33-233. OR 3,030,708 SR

SEARCH ROOM

April 24, 1962 R. I. DANIEL 3,030,708

GUN SIGHT MECHANISM

Filed Oct. 29, 1959 2 Sheets-Sheet 1

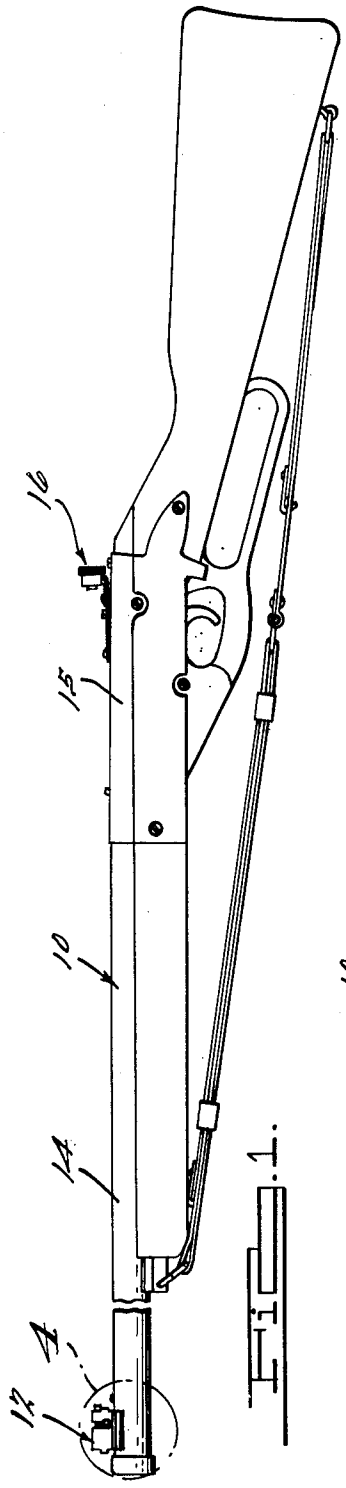

Fig. 1.

