July 1, 1947. C. B. FERREL 2,423,141

GUN SIGHT

Filed May 28, 1943

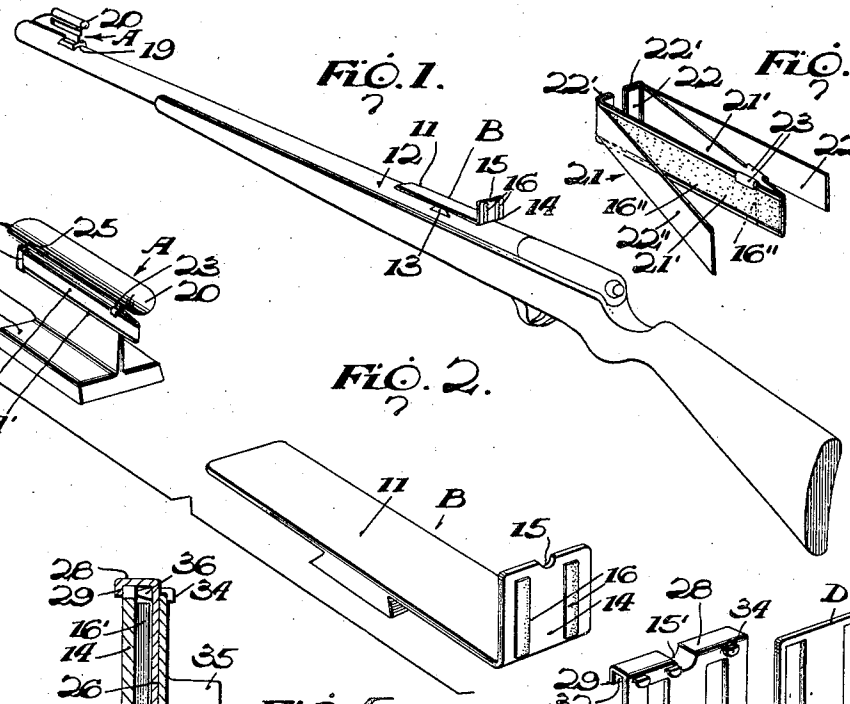


FIG. 1.

FIG. 2.

FIG. 3.

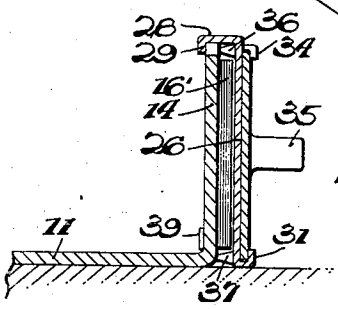


FIG. 5.

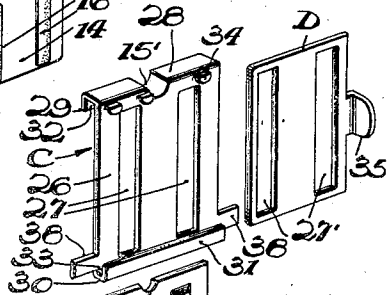


FIG. 4.

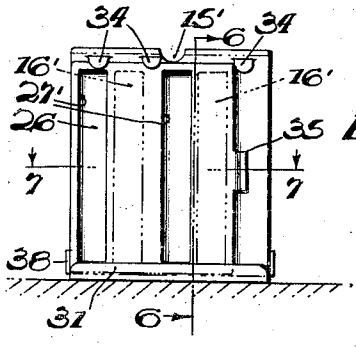
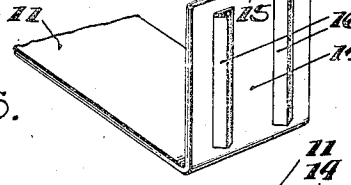


FIG. 6.



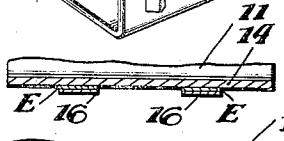


FIG. 8.

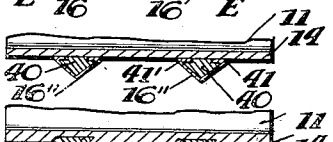


FIG. 9.

