

Feb. 14, 1967

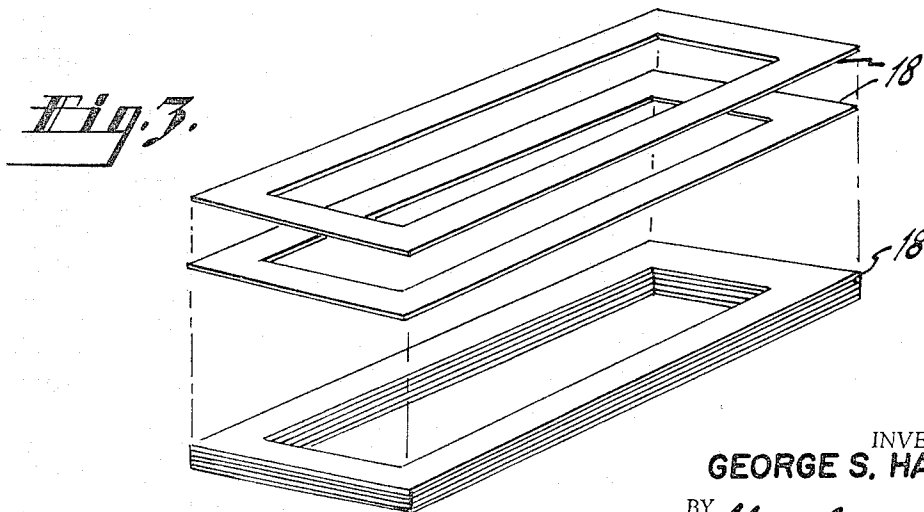
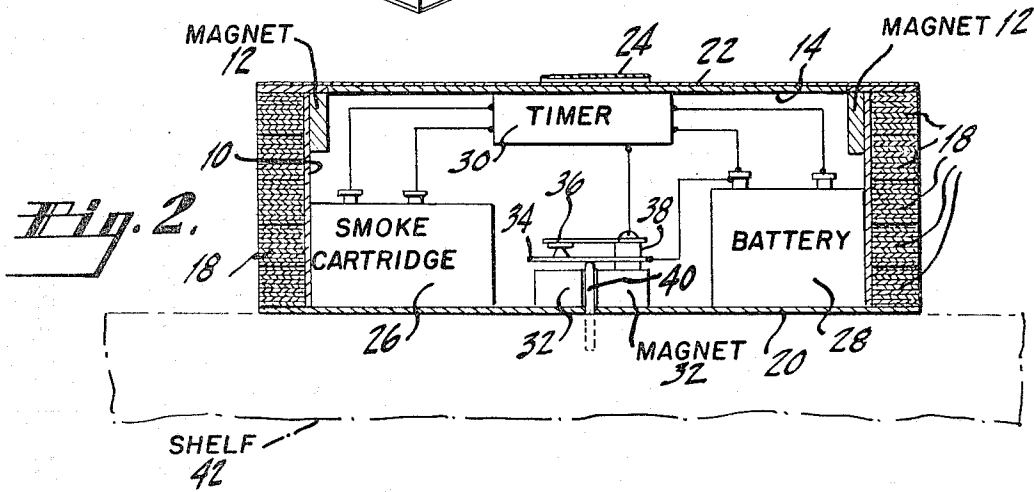
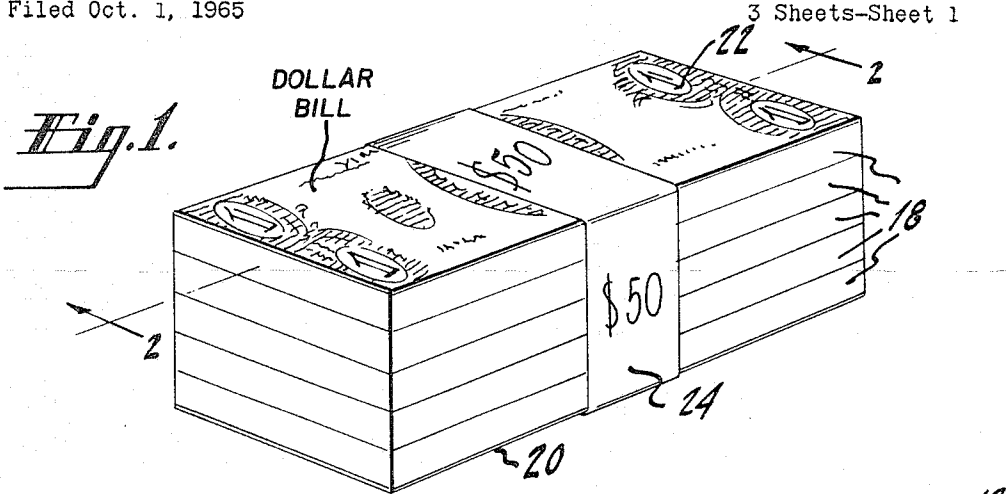
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3,303,592

