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DRAWING SHEET 1 OF 2

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TRAINING AID FOR SIGHTING SMALL ARMS

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2 Sheets-Sheet 1
TRAINING AID FOR SIGHTING SMALL ARMS

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5 Claims

ABSTRACT OF THE DISCLOSURE

An electrically actuated light bulb and focusing lens which inserts into the barrel of, for example, a revolver. Energy for lighting the bulb is connected to one electrode of the bulb through the portion of the device in the barrel and to the other electrode through the metal portion of the revolver. When the trigger is pulled, the firing pin strikes the cartridge unit in the chamber for completing the electrical circuit. Light from the bulb appears, for example, on a target where the revolver was pointed.

BACKGROUND OF THE INVENTION

Field of the invention

The invention relates to a training aid for improving the sighting of small arms and, more particularly, to such a device wherein light is emitted from the training aid when the trigger is pulled for completing the electrical circuit.

Description of prior art

Applicant is unaware of any prior art directly to the present invention. Presently, in order for a user to develop a "feel" for a weapon, it is necessary to spend innumerable hours at a firing range. Countless rounds of ammunition may be expended before a firer is assured that he is properly sighting the weapon. In other words, before skills and accuracies in the use of a weapon can be developed, and individual must practice firing. When he is more familiar with where the bullet will strike when the trigger is pulled and with the weight of the weapon, his skills as a marksman and capabilities improve.

Often, however, it is difficult to go to a firing range. Weather, distance, or availability may reduce the practice individuals such as law enforcement officials, sportsmen and other require. In addition, the use of firing ranges including ammunition expended, is relatively expensive.

The use of live ammunition while a beginner in adjusting to a weapon may constitute a hazard as well as an expense.

Desirably, a device should be provided for permitting practicing without the necessity for extensive practice at the firing range. A training aid should give the individuals indicated above an opportunity to practice and get the feel of a weapon before visiting a range so that better use can be made of their ammunition and time. Hazards should be reduced to a minimum.

Such a development should simulate as nearly as possible the response one expects when firing a gun. Although the sound and recoil cannot be simulated, the reaction of bullet impact should be present. When a person pulls the trigger, they should be able to see where the bullet would have struck. He can repeat the process until his eye and/or arm, and gun sight can be aligned for improving his accuracy.

SUMMARY OF THE INVENTION

Briefly, the invention comprises a device including a portion which inserts into the barrel of a weapon and a second portion for inserting into the firing chamber of a weapon. A voltage source is connected to one portion of the weapon and to the portion of the device inserted into the barrel. The barrel is insulated from the device initially so that the electrical circuit is not complete. The second portion includes a conducting element which contacts the first portion and the firing pin of the weapon when the trigger is pulled, whereby the electrical circuit is complete. The first portion includes a lamp source which is actuated when the firing pin strikes the conducting element.

In one embodiment, the first portion includes lens means and means for changing the distance and direction of the lens with respect to the light source for focusing the light and for directing the light in a preferred direction. In addition, a rod may be provided which has a length for accommodating one type of weapon but which can be replaced by a rod of different length for adapting the device to another weapon having different barrel lengths.

Therefore, it is an object of this invention to provide a training aid for improving an individual's capabilities in handling a weapon.

Another object of this invention is to provide a training aid means for reducing the use of ammunition and firing range time in training an individual to use a weapon.

It is another object of this invention to provide a training aid which reduces the hazards associated with learning how to use a weapon.

A still further object of this invention is to provide a training aid adaptable for use with a plurality of weapons for improving sighting capabilities.

Still a further object of this invention is to provide a training aid for improving an individual's sighting capabilities with the weapon.

Still another object of the invention is to provide a training aid for sighting practice of a weapon simulating certain aspects of the use of live ammunition.

These and other objects of this invention will become more apparent in connection with the following drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 represents a cross-sectional view of one embodiment of a training aid in a revolver.

FIG. 2 represents an exploded view of the device removed from a weapon.

FIG. 3 represents one embodiment of contacts for supplying energy to the weapon and the device.

FIG. 4 represents one embodiment of the cartridge unit completing the electrical circuit.

FIG. 5 represents a different embodiment of a light source usable in the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows revolver 1, including barrel 2, and revolving cylinder 3. The cylinder includes a plurality of chambers 4. The revolver also comprises hammer 5 which connects firing pin 6 and trigger 7. When pulled, the trigger actuates the hammer and forces the pin towards a chamber of the cylinder. The doped position of the hammer represents the position of the hammer when the trigger is pulled.

