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FLASHING LIGHT WHEELED TOY

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My invention relates to a flashing light wheeled toy. My invention has to do, more specifically, with a toy in the form of a small vehicle which can be drawn along by a string and which includes means for producing a flashing light as well as a clicking noise as it is pulled along so that it will be very fascinating to a child.

The body of the toy may take various forms although I prefer that it simulate a firefly. It is mounted on wheels and can be pulled along by a string. A light bulb is provided on the body and receives power from a battery source carried by the body. A switch is provided for controlling the light bulb and is closed every time a pull is exerted on the string. A flashing switch is also provided which is controlled by rotation of the wheels to flash the light when the toy is pulled along by the string. A noisemaking means is also actuated by the rotation of the wheels to give a clicking sound.

The preferred embodiment of my invention is illustrated in the accompanying drawings. In these drawings: Figure 1 is a vertical sectional view showing my toy device.

Figure 2 is a diagrammatic view illustrating how parts of the device may be disassembled to permit replacement of batteries.

Figure 3 is a schematic view of the electrical circuit of the device.

Figure 4 is a vertical sectional view through the housing which encloses the switches and noisemaking means.

With reference to the drawings, I have illustrated the body of the toy generally by the numeral 10 and this body can take various forms. It is carried by a pair of wheels 11 keyed on a square axle 12 and a pair of wheels 13 keyed on a square axle 14. The body 10 may be made of any suitable material but is preferably plastic and has a section 15 which is translucent or transparent or which may be actually a window or opening (not shown) through which a flashing light can be seen, as will later appear.

Carried within the body 10 is a housing, indicated generally by numeral 16 and which is preferably formed of plastic or other suitable electrically non-conductive material. This housing 16 is divided into two sections, namely, a section 17 for containing batteries and a section 18 for containing the switching and noisemaking means of the toy.

The section 17 is provided with an integral depending lug 19 which is provided with a circular opening 20 for receiving the square axle 12 which will rotate therein. Although the axle 12 need not be square, it is made so in order that it provides a simple way for keying the wheels 11 thereon or can be used interchangeably as the axle 12 or as the axle 14. The housing section 17 contains two small batteries 21 and 22 of the flashlight type which are arranged in series. A bulb socket 44 is provided on the housing section 17 and the bulb 23 screwed therein will be disposed adjacent the light-transmitting section 15 of the body 10. In the case of a firefly toy, this will be the tail section and the housing 16 will be supported in an upwardly and rearwardly inclined relationship within the body 10. When the bulb 23 is mounted in the socket 44 it will contact one end of the battery 21 and the other end of this battery will engage a spring contact strip 24. The other battery 22 at its upper end engages a contact spring 25 which is an extension of the socket 44 while its opposite end engages a spring contact 26.

The spring contacts 24 and 26 are carried by the housing section 18. They not only serve as contacts but serve as friction means for keeping the housing sections 17 and 18 aligned with each other. These sections 17 and 18 are provided with laterally extending interlocking tongues and grooves 27 formed respectively on the lower end of the section 17 and on the upper end of the section 18. These connections permit the two housing sections to be separated by moving one laterally relative to the other as indicated diagrammatically in Figure 2. The springs 24 and 26 are of substantially U-form in plan and their open ends are both turned in the same direction. To assemble the two sections 17 and 18, they are moved relatively in the directions indicated by the arrows in Figure 2. When in a separated condition indicated in Figure 2, the bottom of the section 17 is completely open to permit removal and replacement of the batteries 21 and 22.

The lower end of the housing section 18 is mounted on the axle 14. For this purpose the housing section 18 has a supporting spider 30 at each side, each of which is provided with a bearing opening which rotatably receives a sleeve 32. This sleeve 32 has a square opening through which the axle 14 extends so that it will rotate with the axle. Adjacent one end of the sleeve a ratchet 33 is formed and adjacent the other end a cam 34 is formed. For making a clicking noise a leaf spring 35 is fastened to the upper end of the housing section 18 and extends rearwardly and downwardly, being provided with a turned end which engages the teeth of the ratchet 33.