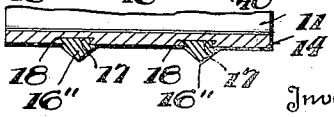


FIG. 10.

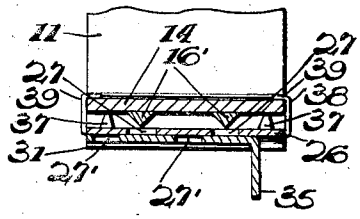


FIG. 7.

Inventor

Clyde B. Ferrel

By Castberg and Roemer

Attorneys

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2,423,141

GUN SIGHT

Clyde B. Ferrel, San Francisco, Calif., assignor to Ferrel Industries, Inc., Reno, Nev., a corporation of Nevada

Application May 28, 1943, Serial No. 488,910

17 Claims. (Cl. 250—71)

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My invention relates to gun sights. More particularly the invention relates to gun sights of that type capable of use in the daylight and also in the darkness of night. More specifically the invention is directed to gun sights for use in connection with small arms and is characterized by the fact that the gun sights are self-luminous.

Considerable difficulty has been encountered in connection with gun sights for fire arms and the like due mainly to the diffusion of light. Some of the so-called illuminated gun sights when used in the darkness of night have been very ineffective due to the fact that the illumination interferes with the vision of the operator of the gun and thereby renders the aim inaccurate. In my gun sight, I have provided means whereby the accuracy of the aim, particularly at night, is commensurate with that accuracy attained by use of a gun sight in the daylight.

Having in mind the foregoing, it is an object of my invention to provide a gun sight capable of use in the daylight and at night and possessing the features which are conducive to the accuracy of the aim. Another object of my invention is to provide a gun sight wherein the features thereof are conducive to better vision and resulting in a more accurate aim, particularly in the night.

Another object of my invention is to provide a gun sight that is of simple construction, durable and reliable both as a day sight and a night sight.

Another object of my invention is to provide a gun sight which is of simple relatively inexpensive construction and is durable and reliable both as a day sight and as a night sight.

With these and other objects in view, the invention consists in the novel construction, arrangement and combination of parts, hereinafter described, illustrated in the accompanying drawings, including modifications, and set forth in the claims hereto appended, it being understood that various changes in form, proportion and details of construction within the scope of the claims may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

This application is a continuation-in-part of my application Serial No. 449,856, filed July 16, 1942.

The invention will be more readily understood by referring to the drawings, wherein:

Fig. 1 is a perspective view of a conventional rifle showing my front and rear sight attached to the barrel of the rifle;

Fig. 2 is an exploded view showing the front and rear sights;

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Fig. 3 is a perspective view of the self-luminous attachment for the front sight;

Fig. 4 is a perspective view of a modification of my rear gun sight showing a shield, frame, or protector attachment about to be applied thereto;

Fig. 5 is a cross sectional view taken substantially on the lines 6—6 of Fig. 6;

Fig. 6 is a front elevational view of my rear gun sight showing the shield attachment about to be applied thereto;

Fig. 7 is a cross sectional view taken substantially on the lines 7—7 of Fig. 6; and

Figs. 8, 9 and 10 show various modifications of securing or applying the self-luminous material to my gun sight.

Referring more specifically to the drawings, A indicates the front sight, and B indicates the rear sight. By referring to Figs. 1, 2 and 3, particularly, the rear sight B consists of horizontally extending portion 11 which is suitably secured to the barrel of the gun 12 by means of a transversely extending dovetail rib 13. Rising from one end of the rear sight is an upstanding sight-leaf 14 provided with the usual sight-notch 15.

In order to provide for the luminous means or characteristic of my gun sight, I employ any chemical compound capable of absorbing short wave energy almost instantly and storing it for re-emission at some later time. Compounds of this type should be of such a nature that they recharge themselves almost instantly, such as by exposure to subdued sunlight or an electric lamp rich in short wave energy emissions, and to release the energy so stored in an even a rate of discharge as possible and over a period of time long enough to cover the darkness of an ordinary night. One example of this self-luminous means is "Velva-Glo D7" which is a luminous plastic tape.

