

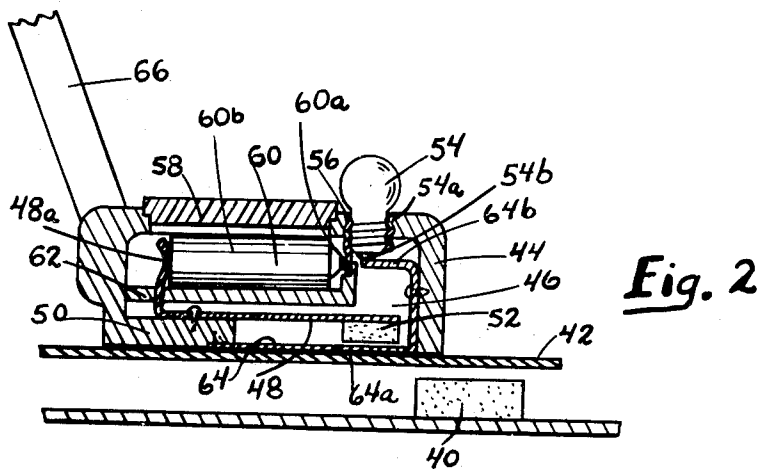
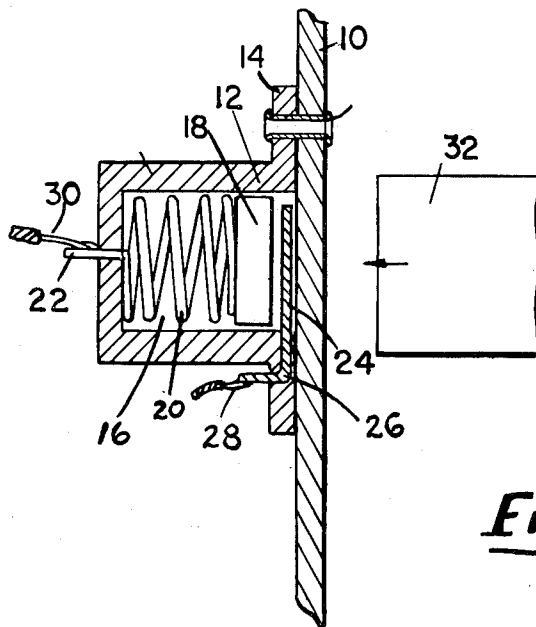
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J. H. LEMELSON

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TOY MINE DETECTOR

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INVENTOR.
Jerome H. Lemelson
BY

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TOY MINE DETECTOR

Jerome H. Lemelson, Staten Island, N. Y.

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2 Claims. (Cl. 46—236)

The present invention relates to toys, and is a division of my co-pending application Serial No. 200,372, filed December 12, 1950, and entitled "Toy Switches," which co-pending application is now abandoned. Specifically, the present invention is concerned with an electrically operable, magnetically activated toy in which a surprise action, such as an audible or visible warning, occurs in response to the toy being brought into proximity to a magnet or magnetically susceptible material.

The curiosity of magnetic attraction and repulsion has long been a source of fascination to children. As such, numerous toys have been constructed according to the well understood phenomenon of magnetic attraction and repulsion, such as those in which one object is made to follow the movements of another object by the use of appropriately poled magnets and those in which animation is brought about by the proximity of a magnet to a component of the toy. In such known toys, it is characteristic that physical motion occurs as a result of the proximity of the magnetic object; such physical movement is tell-tale evidence of the magnetic action to the child and as such detracts from the sales appeal of the toy.

It is broadly an object of the present invention to provide a toy incorporating an electrically operable visual or audible alarm device which is activated by the invisible forces of magnetism. Specifically, it is within the contemplation of the present invention to provide such a toy in which the manner of activating the toy is concealed from the user.

To advantage, toys constructed according to the present invention may be designed to simulate the action of a mine detector or similar detection devices in which a warning signal, either audible or visual occurs as a result of the proximity of the toy to a magnet or magnetically susceptible object.

The above objects as well as further features and advantages of the present invention will be best appreciated by reference to the following detailed description of several illustrative embodiments, when taken in conjunction with the accompanying drawing, wherein:

Fig. 1 is a fragmentary view, with parts broken away and sectioned for clarity, showing a magnetically activated toy embodying features of the present invention; and,

Fig. 2 illustrates an electrically operable magnetically activated toy according to the present invention.

Referring now specifically to Fig. 1, there is shown a fragment of the casing or wall 10 of a toy, the details of which will become apparent after consideration of the several embodiments of the present invention. Secured upon the wall 10 is a cup-shaped housing 12 having a flanged end 14. The flanged end 14 is in abutment with the wall 10; thus the housing 12 and the wall 10 cooperate to define a completely enclosed chamber. Disposed within the chamber 16 is a movable contact element 18 which is either a magnet or of a magnetically susceptible material. The movable contact element 18 is supported for movement toward and away from the wall 10 through provision of a coil spring 20 or the like which is anchored

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on the housing 12, for example by extending the terminal end 22 of the coil spring 20 through the wall of the housing remote from the wall 10, as illustrated.

Interposed between the movable contact element 18 and the wall 10 is a stationary contact element 24. The stationary contact element 24 is rigidly anchored in face to face relation with the movable contact element 18 through an integral extension 26 thereof which extends through an adjacent portion of the housing 12.

