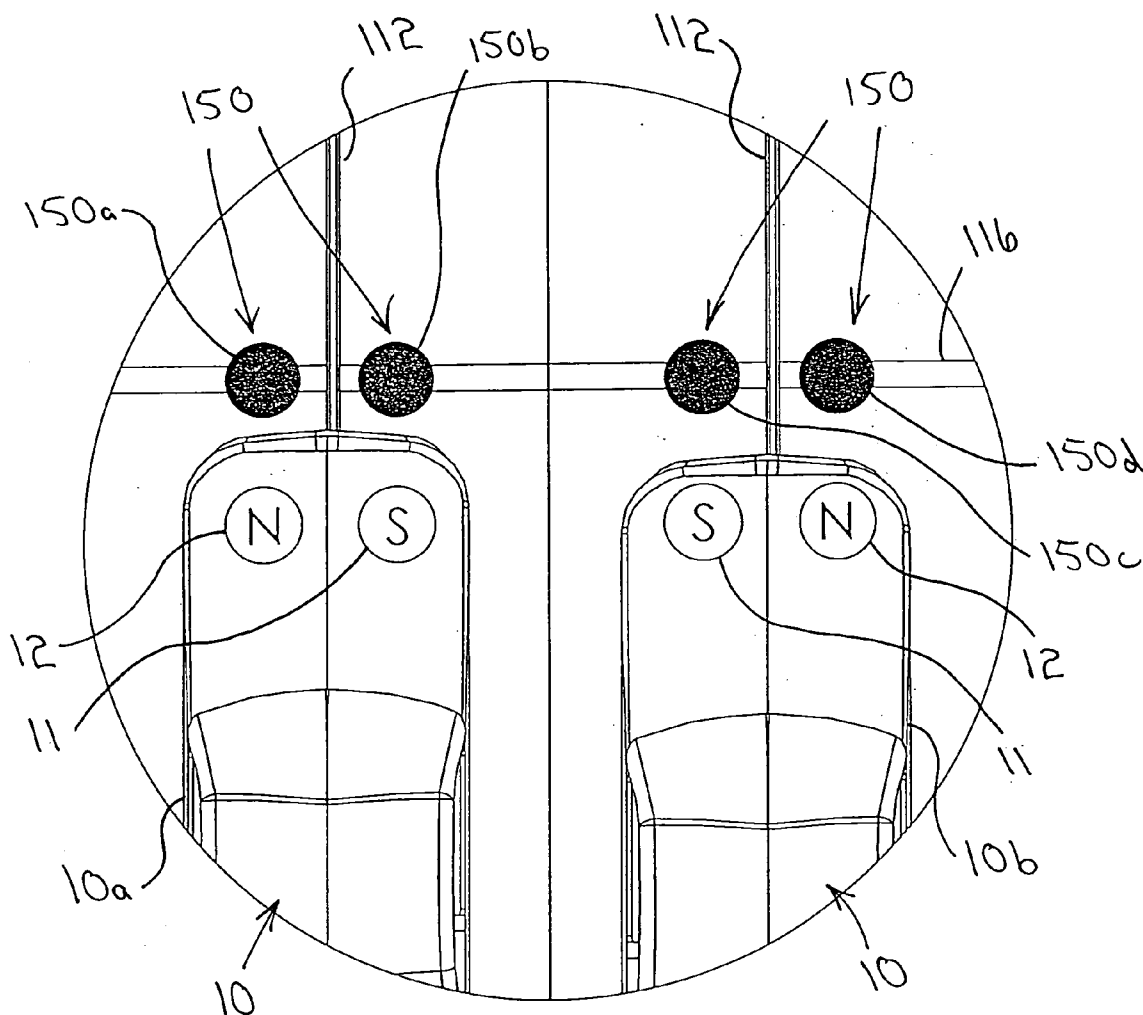




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(19) **United States**(12) **Patent Application Publication****Tyler**(10) **Pub. No.: US 2007/0293324 A1**(43) **Pub. Date: Dec. 20, 2007**(54) **SLOT TRACK MANAGEMENT SYSTEM**(76) Inventor: **Daniel W. Tyler**, Portland, OR
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OTTAWA, KS 66067(21) Appl. No.: **11/454,167**(22) Filed: **Jun. 15, 2006****Publication Classification**(51) **Int. Cl.**
A63F 9/14 (2006.01)(52) **U.S. Cl.** **463/68**(57) **ABSTRACT**

A slot track management system for use with at least one racecar includes a track having a plurality of slots and a plurality of metal strips along the slots for conveying current to a respective racecar. A starting line is perpendicular to the slots. The system includes a processor, start and information displays. At least two south-pole sensors are situated adjacent each slot and the starting line for detecting the presence of a racecar. The processor includes programming for distinguishing between race cars based on data from the sensors, calculating race performance information, actuating the information display to display the calculated race performance data, and actuating the start display indicative of a start time. The start display may include a lighting configuration characteristic of a NHRA Christmas tree. The system enables race fans to experience characteristics of multi-lap racing and drag racing.