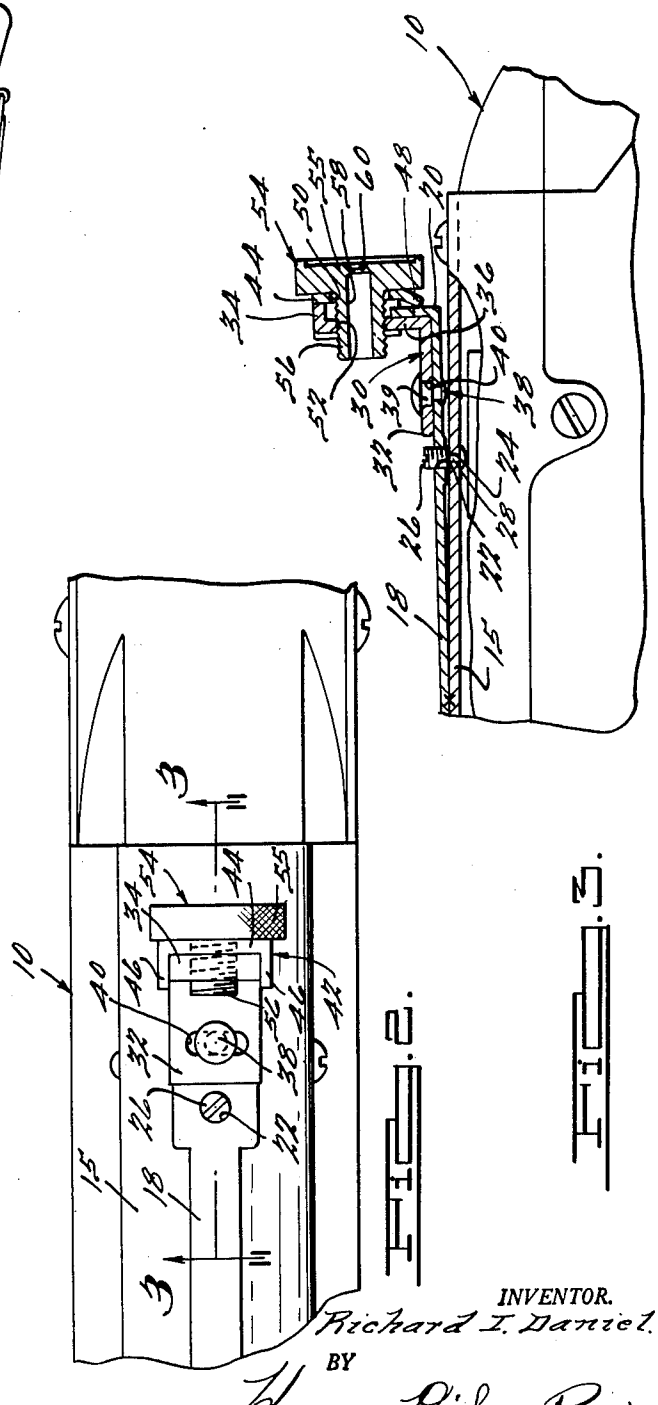

Fig. 2.

Fig. 3.

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GUN SIGHT MECHANISM

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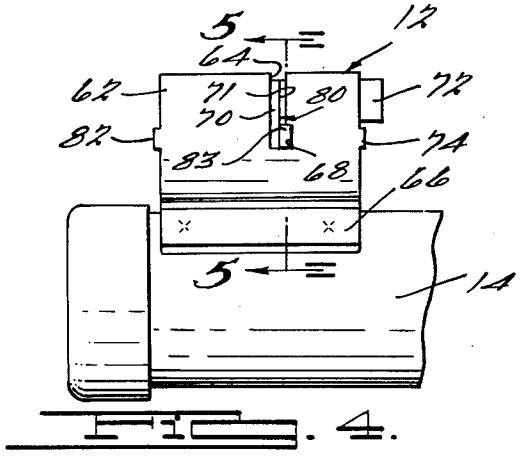

FIG. 4.

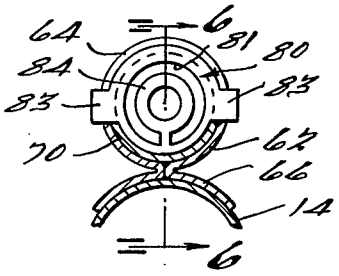

FIG. 5.

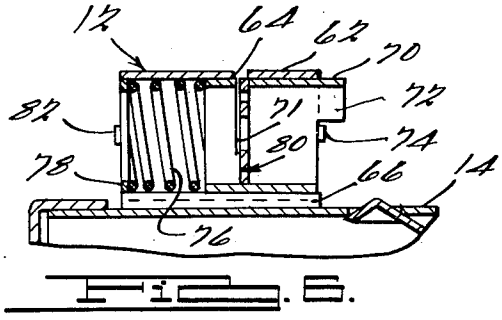

FIG. 6.

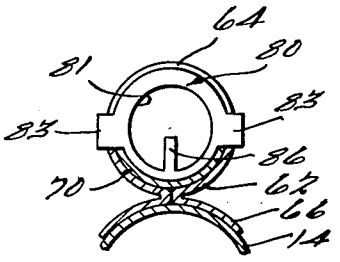

FIG. 7.

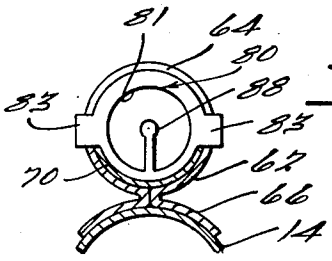

FIG. 8.

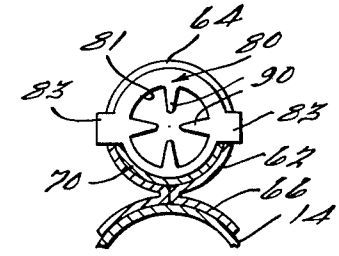

FIG. 9.

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3,030,708
GUN SIGHT MECHANISM

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Filed Oct. 29, 1959, Ser. No. 849,673
3 Claims. (Cl. 33—47)

This invention relates to improvements in gun sight mechanisms and more particularly to improvements in a shrouded interchangeable aperture front sight and an adjustable rear aperture sight adapted for mounting on shoulder firearms.

A primary object of this invention is to provide a front and rear gun sighting mechanism of sturdy design, economical manufacture, and which is simply, quickly, and accurately adjustable and variable to adapt to a variety of shooting conditions.

Another object of this invention is to provide a shrouded or hooded front gun sight having a variety of interchangeable aperture rings of various configurations which may be quickly and simply interchanged to best adapt the sight to a particular type target.

Still another object of this invention is to provide a shrouded front gun sight embodying an aperture ring retaining mechanism, which enables quick and simple replacement of a variety of interchangeable aperture rings and which positively maintains the installed aperture ring in appropriate alignment with the sight axis.

