33 - 233 CROSS REFERENCE SEARCH ROOM

United States Patent

Merrill et al.

[15] **3,698,091**

[45] **Oct. 17, 1972**

[54] **OPEN GUN SIGHTS FOR SMALL ARMS**

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[52] **U.S. Cl.**.....**33/233,** 33/243

[51] **Int. Cl.** **F41g 1/00,** F41g 1/32, F41g 11/00

[58] **Field of Search**.....33/47, 56, 51, 52

[56] **References Cited**

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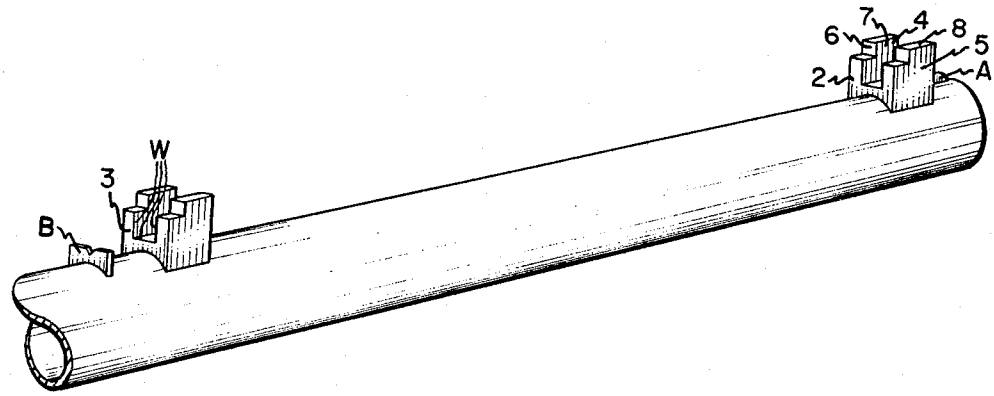
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Assistant Examiner—Steven L. Stephan
Attorney—M. Ralph Shaffer

[57] **ABSTRACT**

A gun sight for small firearms having applicability to short and medium range, quick-firing situations and for night-firing has been invented. The gun sight or aiming device comprises a pair of U-shaped sights each having a horizontal opening of substantial width. The horizontal opening of the front sight can be sufficiently wide to permit sighting of a target therethrough under conditions of substantial darkness. The U-shaped rear sight has a horizontal opening sufficiently wide so that at least a portion of the face of the front side on each side of the U-shaped opening can be viewed by an operator aiming the weapon. Also, the front sight may contain on its rear face a pair of rectangular, light-colored patches having sides coextensive with the upper edge of the sight and the vertical interior edge of the sight; each patch being located on opposite sides of the U-shaped opening.

