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CROSS REFERENCE

Dec. 17, 1963 W. F. HELLMAN 3,114,362
TOY DART GUN
2 Sheets-Sheet 1
Filed April 3, 1961

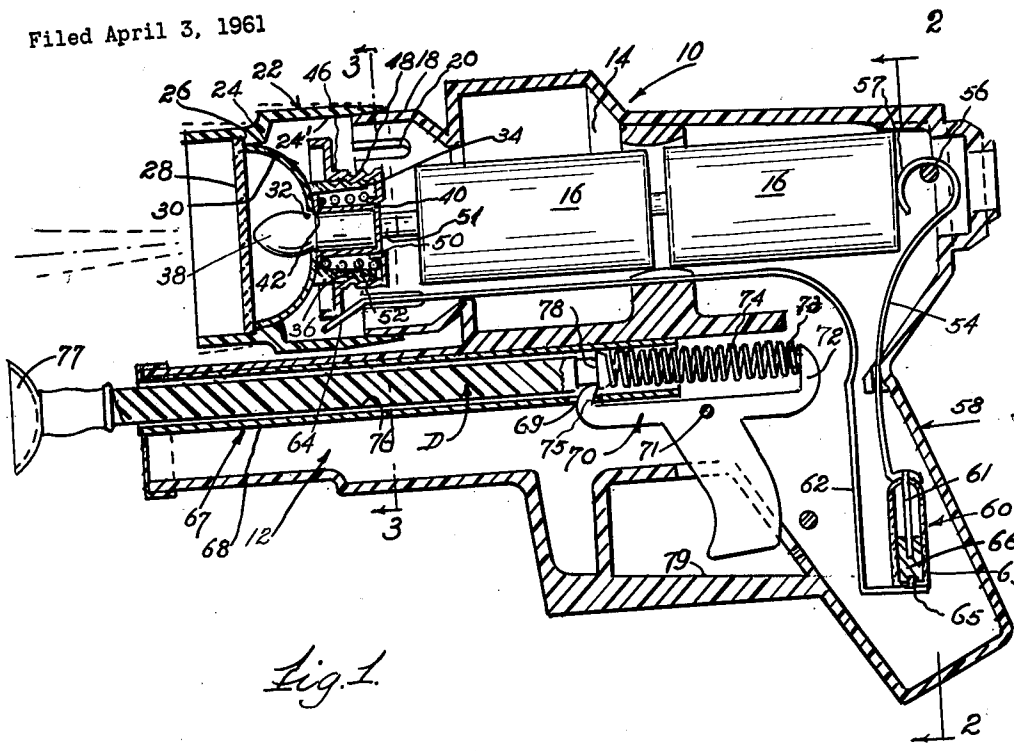


Fig. 1.

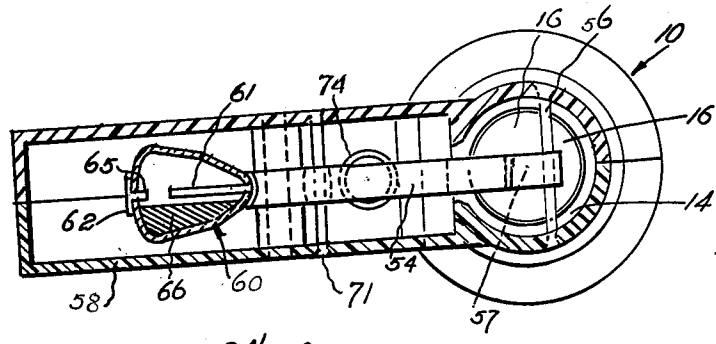


Fig. 2.

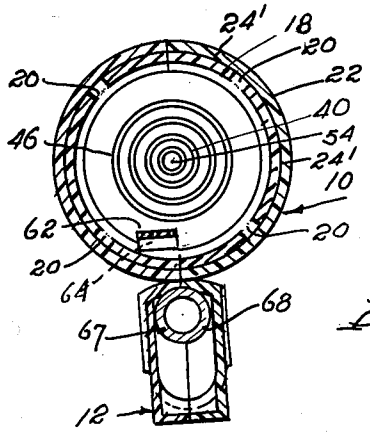


Fig. 3.

