

April 30, 1946.

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2,399,431

GUN SIGHT FOR ANTI-AIRCRAFT WEAPONS AND THE LIKE

Filed April 17, 1943

2 Sheets-Sheet 1

FIG. 1.

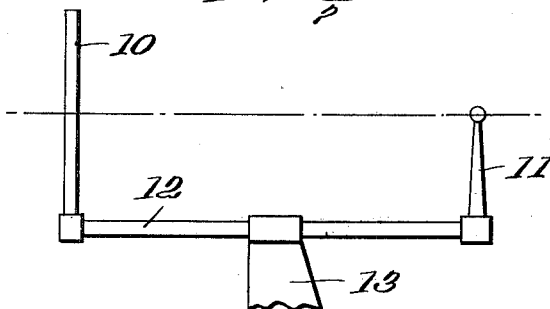


FIG. 2.

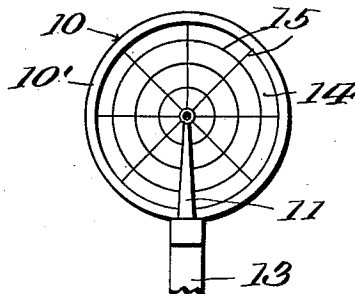


FIG. 3.

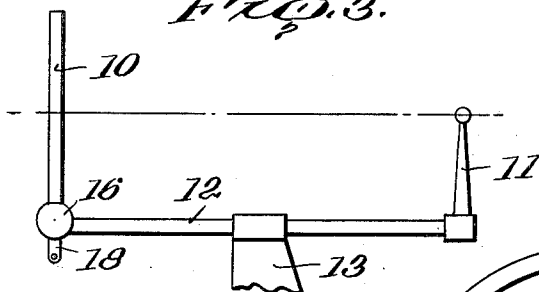


FIG. 4.

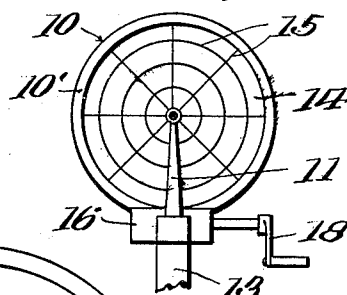


FIG. 6.

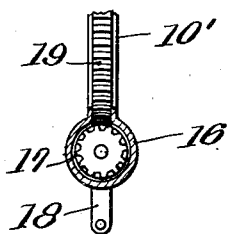
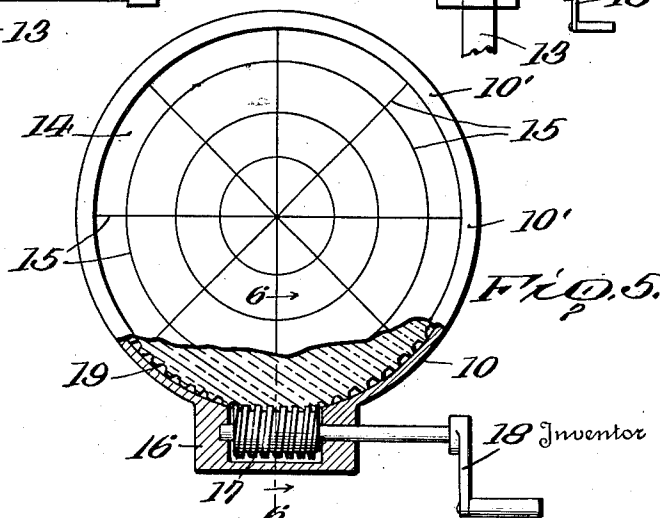


FIG. 5.

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FIG. 7.

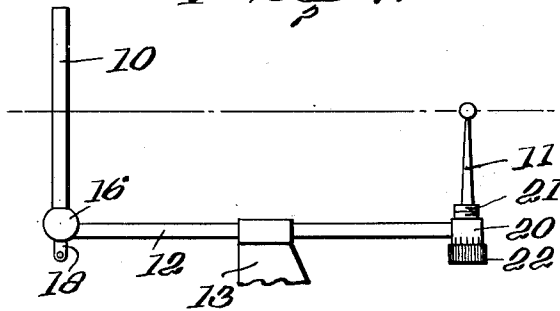


FIG. 8.

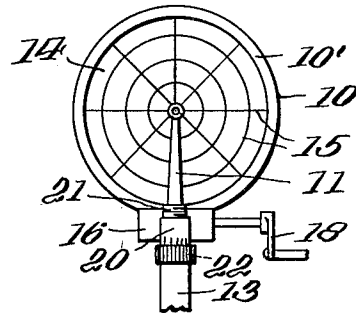


FIG. 9.

