

Dec. 13, 1955

L. A. VOUGHT

2,727,136

TARGET LIGHT ADAPTER

Filed Nov. 24, 1951

2 Sheets-Sheet 1

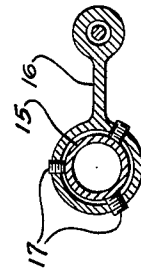
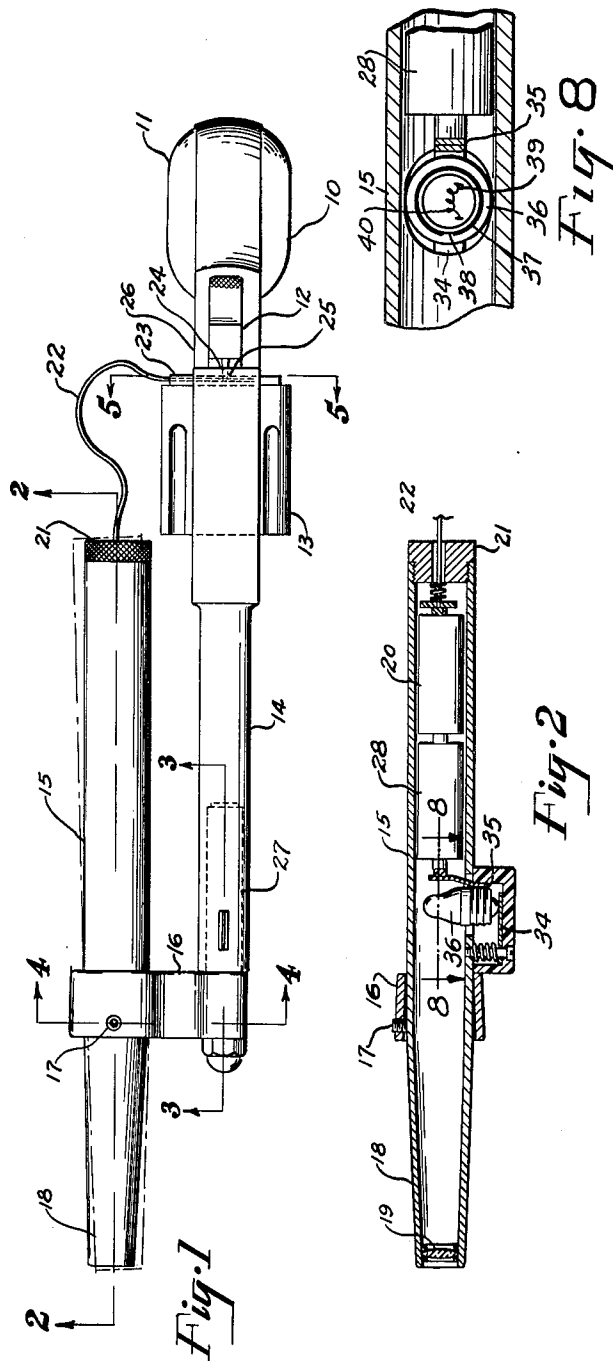


Fig. 4

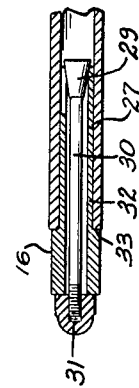


Fig. 3

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X2791

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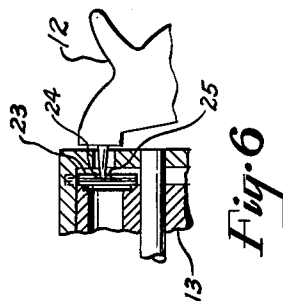