In Figs. 1 to 3, this said chemical compound is denoted at 16 and takes the form of vertically disposed strips, stripes, bars, tape, plastic tape, or the like. The compound may be suitably mixed with or applied to a plastic containing the desired characteristics so that it may be preformed in the strips, bars, or the like, 16, and applied to the face of the upstanding sight-leaf by means of any suitable adhesive. I have chosen the manner of spacing the bars, stripes, or the like, 16, after considerable experimentation and research with regard to illuminating a gun sight at night. Proper spacing of the luminous bars, strips or the like, is essential to avoid diffusion of light and there-

by not interfere with or obstruct the vision and aim in using this gun sight.

Obviously at night the sight-notch 15 is of no use at all and by providing my properly spaced self-luminous bars or stripes 16, there will be formed two separate and distinct bands or lines of light on opposite sides of the said sight-notch, and this is an important factor of my rear gun sight, especially when used in combination with the front sight A, which is hereinafter more fully set forth.

The front sight A consists of an intermediate web connecting portion 17 and a transversely arranged securing means 18 in the form of a dove-tail wedge which is suitably positioned in the formation of the barrel of the gun as indicated at 19. On top of the said web portion is the usual bead sight which as will be noted, projects over the inner end web connecting portion as at 20. The self-luminous feature of my front gun sight consists of a substantially V-shaped member, indicated generally at 21 in Fig. 3.

This self-luminous member 21, as shown, is preferably stamped of sheet metal and consists of rearwardly diverging arms 21' which are of channel formation and having the ends 22 thereof flanged inwardly, and these arms 21' are bent upon themselves as at 22' in parallel relationship with the said ends 22 and then continue forwardly to provide a shield, or a cover or protector 22'' for the self-luminous compound 16'' that is coated on, attached to, or otherwise applied to each of the rearwardly diverging arms 21' in the said channel formation.

This self-luminous member 21 is preferably made of a metal having inherent spring-like characteristics so that the tendency of the device is for the arms 21' to move toward one another and the protectors 22'' to move away from one another. Thus, when the ends 22, one of which is preferably longer than the other so as to overlap, as shown, are positioned in the slot 25 in the web 17 of the front sight, the self-luminous device will then be automatically and effectively held in its position which is directly beneath the elongated front sight bead.

Assuming that the self-luminous device 21 is applied to the front sight, as shown in Fig. 2, and that the gun is being fired at night, then the shields, covers or protectors 22' are out of engagement with the locking tabs 23 which are disposed at the forward portion of the luminous device. These shields then assume the position as more clearly seen in Fig. 3 whereby they are spaced from the luminous material 16' so as to permit the latter to emit the necessary illumination at the front sight.

It is of course understood that in the day time the said shields 22'' are brought into parallel relationship with the arms 21' and snapped under the overhanging tabs or clips 23 and into the channel formation and thereby protect the luminous material 16'' from the deteriorating effects of the direct rays of the sun. All that is necessary to release the shields 22'' to uncover the luminous material is that they be simply depressed at their forward ends to disengage same from the locking tabs 23 and then these shields will automatically assume the position as clearly seen in Fig. 3.

In the modification of my invention as depicted in Fig. 4, I have shown a shield, protector or frame indicated generally at C. This shield or frame carries therewith a slidable closure D

which is adapted to open and close, as desired, certain openings in the frame to either expose the self-luminous bars 16' to the subdued sunlight or artificial light for recharging or to close the same against the deteriorating effect that the direct rays of the sun might have thereon by overcharging and destroying the illuminating function of the said bars.

In Fig. 4, the self-luminous bars 16' are of triangular formation in cross-section and suitably secured to the upstanding leaf 14 of the rear gun sight by means of an adhesive, as referred to in Fig. 1, or by means of dovetailed formation 17, as shown in Fig. 10, wherein the bars are adapted to be slid into and out of correspondingly formed dove-tailed recesses 18 in the upstanding sight-leaf 14. Thus, a maximum amount of illumination on a minimum amount of space is provided, and this results in a sharper and brighter line of illumination than that of a flat surface such as shown at 16.

