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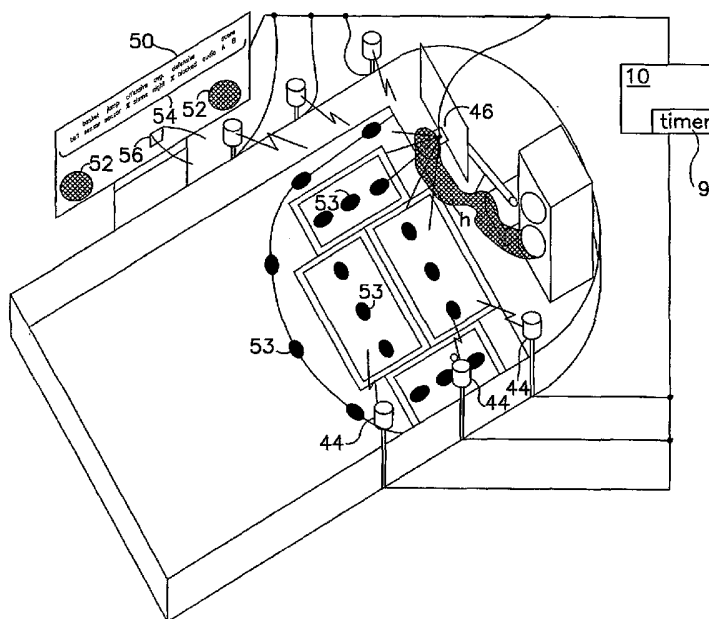
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(54) Title: AUTOMATED BALL GAME TRAINING AND PLAYING SYSTEM



(57) Abstract: A ball game system for training and/or play comprising a one or more playing areas suitably large to accommodate running and jumping players, each the playing areas including adjacent surface areas forming a court and having distinctly different properties, such as a first surface suitable for bouncing a ball and a second surface comprised of a deformable elastic material. The system includes an automatic ball feeder and sensors for monitoring the positions and trajectories of one or more players and/or balls on the court. Options include visual displays and/or audio outputs reflective of player performance, and payment-driven operation of the system components, including a means for adjusting the degree of rebound provided by the deformable elastic surface(s).



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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/40426

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A63B 63/08

US CL : 273/317.3, 397, 402, 406; 473/480, 479, 485, 447, 433

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)

U.S. : 273/317.3, 397, 402, 406; 473/480, 479, 485, 447, 433

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,833,557 A (COLE) 10 November 1998 (10.11.1998), the entire document	1-212
Y	US 6,488,600 A (GORDON) 03 December 2002 (03.12.2002), the entire document.	1-212
X	US 5,842,699 A (MIRANDO et al) 01 December 1998 (01.12.1998), the entire document.	9-11
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Y		1-8, 12-212
Y	US 3,233,895 A (GRELLÉ et al) 08 February 1966 (02.08.1966), the entire document.	5-11, 36-38, 78-83, 100-113, 144-146, 192, 196
Y	US 5,776,018 A (SIMPSON et al) 07 July 1998 (07.07.1998), the entire document.	1-212
Y	US 6,682,444 B2 (GORDON) 27 January 2004 (27.01.2004), the entire document	1-212



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 published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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

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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

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# INTERNATIONAL SEARCH REPORT

International application No.  
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## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,330,175 A (KIM) 19 July 1994 (19.07.1994), the entire document.	9-12
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Y		1-212
'&'	US 6,042,490 A (LENHART) 28 March 2000 (28.03.2000), the entire document.	1-212
Y	US 3,339,925 A (NISSEN) 05 September 1967 (05.09.1967), the entire document.	1-212
Y	US 3,312,471 A (NISSEN) 04 April 1967 (04.04.1967), the entire document.	1-212
Y	US 5,624,122 A (WINKELHORN) 29 April 1997 (29.04.1997), the entire document.	5-11, 36-38, 78-83, 100-113, 144-146, 192, 196
Y	US 5,370,591 A (JEWELL et al) 06 December 1994 (06.12.1994), the entire document.	5-11, 36-38, 78-83, 100-113, 144-146, 192, 196
Y	US 4,452,444 A (SCHULZE, Jr) 05 June 1984 (05.06.1984), the entire document.	5-11, 36-38, 78-83, 100-113, 144-146, 192, 196
Y	US 4,162,063 A (Nissen et al) 24 July 1979 (24.07.1979), the entire document.	5-11, 36-38, 78-83, 100-113, 144-146, 192, 196