ROBBERY PROTECTIVE AND DETECTING DEVICE

Filed Oct. 1, 1965

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

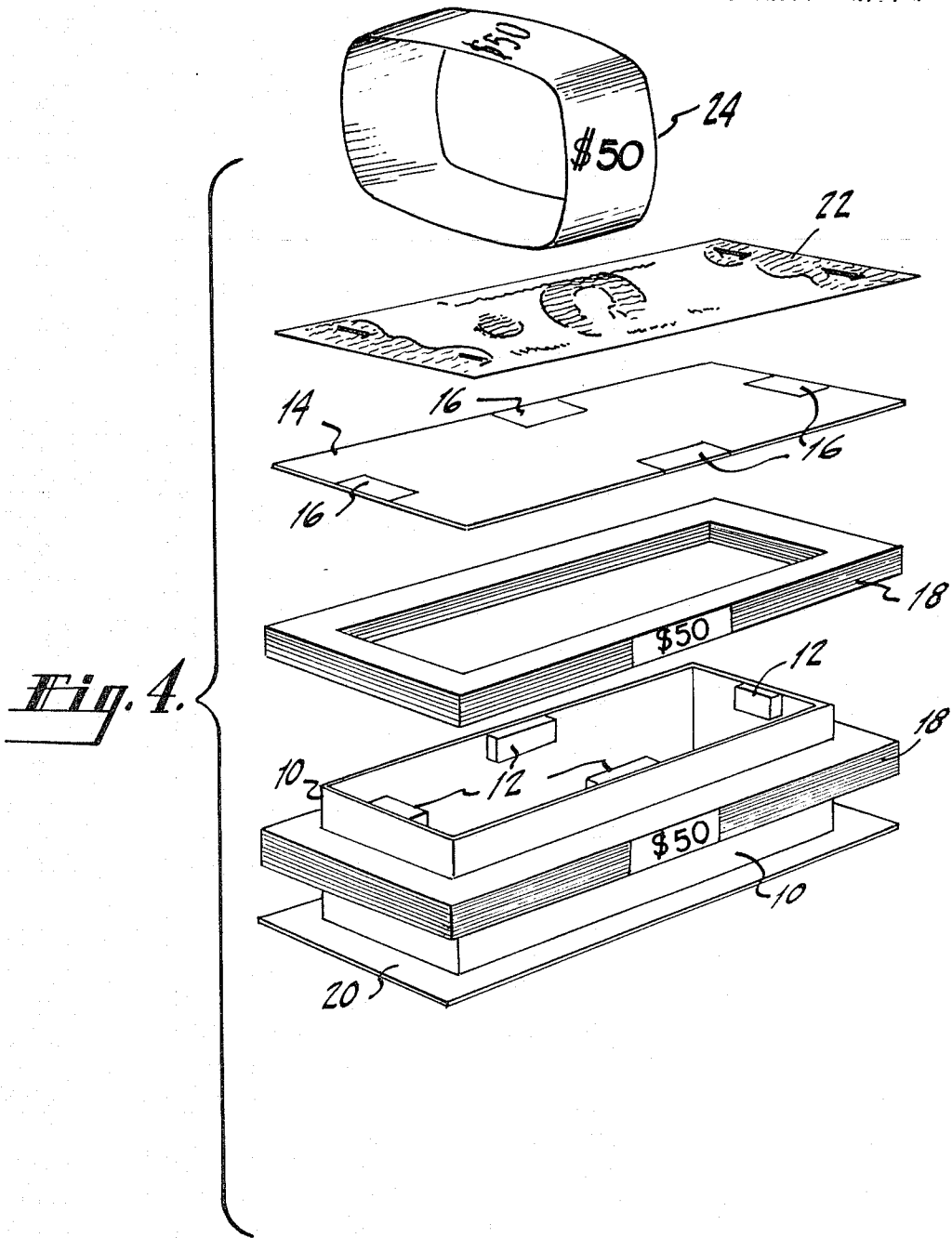