4 Claims, 4 Drawing Figures



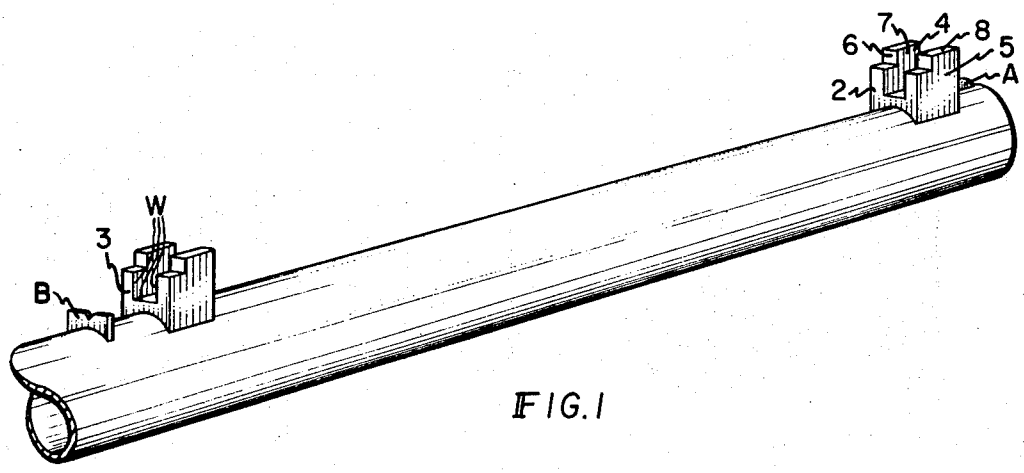


FIG. 1

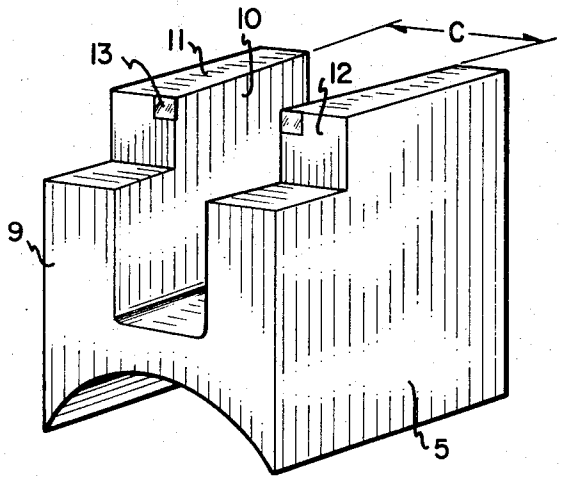


FIG. 2

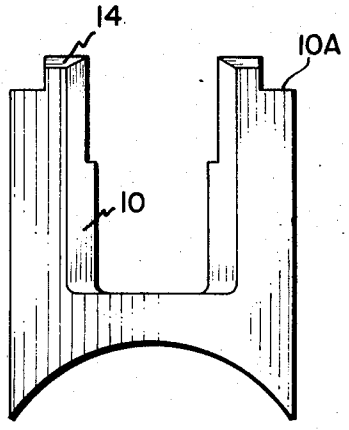


FIG. 3

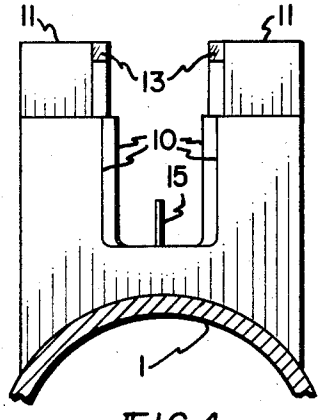


FIG. 4

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OPEN GUN SIGHTS FOR SMALL ARMS

BACKGROUND OF THE INVENTION

The development of gun sights for rifles, handguns and the like for military and sport use has generally been directed towards developing an accurate sighting or aiming device for medium to long range firing. There have been few apparent efforts to devise an efficient sight for short to medium range, quick-firing situations. The technique of quickly firing at short range has involved merely pointing the weapon at the target without the use of the sighting means. This has been necessitated because the sighting means on personnel weapons have not been designed for quick-firing at short range. In sport guns the type of sight utilized for quick firing is illustrated by the bead sight on shotguns. The shooter, in effect, merely looks down the barrel of the gun without any accurate sighting means.

Open sights of a conventional type are illustrated in U.S. Pat. No. 1,818,381 of Caruth, U.S. Pat. No. 837,563 of Hartmann, U.S. Pat. No. 2,488,836 of Sweetman, U.S. Pat. No. 821,821 of Nickerson, 811,267 of Andrus, and U.S. Pat. No. 154,871 of Johnson. None of these patents, however, disclose a pair of U-shaped, open sights and none are directed towards solving the problem of quickly and accurately aiming a weapon on targets at short ranges. The disclosure of deep or V-notched rear sights in the above patents indicates that long-range accuracy was of prime importance and that such sights could not have been quickly located and aligned on a target.

U.S. Patent 2,335,881 of Persinger illustrated a pair of slotted, open sights as auxiliary sights to align a detachable sighting bar with the fixed sights of a weapon. At page 2, column 2, lines 7 et seq. it is explained that the slotted sights are not used and apparently could not be used, to sight on a target. The sights attached to the detachable sighting bar are used to sight upon a target, and these sights are conventional in design.

OBJECTIVE OF THE INVENTION

The objectives of the invention are:

To provide a sight for daytime use in quick-firing situations at short to medium range;

To provide a sight for accurate firing under conditions of semi-darkness at close range;

To provide a sight for accurate quick-firing which do not interfere with the use of conventional sights attached to the firearm.

INVENTION

This invention relates to a novel open sight for firearms. This sight is useful in daylight and night firing and is especially useful for quick-firing at targets at short to medium range. The sight is primarily intended for use with small arms such as rifles, pistols, machine guns, shotguns and similar weapons.

The gun sight comprises a front sight having a U-shaped opening of sufficient width to permit sighting of a target therethrough in daylight or under conditions of semi-darkness, and a rear sight having a U-shaped opening sufficiently wide for at least a portion of the face of said front sight on each side of the U-shaped opening to be viewed by an operator aiming the weapon.

A combination of U-shaped open sights for front and rear positioning on a weapon is unique. Also, the horizontal opening of each sight is greater than that ordinarily used in conjunction with firearms. The sights are utilized for aiming at targets and are preferably located on the barrel and/or receiver of the weapon in alignment with the longitudinal axis of the bore. The sights are preferably located in the vertical plane which contains the longitudinal axis of the bore.