The cam 34 is adapted to engage and control the spring switch arm 36. The cam extends only partially around the sleeve 32 and when it engages the contact 36 moves it downwardly as shown in Figure 4. This switch arm 36 is in electrical contact with the spring contact 26. In electrical contact with the spring contact 26 is another switch arm 37 which has a downturned outer end 38. This arm 38 normally springs up against a stop pin 39 formed as a part of the housing 18. However, the pull spring 40 for pulling the toy is connected to its outer end and will pull it downwardly whenever a pull is exerted on the string. It will be noted that the string 40 is threaded through a passage 41 in the section 18 so that a pull on it will exert a downward pull on the free end of the arm 37. The downward position of the arm 37 is limited by a stop pin 42 formed as a part of the housing section 18. This pin 42 is so located that when the cam 34 forces the arm 36 downwardly and the arm 37 is pulled down into contact with the pin 42, the end 38 will not contact the arm 36 as shown by the full lines in Figure 4. Thus, the circuit will be broken at this time. However, if the cam 34 is in a position to permit the arm 36 to swing up into contact with the stop pin 43, which is formed on the housing section 18, the downward pull on the arm 37 will cause the end 38 thereof to contact the arm 36 and make the circuit as shown by the dotted lines in Figure 4.

It will be noted from Figure 3 that both the switch arms 36 and 37 are connected in series in the circuit with the batteries 21 and 22 and the bulb 23 and must be in contact with each other for the bulb 23 to light. Consequently, when a pull is exerted on the string 40 the toy...
will be pulled along and the cam 34 will be rotated by the axle 14, moving the arm 36 at intervals into and out of contact with the end 38 of the arm 37. The result will be that the bulb 23 will flash as the toy is pulled along. However, it must be pulled along with the string 40 and not pushed, otherwise the end 38 of arm 37 will not be in its lowermost position and even when rotation of the cam 34 permits the arm 36 to rise it will not engage the end 38. At the same time that cam 34 rotates the ratchet 33 also rotates and makes the clicking noise.

It will be apparent from the above description that I have provided a toy in the form of a small vehicle which can be pulled along by a child and which will be extremely fascinating due to the flashing light and the clicking noise which are produced automatically as the toy is pulled along. The flashing of the light not only makes the toy attractive but results in longer battery life. However, the batteries can be replaced readily by removing the wheels and axles and separating the housing sections by relative laterally movement. Disassembly and assembly of the parts to permit replacement of the batteries is very simple.

Various other advantages will be apparent.

Having thus described my invention, what I claim is:

1. A toy in the form of a vehicle comprising a body having wheels for supporting it for movement along a surface, pulling means connected to the body for pulling it along the surface, a light bulb carried by the body, a source of power for the light bulb carried by the body, a switch carried by the body and connected in a circuit with said power source and said light bulb, said switch comprising a pair of contacts movable toward and away from each other, the first of said contacts being connected to said pulling means for movement thereby toward the other contact, and means for moving the second of said contacts toward and away from the first contact upon rotation of said wheels.

2. A toy comprising a body having wheels for supporting it for movement along a surface, pulling means connected to the body for pulling it along the surface, a light bulb carried by the body, a source of power for the light bulb carried by the body, a switch carried by the body and connected in series with said power source and said light bulb, said switch comprising a movable contact arm actuated by said pulling means and another movable contact arm actuated upon rotation of said wheels, cam means for actuating said last-named movable contact arm, said cam means being rotated upon rotation of said wheels, a housing within said body which is divided into two separable sections, one section containing a battery as said power source and the other section containing said switch, said pulling means comprising a string connected to the first movable contact arm which has a downturned end, said arm being a spring arm which is normally in an up position, and the second movable contact arm being a spring arm movable towards and away from said downturned end of the other arm by said cam, said second arm normally being in an up position.

References Cited in the file of this patent

UNITED STATES PATENTS

1,750,152 Alland ------------ Mar. 11, 1930
2,036,328 Furey -------------- Apr. 7, 1936
2,599,208 Starr -------------- June 3, 1952