June 22, 1965 W. H. BLISS 3,190,002

ARRANGEMENT FOR ALIGNING SIGHTS

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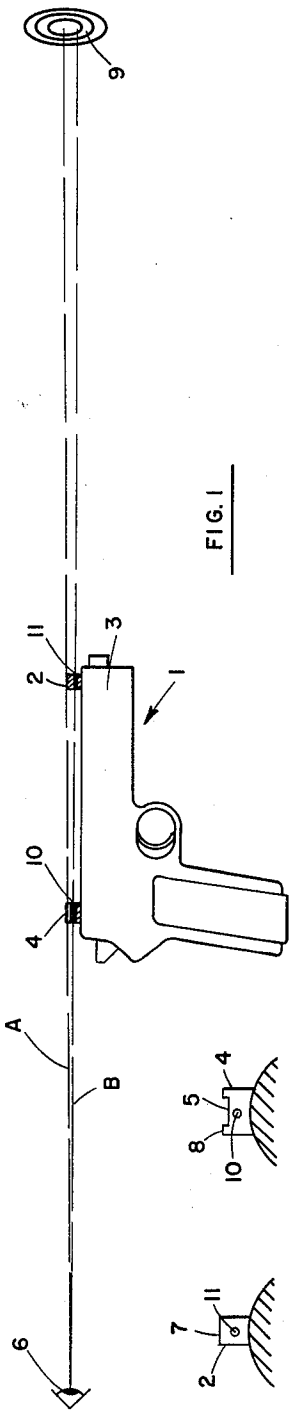


FIG. 1

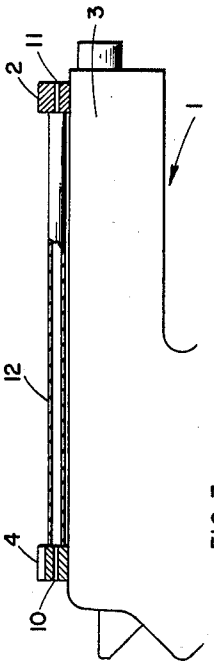


FIG. 7

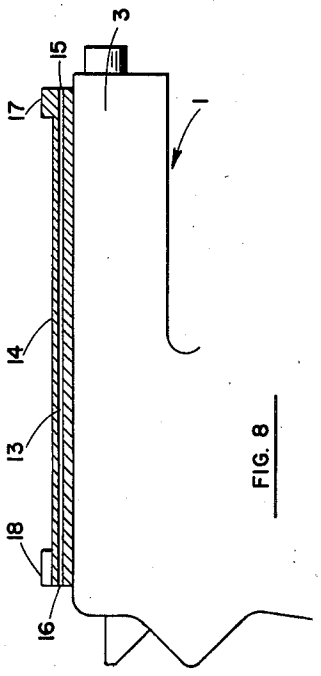


FIG. 8

FIG. 3

FIG. 2

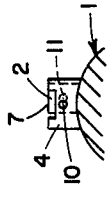


FIG. 5

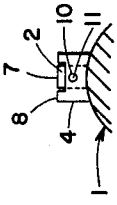


FIG. 4

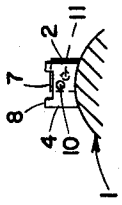


FIG. 6

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ARRANGEMENT FOR ALIGNING SIGHTS

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This invention pertains to a means for obtaining proper visual alignment of sights.

One particularly important use of the device of this invention is in providing alignment of the sights of a hand gun. For example, typical sights for a target pistol include a front blade at the muzzle of the gun, and a notched block at the rear portion of the gun. These sights are arranged so that when the sight blade is centered in the notch of the rear sight block, and the top surfaces of the two portions of the sight are level, the shooter's eye then will observe the expected point of contact for the bullet. Therefore, to strike a predetermined target, it is necessary to align the sights with the shooter's eye, as well as to train the aligned sights on the target.

While obviously a good shot can be obtained only if the target is properly seen by the marksman, the problem of sight alignment is much more critical. This is because the sights are displaced only a few inches apart, while the target normally will be in the neighborhood of twenty-five to fifty yards distant. A misalignment of a few thousandths of an inch between the front and rear sights is greatly magnified and causes an inaccuracy of several inches at the more distant target point.

The shooter's problem is complicated by the various factors influencing the accuracy of his shot. Due to the considerable difference between the distance from his eye to the sights and to the target, it is impossible for him to focus his eye on both. One object must remain blurred if the other is to be seen sharply. In view of the critical nature of sight alignment, most shooters will focus on the sights and allow the target to become blurred. Over and above the problems of sight alignment and point of aim, the marksman must bear in mind the proper trigger squeezing technique, breath control, stance, and other practices necessary for accurate marksmanship. In other words, striking a desired target point is a matter of considerable complexity requiring a great deal of concentration as well as physical skill.

According to the provisions of this invention, there are provided small apertures through the spaced front and rear sights which openings are appropriately located so that a positive visual indication, as from a signal light, shows the shooter when the sights are in proper alignment.