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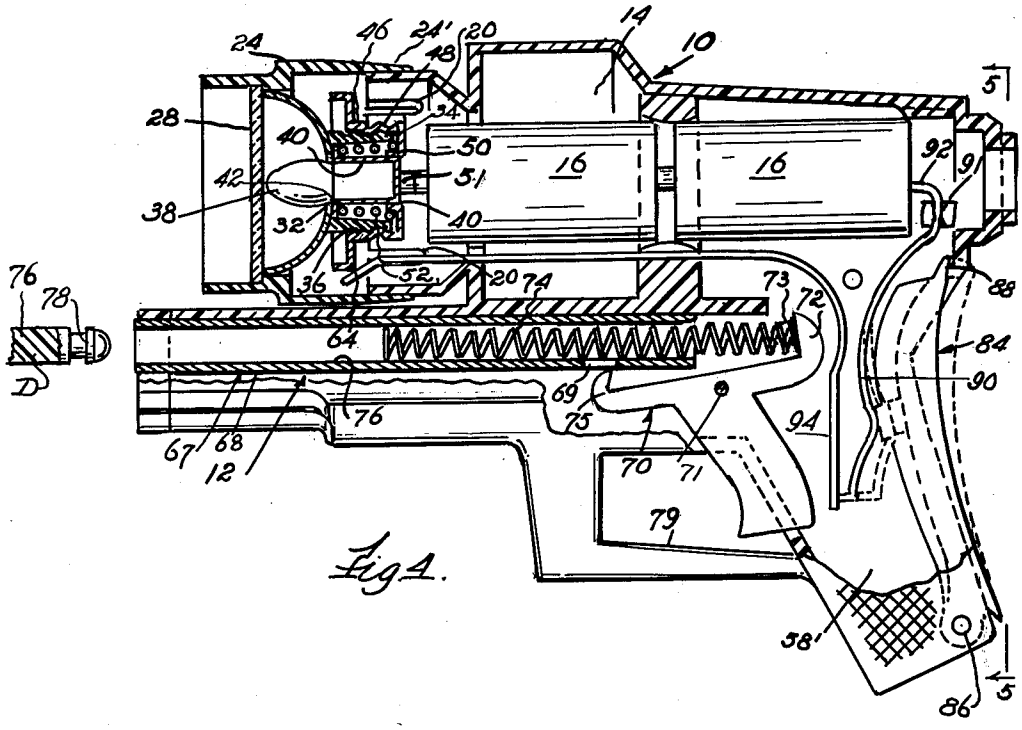


Fig 4.

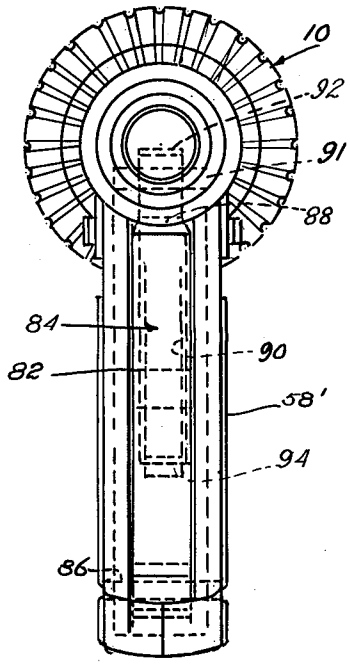


Fig 5.

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United States Patent Office 3,114,362 Patented Dec. 17, 1963

3,114,362

TOY DART GUN

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Filed Apr. 3, 1961, Ser. No. 100,279
2 Claims. (Cl. 124—27)

The invention relates to a toy dart gun.

One of the objects of this invention is to provide a toy dart gun with means for projecting or casting a beam of light to illuminate an area which will form the target at which the dart gun is to be aimed and against which the dart is directed.

Another object of this invention is to provide a toy of the foregoing character provided with batteries as a source of current supply, wherein the electrical circuit for the light beam is operated only when the toy gun is in use, thereby eliminating any possibility that the light will remain on when the toy is not in use.

It is appreciated that children in playing with battery operated toys will forget to turn off the switch after they have ceased playing with the toy, consequently, the batteries are used up before their normal play usage and thus have to be repeatedly replaced. It is therefore one of the objects of this invention to provide a toy dart gun having means for projecting a light beam to serve as a target area with means so that the light beam will not function during non-use of the toy, thereby preserving the life of the battery.

Another object of this invention is to provide a dart gun with an adjustable light beam unit so that the light beam is focused to provide a target area in line with the flight of the dart.

Other objects will become apparent as this description progresses.

In the drawings:

FIGURE 1 is a longitudinal sectional view of one embodiment of this invention, with the dart in position to be shot.

FIGURE 2 is a sectional view taken on lines 2—2 of FIGURE 1, but with the gun laid sidewise to show the position of the mercury in the mercury switch.

FIGURE 3 is a view taken on lines 3—3 of FIGURE 1.

FIGURE 4 is a longitudinal sectional view of another embodiment of the invention, with the trigger and parts associated therewith in released position after the dart has been shot, and

FIGURE 5 is an end elevational view taken on lines 5—5 of FIGURE 4.

Reference will first be had to the structure shown in FIGURES 1 to 3 inclusive.