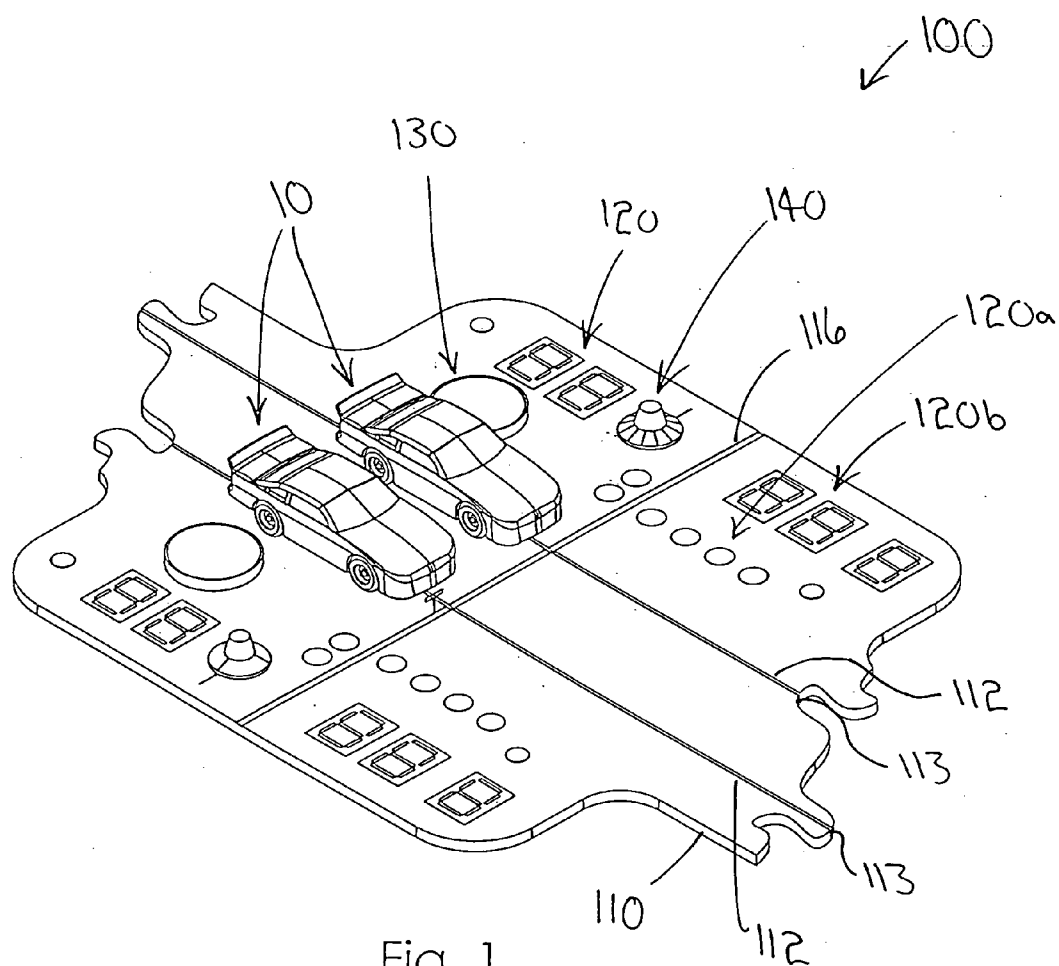
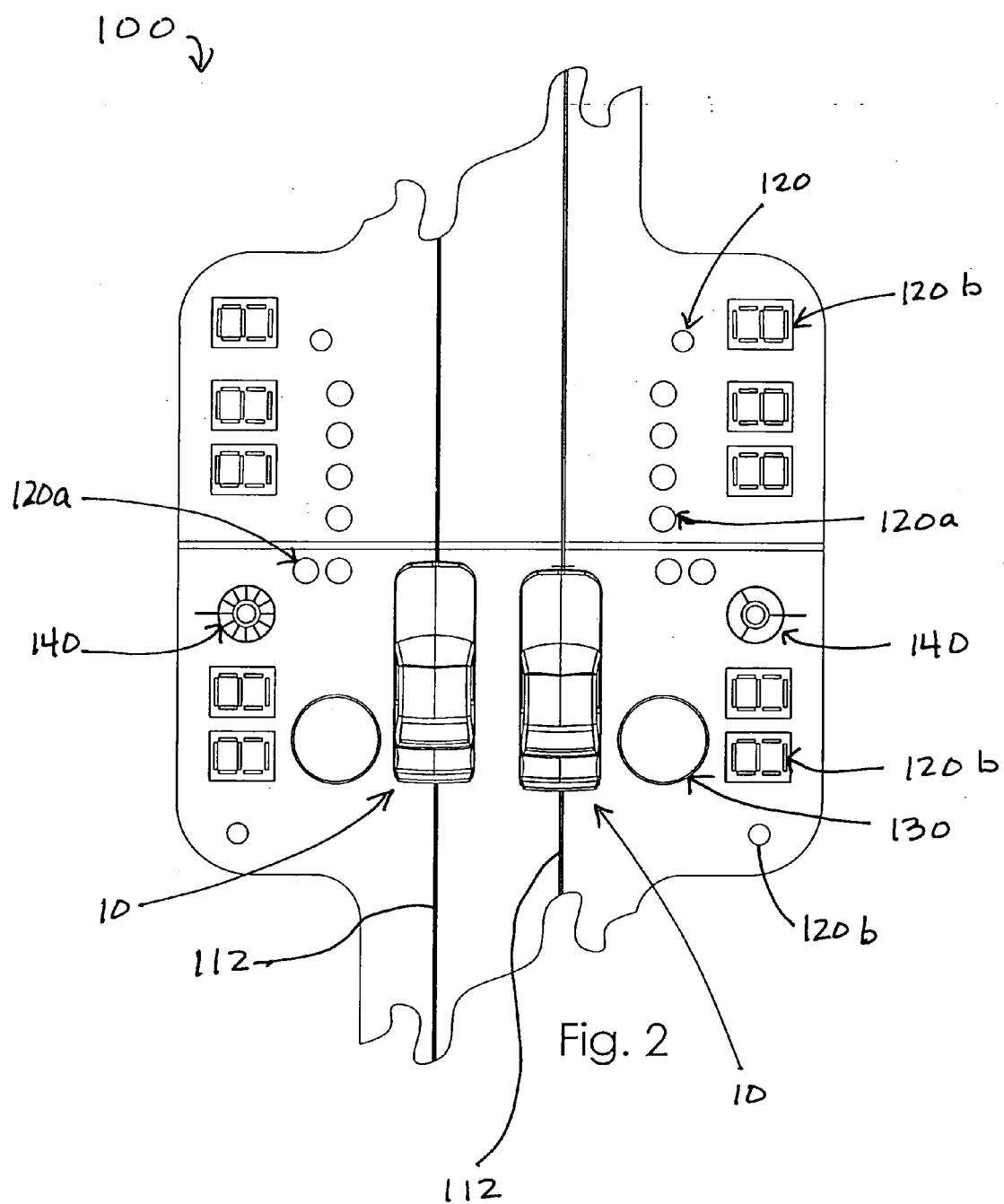
