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May 1, 1945. W. J. A. BAILEY 2,374,722

GUN SIGHT

Filed Nov. 4, 1943

Fig. 1.

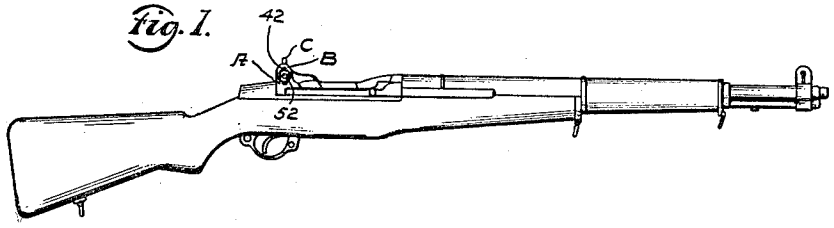


Fig. 2.

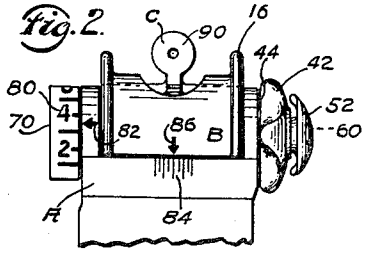


Fig. 3.

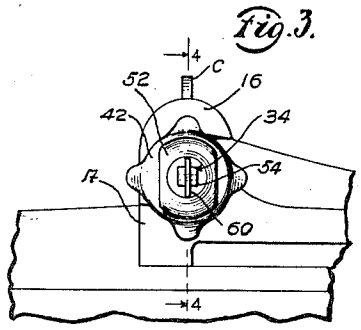


Fig. 4.

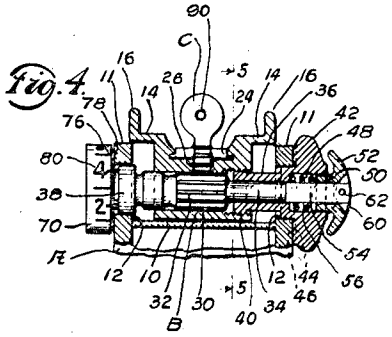


Fig. 5.

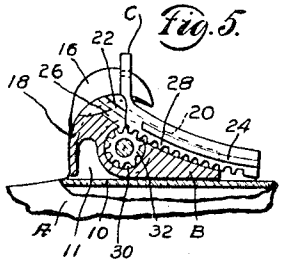


Fig. 6.

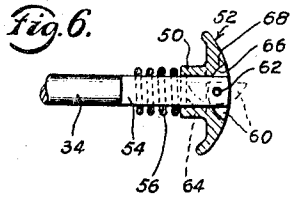
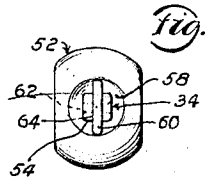


Fig. 7.



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33, GEOMETRICAL INSTRUMENTS.
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UNITED STATES PATENT OFFICE

2,374,722

GUN SIGHT

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Application November 4, 1943, Serial No. 508,907

1 Claim. (Cl. 33—56)

My invention relates to gun sights and, more particularly, to a rear gun sight designed as an improvement over the existing rear gun sight currently installed on and comprising an integral and permanent part of the weapon employed by the United States Army and officially designated as U. S. Rifle Cal. .30, M–1, but generally known as the "Garand" rifle. The rear gun sight employed on this weapon is fully illustrated and described in United States Patent to Garand, No. 1,929,418, dated October 10, 1933, for a Gun sight.

The rear sight shown in the above mentioned patent includes among other parts a sight member which is carried on a movable sight bar, which in turn is mounted in a movable base. An elevating shaft is provided for moving the sight bar in such a manner as to raise or lower the sight member while a windage shaft is provided for shifting the movable base laterally of the weapon, thus carrying the sight bar and the movable base in which it is mounted to the right or the left as required. A thumbwheel on the elevating shaft projects from the left side of the sight assembly and is adapted to be manipulated to shift the sight bar in the base in which it is carried for sight elevation adjustments, while a similar thumbwheel on the windage shaft projects from the right side of the assembly and is adapted to be manipulated to shift the base laterally to effect windage adjustments. A spring exerts its influence on both knobs and enables a click latch mechanism associated with each thumbwheel to function.

In actual practice with the structure briefly outlined above, in all of the posture positions in which the weapon is used, the left hand is employed for supporting the gun and in most positions the left hand is received in the usual supporting sling and is securely held therein so as not to be accessible for adjusting purposes. Because of this fact, the right hand must be employed for actuating the elevation thumb wheel. Since this latter thumb wheel projects laterally from the left-hand side of the weapon, its manipulation by the fingers of the right hand presents certain difficulties in that the right arm must be arched over the weapon laterally with the forearm inclined downwardly and the wrist turned inwardly. By such a procedure, very little leverage can be applied to overcome the yielding action of the spring and click latches.

The present invention contemplates the provision of a rear sight embodying many of the principles of the present day Garand sight but in which the adjustment of the sight for elevation may somewhat more conveniently be performed with the right hand.

In carrying out the principles of the invention provision is made whereby the windage adjusting thumbwheel, as well as the elevation adjusting thumbwheel both project laterally from the gun sight at the right-hand side thereof. Such a provision being the principal object of the invention, another object thereof is to provide a gun sight of this general type wherein the gunner may, despite the fact that both thumbwheels are on the same side of the weapon, readily perform either adjustment without confusion, whether the adjustment be made by actual visualization of the adjusting members or by experience and through the sense of feeling.