Fig. 4.

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Fig. 5.

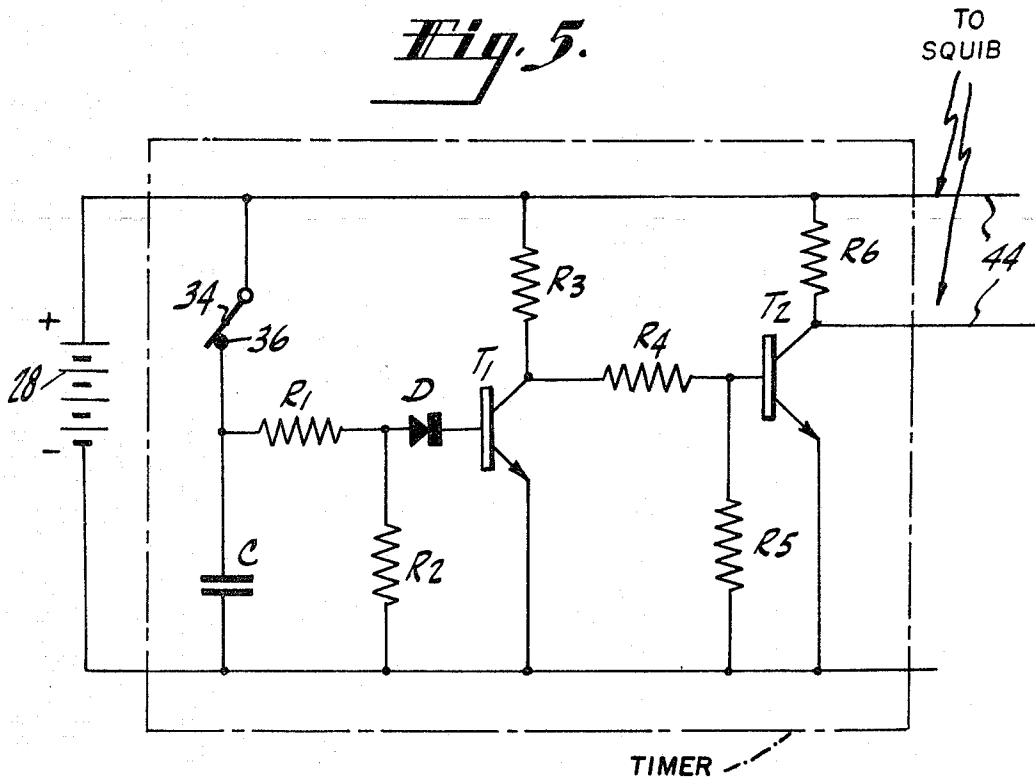
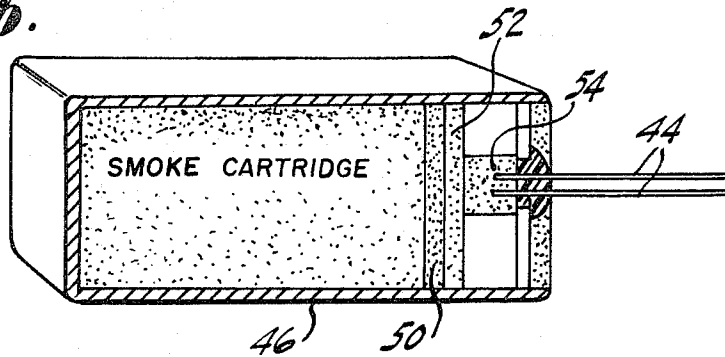


Fig. 6.