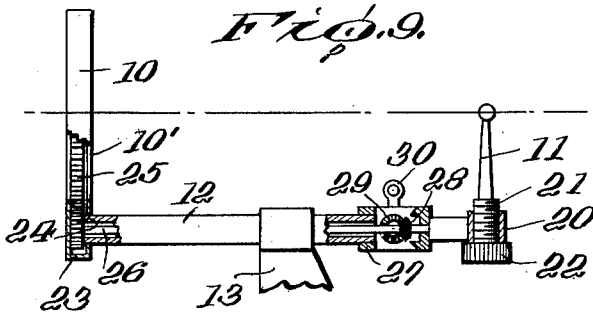


FIG. 10.

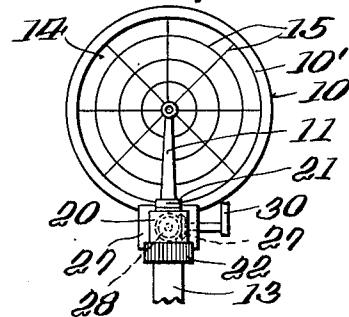


FIG. 11.

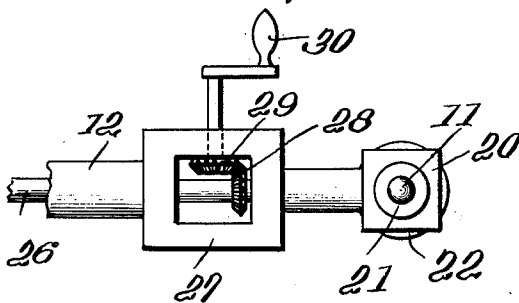
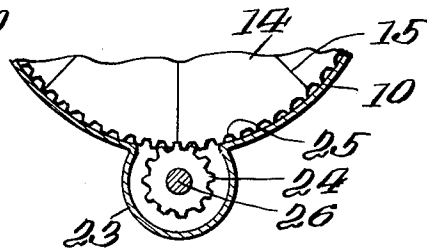


FIG. 12.



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GUN SIGHT FOR ANTIAIRCRAFT WEAPONS
AND THE LIKE

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Application April 17, 1943, Serial No. 483,437

1 Claim. (Cl. 33—53)

The constantly increasing speeds which are being attained by modern warplanes, such as dive bombers and the like, have commensurately increased the difficulty in sighting and aiming the anti-aircraft weapons with which these planes are provided.

The present tendency has been to try to obviate this difficulty by effecting a significant increase in the diameter of the gun sight, usually mounted on the barrel or receiver of the gun. These sights conventionally comprise essentially a metallic annulus, across the diameter of which are stretched a plurality of orienting wires of hair-breadth thickness.

Sights of this character are manifestly exposed to very severe vibration, particularly when mounted on weapons such as automatically-firing anti-aircraft cannons which operate at very high speed. Increase in diameter of the sight annulus tends, however, to enhance rather than suppress the vibration.

The high speed of the plane and the high speed of operation of the guns make it so difficult to use the conventional sights—the wires of which are very short-lived—that gunners avoid their use, preferring to rely upon tracer bullets for aiming. The result is, of course, to markedly reduce the effectiveness of the gunfire, since the tracer bullets, which have to be employed in large number, do not contain the quantity of high explosive contained in the regular high explosive shells.

The provision of an anti-aircraft gun sight which is free of the aforescribed disadvantages would manifestly constitute a substantial contribution to the state of the art. The present invention provides such a sight.

Briefly stated, the new gun sight consists of the combination of a sight ring and a sight bead which may be fixed to the gun either separately or associated together as a unit. The sight ring according to this invention consists essentially of a solid transparent plate of suitable material, for example, plastic synthetic resin and the like, in which sight lines may be engraved or otherwise marked. The solidity of the device imparts great stability to the sight which is not influenced by vibrations such as those due to the firing of the automatic anti-aircraft gun with which it may be associated.

A further difficulty encountered by aerial gunners employing conventional gun sights is the impossibility of aiming into the sun and at targets covered by light clouds. The present invention makes it possible largely to obviate this difficulty

by making the sight plate of polarized material of the character of the well-known anti-glare "Polaroid."

Various other details of construction incident to the realization of the foregoing and other objects and advantages of the present invention will be apparent from the following detailed description of several presently-preferred exemplary embodiments thereof, reference being had in this regard to the accompanying illustrative drawings, wherein:

Fig. 1 is a side elevation of a first form of the invention;

Fig. 2 is a front elevation corresponding to Fig. 1;

Fig. 3 is a side elevation of a second form of the invention;

Fig. 4 is a front elevation of the embodiment of Fig. 3;

Fig. 5 is a front elevation, on a somewhat enlarged scale, of the sight plate of the embodiment of Fig. 3, with a part broken away and shown in section;

Fig. 6 is a sectional view taken along line 6—6 of Fig. 5;

Fig. 7 is a side elevation of a third form of the invention;

Fig. 8 is a front elevation corresponding to Fig. 7;

Fig. 9 is a view, partly in section and partly in side elevation of still another embodiment of the invention;

Fig. 10 is a front elevation corresponding to Fig. 9, with parts broken away;

Fig. 11 is a fragmentary top plan view of the embodiment of Fig. 9; and

Fig. 12 is a fragmentary section showing part of the gearing of the device of Fig. 9.