Another object of this invention is to provide a rear aperture or peep-type sight that is simply and quickly adjustable to compensate for windage and elevation.

Still another object of this invention is to provide a rear aperture gun sight embodying a windage adjusting mechanism that is of simple and sturdy design, and enables accurate lateral adjustment of the line of sight through the aperture relative to the longitudinal axis of the gun barrel, to compensate for windage effects.

Other objects and advantages of the present invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a side elevational view of a shoulder firearm, and more particularly an air-rifle having mounted thereon a hooded variable aperture front sight and an adjustable rear aperture sight incorporating the preferred embodiments of this invention;

FIG. 2 is an enlarged plan view of the adjustable rear aperture sight shown in FIG. 1;

FIG. 3 is a vertical longitudinal sectional view of the adjustable rear aperture sight shown in FIG. 2, and taken along line 3—3 thereof;

FIG. 4 is an enlarged side elevational view of the hooded front gun sight shown in FIG. 1;

FIG. 5 is a transverse vertical sectional view through the hooded front gun sight shown in FIG. 4 and taken along line 5—5 thereof;

FIG. 6 is a vertical longitudinal sectional view of the hooded front gun sight shown in FIG. 5 and taken along line 6—6 thereof; and

FIGS. 7, 8 and 9 are transverse vertical sectional views through the hooded front gun sight similar to that shown in FIG. 5, and illustrating alternate configurations of the interchangeable aperture disks adapted for removable installation in the hooded front gun sight.

Referring now to the drawings, and as may be best seen in FIGURE 1, a gun sight mechanism incorporating the preferred embodiments of this invention and mounted on a shoulder firearm such as an air rifle **10** is comprised of a shrouded or hooded front gun sight **12** mounted on the forward top portion of barrel **14** and an adjustable rear apertured sight **16** adapted for mounting on the rearward end portion of a barrel **14** or a receiver portion **15** of rifle **10**. The sturdy construction, simplicity of adjustment, and comparatively low cost of the gun sight mechanism herein described make it ideally suitable for mounting on an air rifle wherein it does not constitute a disproportionate cost of the rifle, will sustain rough handling without malfunction or breakage, and will provide a high degree of flexibility to adapt the rifle to a variety of shooting conditions. However, it will be understood that the hooded front gun sight and adjustable rear apertured sight are equally applicable to other small arms and shoulder firearms and are not intended to be restricted to use on air rifles.

As may be best seen in FIGS. 1–3, the adjustable rear apertured sight **16** is comprised of an elongated flexible leaf or blade member **18**, having the forward end portion thereof fixedly secured to the top portion of the receiver **15** such as by a conventional dovetail mounting member or by securing means such as riveting, welding and the like. Blade member **18** is disposed in substantial longitudinal alignment with the longitudinal axis of the barrel **14** and is provided with a rear, upwardly projecting flange **20**. Blade member **18** is provided with elevation adjusting means whereby the longitudinal angularity of blade member **18** relative to the longitudinal axis of barrel **14** can be varied and whereby the rear end portion of blade member **18** is vertically adjustable relative to the top of the receiver **15**. The elevation adjusting means comprise a threaded aperture **22** having preferably a comparatively low pitch thread disposed substantially midway between the front and rear end portions of blade member **18**, and in vertical axial alignment with an aperture **24** in the top of the receiver **15**. An adjusting screw **26** is rotatably mounted on the receiver **15** and is in threaded engagement with the threaded aperture **22**. Integrally connected to the lower end of adjusting screw **26** and in axial alignment therewith is a downwardly projecting retainer pin **28** rotatably mounted in the receiver aperture **24** and provided with a head portion which is disposed beneath the aperture **24** so as to prevent the adjusting screw from becoming disengaged from the receiver while permitting it to rotate relative to the receiver. The coaction between the adjusting screw **26** and the threaded blade aperture **22** provides minute and accurate adjustment of the sight to compensate for the magnitude of gravitational fall of the projectile or pellet as affected by the distance of the target and the muzzle velocity of the projectile.

A Z-shaped support member **30** comprising a lower base leg **32**, an upper locking leg **34** and an upright interconnecting leg **36** is slidably mounted on the rear end portion of blade member **18**. The Z-shaped support member **30** is positioned on the blade member **18** with the bottom surface of the base leg **32** in slidable contact with the upper surface of the rear portion of the blade member **18** and the rear surface of the lower portion of the interconnecting leg **36** in sliding abutment with the front surface of the upwardly projecting flange **20**.