Training aid 8 is shown inside the revolver. It should be noted, however, that the invention can also be used with other types of weapons, including rifles, hand guns, and magazine fed pistols. Portion 9 is in the barrel, and cartridge portion 10 is inside a chamber of the cylinder. Other portions occupy the remaining chambers.

Connector means 11 provides electrical energy to the training aid. The connector includes prongs inserted 12 and 12' which insert into receptacle 13 and 13' of the training aid. The receptacles are integral with contact ring portions 14 and 14' which are insulated from each other by insulating washer means 15 (FIG. 3). The contact ring and insulator washer are circular in configuration and include centrally disposed openings 18 and 18'.
FIG. 3) for accommodating hollow tube means 16 of the training aid. A more detailed view of the receptacles, etc., can be seen in FIG. 4. As indicated in the figure, the receptacle form female members which engage the power connection prongs. The contact rings may be stamped or otherwise formed from relatively flat metal elements which convert voltage from a source (not shown) to the aid and revolver. The insulator may be molded from a plastic or non-conducting material for insulating the contacts from each other. The contact rings are relatively flexible so that during assembly they can be spread apart for permitting insertion of the insulator as shown in FIG. 4. The insulator includes an extension on both sides of centrally disposed flange member 15'. The extensions insert into the openings of the contact rings, partially into the barrel, and into indentations of flange portion 17. In other embodiments, the extensions may be shorter and not extend into the barrel or flange portions.

Ring 14 contacts the end of barrel 2 and forms one-half of an electrical circuit, with the hammer and firing pin. Ring 14' contacts flange portion 17 of the bore tube for forming the other half of the circuit. The electrical circuit is not completed until the firing pin contacts the cartridge in the chamber. When that occurs, light means 19 becomes energized by other means, energy to one electrode of the light means is conducted to the light means through the training aid in the barrel and energy to (or from) the other electrode for completing the circuit is conducted through the metal portion of the revolver. It should be noted that although energy is supplied initially at the barrel, the power source could be connected at any point of the weapon.

FIG. 2 shows an exploded view of the training aid illustrated in FIG. 1. The device comprises contact rod means 28 which forms a metal rod for contacting one end of the cartridge portion and one electrode of the light means, such as a low voltage lamp. By changing the length of the rod, the device can be made to fit other weapons with different barrel lengths. At the end of the barrel adjacent to the cartridge unit, the rod is insulated from the barrel and restricted from the bore tube by sleeve means 21. The sleeve is circular for being inserted into the barrel and may be comprised of a plastic or other non-conducting material. O-ring member 50 is placed about narrow necked portion 22 of the sleeve means for holding the sleeve within the barrel portion. The sleeve is threaded on the inside for mating with the threaded portion 23 of the bore tube means.

The rod includes head portion 24 which has a larger radius than the longitudinal portion. Rod spring means 25 is inserted inside the contact sleeve means around the longitudinal portion of the plunger. The sleeve has an enlarged opening with a depth sufficient to accommodate the spring. The spring provides tension to insure good contact between the head portion of the rod and the base of light means 19.

The front end of the light means inserts into portion 26 of the barrel bore tube means. Portion 26 is hollow, as is the remaining portion, but has a relatively larger diameter for accommodating the light means. In other embodiments, the tube means may have a uniform diameter. Flanged portion 27 of the light means prevents it from being pushed completely inside the bore tube means and out of contact with the head of the rod. The bore means includes narrow necked portion 28 and 29 into which O-rings 51 and 52 insert for holding the tube inside the barrel. The tube includes flanged portion 17 at the terminal end. The tube means for contacting ring portion 14'. Connector 11 is shown out of context for convenience. When assembled, the connector would appear as shown in FIG. 1.

Lens holder 33 comprises a cone-shaped portion having contoured portion 34 for forming a swivel with respect to the end of barrel 2. The shape is not essential, however. Other shapes are within the scope of the invention. As a result, the direction of a light beam from the light means for directing the beam towards a desired point relative to the gunlight. Lens 35 inserts over the end of the holder for projecting the beam to a target area. The lens is held in place by lens lock ring 36 comprising a split ring fitting inside the rim of the lens holder.