Therefore, it is an object of this invention to provide an arrangement for obtaining alignment between spaced sighting members.

A further object of this invention is to provide an arrangement giving a positive indication when sights have been aligned.

An additional object of this invention is to provide an arrangement taking all guesswork out of the alignment of sights, permitting concentration on other matters.

Yet another object of this invention is to provide an indication of proper sight alignment which can be observed readily without disturbing normal aiming practices.

These and other objects will become apparent from the following detailed description taken in connection with the accompanying drawing in which:

FIG. 1 is a side elevational view, partially in section, illustrating the sight alignment provisions of this invention,

FIG. 2 is an end elevational view of a front sight blade including an aperture for sight alignment,

FIG. 3 is an end elevational view of the rear sight block likewise provided with a sight alignment aperture,

FIG. 4 is an end elevational view of the sights in the properly aligned condition,

FIG. 5 is a view similar to FIG. 4, but with the sights slightly misaligned,

FIG. 6 is a view similar to FIG. 5 with the sights further misaligned,

FIG. 7 is a longitudinal sectional view illustrating the use of a tube interconnecting the alignment apertures to obstruct side lights, and

FIG. 8 is a longitudinal sectional view of an arrangement utilizing a single elongated alignment aperture.

As seen in FIG. 1, a typical target pistol **1** includes a front sight blade **2** projecting upwardly from the top of the gun barrel **3** near the muzzle. Spaced a few inches from the front sight blade, and near the rear of the gun is the rear sight block **4**. The latter includes a notch **5** at its midpoint which may be rectangular, as shown, V-shaped, semicircular, or of other configuration. For target shooting the pistol will be held by hand spaced in front of the shooter's eye **6** a distance depending upon the length of the arm of the user of the gun.

In obtaining a good shot, it is necessary for the front sight blade **2** to be centered within notch **5** of the rear sight block, and for the upper surface **7** of the front sight blade to be even with the upper surface **8** of the rear sight block. In other words, the shooter's eye **6** and the two sights must fall within the single straight line A in order for the sights to be in the proper alignment. The bullet then can be expected to contact whatever object also falls along the path of line A. When this line A also intersects the center of target **9**, the gun is aimed properly. Thus, the bullet should strike the center of target **8** so long as the target, the two sights, and the shooter's eye all fall along the one straight line A.

Of course, in some instances the sights are made adjustable to compensate for variations in distance between the marksman and the target. Whether or not an adjustment of this type is made, the sight alignment procedure is the same.

According to the provisions of this invention, there is provided through the rear sight block **4** a small aperture **10** immediately below the center of notch **5**. A similar aperture **11** extends through the vertical axis of the front sight blade **2**. As a result, a beam of light from in front of the gun will pass through the two apertures **10** and **11** along the path of line B. These two openings, by transmitting the light beam B, provide the shooter with a positive indication of sight alignment.

As seen in FIG. 1, when the sights are properly aligned the beam of light following line B will pass through both openings **10** and **11** and strike the shooter's eye **6**. With correct sight alignment, therefore, lines A and B intersect at the observation point for the sights.

It is for this reason that the front opening **11** is slightly lower than the rear opening **10** to allow the light beam B to fall upon the eye **6** at the same point as the line A of sight alignment.

In use of the sight aligning arrangement of this in-

vention, it is apparent to the marksman when the sights are aligned because the light beam B will be observed at maximum intensity only in this condition. This is indicated in FIG. 4. However, if the sights are misaligned, as in FIG. 6, the shooter will be unable to see any light through the rear opening **10**. This is because the openings **10** and **11** no longer coincide as he looks at the sights, and the rear opening **10** is obstructed by the surface of the front sight **2** adjacent the opening **11** in the front sight blade.

Obviously, therefore, when the sights are positioned correctly, a relatively bright light will be observed in the rear opening **10** because it is in registry with front opening **11**. If the sights are moved toward misalignment, such as indicated in FIG. 5, the intensity of the signal at rear opening **10** will decrease as there is less area through which a beam of light from the front sight may be observed. Therefore, the shooter may watch for a relatively bright beam of light through the rear opening **10** which will automatically advise him that the sights are in their aligned condition. If the signal is relatively dim he knows that the sights are nearly but not quite in the optimum position. When the light is extinguished, the marksman realizes that the sights are no longer correctly aligned, and that he cannot obtain an accurate shot. The provisions of this invention, therefore, remove all guesswork from the sight alignment problem. The shooter is given a positive means of knowing that the sights are in the correct position. This leaves him free to aim the sights when he is given the automatic signal of alignment, concentrating only on the problem of striking the target point without concern for sight alignment. The light through opening **10** is observed by the marksman without looking directly at this opening. The shooter is made aware of the alignment as if a signal light has been turned on, which is readily detected without any conscious observation of the light source.