The gun sight of this invention is particularly useful for quickly firing small arms since the sights are readily located and aligned with a target, making the weapon more accurate for quick-firing at short ranges. Also, the width of the opening of the front and rear sights permits a target to be located under conditions of limited natural light. Typical sights utilizing a single post as a front sight tends to obscure the target under conditions of limited visibility while typical peep or notch rear sights are difficult to locate and can't be used for quick-firing of a weapon.

The novel U-shaped sights of this invention may be readily illuminated by positioning in or near the body of said sights a light source which can be seen by an operator of the firearm when aiming same. Illuminated sights of this type are described and claimed in copending application, Ser. No. 18,999 of Bill J. Rosenhan, one of the coinventors of the instant invention.

Further description of the invention may be facilitated by reference to the following drawings:

FIG. 1 is a perspective view of a front and rear sight positioned on a gun barrel;

FIG. 2 is a perspective view of a front sight embodiment;

FIG. 3 is an elevational view of the muzzle face of a front sight;

FIG. 4 is an elevational view of the rear faces of the front and rear sights when viewed in alignment; the rear face of the rear sight being shaded by vertical lines.

FIG. 1 is a perspective view of a gun barrel 1 having attached thereto an open, U-shaped, front sight 2 and an open, U-shaped, rear sight 3. The front sight 2 located near the muzzle end of the barrel 1 has a U-shaped or rectangular opening 4 with wings or posts 5 on each side of the opening. The width and vertical depth of the opening 4 in the front gun sight 2 are not a function of one another except to the extend that the opening must have sufficient width and depth to embrace a substantial portion of a target within the opening when viewed by a shooter. The depth of the opening is generally as great as the width. The front sight 2 is illustrated with patches of lighter color 6 on each side of the U-shaped opening 4 and covering a rectangular area at the junction of the vertical side 7 of the U-shaped opening 4 and the top surface 8 of each post or wing 5. The light colored patch is preferably included on sights of weapons intended for firing under lighted or semi-lighted conditions. The patches are placed on the rear face of the front sight and assist in aligning the rear and front sights on the target. The rear sight preferably contains no light colored patches.

The rear sight 3 shown in FIG. 1 is similar in configuration to the front sight 2. The horizontal width of the U-shaped opening need not be as large as that of the front sight 2 although it must be sufficiently large that a portion of the right and left posts adjacent to the U-shaped opening of front sight 2 may be seen when

viewed by an operator of the rifle or weapon sighting through the rear sight 3. The dimensions of the rear sight need not bear any specific correlation to the dimensions of the front sight although it is preferred that the dimensions of the U-shaped opening of the rear sight 3 be proportional to the dimensions of the U-shaped opening of the front sight 2.

The width of the U-shaped opening of both the front and rear sight should be sufficiently large that an object can be viewed therethrough under conditions of substantial darkness without the vertical sides of the U-shaped opening appearing to fuse together and obscure the object. If such a width is maintained for the sights it is found the sights are also readily located for quick firing in daytime conditions with excellent accuracy at short and medium ranges, that is, ranges of about 200 yards and less. It has been found that a minimum horizontal opening of about ½ inch for a front sight located about 2 and ½ feet to 3 feet from the eye of the operator of the weapon is satisfactory for nighttime use. For firearms intended only for daylight use the front sight opening may be as small as about one-fourth inch for a front sight similarly located.

The closer the front sight is located to the eye of the operator, the smaller may be the horizontal opening of the sight; and conversely the farther from the eye the sight is located the greater the horizontal opening required. Once the width of the opening of the front sight is determined then the width of the opening of the rear sight is fixed inasmuch as a portion of the pair of vertical posts bracketing the U-shaped opening of the front sight must be viewable when sighting through the rear sight. Thus, the horizontal opening of the rear sight will optically appear larger since it is closer to the eye of an operator, but it may, in fact, have an absolute measurement less than the front sight.

The sights illustrated in FIG. 1 need not have any substantial thickness and may be constructed of relatively thin, rigid material. The vertical edges of the U-shaped opening are preferably parallel to one another and are generally perpendicular to the base of the U-shaped opening with the interior vertical walls of the posts and the said base forming a sight opening wall W of U-configurement. The base of the U-shaped opening is substantially the same width as the top although the intersection of the base of the opening and the vertical walls may be somewhat rounded.