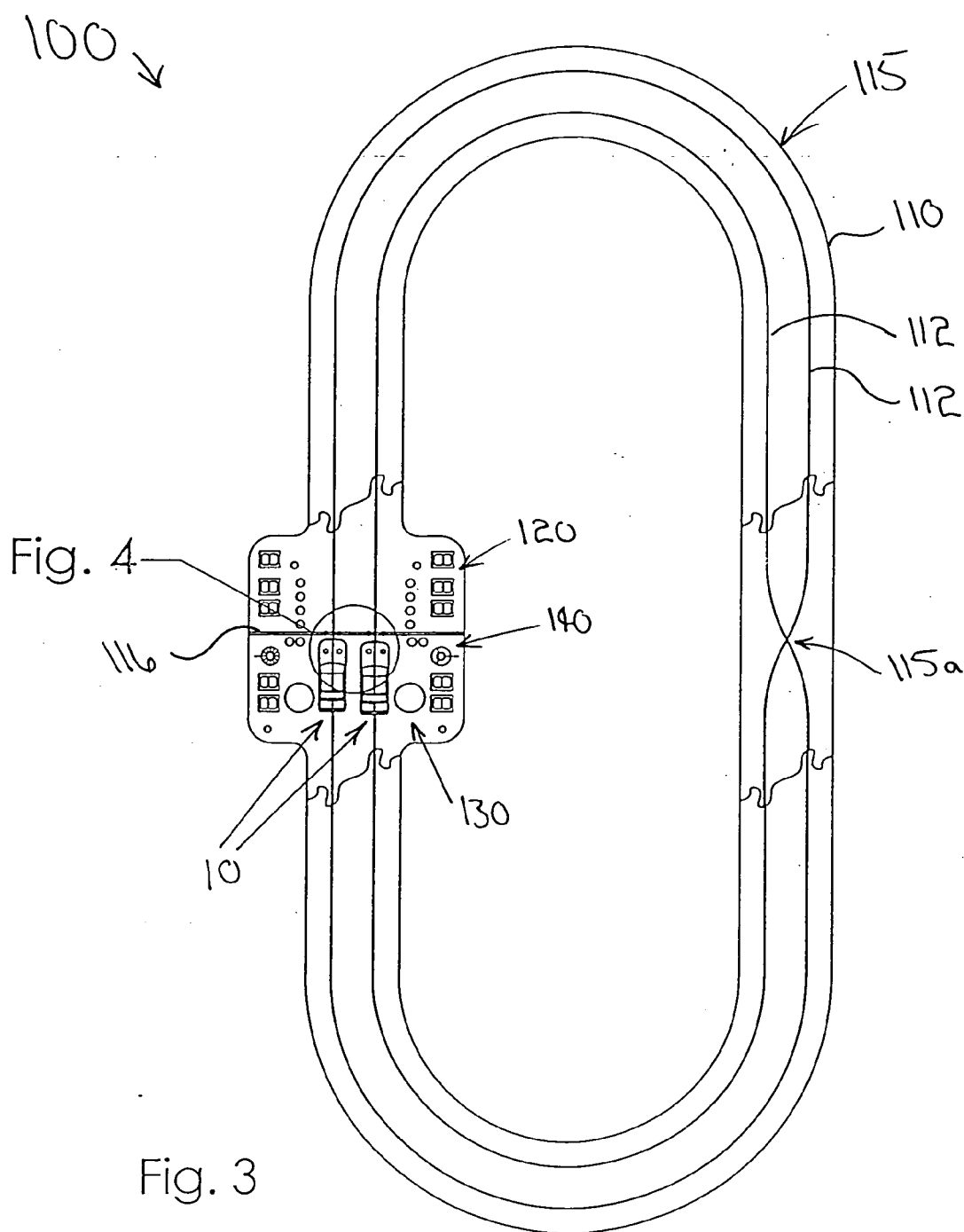


