June 24, 1969 R. J. HART 3,451,137

GUN SIGHT

Filed Nov. 2, 1967

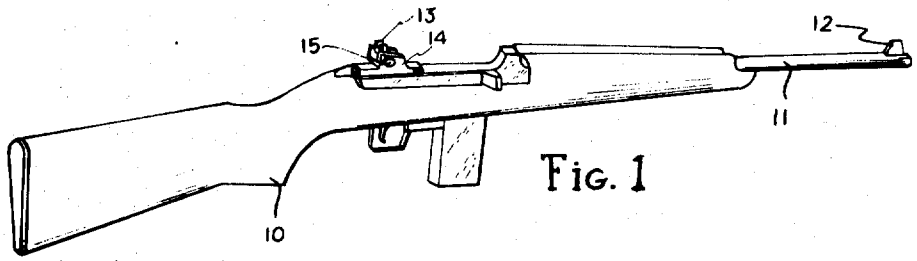
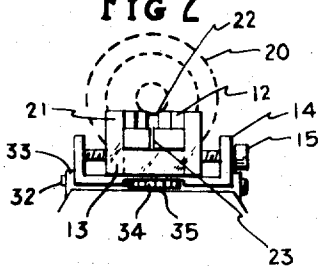
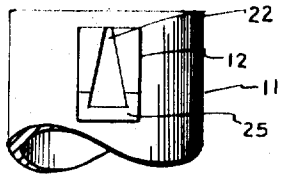


FIG. 1

FIG 2





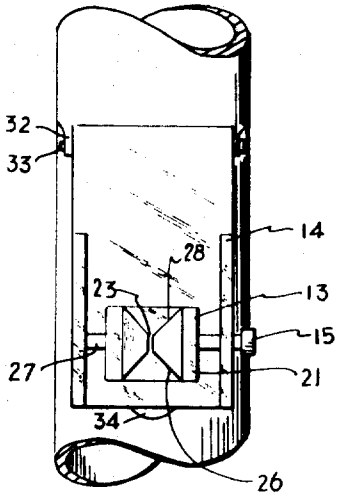
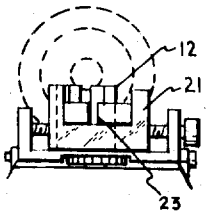


FIG. 3

FIG. 4



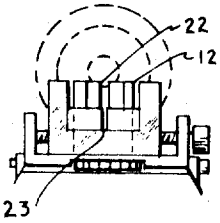


FIG. 5

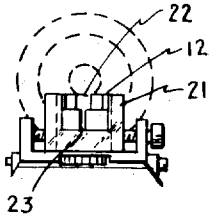
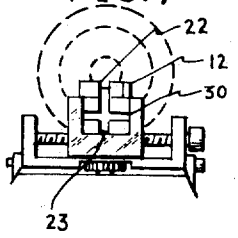


FIG. 6

FIG. 7



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United States Patent Office 3,451,137 Patented June 24, 1969

3,451,137

GUN SIGHT

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Filed Nov. 2, 1967, Ser. No. 680,192
Int. Cl. F41g 1/16
U.S. Cl. 33—47 7 Claims

ABSTRACT OF THE DISCLOSURE

The invention comprises the combination of a firearm to be aimed at a distant target by eye-sighting with the sighting means that comprises a first sight means carried by said member having target orienting means and an aperture light transmitting means to transmit a confined beam of light with second sight means carried by the firearm and positioned in the line of sight between said first sight means and the eye of the sighter and having means cooperative with said light transmitting means to indicate to the sighter the alignment of the first and second sight means.

This invention relates to gun sights and in particular relates to gun sights for hand-held firearms to provide rapid sighting with a high degree of accuracy.

