

Patents

From the US Patent And Trademark Office web site (<http://www.uspto.gov/>), these patents were found when we searched for laser and gun in the titles.

United States Patent 4,365,439
Litynski Dec. 28, 1982
Toy laser-type gun
Abstract

A toy gun incorporates light and sound sources for simultaneous generation of light pulses and sounds reminiscent of an outer space laser gun when a trigger is depressed. Light transmission material in conjunction with a reflector, radiate and project the light pulses generated within the gun in two different directions. The electronic circuitry for generating the light pulses and the sounds is completely enclosed within the grip of the gun.

United States Patent 4,236,348
DuLac Dec. 2, 1980
Toy space gun
Abstract

A toy space gun comprising a hollow chamber and an elongate hollow cylindrical barrel extending therefrom, both of opaque molded plastic construction. A strobe unit including a strobe lamp is responsive to an operator trigger for generating a high intensity light flash of short duration. The lamp is mounted at the inner barrel end by a concave reflector which cooperates with a reflective internal surface in the barrel for projecting a major portion of the light flash through the barrel in a condensed pattern.

United States Patent 4,171,811
Meyer, et. al. Oct. 23, 1979
Light gun with photo detector and counter
Abstract

A toy gun or similar device usable with reflective target apparatus utilizes a pulsed light source and a self-contained light detector for detecting light reflected from the target apparatus back to the light detector. The gun includes an audible indicator responsive to the light detector for indicating each time a "hit" is made on the target apparatus, and also includes a resettable counter that provides an indication of the total number of such "hits" achieved in a given time period. The invention also provides a target having a pulsed light source to energize or actuate the light detector.

From the US Patent And Trademark Office web site (<http://www.uspto.gov/>), these patents were found when we searched for laser in the title and toy in the abstract.

United States Patent 4,586,715
Scolari, et al. May 6, 1986
Toy laser pistol
Abstract

A toy laser weapon such as a pistol utilizes a flash unit to generate a burst of high intensity light. A collimating device collimates the light into a beam simulating a laser beam. A target vest can be worn by the person that is the target of the simulated laser pistol and includes a target area of fluorescent material that indicates a hit when the light beam from the toy laser pistol strikes the target area. Also, a sound generator can be provided to emit a sound when the burst of light occurs. An exemplary circuit for use with the light pistol is also part of the invention.

This patent was found from searching the IBM patent search web site (<http://patent.womplex.ibm.com/>). It was found using the Boolean search and searching for laser and game and gun using all fields.

United States Patent [19]
Rockhold et al.

[11] **Patent Number:** 4,772,028
 [45] **Date of Patent:** Sep. 20, 1988

[54] **ELECTRONIC SHOOTOUT GAME**

- [76] **Inventors:** Christopher K. Rockhold, 305 Hollyridge Cir., Peoria, Ill. 61614; Louis G. Alster, 1033 E. Polk, Morton, Ill. 61550
- [21] **Appl. No.:** 90,015
- [22] **Filed:** Aug. 27, 1987
- [51] **Int. Cl.:** A63F 9/02
- [52] **U.S. Cl.:** 273/311; 434/22
- [58] **Field of Search:** 273/310, 311, 312, 16 C, 273/1 E; 434/21, 22; 272/105, 71, DIG. 5; 340/323 R

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,400,928	9/1968	Weidacher	340/323 R
3,870,305	3/1975	Harcrode	273/311
4,545,583	10/1985	Foarnan et al.	273/311
4,640,514	2/1987	Mylylä et al.	273/310

FOREIGN PATENT DOCUMENTS

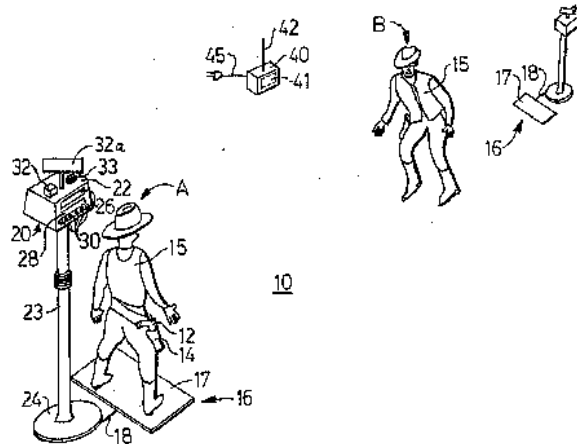
2426479 1/1980 France 273/311

Primary Examiner—Leo P. Picard
Assistant Examiner—Jessica Harrison
Attorney, Agent, or Firm—Ralph E. Walters

[57] **ABSTRACT**

The present invention relates to an electronic shootout game and more specifically to such a game intended to be played by two contestants disposed in facing relation on a prescribed shooting field. The game accurately simulates the 19th Century gunfighting practice and is completely controlled by a programmable microprocessor which includes audio and visual display to control and track the progress of the game during play. The guns include a radio frequency transmitter and antenna system which broadcasts the firing and successful hit modes by wireless communication with the computer which provides an instantaneous readout of such game functions.