The novel sights having U-shaped or depending openings are illustrated in FIG. 1 as being additional sights. The depth of the U-shaped openings may be sufficient to permit the traditional peep hole or V-shaped rear sight B and post front sight A to be seen through the bottom portions of the U-shaped openings. A substantial portion of the U-shaped opening of the front sight projects above the top of the post sight A so that said post cannot interfere with the quick-aiming or nighttime use of sights 2 and 3.

FIG. 2 is a perspective view of a front sight. The sight of FIG. 2 has substantial thickness and for this reason the walls forming the U-shaped opening are tapered so that the opening at the front or nuzzle face of the sight is wider than the opening at the rear face of the sight. A taper on each wall is preferred so that an operator aiming through the sight will see only the rear face or rear indented surface area 12 of the vertical walls 10 and therefore see a sharp line. The angle C illustrated in FIG. 2 has a minimum value of about 4° and can have substantially greater values although the maximum included angle would be limited by the length of the sight, i.e., a greater included angle of taper can be utilized with very thin sights than with those of substantial thickness. The top surface 11 of each post or wing is also tapered so that the rear edge of the top surface is higher than the forward edge. Again, the purpose of tapering is to provide a sharp visible edge at the rear face of the sight to the operator of the weapon. Since the base of the U-shaped opening is not utilized in aiming a weapon, it need not be tapered although it may be.

The rear face 12 of the sight illustrated in FIG. 2 may be recessed partly or offset from the forward edge 9 of the sight. Having the face 12 slightly offset aids in protecting that portion of the sight from physical damage. The light colored square or rectangular area 13 is located at the interior edge of the face of the sight.

FIG. 3 is an elevational view of a front sight or rear sight looking from the muzzle of a weapon towards the stock or breach of the weapon. This view illustrates the interior walls 10A of the U-shaped opening tapering outwardly towards the front of the sight and similarly the top surface of the vertical post 5 tapering downwardly from the rear portion of the sight to the front face of the sight. This view shows a pair of lugs or ears 14 extending above the top surface 10A of the sight. These ears 14 are also recessed from the side of the sights so that a panel or other cover may be attached to either side of the sight. Such a panel or covering may be a functional part of the sight when the sight contains a light source and a power supply or whenever the sight must be attached to existing sights by adaptive means.

The alignment of the rear sight and front sight during aiming of a weapon carrying such sights is illustrated in FIG. 4. The top surfaces 11 of each sight forms a continuous line. To the positioned sighting-eye of the user the light colored patches 13 of the front signt are shown as completely filling the horizontal width of the rear surface, vertical side margins bounding the opening of the front sight as exposed to view between the vertical interior walls of each side of the rear sight. This is a preferred arrangement although as indicated above, the light colored patch may be omitted altogether or the light colored patch may extend only a short distance from the vertical wall 10 of the front sight across the rear face of the front sight.

FIG. 4 also illustrates a novel U-shaped open front sight with a traditional post sight 15 as an integral part thereof. The post preferably projects upward only a portion of the height of the opening of the front sight. Such a front sight may be used in conjunction with a traditional fold down peep sight which may be raised to sight accurately upon long range targets, e.g., targets at distances greater than 200 yards. If desired the U-shaped rear sight could contain a peep opening in the center of its base or a small V-shaped open sight could be cut in the center of the base of the U-shaped opening without detracting from the use of U-shaped open sights for quick-firing and nighttime use.

The novel sights of this invention can be readily constructed of rigid materials. Plastics are especially useful

since they are light weight and easily cast. Preferred plastics are the thermosetting resins such as polyesters, polycarbonates, polyurethanes, epoxies and the like. Metals, such as aluminum, steel or the like can also be used.

As indicated hereinabove, a pair of open U-shaped sights offers advantages over traditional sights when quick-firing or night firing of a weapon is involved. The sight of a rifle should have a minimum width of about one-half inch for either purpose when the front sight is about 2 feet or more from the eye. The rear sight opening will generally have different absolute dimensions in order for the sights to appear optically similar. However, for handguns the rear and front sights may be substantially identical in size because of the close proximity of the sights to one another.

The rear sight of a rifle, however, preferably has different dimensions than the front sight so that the sights will appear substantially identical when sighted through, as illustrated in FIG. 4. The dimensions of the rear sight, for example, can be computed from knowledge of the dimensions of the front sight, the distance between the front sight and the rear sight and the average distance between the rear sight and the eye of an operator aiming the particular weapon to be equipped with the open sights. Since the eye of the operator is the point at which light converges, then simple geometric formulas applied to triangles can be used to compute the rear sight dimensions.