The toy is shaped and formed to simulate a gun, and is formed preferably of plastic into longitudinal half sections which are suitably joined together to form an integral unit. The upper body portion of the toy, indicated generally by the numeral 10, contains the batteries and the light bulb, whereas the lower portion, indicated by the numeral 12, contains the structure for shooting the dart.

The upper body portion 10 has a hollow compartment 14 which is circular in cross-section and is adapted to accommodate a pair of small dry cell batteries 16. Extending forwardly of the upper body portion and integrally formed therewith is an enlarged circular rim 18, provided with a plurality of longitudinally extending spaced slots 20.

An adjustable light beam unit, generally indicated by the numeral 22, is adapted to be secured to the circular rim 18 and is adjustable relative thereto for a proper focusing of the light beam. The light beam unit 22 includes a circular housing 24 provided with an internal shoulder 26 against which a lens 28 is secured. A reflector 30 is

fixedly secured within the circular housing 24 rearwardly of the lens. The reflector is provided with a central opening 32 and attached to said reflector is a rearwardly extending sleeve 34 which is externally threaded as at 36. The circular housing 24, lens 28, reflector 30 and sleeve 34 are secured together as an integral structure.

A light bulb 38 is positioned inside the sleeve 34 and extends through the opening 32 into the reflector 30. The light bulb is partially encased in a conventional tubular metal body 40 having an outwardly extending flange 42 at the front, which engages the rear of the reflector 30 to limit the forward movement of the light bulb.

A metal dish-shaped member 46 is internally threaded as at 48 to engage threads 36 on sleeve 34 to secure metal member 46 thereto. Member 46 has a central opening 50. A coil spring 52 is positioned inside member 46 and surrounds the metal body 40 on the light bulb, with the front end of the spring engaging the flange 42 to maintain the light bulb 38 in the reflector. With the dish-shaped member 46 threaded to sleeve 34, the light bulb 38 is locked in position and the light bulb and member 46 become secured together with the housing 24 as a unit, and same constitutes the light beam unit 22.

As seen in FIGURE 1, the terminal 51 of the light bulb extends rearwardly of dish-shaped member 46 and engages the positive pole of one of the batteries 16. The rear portion 24' of the housing 24 of the light beam unit is secured to the circular rim 18 by a friction fit, however, the slots 20 permit the light beam unit 22 to be adjusted to focus the light beam. The adjustment is made by merely tilting the light beam unit 22 in any desired direction and this may be readily accomplished by a slight touching of the light beam unit. The light beam unit thus is universally adjustable for directing a light beam forwardly of the gun in alinement with the barrel of the gun so that the dart may strike the spot cast by the light beam.

The dry cell batteries 16 are inserted in the body of the toy gun through the front opening, after which the light beam unit 22 is then frictionally secured to the rim 18.

Secured to the rear of the housing is a metal strip 54 which is fixedly secured at the upper end on a stationary transverse pin 56 secured to the body. The upper end of the metal strip 54 is curved forwardly as at 57 to make contact with the negative pole of the second battery. The strip 54 extends downwardly into the hollow handle portion 58 and supports a mercury switch, generally indicated at 60. The metal strip 54 connects to a metal rod 61 which extends into the tube 63 of the mercury switch.

Another metal strip 62 is secured to the lower end of the tube and said strip has a contact 65 extending into the tube of the mercury switch. The strip 62 extends upwardly and longitudinally forward inside the upper body of the gun and makes contact with the metal dish-shaped member 46 as at 64.

When the toy is held in a shooting position, such as shown in FIGURE 1, the mercury 66 inside the tube 60 will be positioned in the bottom of the tube, thereby closing the circuit between the metal strips 54 and 62 through rod 61 and contact 65 to the light bulb and cause the light bulb 38 to light up. However, if the toy is laid down, as shown in FIGURE 2, the mercury 66 within the mercury switch will flow away from the position shown and break the circuit. Thus, it is only when the gun is held in a shooting position will the light bulb be on and at no other time, so that the batteries are not wasted.

The lower portion of the simulated gun, generally designated by the numeral 12, includes the barrel portion 67 which has a sleeve 68 defining the bore. A generally

T-shaped trigger indicated by the numeral **70** is pivotally mounted as at **71** on a cross-pin which is secured in the walls of the lower portion of the gun. The trigger **70** has an upwardly extending rear portion **72** with a forwardly extending projection **73** on which the rear end of a coil spring **74** is anchored. The coil spring **74** extends into the sleeve **68**.

The trigger **70** also has an upwardly extending hook **75** at the front end which enters an opening **69** in the sleeve **68** for engagement with a dart. The dart, generally indicated at D, has a stem **76**. The front of the stem has a suction cup or rubber cup **77** secured thereto. Other types of heads may be used if desired. The rear of the stem has a reduced portion which provides an annular shoulder **78** which is adapted to be engaged by the hook **75** of the trigger when the dart is inserted into the sleeve **68**, as shown in FIGURE 1. The triger **70** extends through an opening in the lower portion of the unit into a recess **79**, which forms a finger recess into which the finger is inserted for engagement with the trigger.