12 Claims, 4 Drawing Sheets



Laura Miller and Steven Noto
Advisor - Steve Gutshlag
Senior Lab - Laser Shootout game
Patent and Standards Search
November 3, 1999

Standards

From: <http://www.nssn.org/>, search for "laser NOT medical NOT military NOT fiber":

Safety of laser products - Part 1: Equipment classification, requirements and user's guide

Deals with the safety of laser products. Covers laser radiation in the wavelength range 180 nm to 1 mm, indicates safe working levels of laser radiation and introduces a system of classification of lasers and laser products according to their degree of hazard. Replaces IEC 60825 (1984) and IEC 60820 (1986). Has the status of a group safety publication in accordance with IEC Guide 104.

Document Number: IEC 60825-1 Ed. 1.1 b:1998

Date of Publication: 1/15/98

Number of Pages: 209

Price: 195.00

ANSI Z136.1 American National Standard for Safe Use of Lasers

This standard provides recommendations for the safe use of lasers and laser systems that operate at wavelengths between 180 nm and 1mm.

Document Number: Z136.1

Approval Date: 2/5/93

Number of Pages: 120

Price Information: \$60 List/\$45 LIA Member

Safety of machinery -- Laser processing machines -- Safety requirements

Document Number: ISO 11553:1996

Publication Date: 8/29/96 0:00:00

From: <http://www.nssn.org/>, search for "toys":

Electric Toys

Covers safety requirements for electrically operated toys and miniatures of full-sized appliances that may not necessarily perform the expected function of the copied appliance and that are intended to be employed on nominal 120 volt branch circuits, including toy phonographs with motor-driven turntables and mechanical sound reproduction. The package for the toy, including packaging material if intended to be used with the toy, is considered to be a part of the toy and is covered by these requirements.

Document Number: UL 696-1995

ANSI Approval Date: 12/19/95 0:00:00

Electrically Operated Toys

This Standard applies to household electric toys operating at nominal potentials of 120 volts or less, including extra low potential, and intended for use in ordinary (ie, non-hazardous) locations as defined in the Canadian Electrical Code Part I.

Document Number: C22.2 No. 149-1972(R1992)

Publication Date: 1972

Price (US): 14.00

From: <http://global.ihs.com/>, search for "electronic toys":

Safety of Electronic Toys

Document Number: EN 50088 (BS)

Most Recent Update: 3/15/98

Number of Pages: 46

Price Information: \$153

References

From: <http://www.biblio.ieee.org/>, search for "laser" in journal titles:

Numerical Analysis of Laser Beam Width and Beam Quality of Q-Switched Lasers Using Different Definitions of the Beam Width

Ajer, H.;
Norwegian Defence Research Establishment

No abstract available

From: http://www.spie.org/bookstore/adv_search.html, search for "laser transmission" in title and "data transmission" in abstract:

Laser-induced atmospheric transmission windows in the infrared

Ivanov, Sergey V.; Buzykin, O. G.; Rusyanov, Dmitry A.;
AA(Scientific Research Ctr. for Technological Lasers) AB(Central Aerohydrodynamics Institute)

The reduction of strong interfering absorption of atmospheric water vapor and carbon dioxide in infrared and microwave regions is important in various applications. We present an accurate theoretical model and simulation results for nonequilibrium infrared high-resolution absorption spectra of the atmospheric air aiming to study its laser bleaching.

High-power, high-data-rate laser diode transmitter

Ebben, Thomas H.; Begley, David L.; Marshalek, Robert G.;
AA(Ball Aerospace Systems Group)

This paper reports the performance and test results of a high-power laser diode transmitter (HPLDT). The HPLDT provides a controlled environment to operate semiconductor lasers with power levels exceeding 0.5 W and is scalable to multi-watt output powers. It provides thermal and optical power control and overdrive protection, and is capable of modulating the laser at high data rates (up to 10^9 pulses/s). In addition, the HPLDT can accommodate a variety of semiconductor lasers and input modulating signal types over a wide bandwidth.

Laser radar transmitter issues

Hasson, V.; Theophanis, G.; Chou, H.; Pacheco, D. P.;
AD(Avco Research Laboratory, Inc., Everett, MA)

The presentation focuses on issues which relate directly to the generation of coherent CO₂ laser pulses at energy levels of up to about 100J and duration of tens of microseconds. Important factors which influence the beam coherence are addressed in the context of E-beam and self-sustained discharge technologies. An illustration of possible local and volumetric discharge nonuniformities is provided. Diagnostic procedures being implemented at ARL are reviewed and experimental data provided. Detailed computer modeling of chirp phenomena has been conducted at ARL. The results compare favorably with experimental data; the modeling and experimental data are presented.