Lens holder spring 37 comprises a conical compression spring formed to fit over the base formed by bushing member 38. The spring presses against the lens and the bushing member. Bushing member 38 includes threaded portion 39 for securing the holder to the tube. The taped end of the spring has a diameter large enough to permit light from the light means to pass unimpared to the lens. The spring diameter increases in accordance with the increase of the diameter of the lens holder. Focus bushes spring 30 inserts into the opening of flanged portion 17 and presses against the surface of bushing member 38 for increasing the friction between the threaded portions which prevents vibration and changes in the focus position of the lens. The spring inserts inside threaded portion 39. The friction between the lens and the bushing permits the holder assembly to be adjusted to a desired position and held in that position. By turning the lens holder, the bushing moves in or out of the tube portion for changing the distance between the lens and the light means. As a result, the lens can be focused.

As shown in FIG. 4, cartridge 10 comprises casing 40 formed from a plastic or non-conducting material and having a size and shape required for the calibre and model of weapons into which the cartridge is placed. The cartridge includes ball means 41 at one end of the casing. The opening of the casing at that end if slightly reduced to prevent the ball from being forced out of the casing. The ball is fixed against the end of the rod means by spring means 42. One end of the spring presses against the ball and the other end presses against firing pin contact 44. Bushing 43 includes a cylindrical protrusion which inserts inside the casing. An adhesive can be used to hold the cartridge unit together. In other embodiments, the parts could be threaded. The bushing is also comprised of plastic or non-conducting material. Threads are shown in the figure.

Firing pin contact 44 includes narrow neck and solid portion 46 which inserts into an opening in the bushing so that the end of the portion is approximately flush with the back of the bushing. Flanged portion 31 contacts the narrow portion of the bushing and prevents the pin from slipping out. The other end of the contact inserts inside the spring. The outer diameter of the spring and the outer diameter of the flanged portion are approximately equal.

In a different embodiment, instead of using a light means with a flanged portion, the sleeve means of FIG. 2 could be provided with two sets of threads of different diameters as shown in FIG. 5. The first set 32 could be used to engage portion 26 of the tube means and the second set 47 could be used to engage threads 48 about the base of the light means.

In addition, although not shown, the first and second sets of threads could be disposed parallel to each other so that instead of the tube means being threaded about its outer diameter, the tube means could be threaded along its inner diameter for engaging the first set of threads.

Although the invention has been described and illustrated in detail, it is to be understood that the same is by way of illustration and example only, and is not to be taken by way of limitation; the spirit and scope of this invention being limited only by the terms of the appended claims.
I claim:

1. A training aid for weapons having a barrel and having a firing pin actuated by the pull of a trigger, comprising:
   - light source means disposed inside the barrel including means insulating the light source means from the barrel and first means connecting electrical energy to a first electrode of said light source means,
   - electrical conduction means interposed between a second electrode of the light source means and the firing pin,
   - second means for connecting electrical energy to the firing pin whereby the light source means projects a beam of light from said barrel when the firing pin strikes the electrical conduction means and,
   - said electrical conduction means providing electrical continuity between said firing pin and said second electrode so long as said firing pin contacts said electrical conduction means for connecting.

2. The combination as recited in claim 1, wherein said electrical conduction means includes removable rod means adaptable to weapons having barrels of different lengths.

3. The combination as recited in claim 1, wherein said electrical conduction means includes removable rod means having one end in contact with said second electrode, and means in the firing chamber of the weapon contacting the other end of said rod means, said means including means for maintaining the rod means in contact with said second electrode and means disposed adjacent to the firing pin whereby the firing pin strikes said means adjacent when said trigger is pulled.

4. The combination as recited in claim 1, wherein is included a rod means connecting said light source means to said electrical conduction means, and wherein said electrical conduction means includes spring means and frictionless engaging means, said spring means is disposed for pressing against said frictionless engaging means for forcing the frictionless engaging means into contact with one end of said rod means and for forcing the other end of said rod means against said second electrode,
   - casing means enclosing said spring means and said frictionless engaging means for insulating said means from the weapon, conducting element means connected between said spring means and the end of said casing means adjacent to the firing pin, including a portion extending into an opening in the end of said casing means whereby an electrical circuit is formed between the conducting element and the second electrode and between the conducting element and the firing pin when the firing pin strikes the conducting element.

5. The combination recited in claim 1, wherein said first means connecting electrical energy to a first electrode includes a first electrical contact, and said second means for connecting electrical energy to the firing pin includes a second electrical contact, said first and second electrical contacts being insulated from each other at the end of said barrel,
   - said first electrical contact providing electrical continuity to said first electrode, said second electrical contact providing electrical continuity through said barrel to said firing pin, said first and second electrical contacts forming a continuous electrical circuit from said first electrode to said firing pin.

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