Fig. 1





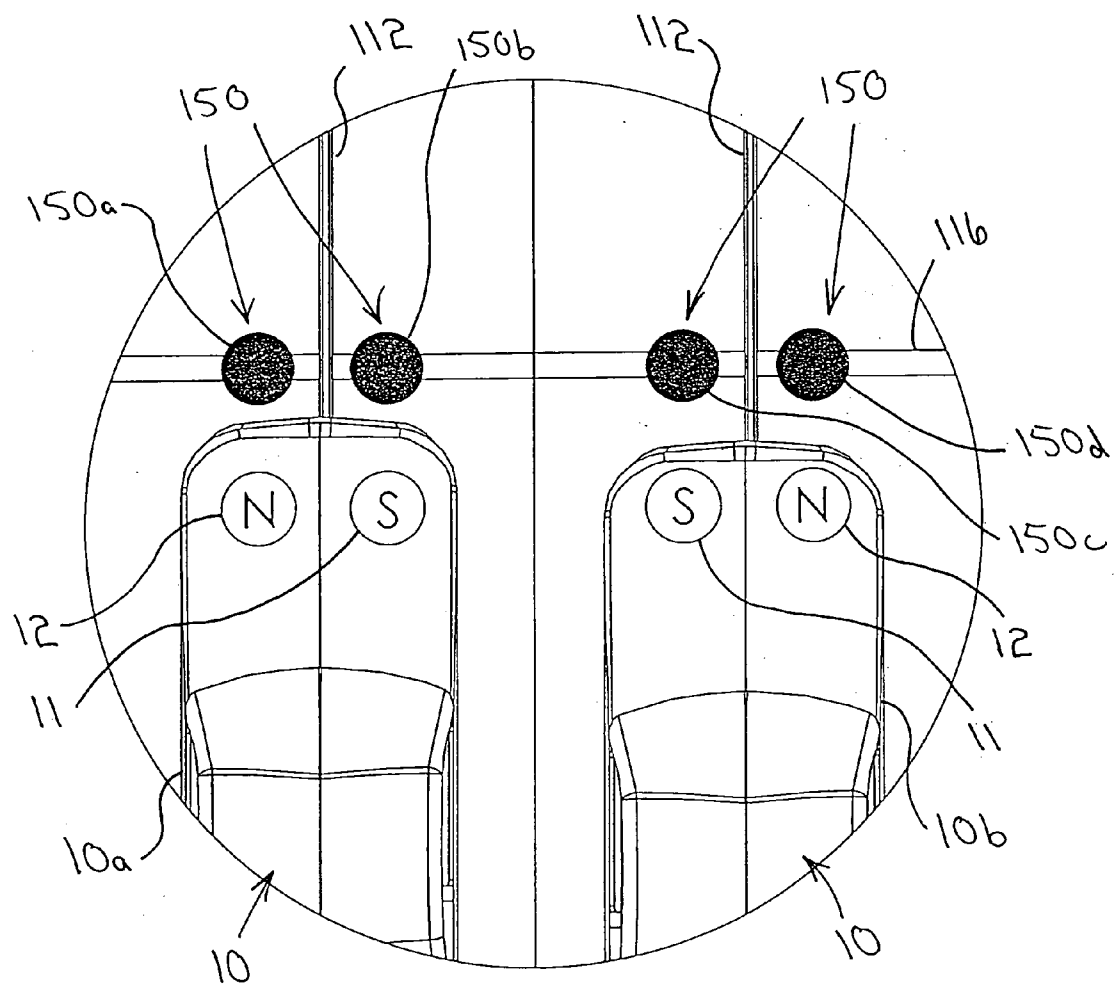


Fig. 4

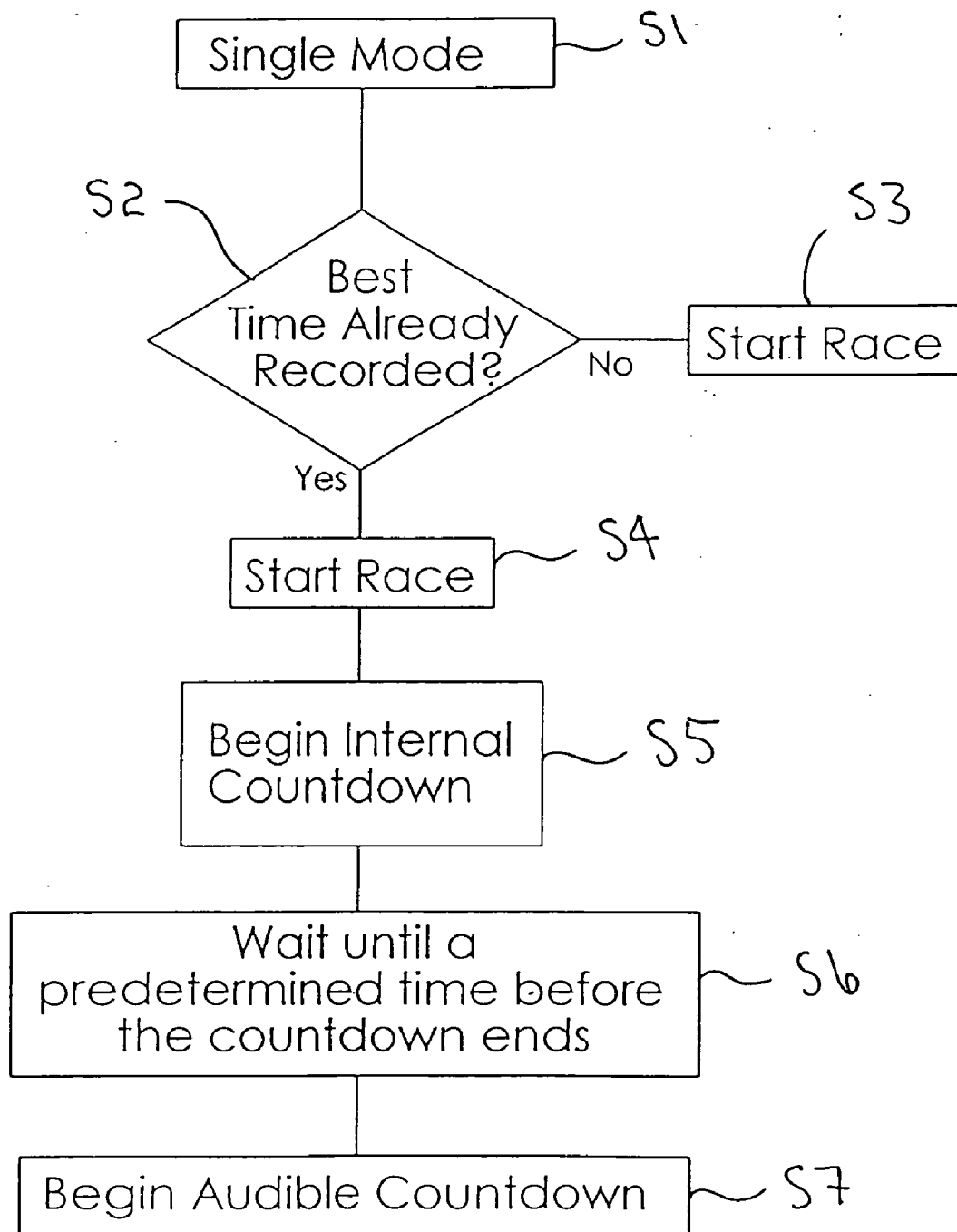


Fig. 5

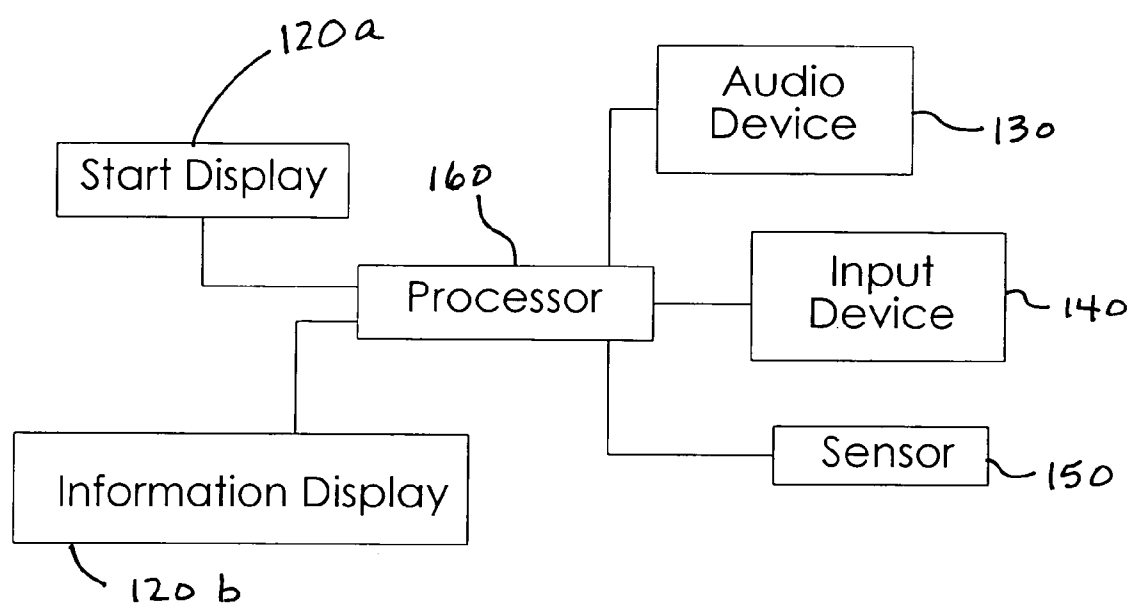


Fig. 6

SLOT TRACK MANAGEMENT SYSTEM

BACKGROUND OF THE INVENTION

[0001] This invention relates to slot car racing and, more particularly, to a slot track management system that combines features of drag racing with traditional slot track racing.