The shield or frame C, which is preferably made of sheet metal, is provided in its face portion 26 with spaced openings 27 and the upper end of this frame 28 is flanged rearwardly at a right angle thereto and then downwardly at 29 in a plane substantially parallel with the face plate. The lower portion of the said frame is flanged forwardly thereof at 30 which is substantially at right angles to the face plate and then flanged upwardly at 31 in a vertical plane substantially parallel to the face plate. By thus flanging the face plate or shield, there is formed at the top and rearwardly thereof a channel 32 and at the bottom forwardly thereof a channel 33. The upper portion of the face plate has struck therefrom or otherwise formed thereon, spaced tongues 34 which, as will be seen in Fig. 5, are in substantial vertical alignment with the lower channel formation 33. These said spaced tongues 34 and the channel 33 provide a guide or slideway for the slide D which has at one side edge thereof a finger engaging piece 35 which provides for manipulation of the slide. The slide D is provided with spaced openings 27', when the slide is moved, are adapted to register with the spaced openings 27 in the said shield or frame C. In order to space the said frame, when attached to the upstanding sight-leaf 14, therefrom, suitable tongues 36, preferably struck from the material of the frame itself, extend rearwardly from the top of the frame and similarly formed tongues 37 also extend rearwardly from the bottom of the frame, and both sets of tongues engage the respective upper and lower portions of the upstanding sight-leaf 14, as will be clearly seen by referring to Fig. 5.

This spacing of the frame from the sight-leaf 14 is necessary when using the triangularly shaped luminous bars 16' in order that the frame will not contact or injure, obscure, or in any way interfere with said luminous bars.

In order to further secure the frame to the upstanding leaf 14, integral tabs 38 are formed on the lower portion at each side thereof, and these tabs are bent around the lower portion of the sight-leaf, as shown at 39.

It will be seen that when the rear sight is to be used in the daylight, this may be done by means of the sight-notch 15' which is formed in the upper portion of the said frame or shield C. In order that the rays of sunlight will not destroy the luminous characteristics of the bars 16', the said slide D when moved into position, as shown

in Fig. 6, covers the openings 27 in the frame and thereby prevents any direct rays of light from damaging these luminous bars. When, however, it is desired to use the rear sight in the night, it is simply necessary that the said slide D be moved so as to register the slots 27 and 27' in the frame and said slide respectively. Then the charged self-luminous bars will provide two separate and distinct lines of light as described in connection with the gun sight of Fig. 1, with a clear line of demarcation between the two lines of light.

A modification of the rear gun sight B, as shown in Fig. 8, discloses the application of the self-luminous bars, tapes, or strips 16 or 16' to the sight-leaf by means of an adhesive E which adhesive may either be applied to the back of the tape, strips, or bars 16 or the bar 16' or which may be applied directly to the upstanding sight-leaf 14.

In the modification of my rear gun sight, as shown in Fig. 9, suitable ribs 40 are shown as being formed integral with or which may be attached to the upstanding sight-leaf 14. These ribs 40 are of substantially triangular formation in cross-section and provide at their rear portions grooves 41 on opposite sides thereof into which grooves the flanged side edges of a self-luminous strip 16'' are entered and anchored therein. This self-luminous strip 16'' is preformed and is applied to the ribs 40 by merely sliding the same thereon with the inturned flanges thereof entering the said grooves 41.

It will be noted that in the several modifications of my invention, the self-luminous tapes, bars or strips extend up to a point which is substantially in horizontal alignment with the bottom of the sight openings 15 and 15', and preferably just slightly below the bottom of the said sight openings.

Instead of the self-luminous material being in the form as described, this material may, of course, be coated or otherwise applied to any of the modified sight-leafs as hereinbefore described.

It is obvious that sights other than those of the particular form shown and described may have my invention applied to them. It is to be understood that the sights per se as shown are more or less conventional.