Fig. 6

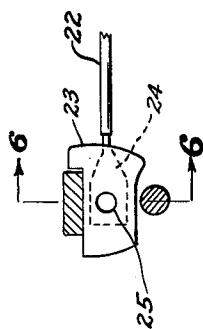


Fig. 5

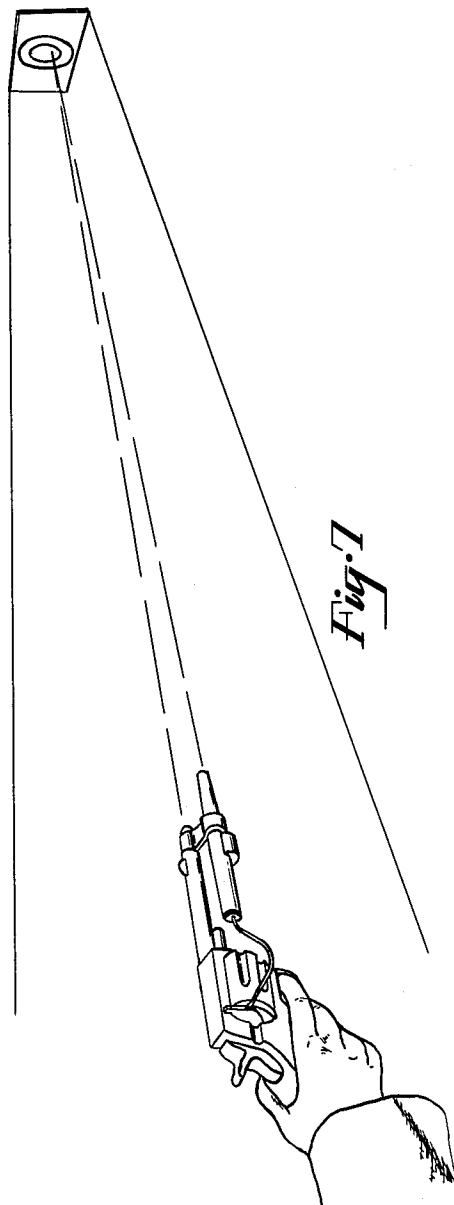


Fig. 7

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2,727,136

TARGET LIGHT ADAPTER

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5 Claims. (Cl. 240—6.41)

This invention, relating as indicated to a target light adapter, is more particularly directed to an attachment or adapter to be used with a pistol or revolver, primarily for directing an instantaneous spot of light on a target by actuating the trigger to release the hammer of the pistol or revolver against the contacts closing a circuit through dry cell batteries and a light and lens system. The invention particularly relates to an adapter, which may be temporarily inserted within the barrel of a pistol or revolver and collimated thereto adapted for revolvers of different exterior construction having various sighting arrangements. It is intended that in this way a marksman may practice with his own revolver on a target without the expenditure of ammunition and without spending considerable time modifying his revolver to work with various sighting devices.

In essence, this invention relates to a universal target light adapter for small firearms, particularly of the revolver type, for projecting a spot of light on a target to train the marksman in trigger squeeze, quick firing and shooting from the hip without the expenditure of ammunition.

An object of this invention is to produce a universal target light adapter for revolvers which may be quickly attached thereto for marksmanship training.

A further object of this invention is to produce a combination of a revolver and adapter attached to the revolver and a reflex light reflector surface wherein a narrow beam of light for a short interval of time will be projected against the reflective surface and said light will be reflected to the marksman to give him an indication of the sighted position at the exact instant the revolver was fired.

A further object of this invention is to produce a combination of a revolver, adapter for the revolver and a reflex light reflecting surface wherein the marksman must sight the revolver and squeeze the trigger to project a spot of light from the target light adapter upon the light reflective surface wherein the incident ray of light reflects back towards its source at approximately the same angle that it was projected to indicate to the marksman the exact sighting of the revolver.

A further object of this invention is to produce an external target light adapter for revolvers to be mounted internally of the barrel in order that the external surface and sighting indicators will not get in the way of the adapter to cause a ray of light to be projected through an achromatic lens system parallel to the barrel and at the approximate position of sighting of the revolver.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of the various mechanical forms in which the principle of the invention may be used.

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In the drawings:

Fig. 1 is a top view of a revolver showing the target light adapter mounted thereon,

Fig. 2 is a cross-section along the lines 2—2 of Fig. 1 through the light projecting tube,

Fig. 3 is a cross-section along the lines 3—3 of Fig. 1 through the extension axis of the light projecting tube showing the expanding collet.

Fig. 4 is a cross-sectional view through the light projecting tube extension and the tube showing the adjustment for the tube,

Fig. 5 is a cross-section along the lines 5—5 of Fig. 1 showing the contacting strip in position between the cylinder and the stock,

Fig. 6 is a cross-section through the hammer and the cylinder showing the hammer pin contacting the metal plate to make a completed circuit through the batteries to the bulb,

Fig. 7 shows a marksman having a pistol in hand mounted with a target light adapter attached thereto in position for firing at a reflex light reflecting surface, and

Fig. 8 is an enlarged cross-sectional view along the lines 8—8 of Fig. 2, showing the bulb construction.