[0002] Slot car racing is the hobby of racing electrically powered model cars on tracks that have a groove or slot to guide the cars. Users control the speed of the cars using handheld controllers that regulate a small, electric motor situated within respective cars. Most handheld controllers used in slot car racing are touchy and too much speed causes a slot car to be thrown from the track. This characteristic often leads to relatively slow, multi-lap races by slot car racing players. Another important observation regarding slot car racing is that most slot car race tracks are designed to emulate NASCAR style tracks. However, the defined lanes in a typical slot car track are naturally characteristic of drag racing.

[0003] Various slot car race tracks and electronics for managing slot car racing are known in the art. Although assumably effective for their intended purposes, the existing devices do not include race features common to both stock car racing and drag racing. More particularly, the existing devices do not include an accurate clock feature that would enable shorter, faster and more exciting races to take place.

[0004] Therefore, it would be desirable to have a slot track management system that combines features of both multi-lap racing characteristic of stock car racing with accurate clock features and defined lanes characteristic of drag racing. Further, it would be desirable to have a slot track management system having a lighting interface indicative of NHRA racing. In addition, it would be desirable to have a slot track management system that utilizes sensors to track individual slot cars and to calculate race performance data for display.

SUMMARY OF THE INVENTION

[0005] Accordingly, a slot track management system according to the present invention includes a racetrack having one or more slots forming a raceway. A metal strip is situated adjacent each slot for conveying an electric current to at least one racecar. A starting line is positioned perpendicular to each slot and provides the basis for many additional features. A sensor is also positioned along each slot for detecting the presence of a racecar at a particular position therealong.

[0006] A processor is in data communication with the sensors and with electronic displays, audio devices, and input devices. The processor includes programming, in cooperation with the sensors, for distinguishing between the racecars, and for calculating race performance information and for comparing current race performance information with prior race performance information. A clock for timing items such as lap time, reaction time to start, and other data is in electrical communication with the processor. The system may include a start display in the form of a so-called NHRA Christmas Tree in which a user must start the race as quickly as possible following a sequence of lights. The programming, in cooperation with the clock and start displays also allow for handicapping the races based on a user's abilities and experience levels.

[0007] Therefore, a general object of this invention is to provide a slot track management system for having features characteristic of both multi-lap racing and drag racing.

[0008] Another object of this invention is to provide a slot track management system, as aforesaid, that incorporates an accurate clock and lighting features indicative of drag racing.

[0009] Still another object of this invention is to provide a slot track management system, as aforesaid, having sensors for distinguishing between racecars, a starting line, and a processor having programming for calculating race performance data.

[0010] Yet another object of this invention is to provide a slot track management system, as aforesaid, which can vary race characteristics based on user-supplied handicapping information.

[0011] A further object of this invention is to provide a slot track management system, as aforesaid, which can compare and display current race performance information and previous race performance information.

[0012] A still further object of this invention is to provide a slot track management system, as aforesaid, which enables one user to race against another user or to race against his previous race performance statistics.

[0013] Other objects and advantages of the present invention will become apparent from the following description taken in connection with the accompanying drawings, wherein is set forth by way of illustration and example, embodiments of this invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a perspective view of a segment of a racetrack of a slot track management system according to a preferred embodiment of the present invention;

[0015] FIG. 2 is a top view of the racetrack segment as in FIG. 1;

[0016] FIG. 3 is a perspective view of a slot track management system according to a preferred embodiment of the present invention;

[0017] FIG. 4 is an isolated view on an enlarged scale taken from FIG. 3;

[0018] FIG. 5 is a flowchart showing the logic performed by the processor according to the present invention; and

[0019] FIG. 6 is a block diagram illustrating the electronic components of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0020] A slot track management system 100 for use with at least one racecar 10 according to the present invention will now be described in detail with reference to FIGS. 1 through 6 of the accompanying drawings. More particularly, a slot track management system 100 according to the current invention includes a track 110 having a plurality of slots 112 that form at least a part of a raceway 115 (FIG. 3).

[0021] As shown in FIG. 1, a metal strip 113 is adjacent each slot 112 for conveying electrical current to the racecars 10, and a starting line 116 is generally perpendicular to the slots 112. Various displays 120, audio devices 130, and input devices 140 may be integral with (FIG. 1) or separate from the track 110. As shown in FIG. 1, a start display 120a may correspond to each respective slot 112, and one or more information displays 120b may be included. The start dis-

plays **120a** are shown as series of lights that are commonly referred to in the art as being in a “Christmas-tree configuration”.

[0022] At least one sensor **150** may be adjacent each slot **112** for detecting the presence of a racecar **10** at a particular location (i.e., a start and/or finish line) along the raceway **115**. As shown in FIG. 4, at least two south-pole sensors **150** (also known as “Hall effect sensors”) may be adjacent each slot **112** for detecting the presence of a racecar along the raceway **115**. Other sensors may alternately be used, however, including mechanical switches, Reed switches, and others.