Corresponding parts bear the same reference characters throughout the several figures of drawings.

The simplest embodiment of the present invention is illustrated in Figs. 1 and 2 of the drawings. Reference numeral 10 represents the sight ring of the device, while reference numeral 11 designates the essentially conventional sight bead. The parts are associated by the common supporting bar 12 which is fixed to the conventional lug or other suitable means fixed to the gun (not shown).

The sight ring 10 may preferably comprise a metallic peripheral annulus 10' which encases the periphery of a solid disk 14 of suitable transparent material such as synthetic resin (e. g. "Lucite," "Plexiglas," etc.), colorless tourmaline,

etc. The annulus 11 may conveniently be U-shaped in section, with the disk 14 fitting into the space between the legs of the U.

The disk 14 may be of a one-piece cast or molded construction and may have the sight lines 15 engraved or otherwise marked thereon. Alternatively, the disk 14 may be of a laminated construction with the sight lines 15 marked on an interior surface of one of the laminae prior to integration of the several laminae.

The sight bead 11 may preferably be arranged on the other side of lug 13 from the sight ring 10. This bead being of conventional construction, further detailed description thereof is unnecessary. The cooperative relationship of the parts described will be readily apparent to those skilled in the art.

The solid character of the sight ring 10 imparts the necessary stability thereto enabling it to withstand the vibrational and other forces to which it may be subjected in use.

In the embodiment of Figs. 3, 4, 5 and 6, the sight bead construction 11 remains conventional. The sight ring construction differs from that aforescribed primarily in that the transparent material of which the disk 14 is made is of the type of "Polaroid" glass, or of tourmaline, i. e. is capable of polarization of the light rays impinging thereon. The result is to dissipate glare and to make it possible to sight and aim at a target having the sun or light clouds as background. The disk, in this embodiment, comprises the sight lines 15 of the previous embodiment.

In order to be able to realize maximum polarization and, consequently, maximum glare dissipation, it is desirable to be able to rotate disk 14, within the casing 11, to position of maximum polarization. To this end, casing 11 may conveniently be provided at its lower end with an integral gear housing 16 within which may be housed and journaled a worm gear 17 actuated by means of projecting handle 18. The adjacent peripheral portion of disk 14 is dentated as at 19 in engagement with gear 17, whereby rotation of the latter by means of handle 18 effects a simultaneous rotation and adjustment of disk 14.

In all other respects, this second modification of the invention coincides with the first embodiment.

According to the embodiment of Figs. 7 and 8, the sight ring part of the device coincides with that of Figs. 3-5 inclusive. The sight bead construction is modified, however, in that the bead is vertically adjustable. To this end, the bar 12 terminates at the sight bead end in an interiorly threaded cylindrical sleeve 20 in which the bead proper is threadedly mounted by means of

its externally threaded shank 21. The latter terminates in a knurled enlargement 22 whereby the shank 21 may be turned relative to sleeve 20 to effect vertical adjustment up or down with respect to the sight ring. The parts 20 and 22 may be graduated, if desired, so that the extent of adjustment may be measured.

Figs. 9, 10, 11 and 12, finally, show still another embodiment of the invention. In this embodiment, the sight bead part of the device may preferably be a duplicate of that of the embodiment of Figs. 7 and 8. The sight ring construction is modified, however, in that the means for adjusting the disk 14 is operable from the bead end of the device. To this end, casing 11 is provided at its lower end, as shown in Fig. 12, with a gear casing 23 for the reception of a ring gear 24 which cooperates with corresponding gear teeth 25 provided on the periphery of disk 14.

Bar 12 assumes, in this embodiment, the hollow configuration shown on the drawings, the shaft 26—at the end of which gear 25 is mounted—being received therein and extending back to gear casing 27, where the other end thereof is journaled. Casing 27 houses bevel gears 28 and 29, actuatable through the handle 30, whereupon the desired adjustment of disk 14 may be effected.

In order to facilitate use of the device according to the present invention for night firing, the sight lines 15 may preferably be formed of luminous (radiumized or phosphorescent) material.

It is apparent from the foregoing description that the present invention provides a novel relationship of parts whereby the desired objects and advantages, as hereinbefore enumerated, are realized.

Having thus described the invention, what I claim is:

A gun sight of the character described comprising a supporting bar, means for mounting said supporting bar intermediate the ends thereof on an automatic anti-aircraft cannon or the like, a solid transparent sight disk of shatter-proof synthetic material, sight lines on said disk, means for mounting said sight disk at one end of said bar, said means comprising a supporting housing for said disk substantially peripherally encasing the latter, a bead sight, means at the other end of said bar for mounting said bead sight thereon, means for adjusting the angular position of said sight disk in said casing and comprising peripheral dentations on said disk and manually operable gearing engageable with said dentations for moving said disk, and means for adjusting the vertical position of said bead sight on said bar.

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