The present sighting means employed with most firearms generally comprises a combination of front and rear sights which are to be aligned with a distant target. Because these devices require a focusing of the sighting eye upon the distant target as well as upon each of the sights, it is often difficult to train individuals to accurately use firearms. Frequently it is impossible for all three items, i.e., the distant target, the front sight and rear sight, to be in focus simultaneously and the sighter is often required to focus on the distant target and front sight. Additionally, the more common sighting devices require the positioning of the front sight within a sighting area defined by the rear sight. This technique suffers from an inherent disadvantage because the distance between the rear sight and the sighter's eye often varies considerably which introduces an error in the proper positioning of the front sight in a manner that will be apparent in the following discussion.

It is an object of this invention to provide a sighting means for firearms that will permit the aiming of such arms with speed and accuracy.

Another object of this invention is to provide for a relatively simple sighting means for guns or the like which will be capable of ready manufacture and use and which will not be subject to inaccuracy by wear.

It is also an object of this invention to provide means for sighting a firearm that will be free of errors regardless of the distance between the sighter's eye and the sighting means.

It is a further object of this invention to provide means for sighting a firearm which will not require the difficult focusing on near and far objects simultaneously.

Other and related objects will be apparent in the following description of this invention.

The preceding objectives are achieved by the improved sight means of my invention which is based upon the ability of the human eye to discern or recognize a flash of light without prior focusing. In operation, the improved sight means of my invention utilize this flash of light to properly align the rear and front sights of a typical firearm, thereby freeing the eye from the necessity to focus on the rear and front sights which commonly causes loss of focus on the distant target. Accordingly, the sighter need only focus on the distant target and properly orient the front sight to the target and move the firearm until

the eye discerns a flash of light that indicates alignment of the firearms.

The invention will now be described with reference to a hand held firearm; in this application the low bulk and weight of the sight of my invention are of particular advantage.

The invention is illustrated by the following figures of which:

FIGURE 1 illustrates a typical firearm bearing my improved sighting means;

FIGURE 2 illustrates the target sight line along my improved sighting means;

FIGURE 3 illustrates the front and rear sights on the firearm;

FIGURE 4 illustrates an off-target sighting with my improved sighting means;

FIGURES 5 and 6 illustrates how my sighting means prevent errors commonly occurring in conventional sighting means; and

FIGURE 7 illustrates a second embodiment of my improved sighting means.

FIGURE 1 illustrates a typical handheld firearm **10** having an elongated member, barrel **11** to be aimed at a distant target. The sighting means comprises a front sight **12** and a rear sight **13** mounted within a channel **14** with a windage correction knob **15** and an elevation adjustment screw **34**. The detail of construction of the front and rear sights will be more apparent from a description of FIGURES 2 and 3.

FIGURE 2 illustrates a line of sight on a distant target **20**. Front sight **12** is illustrated between the upright wings **21** of rear sight **13**. The front sight **12** has a vertical slot **22** which is medially positioned and a similarly positioned slot **23** is provided upon the rear sight. These slots comprise the aperture light transmitting means of my invention.

FIGURE 3 illustrates the front sight **12** and rear sight **13** positioned on the barrel **11**. The front sight as illustrated comprises an upright member which has an inclined rear face **25** and a groove **22**. The rear sight **13** is illustrated mounted within channel **14** on windage adjustment knob **15** having shaft **27** that extends through a threaded bore in the face of member **13** to permit axial movement of member **13** within channel **14**. Slot **23** previously mentioned in FIGURE 2 is shown as a narrow groove between the chamfered front and rear faces **28** and **26**, respectively, of this sight. Channel **14** is shown as hinged along its leading edge by pin **32** that passes through upright brackets **33**. Beneath the rear edge of the channel **14** is a thumbscrew **34** which is turned on shaft **35** that is secured to the firearm. Rotation of screw **34** raises and lowers it on the threaded shaft **35** and thus serves to elevate or lower the rear sight. The aforedescribed windage and elevation adjustment means are not critical to the invention and other means can readily be employed as desired.

As previously mentioned, my invention utilizes the ability of the human eye to recognize or discern a flash of light without focusing on the means defining the passage for the beam. The means for transmitting the beam of light comprise the slot **22** in the front sight means and the corresponding slot **23** in the rear sight means. Accordingly, as shown in FIGURES 2 and 3, the eye is not required to focus on both rear sight **13** and front sight **12**, but only to recognize the transmission of a beam of light through slots **22** and **23**. The eye is thus free in any need to focus on the sight members to secure the lateral alignment of barrel **11** on the distant target **20** and need only focus and concentrate on positioning target **20** to secure the proper vertical alignment or elevation or barrel **11**.