This invention primarily consists of a target light adapter for revolvers or pistols which may be attached thereto and connected to the tube of the adapter through a tube extension adapting it to fit any of a number of pistols or revolvers. The composite invention can be seen best from Fig. 1 where 10 shows the revolver generally with 11 being the handle or stock member, 12 the hammer, 13 the cylinder, 14 the barrel. The revolver is of the usual type and may be of any particular caliber. Externally of the revolver there is a light reflecting tube 15, having an extension member 16 and an expanding collet and tube shown generally at 27. Said collet is formed with a frusto conical head 29 attached to a shank 30 having screw threads at the opposite end thereof at 31 and a tubular sleeve 32, which is expanded by means of the frusto conical head 29 to provide a gripping surface on the barrel inside diameter. Said sleeve has a shoulder 33 to aid in providing a tight grip on the end of the barrel. The light reflecting extension member 16 is adapted to fit around the exterior of the tube 15 and has a plurality of screw adjustments 17. This permits the tube to be collimated with the barrel and to permit any parallax correction that need be made. The exterior end of the tube 15 is slightly tapered as at 18 and has an achromatic lens 19. In the rear of the tube nearest the cylinder are batteries 20 and 28 connected in series. From the end plug member 21 there is a wire 22 and an insulating member 23 to permit a connection through the hammer 12 and firing pin to the grounded member which is the revolver, through the collet and extension member to the tube 15. Mounted in the insulating member 23 which is connected to wire 22 is a copper member or plate 24 and through insulating member 23 there is an opening 25 to permit the hammer and firing pin when released to contact the copper plate and to complete the circuit. Details of these connections can be seen particularly in connection with Fig. 5. The shape of the insulating plate 23 is designed to fit within the short clearance from the rear of cylinder 13 to the stock member 26 so that it may not be accidentally moved therefrom. It may be readily seen by an examination of Fig. 1 that no bullets may remain within any chamber of the cylinder and rotate into position to be fired. The head which projects from the chamber not shown would thus contact insulating plate 23 and prevent the cylinder from rotating the bullet into position for firing. This is a positive safety feature which permits this revolver to be used with the target light adapter without endangering the marksman or the spectators.

The bulb shown in Fig. 2 is more particularly shown in detail in Figs. 2 and 8. Fig. 8 is a view along the lines 8—8 of Fig. 2 through said bulb. In said view and in Fig. 2, 34 shows the contacting lead, 35 is the connecting lead to the batteries 20 and 28, 36 is the bulb itself, and 37 is the black coating on the bulb having a small opening 38. 39 are the filament posts and 40 the filament, which is a cross filament, i. e., one with the filament in the direction perpendicular to the axis screw threads on the base of the bulb and, of course, parallel to the longitudinal axis of the tube. The coating on the bulb is in the direction of the lens 19, with a pin-point opening designated in a direct line with the lens. This permits the concentration of light to be directed through the pin-point to the achromatic lens in order that the spot of light may be in a narrow band without substantial diffusion.

In operation, gripping the pistol and pulling the trigger advances the hammer 12 upon the insulated plate 23, which has a copper conducting member 24 mounted therein, thus closing the circuit between the weapon through wire 22 to batteries 20 and 28 and then to the bulb and returning through the extension 16 to the weapon. The complete circuit is from the batteries which are connected in series 20 and 28 to the terminal through end plug 21 to the lead line 22, and then passing through the insulated member 23 to the copper end plate 24, said insulated member having an opening 25 to permit the hammer 12 to contact the plate. This closes a circuit that is completed through the weapon and the barrel 14, the extension member 16, to tube 15, to one terminal contact 34 through the filament 40 in the bulb, and to the other terminal contact 35 and thence to the battery 28 again. This makes a complete circuit.