Restricted lateral movement of the support member 30 relative to the blade member 18 is achieved by the coaction of a securing pin 38 affixed to the blade member 18 and having a shank portion 39 thereof in sliding contact with the side edge surfaces of a transverse elongated aperture 40 in the base leg 32. The shank portion 39 of the securing pin 38 is of a length slightly exceeding the thickness of the lower base leg 32, so that a snug but slidable fit is achieved between the upper and lower surfaces of the base leg 32 and the head of the securing pin 38 and upper surface of the blade member 18, respectively.

A channel-shaped clamping member 42 comprising a base portion 44, a pair of laterally spaced guide flanges 46 and a locking flange 48 which extends angularly inwardly from the lower end of the base 44, are adapted to coact with the upwardly projecting flange 20 of the blade member 18 and the rear of locking leg 34 of the Z-shaped support 30 to maintain the support member 30 in an adjusted position relative to the blade 18. The base portion 44 is provided with an aperture 50 disposed at substantially the center thereof and in axial alignment with a threaded aperture 52 in the interconnecting leg 36. A screw 54 comprising an apertured disk portion 55 and a threaded shank portion 56 is rotatably mounted with the threaded shank portion 56 thereof extending through the aperture 50 in the base portion 44 of the clamping member 42 and in threaded engagement with the threaded aperture 52 in the interconnecting leg 36 of the support member 30. As screw 54 is tightened the front face of the apertured disk portion 55 abuts the clamp member 42 biasing it forward into firm abutting relationship at its upper end with the end of the support member upper locking leg 34 and at its lower end with the upwardly projecting flange 20 on the blade 18. The screw 54 is provided with a sighting aperture 58 extending axially through substantially the center of the threaded shank portion 56 and the apertured disk portion 55. The sighting aperture 58 may be of a stepped configuration as shown in FIG. 3, having a smaller diameter peep aperture 60 disposed adjacent to the rear surface of the apertured disk portion 55. The edges of a peep aperture 60 are formed to provide a distinct demarcation of the field of vision. Moreover, the rear surface of the apertured disk portion 55 is preferably of a dull black finish to minimize reflection and glare which have a tendency to detract from the clarity and distinctiveness of the target. The peripheral portion of the apertured disk portion 55 may be knurled to facilitate gripping and finger tightening and loosening of the screw 54.

Lateral adjustment of the rear apertured sight 16 is achieved by loosening the screw 54, whereby the clamping member 42 releases the support member 30 for lateral movement relative to the blade member 18. The support member 30 may then be laterally positioned with respect to the longitudinal axis of the blade member 18, a distance appropriate for compensating for a specific windage condition. The screw 54 is then finger tightened to again urge the clamping member 42 into locking relationship with the support member 30 and the blade member 18. Suitable indicia may be provided on the forward end surface of the base leg 32 and the adjacent upper surface of the blade member 18 to provide a method of visually determining the lateral angularity of the line of sight relative to the longitudinal axis of the barrel 14.