The sight dimensions are established by the distance the sight is located from the eye. As indicated hereinabove, the width of the sight opening should be at least about one-quarter inch and preferably one-half inch for a sight located 24 inches from the eye of the operator of the weapon. Although the opening can be wider, for example, an increase of 100 percent over the minimum width required, very little variation below the minimum can be tolerated and for best operation the width should be not more than 10 percent narrower nor more than 50 percent greater than the recommended minimum. At a distance of about fifteen inches from the eye, a rear sight could be about one-half the width of a front sight located 30 inches from the eye.

In effect, the dimensions of a sight useful at night can be computed by using one-half inch as the standard opening width for a sight located about 24 to 30 inches from the eye of an operator. By allowing X to be the width of the opening to be determined and Y the distance in inches of such sight to the eye then the ratio is $X/1/2 = Y/30$. Since Y is generally known, the equation can be solved for X wherein $X = 1/2(Y/30)$. The equation can be generalized by allowing W to be the known dimension of the front sight and Z to be the distance that sight is from the eye; the equation becoming $X = W(Y/Z)$. Other dimensions than width can be computed from this formula since it is desirable to have the rear sight, for example, proportional in size and shape to the front sight. The width of the opening of the rear sight, however, will generally not be exactly proportional to the front sight since it is desirable to be able to view portions of the twin posts of the front sight through the rear sight. For example, a front sight having a one-half inch wide opening located 27 inches from the eye could be used in conjunction with a rear sight nine inches from the eye and opening of one-sixth of an inch if exact proportions were used. However, in this situation, in order to view portions of the twin posts of the front sight it is preferred that such a rear sight opening be about one-quarter inch.

For the general purposes of this invention, rifles, shotguns, and like weapons can be fitted with a rear sight having a minimum opening width of about one-quarter inch, and if the front sight is between about 2 feet and 3 feet from the eye, an opening width of one-half inch is appropriate. If such firearms are intended only for daylight use the dimensions may be about one-half those described in this paragraph. As indicated elsewhere herein, the depth of the U-shaped opening is preferably at least as great as the width and the combined widths of the twin posts on each side of the opening is preferably substantially the same as the width of the opening. The field of view for sights of this invention at about 200 yards is preferably between about 50 inches and 100 inches for all-purpose use, while a field of view of at least about 100 inches at 200 yards is preferred for night-sights.

In the above discussion, the term "width" refers to horizontal dimension at the rear face of a sight while "depth" refers to vertical dimension at the same face.

Although the instant invention has been described hereinabove by reference to specific embodiments, it is not intended that the invention be limited solely thereto, but to include all the variations and modifications falling within the scope of the appended claims.

We claim:

1. A gun sight for small arms comprising:
   a. a U-shaped front sight having upstanding, transversely spaced right and left vertical-interior-walled posts defining therebetween a U-shaped sighting opening of sufficient horizontal width to permit sighting of a target therethrough; and
   b. a U-shaped rear sight spaced rearwardly of said front sight and having upstanding, transversely spaced right and left vertical-interior-walled posts defining therebetween a U-shaped sighting opening of sufficient horizontal width, relative to the distance between said sights and sighting eye placement relative to the latter, for at least a portion of the right and left posts of the front sight adjacent to the U-shaped sighting opening to be visible when viewed by an operator aiming the firearm.

2. The sight of claim 1 wherein said posts of said front sight are each provided with indented rear surface areas contiguous with said sighting opening thereof, and a pair of horizontally aligned sighting markings respectively disposed upon said indented areas.

3. The gun sight of claim 1 wherein the width of the opening of the U-shaped rear sight is dimensioned to be sufficiently large that an object can be viewed therethrough under conditions of substantial darkness without the vertical sides of the opening appearing to fuse together and obscure the object.

4. A gun sight for small firearms comprising:
   a. a front sight provided with mutually laterally spaced posts having respective rear faces and a U-shaped sighting opening of sufficient horizontal width between said posts to permit sighting of a target therethrough, a pair of light colored patches disposed on said post rear faces proximate said

sighting opening at upper regions of said posts, each patch being of the same shape and having substantially the same dimensions, and both patches being horizontally aligned; and

b. a rear sight spaced from said front sight, positioned relative to intended sighting eye placement, and having a U-shaped sighting opening of sufficient horizontal width for at least a portion of said rear faces of said right and left posts of the front sight adjacent to the said U-shaped sighting opening and the said pair of patches on said rear faces to be visible when viewed by an operator aiming the firearm, said rear sight being dimensioned to mask out, relative to the viewer, the remainder of said front sight.

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