Assuming that the rifle as depicted in Fig. 1 having embodied therewith my front and rear gun sights is being used at night, it will be clear that two separate and distinct lines of light will result from the self-luminous strips or bars, as the case may be, with a clear and distinct blank space or line of demarcation in between these two lines of light, so to speak, and then when the aim is taken by aligning the luminous device 21 medially between the two lines of light created by the spaced bars or strips, this aim is accurate, due to the fact that the said luminous device is clearly seen in its correct position for bringing the bead of the front sight in its normal position as in daylight firing.

What is claimed is:

1. A gun sight having embodied therewith self-luminous characteristics consisting of spaced self-luminous means of material length having sharply defined edges and arranged to emit two separate and distinct lines of non-diffusing light separated by a clear and distinct blank space of demarcation between said lines of light.

2. In a gun sight including a sight leaf and embodying self-luminous characteristics which will permit night sighting and firing with that degree of accuracy commensurate with daytime sighting and firing, and said luminous characteristics consisting of spaced elongated bars of substantially triangular shape in cross-section carried by the sight-leaf which will emit sharply defined non-diffusing lines of light.

3. In a gun sight embodying self-luminous characteristics which will permit night sighting and firing with that degree of accuracy commensurate with daytime sighting and firing, said self-luminous characteristics consisting of two spaced vertically elongated substantially flat bars having sharply defined vertical edges and arranged to emit two separate and distinct lines of non-diffusing light separated by a clear and distinct blank space of demarcation between said lines of light.

4. In a gun sight including an upstanding sight-leaf provided with the usual sight opening in its upper edge medially thereof and spaced self-luminous means of material length having sharply defined edges positioned on the sight-leaf and arranged to emit two separate and distinct lines of non-diffusing light at opposite sides of the sight opening separated by a clear and distinct blank space of demarcation between said lines of light coinciding with the sight opening.

5. In a gun sight as described in and by claim 4 wherein the self-luminous means presents a substantially flat surface.

6. In a gun sight as described in and by claim 4 wherein the self-luminous means is of substantially triangular shape in cross section.

7. In a gun sight including an upstanding sight-leaf provided with the usual sight opening in its upper edge medially thereof, self-luminous means positioned on said sight-leaf at opposite sides of the said sight opening, a shield affixed to the sight-leaf and having spaced openings in registry with said luminous means, a movable closure for the shield also having openings adaptable to be brought into and out of registry with said openings in the said shield.

8. In a gun sight as described in and by claim 7 wherein the self-luminous means presents a substantially flat surface.

9. In a gun sight as described in and by claim 7 wherein the self-luminous means is of substantially triangular shape in cross-section.

10. In a gun sight as described in and by claim 4 wherein the self-luminous means is removable.

11. In a gun sight as described in and by claim 7 wherein the self-luminous means is removable.

12. A front gun sight provided with the usual bead and having embodied therewith self-luminous characteristics consisting of a substantially wedge-shaped means disposed directly beneath the said bead with the apex of the wedge adjacent the forward part of the gun sight bead.

13. A front gun sight provided with the usual elongated sight bead and a web connecting the said bead and a supporting base, a substantially V-shaped self-luminous means having diverging portions disposed on each side of the web and secured thereto directly beneath the said bead.

14. A gun sight as described in and by claim 13 and including means to shield the said self-luminous means.

15. A gun sight as described in and by claim 13 including movable shielding means carried by the said V-shaped means and adapted to be moved into or out of shielding position with regard to the luminous means to cover or uncover the same.

16. In combination, a front self-luminous gun

sight and a rear self-luminous gun sight, the front gun sight being of substantially horizontal V-shaped formation and said rear gun sight carrying thereon spaced self-luminous means of material length having sharply defined edges and arranged to emit two separate and distinct lines of non-diffusing light separated by a clear and distinct blank space of demarcation between said lines of light, the front self-luminous sight being aligned medially of the two spaced lines of light on the rear sight whereby accuracy of aim in firing is obtained at night commensurate with that degree of accuracy of daylight sighting and firing.

17. A gun sight including self-luminous means, and a shield located adjacent the gun sight and connected with and movable over the gun sight for covering or exposing the self-luminous means, said shield being arranged in a non-sight-interfering position when either covering or exposing the self-luminous means.

CLYDE B. FERREL.

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