In the illustrative form of the invention, the integral extension 26 of the stationary contact element 24 terminates externally of the housing 12 and is connected to a first lead or conductor 28; the mounting member 20 for the movable contact element 18 is made of electrically conductive material (illustrated as a coil spring), such that the terminal end 22 which extends externally of the housing may be electrically connected to a further electrical conductor 30. Although not illustrated, the electrical conductors 28, 30 are in circuit with a source of electrical energy and a utilization device, such as an electric motor, an audible warning device in the form of a bell, or a visual warning device in the form of a light. Upon movement of the contact element 18 into engagement with the contact element 24, a circuit is completed for such utilization device via the conductor 28, the stationary contact element 24, the movable contact element 18, the mounting member 20, the terminal 22, and the electrical conductor 30.

The energization circuit is closed in response to the movement of a magnet or magnetically susceptible object 32 toward the wall 10 of the toy. The circuit will be closed when the magnetic attraction of the object 32 is sufficient to displace the movable contact element 18 toward the stationary contact element 24; this may occur when the paramagnetic object 32 is spaced from the wall 10 or in direct contact therewith. If the actuating element 32 consists merely of magnetically susceptible material, then the movable contact element must necessarily be a magnet for operation of the device. In a preferred form of the invention, both the movable object 32 and the movable contact or switch element 18 are magnets to obtain the most pronounced action.

In Fig. 2, there is shown an actual toy embodying a magnetically activated switch constructed according to the principles outlined in conjunction with Fig. 1. This toy is constructed to simulate a detecting unit, such as the well known wartime mine detector, and is capable of giving a visual indication of the presence of a magnet or magnetically susceptible object 40 beneath the relatively thin playing surface 42 of the toy. Above the surface 42 is a hollow downwardly opening shell 44 which cooperates with a contact section 64a to provide a chamber or enclosure 46. Disposed within the enclosure 46 is a modified magnetically actuated switch consisting of a spring 48 anchored at one end to a shoulder portion 50 of the shell 44. The spring, which is flat, extends horizontally above the relatively thin playing surface or wall 42, and carries on the undersurface thereof adjacent its free end a movable contact element 52. In this form of the invention, the warning device is illustrated as a lamp 54 screwed within a socket 56 which is supported on the housing or shell 44. The bulb thus is disposed on the top of the shell in a position wherein it is readily visible. Access to the interior of the housing is had through a removable cover 58.

Within the housing is a self-contained low voltage source in the form of a battery 60 which is mounted on an integral extension or shelf 62 of the housing 44. The inner terminal 60a of the battery 60 is connected to the socket 56 through provision of an integral extension on the socket and thus to the outer terminal 54a of the

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bulb 54. The outer terminal or casing 60b of the battery is connected to an integral extension 48a of the movable spring supporting the contact element 52. A stationary contact element 64 is formed with a flat contact section 64a beneath and facing the movable contact element 52 and with an integral extension 64b in contact with the inner terminal 54b of the lamp or bulb 54. It will be appreciated that the energization circuit from the battery 60 to the bulb or the warning device 54 may be completed upon contact of the movable contact element 52 with the underlying part 64a of the stationary contact element 64. The closing of the circuit occurs upon bringing of the movable contact element 52 enclosed within the housing into proximity to the paramagnetic body 40 by manipulation of a handle 66 fixed to the housing. The energization circuit for the lamp 54 includes a path from the lamp via the socket 56 to the inner terminal 60a of the battery, and a further path from the inner terminal 54b via the extension 64b, the flat contact path 64a, the movable contact element 52, the supporting arm 48 and the extension 48a in contact with the outer terminal or casing 60b of the battery 60.

It will be appreciated that the toy mine detector may be manipulated over the thin wall or playing surface 42 by the user who grasps the handle 66; and that the wall 42, and the body of paramagnetic material 40 associated therewith, simulate a mine field or the like. The body 40 of paramagnetic material attracts the magnet within the housing when the bottom of the top is brought into juxtaposition with the region of the surface adjacent the body.

Numerous modifications are intended within the scope and spirit of the present invention and in certain instances certain features of the invention will be used without a corresponding use of other features.

What I claim is:

1. A toy mine detector including a casing having a relatively thin, flat wall, a handle attached to said casing for moving said mine detector toy, a battery mounted in said casing, an electrical warning device external to said casing and operable by said battery, a switch having a

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movable switch-closing arm hidden from external view and in circuit with said battery and said electrical device, a magnet mounted within said casing and operatively connected to said arm, said magnet being adapted to move said arm to close said switch, said magnet being positioned adjacent to said wall of said casing, said casing completely enclosing the movable assembly of said arm and said magnet whereby there is no tell-tale evidence externally of said detector indicating the manner in which operation is initiated, said magnet being normally spaced from said wall and out of contact therewith, a simulated mine field including a surface over which said detection toy can be moved, and a body of paramagnetic material associated with said surface to attract said magnet when said wall is brought into juxtaposition with said surface.

2. A toy mine detector including a casing having a relatively thin, flat wall, a handle attached to said casing for moving said mine detector toy, a battery mounted in said casing, an electrical warning device external to said casing and operable by said battery, a switch having a movable switch-closing arm hidden from external view and in circuit with said battery and said electrical device, a magnet mounted within said casing and operatively connected to said arm, said magnet being adapted to move said arm to close said switch, said magnet being positioned adjacent to said wall of said casing, said casing completely enclosing the movable assembly of said arm and said magnet whereby there is no tell-tale evidence externally of said detector indicating the manner in which operation is initiated, said magnet being normally spaced from said wall and out of contact therewith, a simulated mine field including a surface over which said detection toy can be moved, and means associated with said surface adapted to receive a body of paramagnetic material which is arranged to attract said magnet when said wall is brought into juxtaposition with said surface.

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