To load the gun, the trigger mechanism is as shown in FIGURE 4 and the dart D is inserted from the front of the barrel and pushed rearwardly against the spring **74**, compressing it and thereby pivoting the trigger **70** so that the front hook **75** of the trigger enters the opening **69** of the sleeve and engages the shoulder **78** of the dart, as in FIGURE 1, to lock the dart in position. To shoot the dart, the trigger **70** is engaged by the finger and pressed rearwardly, pivoting the trigger counterclockwise, as in FIGURE 4, which releases the dart so that the coil spring **74** projects the dart outwardly toward a target.

The structure in FIGURES 4 and 5 is identical to that shown in FIGURES 1 to 3 respectively, except for that means for closing the circuit to actuate the light bulb. The parts in FIGURES 4 and 5 which correspond to those of FIGURES 1 to 3 will not be again described but will bear the same reference as they do in FIGURES 1 to 3.

In lieu of the mercury switch shown in FIGURES 1 and 2, a manually actuable switch is used in the structure shown in FIGURES 4 and 5 and same will now be described. It will also be seen that the handle portion of the gun is different in FIGURES 4 and 5, as compared to FIGURES 1 to 3.

The handle portion **58'** of the gun in FIGURES 4 and 5 has an elongated centrally positioned opening or slot **82** in the rear of the handle to accommodate a member generally indicated at **84**, which is pivotally mounted as at **86** at the bottom on a suitable pin.

In normal unused position the pivotal member **84** will be positioned as shown in dotted lines in FIGURE 4 so that a portion of same extends outwardly and rearwardly of the handle for manual engagement. A projection **88** on pivotal member **84** strikes the rear portion of the body of the gun to prevent the pivotal member **84** from being pushed out of the rear portion of the gun.

A metal spring member, generally indicated at **90**, which forms a part of the switch has its vertical portion shaped to engage the pivotal member **84** and normally urges the pivotal member **84** rearwardly until stopped by the projection **88**. The metal spring member **90** is fixedly supported at the top as at **91** and extends forwardly as at **92** for contact with the battery **16**.

The metal strip **94** is supported in the same manner as the strip **62** previously described in connection with FIGURE 1 and is generally of inverted L-shape, with the base of same extending into the hollow handle portion.

The spring member **90** is normally out of contact with the strip **94** and the circuit is open. It is only when the pivotal member **84** is pushed inwardly or forwardly about its pivot **86** that it engages the spring member **90** to push it forwardly to make contact with the strip **94** and thus close the circuit to the light bulb **38** to illuminate same. By virtue of this construction the light is actuated only when the gun is held tightly in the hand.

With this invention, the adjustable light beam unit is adjustable universally in any direction forwardly to focus the light beam on a wall or the like and is adjustable so that the light beam on the wall forms a target area in alinement with the normal flight of the dart.

It will be understood that various changes and modifications may be made from the foregoing without departing from the spirit and scope of the appended claims.

What is claimed is:

1. A toy dart gun comprising a hollow housing at the upper end thereof and supporting a battery, a hollow handle depending from said hollow housing, a light beam unit secured to the front of said hollow housing and in circuit with said battery, means for tilting said light beam unit in any direction to direct the light beam forwardly of said gun to define a target area, a gun barrel positioned below said light beam unit and adapted to receive the stem of a dart, a trigger mechanism adapted to secure said dart within said barrel in retracted position and adapted to release said dart when manually actuated toward said target area, a switch member for closing the circuit between said battery and said light unit, said handle having a longitudinally extending slot in the rear thereof of substantially the length of the handle, means supported by said handle and movably positioned in said slot and extending rearwardly of said slot so as to be manually engaged when the hand embraces the handle and to be moved forwardly by pressure of the hand to close said switch.

2. A toy dart gun comprising a hollow housing at the upper end thereof and supporting a battery, a hollow handle depending from said hollow housing, a light beam unit secured to the front of said hollow housing and in circuit with said battery, means for tilting said light beam unit in any direction to direct the light beam forwardly of said gun to define a target area, a gun barrel positioned below said light beam unit and adapted to receive the stem of a dart, a trigger mechanism adapted to secure said dart within said barrel in retracted position and adapted to release said dart when manually actuated toward said target area, a switch member for closing the circuit between said battery and said light unit, said handle having a longitudinally extending slot in the rear thereof of substantially the length of the handle, a member pivotally supported by said handle and positioned in said slot and extending rearwardly of said slot substantially the length of the slot so as to be manually engaged when the hand embraces the handle and to be pivoted forwardly by pressure of the hand to close said switch.

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