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3,303,592

**ROBBERY PROTECTIVE AND DETECTING
DEVICE**

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6 Claims. (Cl. 42-1)

The present invention relates to improvements in devices for protecting against robbery which will automatically discharge a gaseous or noxious substance upon disturbance after a predetermined interval of time.

An object of the present invention is to provide an improved protective device in the form of a dummy packet simulating a package of currency which may be placed upon any flat surface such as a counter, or in a cashier's or teller's cage with other currency being used in the transaction of the day's business and which will, upon being picked up, and after a predetermined interval of time, automatically discharge a dense gas, such as smoke, without requiring the manual operation of a button or switch by the owner of the packet.

Another object is to provide an improved highly reliable protective device against robbery, in the form of a dummy packet simulating a package of currency, which is inexpensive to construct and which will be automatically set into action by the lifting of the device to discharge a dense cloud of smoke after a desired interval of time, for example 5 to 10 seconds.

In brief, the dummy packet of the invention comprises a series of sheets or leaves having a size identical with that of paper currency. These sheets or leaves are stacked one above the other and the central portions of the sheets are removed to provide a cavity within the packet within which the protective apparatus is concealed. The apparatus includes a permanent magnet having a hole therein for the accommodation of a pin which when fully inserted into the hole of the magnet prevents an electrical circuit, also positioned within the cavity, from igniting an explosive charge. This explosive charge may form part of a smoke cartridge located within the cavity and be of sufficient strength when ignited to burst the packet and any suitcase or container in which the packet may be placed by the thief.

An important feature of the invention is an electronic timer utilizing transistors and which is set into operation to ignite the explosive charge upon the separation of the pin from the magnet. Thus, if the pin is attached to a counter or flat surface, the mere lifting of the packet will automatically actuate a switch and operate the timer. A battery is also positioned within the cavity for operating the timer and explosive charge. Since the transistors operate with a minimum of current, there is very little drain on the battery and the shelf life of the battery in the circuit is extremely long.

A more detailed description of the invention follows in conjunction with a drawing, wherein:

FIG. 1 is a perspective view of a dummy packet of currency within which are concealed the smoke cartridge and electrical circuit for controlling the discharge of the cartridge upon the lifting of the packet, according to the invention;

FIG. 2 is a vertical section through the dummy packet

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of FIG. 1, shown placed upon a shelf provided with a pin for use in association with the electrical system contained within the packet;

FIG. 3 illustrates the appearance of several of the sheets or leaves of simulated currency placed one above the other for positioning around the case or housing of the device of the invention;

FIG. 4 is an exploded view of the dummy packet of the invention and shows how the various parts fit into position. The electrical components within the case or housing are not shown in this view but are clear from an inspection of FIG. 2;

FIG. 5 is a schematic diagram of the electronic timer of the invention; and

FIG. 6 is a perspective view, partly in section, of the smoke cartridge and igniting mechanism therefor.

Throughout the drawings, the same parts are identified by the same reference numerals.

The dummy packet of the invention comprises a rectangular-shaped hollow case or housing 10 of light weight material, such as fibre board or polystyrene, the side walls of which are provided on its upper edges with small magnets 12 for holding down by magnetic attraction a lid or cover 14 provided with metal sections 16 of magnetic material such as steel. The cover may be made of polystyrene. The metal sections 16 are adapted to be positioned over the small magnets 12. Rectangular-shaped sheets or leaves 18 of fake or simulated currency having a size identical with that of paper currency, and with the central portions removed, surround the case 10 and are stacked one above the other individually or in packages. Both the bottom wall 20 and the cover sheet 14 have the same outer dimensions as the sheets 18. The metal sections 16 on the cover 14 are of a size to extend over and contact magnets 12 when the cover is in place on the case 10. Cemented to the top of the cover 14 is a genuine piece of paper currency 22 and around the entire packet there is provided the usual paper gummed label 24.