The accuracy of the sighting with my improved gun-

sight therefore depends upon the thickness of slots **22** and **23**. Preferably these slots are as narrow as possible without losing the ability of the eye to recognize the shaft of light which is transmitted through the slots. The normal human eye can detect light beams having an angle on convergence greater than about one minute. The thickness of the slots therefore should be no less than the tangent of 1 degree times the distance of the slot from the sighter's eye. This is illustrated in FIGURE 3 where it can be seen that the minimum width of slot **22** is considerably greater than the width of slot **23** because the front sight **22** is more removed from the eye than the rear sight **13**.

To avoid damage of the narrow slot **23** in the rear sight, preferably the front and rear faces of this member are chamfered as shown at **28** and **26**. To shield slot **23** from debris or dirt which could lodge within this slot, optionally, a thin cover plate, not shown can be placed across the top of the slot. A similar plate can also be placed over the slot **22** at the front sight. The plates should have a minimum thickness to avoid interference with the recognition of the light beam through the slots.

Slot **22** in front sight **12** is bevelled as shown with the widest portion of the slot to the rear of the sight. This bevel is provided to permit lateral movement of rear sight **13** by the windage adjustment knob **15**. Because the slot is bevelled as shown, the line of sight through slot **23** at any lateral position of member **13** within channel **14** will pass through slot **22**. Accordingly the light discernment will always be possible through slots **22** and **23** regardless of the lateral position of rear right **13**.

FIGURE 4 illustrates an off-target condition of member **11**. As shown, although front sight **12** is correctly oriented to the target **20**, the left side of the rear sight **13** has blocked the slot **23** and the eye will be unable to discern a shaft of light through slot **22**. This light blocking of the rear sight quickly indicates to the sighter that the member **11** is off target without the necessity of the sighter to focus on the rear sight wings **21** for alignment of these wings with front sight **23** and target **20**. Instead, the sighter need only move the stock **10** to the left to permit recognition of a beam of light through slots **23** and **22**.

As previously mentioned, a common error in sighting with conventional sight means is the variation in the distance between the rear sight and the eye of the sighter. When the sighter places his eye closer than the design distance to the rear sight the relative size of the rear sight is increased. This error is illustrated in FIGURE 5. Most conventional sighting means which have upright wings **21** on the rear sight means require that the front sight **23** be centered between these vertical wings. In the erroneous position shown in FIGURE 5, this positioning of the front sight is difficult because the distance between wings **21** is consideraly greater than the observed width of the front sight **23** and accordingly, interpretation of the thickness of light beams on either side of the front sight is required. This interpretation of thickness of light beams, however, is entirely obviated by my invention which merely requires that the slot **22** in the front sight be aligned with slot **23** in the rear sight to permit passage of a beam of light through these slots. When the eye discerns or recognizes this light beam, it indicates that the front and rear sights are alinged without the need for the eye to attempt to focus on both the rear and front sights.

The corresponding error caused when the viewer sights from too great a distance from the rear sight is illustrated in FIGURE 6. In this variation, the rear sight appears relatively smaller and the distance between vertical wings **21** is insufficient for the width of the front sight **12**. Correct lateral orientation is not possible because it requires that the viewer attempt to align the center of sight **12** (which is often not indicated on the sight) medially between wings **21**. This error does not occur with the improved sight means according to my invention since, again, the viewer is required only to discern passage of light through slots **22** and **23** to detect the proper lateral orientation of the firearm. This light discernment is possible regardless of the relative distance of the eye to slot **23**, provided of course, that the aforementioned minimum thickness of slot **23** be sufficient to permit light recognition.