[0023] A processor **160** (FIG. 6) may be in integral with or separate from the track **110**, and the processor **160** may be in data communication with the start displays **120a**, the information display(s) **120b**, the audio device(s) **130**, the input device(s) **140**, and the sensors **150**. The processor **160** may have programming for distinguishing between the at least one racecar **10** based on data from the sensors **150**, which may be particularly useful if the raceway **115** includes an odd number of crossovers **115a** (FIG. 3); an odd number of crossovers **115a** allows racecars **10** to be in different slots **112** when crossing the start/finish line **116** for different laps. To distinguish between the at least one racecar **10**, a first racecar **10a** may have a magnetically-south side **11** and a magnetically-north side **12** and a second racecar **10b** may have a magnetically-south side **11** and a magnetically-north side **12**; the magnetically-south side **11** of the first racecar **10a** may correspond to the magnetically-north side **12** of the second racecar **10b** (FIG. 4). If south-pole sensors **150** are used as discussed above, the processor **160** may distinguish between the first and second racecars **10a**, **10b** by relating data from the sensors **150** to the respective magnetically-south sides **11** of the first and second racecars **10a**, **10b**. In other words, if sensors **150a** or **150c** detect a magnetically-south side **11**, the processor **160** may determine that the second racecar **10b** has passed the respective sensor **150**; if sensors **150b** or **150d** detect a magnetically-south side **11**, the processor **160** may determine that the first racecar **10a** has passed the respective sensor **150**.

[0024] The processor **160** may have programming for determining a start time, actuating the start displays **120a** to display start information that includes the start time, determining if a racecar **10** crossed the starting line **116** before the start time, and actuating at least one of the displays **120** to display a false start signal if a racecar **10** crossed the starting line **116** before the start time. Data from the sensors **150** may be used to determine if a racecar **10** crossed the starting line **116** before the start time. The start time may be determined randomly, may follow a predictable pattern, or may be based on handicapping information and/or race length information. The handicapping information and/or the race length information may be provided to the processor **160** through the input device(s) **140**. The race length information may include, for example, track distance data and a number of laps.

[0025] The processor **160** may have programming for calculating race performance information and actuating at least one information display **120b** to display the race performance information. The processor **160** may actuate the audio device(s) **130** to audibly present the race performance information and/or other appropriate sounds (e.g., sounds that would be heard at a racetrack). Data from the sensors **150** may be used to calculate the race performance

information. The race performance information may include, for example, a number of laps completed for each respective racecar **10**, a number of laps remaining for each respective racecar **10**, lap speed information for each respective racecar **10**, and comparison data for each respective racecar **10**. The comparison data may compare race performance information for racecars **10** currently racing, and/or the comparison data may compare race performance information for racecars **10** currently racing to racecars **10** that have previously raced. Race performance information for racecars **10** that have previously raced may be referred to as prior race performance information.

[0026] Some exemplary logic used by the processor **160** is shown in FIG. 5. Following the logic presented in FIG. 5 may allow the processor **160** to perform an audible count-down function comparing a current race performance to a prior race performance. At step S1, a user may choose a mode of operation, and the logic continues to step S2. At step S2, the processor **160** determines if prior race performance information exists. If not, the logic proceeds to step S3, where the processor starts a race (e.g., by determining the start time, actuating the start displays **120a** to display the start information that includes the start time, determining if a racecar **10** crossed the starting line **116** before the start time, and actuating at least one of the displays **120** to display a false start signal if a racecar **10** crossed the starting line **116** before the start time). If prior race performance information does exist, the logic proceeds to step S4, where the processor starts a race in the same manner as described in reference to S3; the logic then continues to step S5. At step S5, the processor **160** calculates race performance information that includes comparison data comparing race performance information for racecars **10** currently racing to racecars **10** that have previously raced. At step S6, the processor **160** waits a predetermined amount of time before a predetermined event (e.g., the best race time in the prior race performance information). In other words, if the prior race performance information indicates that the race was previously finished in 60 seconds, the processor **160** may wait, for example, until 50 seconds have passed in the current race. The logic then proceeds to step S7. At step S7, the processor **160** actuates the audio device(s) **130** to present the race performance information (e.g., the final ten seconds that remain until the race was previously finished).

[0027] In use, the racecar(s) **10** may be coupled to the slots **112** as is known in the art. The user may provide the processor **160** with the handicapping information or the race length information to make competition more fair and/or enjoyable, and the processor **160** may determine the start information, actuate the start displays **120a**, and check for false starts as described above. The processor **160** may calculate the race performance information using data from the sensors **150**, and the processor **160** may actuate the information display(s) **120b** and/or the audio device(s) **130** as described above.

[0028] It is understood that while certain forms of this invention have been illustrated and described, it is not limited thereto except insofar as such limitations are included in the following claims and allowable functional equivalents thereof.