Within the case 10 and suitably mounted on the bottom 20 there is provided a smoke cartridge 26, a battery 28, and a permanent magnet 32 of round or square configuration having a central aperture passing completely therethrough. Mounted on the top of magnet 32 there is provided a switch in the form of a pair of contacts 34, 36 which are insulated from each other by an insulation bushing 38. Contacts 34 and 36 are preferably resilient metallic springs. The timer 30 is shown in FIG. 2 as a box for simplicity of illustration and to more easily show the wire connections, but it should be understood that the timer is an electronic circuit (indicated in FIG. 5) whose individual components may merely be positioned within the cavity of the case or be mounted on a fibre board. The central aperture of the magnet 32 accommodates a pin 40 which is of a selected size and fastened to the flat surface, shelf or counter 42 upon which the dummy packet device of the invention is designed to rest. When the packet device of the invention is lifted above the shelf 42, i.e., with the pin 40 no longer within the magnet 32, the resilient or flexible contact 34 is designed to rest upon the top of the magnet 32 and not engage the contact 36, either by virtue of its design or by the pull exerted upon it by the magnet.

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The electronic timer comprises a pair of transistors T1 and T2 here shown as the NPN type, the collector electrodes of which are respectively coupled through resistors R3 and R6 to the positive terminal (+) of the battery 28 and the emitter electrodes of which are connected directly to the negative (-) terminal of battery 28. A charge capacitor C has one side connected to the negative terminal of battery 28 and its other side connected through contacts 34, 36 (when closed) to the positive terminal of battery 28. The positive side of capacitor C is coupled to the base of transistor T1 through a resistor R1 and a rectifier D. Resistor R6 is a stabilizing resistor. The terminals of resistor R6 are connected by way of leads 44 to the squib or ignitable powder of the smoke cartridge shown, by way of example, in FIG. 6.

The smoke cartridge illustrated in FIG. 6 may have the appearance of a firecracker and comprises a cardboard or fibre or thin aluminum container 46 containing therein a suitable smoke-producing composition which may, if desired, contain a dye. This composition is composed of smoke-producing powder mixed with a mineral, vegetable or coal tar pigment that will sublime when ignited. The purpose of this smoke-producing composition is to cover every object and person which it touches so as to identify the object and person. Near one end of the cartridge there is provided a mild explosive which is adequate to rupture or tear apart the container 46 and the case 10 of the packet device and also rupture any bag or receptacle into which the thief may place the protective device of the invention. For insuring the ignition of the explosive 50 there is provided a starter composition of ignitable material 52 which is actuated by an ignitable powder or squib 54 in response to the flow of current through leads 44 from the timer. The smoke cartridge may take any well known form and no claim is made to this per se.

The operation of the protective device of the invention will now be given: Normally, when the protective device is resting on a counter or shelf with the pin 40 within the magnet 32 and causing the contacts 34 and 36 to engage each other, the electrical circuit is as shown in FIG. 5 and no current flows through leads 44. When contacts 34 and 36 engage, the capacitor C charges. A current flows from the battery through resistors R1 and R2. A voltage of positive polarity is supplied through the rectifier D to the base of the transistor T1 of sufficient magnitude to cause it to conduct. The potential or IR drop through resistor R3 is such that there is a small positive voltage on the base of transistor T2 of insufficient magnitude to cause T2 to conduct. Hence, in this condition transistor T1 conducts (turned "on") and transistor T2 is non-conducting (turned "off"). Because of the collector to emitter low impedance of T1, the lower terminal of resistor R3 when T1 is conducting is just above zero. When, however, the device of the invention is lifted from the shelf and the contacts 34 and 36 separate and no longer engage each other, capacitor C discharges and when the charge on this capacitor has dissipated through resistors R1 and R2 to a low value, the voltage on the base of T1 is reduced to a point where T1 ceases conduction. At this time, the voltage on the lower terminal of resistor R3 is now adequate to supply a voltage to the base of T2 to cause transistor T2 to conduct. In this condition, T1 is "off" and T2 is "on." Since the squib of the smoke cartridge is a low impedance, the current flow therethrough is from the positive terminal of the battery 28 to the squib over one of the leads 44, through the squib and back to the collector of T2 through the other lead 44, then through the emitter electrode of T2 to the negative terminal of the battery. This current through the squib is adequate to cause the smoke cartridge to explode and discharge dense clouds of smoke.