In order to assure that the signal will be of sufficient intensity to be observed by the markman, it is advisable generally to avoid bright lights on the gun and to see that the sights are well blackened. To prevent any possible misinterpretation of distracting side lights, the arrangement of FIG. 7 may be resorted to. Here there is a tube **12** interconnecting the openings **10** and **11** of the front and rear sights. This tube allows the light from the front of the gun to pass through opening **11** and then through opening **10** to the shooter's eye. However, any side lights will be blocked out. This relatively simple addition, therefore, assures that an adequately intense light signal will be obtained under all conditions.

As shown in FIG. 7, the tubular member **12** has a larger diameter than that of the openings **10** and **11**. This is preferred for ease of assembly. However, it would make no difference if the tube **12** were of a diameter equal to that of the two apertures **10** and **11**. The effect then would be the same as a single elongated opening having spaced ends. In other words, it is not necessary actually to include separate spaced openings if the single opening has appropriately spaced ends and is positioned properly with respect to the sights and the observer's eye. Such a construction is indicated by the opening **13** through elongated member **14** affixed to the gun shown in FIG. 8. The axis of aperture **13** coincides with line B, and the spaced ends **15** and **16** of this path for the signal light assure that the light can be seen only at the position of correct sight alignment. The single member **14** may incorporate front and rear sights **17** and **18** if desired.

It is apparent that the relative location vertically of openings **10** and **11** is quite important in providing precise sight alignment. In some instances where extreme accuracy is desired, it may be preferable to adjust the two openings to the arm length of the shooter. For a marksman whose arm is relatively short, the gun will be located closer to the shooter's eye, and the front opening **11** should be lower with respect to the rear opening **10** than for one of longer arm length. This lower position will allow the light beam B to strike the eye **6** at the same point as line A of sight alignment. Generally speaking, however, there is little enough variation in arm length with respect to the much smaller distance between the two portions of the sight to require any custom fitting of the vertical positions of openings **10** and **11**.

While the invention has been described as utilized in connection with a target pistol, it is apparent that the teachings of this invention are equally applicable in any instance where the aligning of sights is necessary. This is not only the case in weapons of various types but also may be encountered in navigational equipment, for example.

It should be observed that while openings **10** and **11** are illustrated as being positioned at the vertical axis of their respective sights, it is not necessary for them to fall in this position. This location is preferred for target pistols primarily for ease in construction and because it places the source of the light signal close to the area where the eye is directed in sighting the weapon. The essential factor is to have a light path so positioned that when the sights are aligned with respect to the eye, the path of the light beam likewise is in alignment with the eye. The spaced openings actually need not even be in the sights, but may be in any other members so long as they are properly positioned with respect to the sights and the point of observation of the sights.

It should be borne in mind also that the source of the light signal transmitted by the alignment openings is not critical. As seen in FIG. 1, the pathway B intersects the target **8**. As a result, the alignment signal light is reflected from the target, which normally will be well illuminated. However, any other light source is satisfactory that will provide a beam B passing through the alignment openings to the sighting point.

The foregoing detailed description is to be clearly understood as given by way of illustration and example only, the spirit and scope of this invention being limited solely by the appended claims.

I claim:

1. In a device having longitudinally displaced sighting members having indicia alignable in a sighting operation with a predetermined point of observation, a device for determining such alignment comprising means for transmitting a beam of light, said means including laterally spaced apertures remote from said indicia, said laterally spaced apertures having their axes aligned with said point of observation only when said indicia of said longitudinally displaced sighting members are substantially aligned with said point of observation.

2. In combination with a device having longitudinally displaced sights arranged with observable indicia aligned one in front of the other when said device is aimed at a target, an arrangement for providing alignment of said indicia of said sights comprising an aperture means in each of said sights, said aperture means being remote from said indicia and being positioned so as to be in alignment with the point of observation for said sights when said indicia of said sights are in alignment with said point.

3. In a hand held gun having a front sight blade and a rear sight block having a notch therein, an arrangement for aligning said sight blade with respect to said sight block comprising aperture means through said sight blade, and aperture means through said sight block, said aperture means being positioned so as to be in alignment with the normal sighting point for said gun when said sight blade and said notch in said sighting block are likewise in alignment with said sighting point.

4. The method of aligning a duality of sights comprising the steps of providing a restricted path for a beam of light independent of the normal sighting path of said

sights and positioned such that said restricted path is in alignment with the normal observation point for said sights only when said sights are in alignment with said observation point, then observing said sights from said observation point, and simultaneously positioning said sights such that a light of maximum intensity is received from said restricted path at said observation point.

5. The method of aligning sights of a gun having longitudinally displaced sights comprising the steps of providing an aperture through each of the longitudinally displaced sights of said gun with said apertures positioned to be in alignment with the sighting point for said gun when said sights likewise are in alignment with said sighting point, then observing said sights from said sighting point, and positioning said sights such that light is received at said sighting point through both of said apertures .

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ISAAC LISANN. *Primary Examiner.*