What is claimed is as follows:

1. A slot track management system for use with at least one racecar, said system comprising:

- a track having a plurality of slots that form at least a part of a raceway;
 - a plurality of metal strips adjacent said slots for conveying electrical current to the at least one racecar;
 - a starting line generally perpendicular to said slots;
 - a processor;
 - at least two south-pole sensors adjacent each said slot for detecting the presence of a racecar along said raceway, said sensors being adjacent said starting line and in data communication with said processor;
 - a start display corresponding to each respective slot, said start displays being in data communication with said processor;
 - at least one information display in data communication with said processor;
 - wherein said processor has programming for:
 - distinguishing between the at least one racecar based on data from said sensors;
 - calculating race performance information using said data from said sensors;
 - actuating said at least one information display to display said race performance information; and
 - actuating said start displays to display start information that includes a start time.
- 2.** The system of claim 1, wherein said processor has programming for:
- determining if a racecar crossed said starting line before said start time; and
 - actuating said at least one information display to display a false start signal if a racecar crossed said starting line before said start time.
- 3.** The system of claim 1, wherein:
- a first racecar has a magnetically-south side and a magnetically-north side;
 - a second racecar has a magnetically-south side and a magnetically-north side;
 - the magnetically-south side of the first racecar corresponds to the magnetically-north side of the second racecar; and
 - said processor distinguishes between the first and second racecars by relating said data from said sensors to the respective magnetically-south sides of the first and second racecars.
- 4.** The system of claim 1, wherein:
- an input device is in data communication with said processor for providing said processor with handicapping information; and
 - said processor has programming for determining said start information based on said handicapping information.
- 5.** The system of claim 4, wherein said race performance information includes at least one item selected from the group consisting of number of laps completed for each respective racecar, number of laps remaining for each respective racecar, lap speed information for each respective racecar, and comparison data for each respective racecar.
- 6.** The system of claim 1, wherein said processor has programming for determining said start information based on track distance data.
- 7.** The system of claim 1, wherein:
- an input device is in data communication with said processor for providing said processor with race length information that includes a number of laps;
 - said processor has programming for determining said start information based on track distance data and said number of laps; and
 - said race performance information includes at least one item selected from the group consisting of number of laps completed for each respective racecar, number of laps remaining for each respective racecar, lap speed information for each respective racecar, and comparison data for each respective racecar.
- 8.** The system of claim 7, wherein said processor, said input device, said start displays, and said at least one information display are integral with said track.
- 9.** The system of claim 1, wherein:
- said processor is in data communication with an audio device; and
 - said processor includes programming for actuating said audio device.
- 10.** The system of claim 2, wherein:
- at least one input device is in data communication with said processor for providing said processor with at least one item selected from the group consisting of handicapping information and race length information;
 - said race length information includes a number of laps; and
 - said processor has programming for determining said start information based on at least one item selected from the group consisting of said handicapping information and said race length information.
- 11.** A slot track management system for use with at least one racecar, said system comprising:
- a track having a plurality of slots that form at least a part of a raceway;
 - a plurality of metal strips adjacent said slots for conveying electrical current;
 - a starting line generally perpendicular to said slots;
 - a processor;
 - at least one sensor adjacent each said slot for detecting the presence of a racecar at a particular location along said raceway, said sensors being in data communication with said processor;
 - a start display corresponding to each respective slot, said start displays being in data communication with said processor; and
 - at least one information display in data communication with said processor.
- 12.** The system of claim 11, wherein:
- said processor actuates said start displays to display start information;
 - said start information includes a start time;
 - said processor calculates race performance information using data from said sensors; and
 - said processor actuates said at least one information display to display said race performance information.
- 13.** The system of claim 12, wherein:
- said processor determines if a racecar crossed said starting line before said start time using data from said sensors; and
 - said processor actuates at least one item selected from the group consisting of one said start display and one said information display to display a false start signal if a racecar crossed said starting line before said start time.
- 14.** The system of claim 12, wherein:
- an input device is in data communication with said processor for providing said processor with at least one

item selected from the group consisting of handicapping information and race length information;
said race length information includes a number of laps;
and

said processor determines said start information based on at least one item selected from the group consisting of said handicapping information and said race length information.

15. The system of claim **12**, wherein said race performance information includes at least one item selected from the group consisting of number of laps completed for each respective racecar, number of laps remaining for each respective racecar, lap speed information for each respective racecar, and comparison data for each respective racecar.

16. The system of claim **15**, wherein:

said processor is in data communication with an audio device; and

said processor actuates said audio device to audibly present said race performance information.

17. The system of claim **15**, wherein:

said processor compares said race performance information to prior race performance information; and

said processor actuates said at least one information display to display said comparison of said race performance information and said prior race performance information.

18. The system of claim **15**, wherein:

said processor is in data communication with an audio device;

said processor compares said race performance information to prior race performance information; and

said processor actuates said audio device to audibly present said comparison of said race performance information and said prior race performance information.

19. The system of claim **11**, wherein:

said at least one sensor adjacent each said slot is at least two south-pole sensors adjacent each said slot;

a first racecar has a magnetically-south side and a magnetically-north side;

a second racecar has a magnetically-south side and a magnetically-north side;

the magnetically-south side of the first racecar corresponds to the magnetically-north side of the second racecar; and

said processor distinguishes between the first and second racecars by relating data from said sensors to the respective magnetically-south sides of the first and second racecars.

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