When used upon the pistol range, or any other small arms range, a particular type of surface on the target is very helpful, particularly when target practice is to be conducted in ordinary light or even bright sunlight. Heretofore light projecting arms could not be used in either bright sunlight or ordinary daylight because the spot of light was not of sufficient intensity so that there was a contrast on the target at the particular point that the bullet would have hit. In order to provide sufficient power the weapon was almost invariably overweight and the feel of the pistol was entirely different. To concentrate the light in a narrow beam was difficult but necessary in order to bring up the level of contrast. With reflex reflective surfaces, of the type described in U. S. Patents Nos. 2,294,930, 2,379,741, and 2,440,584 the light from the target light adapter is reflected and refracted back along the path of the incident ray to the eye of the marksman. This directional effect improves to a considerable degree the contrast which the marksman observes and is so necessary for targets which are subject to heavy illumination or where a target is being used in ordinary daylight.

It may be seen that this problem is illustrated in Fig. 7 but in addition to reflex light-reflective surfaces, other light reflecting surfaces may be employed but less effectively since not as much illumination is returned along the path of incident light to the general vicinity of the marksman, and as a result the contrast observable is reduced. Reflex light-reflecting surfaces are particularly adapted to this use under these conditions, and with a light projector having a beam of light with a very small angle of divergence and with a high concentration of illumination within this beam. The particular construction shown in this application, using a cross filament, is well adapted to accomplish this purpose.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing de-

scription, and all changes which come within the meaning and range of equivalency of the claims are, therefore, intended to be embraced therein.

Having thus described my invention, I claim:

1. A target light adapter for small arms having the usual components, including a barrel, hammer, and trigger, comprising a tubular member, a source of power, a bulb mounted in the tubular member connected to the source of power, and a lens at the outer end thereof, an extension member mounted on said tubular member and an expanding collet mounted on said extension member and adapted to secure the target light adapter in parallel relationship with said barrel, and electrical connection means comprising a connection through the source of power and the bulb to permit the hammer to complete the electrical circuit through the barrel, collet, extension member, and tube, whereby the target light adapter may be mounted on small arms and readily removed therefrom following target practice.

2. A target light adapter for small arms having as components a barrel, hammer, hammer pin, and trigger, comprising a tubular member, a source of electromotive power in one end thereof, a bulb connected thereto, a lens in the opposite end thereof, an extension arm secured to said tubular member for mounting the adapter to small arms, a rod and conical member constituting an expanding collet connected to the extension arm adapted to be inserted within the barrel of small arms to secure said target light adapter in substantially parallel relationship with the barrel, electrical contacting means for the circuit through the source of power, bulb, hammer, barrel, arm, and tube, comprising an insulated plate member, said plate member being positioned immediately in front of the hammer and hammer pin, in order that an electrical contact can be made with said plate to complete the electrical circuit and flash a spot of light.

3. A target light adapter having a tubular member, a battery in one end thereof and a lens at the opposite end, and a cross filament bulb mounted parallel to the axis of the tube for directing a concentrated beam of light through the lens; an extension arm attached to said tube and an expanding collet on said arm substantially parallel to the tube; an insulated plate member and a connecting wire from the plate to the battery whereby the adapter may be attached to a weapon with the expanding collet in the barrel and the plate in front of the firing pin, and a spot of light will be directed at a target by the contact of the firing pin of the weapon to the insulated plate, completing the circuit.

4. A target light adapter comprising a tubular member, a battery in one end thereof, a lens at the opposite end, a bulb mounted therein connected to said battery, an extension arm surrounding the tubular member and extending therefrom, a plurality of adjustment members on said extension arm for parallax corrections, an expanding collet secured to said extension arm adapted to be inserted within the barrel of a weapon, and an insulated plate member and wire connected from the plate to the battery to complete the circuit of the target light adapter when secured to a weapon in front of the hammer and hammer pin so that upon the movement of the hammer pin the circuit will be complete through the weapon, extension arm, tubular member, to the bulb and battery.

5. A target light adapter for a pistol which has as component parts a barrel, a cylinder, a hammer, a firing pin, and chamber, said adapter comprising a tubular member having a battery, a bulb and a lens for projecting a spot of light, an extension arm, and expanding collet attached thereto parallel to said tubular member which is adapted to be fitted within the barrel of a weapon, and an insulated plate member of a thickness so that it may be positioned to the rear of the cylinder and chambers of a pistol when in closed position, so that when the firing pin moves forward the firing pin contacts the plate through an opening on the insulated member, closing

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the circuit through the hammer, collet, extension arm, tubular member, bulb and battery to project a spot of light at a target, said insulated plate preventing the rotation of the cylinder should there be a rim of a bullet projecting from a chamber, thus making the weapon safe. 5

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