The hooded or shrouded front gun sight 12, as may be best seen in FIGURES 4, 5 and 6, is comprised of a tubular body member 62 having a transverse receiving slot 64 disposed intermediate the ends thereof and through substantially the upper half portion of said body member. The tubular body member 62 is provided with a suitable arcuate mounting pedestal 66 depending from the bottom portion thereof, and which pedestal has a curvature corresponding to that of the barrel 14. The mounting pedestal 66 may be rigidly affixed to the forward end portion of the barrel 14 by suitable securing means such as riveting, spot welding and the like. An alternate satisfactory mounting method comprises employing a conventional transverse dovetail slide member adapted to engage a corresponding dovetail slot secured to the top of the barrel 14 for fixedly securing the tubular body member 62 in longitudinal alignment with the longitudinal axis of the barrel 14. The transverse receiving slot 64 is disposed in a plane substantially perpendicular to the longitudinal axis of the tubular body member 62 and extending around at least half, but less than the entire periphery thereof. The front and rear edge surfaces of the receiving slot 64 are disposed in substantially parallel spaced relationship and the rear edge surface adjacent the opposite ends of the slot is provided with a rearwardly extending notch or step 68. Slidably mounted within the bore of the tubular body member 62 is a tubular slide member 70 having a transverse clamping slot 71 disposed intermediate the ends thereof and alignable with the transverse receiving slot 64 in the tubular body member 62. The rear end portion of the slide member 70 is adapted to abut inwardly depending stop tabs 74 provided on the rear of body member 62 so as to restrict the rearward axial movement of the slide member 70 relative to the body member 62. The rear end portion of the slide member 70 is provided with a semi-annular shoulder portion 72 which projects rearwardly of the portion which engages the tabs 74. The shoulder portion 72 projects rearwardly of the body member 62 and the opposite ends of the shoulder portion 72 engage the tabs 74 to prevent rotational movement of the slide member 70 relative to the body member 62. A coil spring 76 is mounted in the bore of body member 62 and has one end portion thereof in abutting relationship with the forward end of the slide member 70 and the other end thereof in abutting relationship with a spring retainer 78 disposed in the front end of body member 62 so as to exert a force continuously biasing the slide member 70 toward the rear end of the body member 62. The annular spring retainer 78 is maintained in firm abutting relationship with the forward end of the coil spring 76 by retaining tabs 82 extending inwardly and depending from the body member 62. The slide member transverse clamping slot 71 is aligned with the transverse receiving slot 64 by manually pushing the slide member 70 forwardly such as with one's index finger, in opposition to the biasing force of the coil spring 76, until the rear edge of the semi-annular shoulder portion 72 is in alignment with the rear edge of tubular body member 62. The coaction of the index finger with the end of the tubular body member 62 automatically prevents the transverse clamping slot 71 of the tubular slide member 70 from being moved forward beyond alignment with the transverse receiving slot 64. When the slots 71 and 64 are in alignment a sighting aperture ring 80 can be positioned in the body member slot 64 and will be held in position by the slide member 70.

As may be best seen in FIGS. 5, 7, 8 and 9 a variety of aperture rings 80 may be removably mounted in the receiving slot 64 and the aperture rings 80 are each comprised of an annular ring having a circular aperture 81 in the center thereof and may have one or more sighting projections extending inwardly toward the center of the circular apertures. The diameter of the circular aperture 81 is less than the inner diameter of the coil spring 76 and the retainer ring 78 to mask them from view. The outer periphery of aperture rings 80 are provided with a pair of horizontal diametrically opposite outwardly projecting lugs 83 adapted to fit in the notches or stepped portions 68 of the transverse receiving slot 64. The upper arcuate peripheral portion of the aperture rings 80 are of a radius corresponding substantially to the radius of the bore of the tubular body member 62 and adapted to slidably fit therein with the front face thereof

in abutting relationship with the forward edge of the clamping slot **71**. The lower arcuate peripheral portion of the aperture ring **80** is of a radius corresponding substantially to the radius of the bore of the slide member **70** and adapted to slidably fit therein. The four alternate sighting projections illustrated in FIGS. 5, 7, 8 and 9, are included by way of example and are not intended to be mutually exclusive of other alternate satisfactory sighting projections which may be incorporated in the aperture rings adaptable for use with the hooded front gun sight herein described. An aperture-type sighting projection is illustrated in FIG. 5 which comprises a circular aperture **84** concentrically disposed in the center of the circular aperture **81** and supported on a vertical leg connected to the lower arcuate portion of the ring **80**. A blade or post-type sighting projection **86** is illustrated in the aperture ring shown in FIG. 7, the upper end of which terminates slightly below the center of the aperture ring. A modified blade sighting projection is shown in FIG. 8 wherein a beaded blade-type sighting projection **88** is employed which extends vertically upwardly from the lower portion of the aperture ring. Still another alternate aperture ring having a star-type sighting projection **90** is illustrated in FIG. 9 and which is comprised of four triangular shaped projections circumferentially spaced at substantially 90° intervals and extending inwardly toward the center of the aperture ring. Selection of the appropriate aperture ring is dependent on the size and shape of the target in addition to the shooting and lighting conditions. The surfaces of the aperture rings **80**, as well as the interior and exterior surfaces of the hooded front sight **12** are preferably finished in dull black surface finish to minimize glare and reflection, and maximize the contrast between the sighting projection and the target.