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/40426

### Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

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### BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

It is noted that the present PCT application includes claims directed to nine (9) distinct invention. However, the deadline for submitting the Lack of Unity was not met. Therefore, all claims have been examined.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Species I, claims 1-32      directed to a ball game system having a ball feeder, best seen in Figure 1A.

Species II, claims 33-61 directed to a ball game system including a resilient surface adjacent one or more deformable elastic surfaces, best seen in Figures 2A, 2B and 3.

Species III, claims 62-99      directed to a ball game system including a plurality of playing areas and a plurality of sensors, best seen in Figure 4.

Species IV, claims 100-136      directed to a ball game system including a plurality of playing areas and one or more ball feeders, best seen in Figures 1A and 5A.

Species V, claims 137-169      directed to a ball game system including a plurality of playing areas, a resilient surface adjacent one or more deformable elastic surfaces and means for adjusting the elasticity of rebounds, best seen in Figure 5B.

Species VI, claims 170-172      directed to a ball capture and feed system, best seen in Figure 5B.

Species VII, claims 173-175      directed to a ball game system including a planar playing surface, best seen in Figure 1A.

Species VIII, claims 176-178 directed to a ball game system including a plurality of playing surface and a means for controlling usage of the hoop and playing areas, best seen in Figures 1 and 5A.

Species IX, claims 179-212      directed to a ball game system including a planar playing surface, a plurality of sensors and means for controlling the operation of the sensors, best seen in Figure 4.

Currently, there are no generic claims.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

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Species I, requires a ball game system having a planar playing surface, a hoop, a ball feeder, means for receiving payment and means for controlling the delivery of the ball.

Species II, requires a ball game system having a planar playing surface including a resilient surface adjacent one or more deformable elastic surfaces, a hoop, a ball feeder, means for receiving payment and means for controlling the elasticity adjusting means in response to the payment received.

Species III, requires a ball game system having a plurality of planar playing areas each defined by a planar playing surface, each including a hoop, a plurality of sensors, means for receiving payment and means for controlling the operation of the sensors and receiving the position and trajectory information with which the control means creates an output indicative of the motion of the one or more players and ball in response to the payment received.

Species IV, requires a ball game system having a plurality of planar playing areas, each area including a hoop, one or more ball feeders, means for receiving payment and means for controlling the delivery of the balls from the one or more ball feeders.

Species V, requires a ball game system having a plurality of playing areas, each defined by a respective planar playing surface including a resilient surface adjacent one or more deformable elastic surfaces, each playing area including a hoop, means for adjusting the elasticity of rebounds, means for receiving payment and means for controlling the elasticity adjusting means in response to the payment received.

Species VI, requires a ball capture and feed system having means for receiving payment, means for delivering a ball to a position above a ball court, a ball collector for conveying balls

Species VII, requires a ball game system having a planar playing surface, a hoop, means for receiving payment and means for controlling the usage of the hoop and the playing surface.

Species VIII, requires a ball game system having a plurality of playing areas each defined by a respective planar playing surface, each playing area including a hoop, means for receiving payment and means for controlling the usage of the hoop and the playing surface.

Species IX, requires a ball game system having a planar playing surface, a hoop, a plurality of sensors outputting position and trajectory information with respect on one or more players, means for receiving payment and means for controlling the operation of the sensors and receiving the position and trajectory information.