The values of capacitor C and resistors R1 and R2 determine the delay time for the electronic timer to

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operate. Thus, by way of example only, for a seven second delay, the following values may be used:

Battery 9 volts
 R1=R2=5K
 C=700 μ f.
 R4=R5=5K
 R3=1000 ohms
 R6=10,000 ohms

10 With these values, the current drain is extremely small, less than one mil, and hence the shelf life of the protective device is very long.

15 The time delay of the electronic timer is chosen to enable the thief to leave the scene of the robbery and enter his automobile whereupon the explosion of the smoke cartridge will produce such dense smoke clouds as to prevent any possibility of vision and to attract attention. The short time interval is such that the thief can barely be away from the premises of the robbery before the protective device operates. This time interval also protects the cashier or teller from possible injury at the actual scene of the robbery due to a possibly highly nervous armed thief.

20 An advantage of the invention is that there is no need for the person being robbed to actuate any alarm or push any switch. The mere lifting of the dummy packet either by the robber himself or by the owner of the packet in ostensibly helping the thief starts the timer operation.

30 The dummy packet may be sold with all elements in operating condition but with a metallic pin (steel or iron) inserted into the hole in the magnet 32. The magnet will thus hold the metallic pin firmly in position to maintain engagement between the contacts until such time as the dummy packet is ready to be placed on a counter which is itself provided with a pin as shown in FIG. 2.

35 What is claimed is:

1. A robbery protective device comprising a dummy packet simulating a package of currency, said packet having concealed therein a cartridge for discharging a noxious substance, a timer having a switch and a battery coupled together in an electrical circuit to actuate said cartridge, said packet having a hole therein extending from a point adjacent said switch to the outside of said packet for accommodating a pin therein which when inserted into said hole engages said switch and disables said timer from actuating said cartridge.

2. A robbery protective device comprising a hollow housing having side and bottom walls, said housing having therewithin a battery, an electronic timer connected to said battery, and an explosive charge coupled to and adapted to be actuated by said timer, said timer having a switch positioned above a hole in said bottom wall, whereby the insertion of a pin in said hole causes the upper part of said pin to engage said switch and disable said timer from actuating said explosive charge.

3. A robbery protective device comprising a hollow rectangular-shaped housing having side and bottom walls, said housing having therewithin a battery, an electronic timer and an explosive charge coupled to and adapted to be actuated by said timer, a magnet mounted on said bottom wall in the interior of said housing, said magnet having a straight hole completely therethrough communicating with the exterior of said housing, said hole extending along a line at right angles to the plane of said bottom wall, said timer having a switch in the form of a pair of contacts positioned above said hole in the interior of said housing, said hole being of a size to permit the insertion therein of a pin for engaging said switch to disable said timer from actuating said explosive charge.

4. A robbery protective device in accordance with claim 3, wherein said timer comprises a pair of transistors so coupled that when one transistor is conducting the other is non-conducting, a time constant circuit in said timer including a capacitor and a resistor coupled to the base of said one transistor, means connecting said contacts be-

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tween one terminal of said battery and the junction of said capacitor and resistor, and a connection from the other terminal of said battery to the other side of said capacitor.

5 5. A robbery protective device in accordance with claim 3, wherein said timer comprises a pair of transistors so coupled that when one transistor is conducting the other is non-conducting, a time constant circuit in said timer including a capacitor and a resistor coupled to the base of said one transistor, means connecting said contacts between one terminal of said battery and the junction of said capacitor and resistor, and a connection from the other terminal of said battery to the other side of said

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capacitor, said explosive charge being part of a capsule containing a smoke-producing composition.

6. A robbery protective device in accordance with claim 3, including magnets on each of the upper edges of the four side walls of said housing, and a rectangular-shaped lid of insulation material for said housing having metal sections on the four edges thereof at positions registering with the locations of the magnets on said side walls, and a piece of genuine currency adhering to the top surface of said lid.

No references cited.

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