The appropriate aperture ring **80** is quickly and simply installed in the hooded front sight **12** by pressing the tubular slide member **70** forwardly so that the transverse receiving slot **64** is in alignment with the transverse clamping slot **71**. The selected aperture ring is then inserted in the aligned slots with the outwardly extending lug portions **83** thereof in engagement with the stepped portions **68** of the transverse receiving slot **64**. The projecting shoulder portion **72** of the tubular slide member **70** is released and the forward edge surface of clamping slot **71** moves into pressure contact with the upper portion of the front face of the aperture ring **80** maintaining said aperture ring in appropriate axial alignment with the longitudinal axis of the hooded front sight. The aperture ring **80** is simply removed by pressing the projecting shoulder portion **72** forwardly whereby the aperture ring is released from the bearing pressure of the clamping slot **71** and may be withdrawn from the receiving slot.

While it will be apparent that the preferred embodiments herein illustrated are well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. A hooded front gun sight comprising a tubular body member having a transverse receiving slot intermediate the ends thereof, a tubular slide member slidably mounted and rotatably fixed in the bore of said tubular body member and having a transverse clamping slot disposed intermediate the ends thereof and alignable with said transverse receiving slot in said body member, resilient means for axially biasing said tubular slide member toward one of the ends of said tubular body member, stop means associated with said tubular slide member limiting the axial and rotational movement thereof relative to said tubular body member, said transverse clamping slot disposed out of communication with said transverse receiving slot when said tubular slide member is fully biased toward said one of the ends of said tubular body member; means enabling said tubular slide member to be axially moved relative to said tubular body member to align said transverse receiving slot in said tubular body member with said transverse clamping slot in said tubular slide member, and an apertured sight member removably mounted in said aligned slots and held in abutting relationship with the edges of said slots by the axal biasing force of the said resilient means.

2. A hooded front gun sight comprising a tubular body member having a transverse receiving slot disposed intermediate the ends thereof and in a plane substantially perpendicular to the longitudinal axis of said tubular body member, a tubular slide member slidably mounted in the bore of said tubular body member having a transverse clamping slot disposed intermediate the ends thereof and in a plane substantially perpendicular to the longitudinal axis of said tubular slide member, resilient means axially biasing said tubular slide member toward the rear end of said tubular body member, stop means associated with said tubular slide member limiting its rearward axial movement and rotation relative to said tubular body member, said transverse clamping slot in said tubular slide member positioned rearwardly of said transverse receiving slot in said tubular body member when said tubular slide member is in the rearward position, means enabling said tubular slide member to be axially moved forwardly in opposition to said resilient means for aligning said transverse clamping slot with said transverse receiving slot, an aperture ring removably mounted in said transverse receiving slot and said transverse clamping slot and concentrically disposed in said tubular slide member, said aperture ring maintained in appropriate transverse position and in firm abutting relationship against a rear edge portion of said receiving slot by the rearward biasing force applied thereto by the front edge portion of said transverse clamping slot.

3. A hooded front gunsight comprising a tubular body member having a transverse receiving slot disposed intermediate the ends thereof and in a plane substantially perpendicular to the longitudinal axis of said tubular body member, said transverse receiving slot extending around approximately the upper peripheral half of said tubular body member and provided with a rectangular notch adjacent each of the ends thereof, a tubular slide member slidably mounted in the bore of said tubular body member and having a transverse clamping slot disposed intermediate the ends thereof and in a plane substantially perpendicular to the longitudinal axis of said tubular slide member, a compression coil spring disposed concentrically within the bore of said tubular body member having the rear end portion thereof in abutting relationship with the front end of said tubular slide member and the front end of said spring in fixed abutting relationship with a retainer ring axially secured in said bore, said coil spring mounted in compression and adapted to axially bias said tubular slide member toward the rear end of said tubular body member, stop means associated with said tubular slide member restricting the rearward axial movement thereof, a semi-annular shoulder projecting from said tubular slide member beyond the end of said tubular body member, the sides of said semi-annular shoulder adapted to coact with said stop means restricting the axial rotation of said tubular slide member relative to said tubular body member, an aperture ring removably mounted in said transverse receiving slot and said aligned clamping slot comprising a thin circular disk having a circular aperture in the center thereof, a pair of diametrically opposite lugs extending outwardly from the periphery of said aperture ring and adapted to slidably fit in said notches in said receiving slot, the upper periphery of said aperture ring between said lugs comprising an arc having a radius corresponding substantially to the radius of the bore of said tubular body member and the lower peripheral portion of said aperture ring between the lower portions of said lugs comprising an arc having a radius corresponding substantially to the radius of the bore of

said tubular slide member, and at least one sighting projection extending inwardly toward the center of said circular aperture from said aperture ring providing a line of sight.

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