The improved sight of my invention previously described provides a greatly simplified system for the alteral orientation of a member on a distance target. The proper elevation of the target is still dependent upon alignment of the front and rear sights in the manner as illustrated in FIGURE 2, with the top surface of the outboard wings **21** in the same horizontal plane as the top surface of the front sight **12**. FIGURE 7 illustrates an improved sight according to my invention which eliminates this need to orient surfaces of the front and rear sights and instead relies entirely upon light discrnment in two different planes. This provides for elevation as well as lateral orientation on a distanct target using light recognition. As illustrated in FIGURE 7, the front sight such as **12** previously described is provided with a vertical slot **23** and a horizontal slot at right angles thereto. The rear sight which is supported in channel **14** comprises a block having a vertical slot **23** and a horizontal slot **30** which, when properly oriented on the target as shown is in alignment with a corresponding horizontal slot in front sight member **12**. To properly orient these sights on a distant target, it is necessary only to position the target **20** on the top surface of sight **12** and thereafter bring the gun into alignment so that the eye can discern a vertical slit of light through the vertical slots **22** and **23** and a horizontal slit of light through the horizontal front slot and the horizontal rear slot **30**. It is of course apparent that other shapes can be employed for the light transmitting apertures such as V's or other configurations that will impart both vertical and horizontal characteristics to the light beam.

From the preceding description of the invention, the operation and use of the improved concept of my invention is relatively self apparent. The gun is aimed at the target in the conventional manner by locating the target and positioning the gun with the front sight or ramp on the target. Thereafter, the eye remains focused on the front sight and distant target while the gun barrel is moved until there is light recognition through slots such as **22** and **23**. Because the light discernment or recognition occurs without focusing of the eye on the rear sight member, it is not necessary to change the focusing of the eye and the entire concentration may remain on the target and front sight ramp. The sights of my invention also obviate the errors inherent in the use of firearms with conventional sights which are sized to accommodate an average distance between the sighter's eye and the rear sight. The sights of my invention obviate the error which commonly arises because of variation in this distance with different users of the firearms.

The invention has been described with particular reference to the figures that illustrate a preferred embodiment of the invention and show its application to a hand held firearm. It is not intended by the description to unduly limit the scope of the invention which includes the means and obvious equivalents thereof set forth in the following claims.

I claim:

1. An elongated member adapted to be aimed at a distant target by eye sighting and having a sighting means of:

a first sight means carried by said member having target orienting means and aperture means to transmit a confined beam of light along the line of sight of said member, said aperture means having an expanding cross sectional area in a rearward direction along said elongated member;

second sight means also carried by said member and positioned in the line of sight between said first sight means and the eye of the sighter and having aperture means cooperative with said aperture means of said first member to indicate to the sighter the alignment of said first and second sight means;

attachment means securing said second sight means to said first member permitting movement of said second sight means in at least one of a lateral and vertical direction to permit adjustment of said sight means.

2. The member of claim **1** wherein said first sight means comprises the front sight having a thin vertical slot for said light transmission and wherein said second sight means is a second thin vertical slot, and said first and second slots lie in the line of sight to thereby indicate alignment of said member to said target.

3. The member of claim **1** wherein each of said apertures has a width equal to the multiple of the distance of said apertures from said eye times the tangent of 1 to about 5 degrees.

4. The member of claim **1** wherein said first sight comprises the front sight having a thin slot lying in a first plane and a second slot lying in a second and different plane and wherein said second sight means is a rear sight having a third slot in the same plane as said first slot and a fourth slot in the same plane as said second slot, said slots being positioned in the line of sight thereby indicating both lateral and elevation alignment of said member to said target.

5. The member of claim **1** wherein said attachment means permits movement of said second sight means in a lateral direction to provide windage adjustment of said member.

6. The member of claim **1** wherein said attachment means permits movement of said second sight means in a vertical direction to provide elevation correction of the alignment of said member.

7. The member of claim **1** wherein the front and rear faces of said second sight means are chamfered about said aperture means to thereby recess said aperture means from the surfaces of said sight means.

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SAMUEL S. MATTHEWS, *Primary Examiner.*

U.S. Cl. X.R.

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