supporting the same in an angularly banked relationship to a supporting surface comprising a base, a banking support comprising a pair of beams, means including separate jacking mechanisms for supporting each of said pair of beams in any of a series of angularly disposed positions with respect to said base, and means for releasably locking each of said track surface support beams to the beams of said banking support.

* * * * *