The provision of a sight element of the character set forth above which is extremely simple in its design and which may be manufactured at a relatively low cost, one which readily lends itself to standardization, one which is rugged and durable and which is otherwise well adapted to perform the services required of it under adverse conditions of warfare are further desirable features that have been borne in mind in the production and development of the present invention.

A practical embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a side elevational view of a gun to which the improved gun sight has been applied.

Fig. 2 is an enlarged front elevational view of the gun sight assembly.

Fig. 3 is a side elevational view thereof.

Fig. 4 is a sectional view taken substantially along the line **4—4** of Fig. 3.

Fig. 5 is a sectional view taken substantially along the line **5—5** of Fig. 4.

Fig. 6 is an enlarged fragmentary view of an elevating shaft assembly employed in connection with the gun sight.

Fig. 7 is an end view of the shaft assembly shown in Fig. 5.

In all of the above described views like characters of reference are employed to designate like parts thereof.

Referring now to the drawing in detail, the sight assembly involves in its general organization a fixed base A, a movable base B and a sight bar C.

The fixed piece A is preferably formed as an integral part of the receiver of a gun and is in the form of a casing having a floor portion **10**.

A pair of side walls 11—11 projects upwardly from the edges of the floor portion 10 and are provided with aligned apertures 12—12 (see Fig. 4). The rear edge portion of each side wall is elevated from the remainder of the wall and is formed on a curve, the center of which coincides with the center of the apertures 12—12.

The movable base B is in the form of a block which rests on the floor 10 of the fixed base A and is of a width considerably less than the width of the fixed base so that it may move transversely therein. The block B is generally of triangular configuration and is provided with a pair of oppositely directed, laterally extending webs 14—14, each of which serves to carry a vertical arcuate ear 16. The spaced ears 16 constitute guard members for protection of the sight bar C and when the block B is longitudinally centered in the fixed base, the outer edges of the webs 14—14 slightly overlap the upper edges of the side walls 11—11. When the block B is shifted laterally in either direction from its central position the webs 14—14 are adapted to clear their respective side walls 11—11.

The block B is provided with an inclined rear face 18 and a curved inclined forward upper face 20. The forward face is channeled to provide side walls in which are formed oppositely disposed grooves 22 for receiving tongues 24—24 on the curved sight bar C. A channel 26 formed in the block B centrally between the grooves 22 accommodates a rack 28 integrally formed on the underneath side of the sight bar C.

The block B is formed with a transversely extending aperture 30 intermediate its ends. The aperture 30 communicates with the channel 26 in order that an elongated pinion 32 mounted on a shaft 34 projecting through the aperture 30 will be in mesh with the rack 28 of the sight bar C, regardless of the lateral position of the block B.

The shaft 34 constitutes an elevating shaft and is rotatably journaled in the aperture 12 provided in the left side wall 11 of the fixed base A. The shaft 34 is also journaled in a coaxial shaft or sleeve 36 which constitutes the windage shaft and which latter shaft is journaled in the aperture 12 formed in the right side wall 11. Since the apertures 12—12 are of the same diameter, an enlargement 38 is provided on the elevation shaft 34 for journaling purposes. The inner end of the windage shaft 36 is externally threaded as at 40 to engage internal threads provided in the aperture 30 so that rotation of the shaft 36 in one direction or the other will cause lateral shifting movement of the movable base B within the limits prescribed by the side walls 11—11.

A thumbwheel 42 is formed on the outer end of the windage shaft 36 and the body portion thereof is provided with a series of serrations 44 designed for latching engagement with a similar series of serrations 46 provided on the outer surface of the right side wall 11 in the vicinity of the aperture 12. The thumbwheel 42 is recessed as at 48 to accommodate the shank 50 of a thumbwheel 52 removably received on an end of the elevation shaft 34. This latter end of the shaft 34 is squared as at 54 and a coil spring 56 surrounds the squared portion of the shaft and bears against the bottom of the recess 48 and against the inner surface of the thumbwheel 52. The thumbwheel 52 is recessed as at 58 for reception therein of a latch member 60 which is pivoted centrally as at 62 within a slot 64 formed in the squared end of the shaft 34. The latch member 60 has a curved surface 66 adapted to lie flush with the outer curved surface 68 of the thumbwheel 52 when the parts are in their normal assembled relationship. The latch member 60 has a relatively narrow transverse dimension so that when this member is aligned with the squared portion of the shaft 34 it will lie wholly within the confines of the latter to enable removal of the thumbwheel 52 from the shaft 34.

The elevation shaft 34 is provided with an enlarged head or drum 70 on the end thereof opposite the squared portion 54 and the inner side surface of this head is provided with a series of serrations 76 designed for latching engagement with a similar series of serrations 78 provided on the outer side surface of the left side wall 11 in the vicinity of the aperture 12. The drum 70 has applied thereto a series of indicia providing a range scale 80 registerable against an index point 82 on the side wall 11 and affording an indication of the elevation of the sight bar C.

The lateral displacement of the movable base to either side of its center position is measured by means of a windage scale 84 inscribed on the immovable base A and registerable against an index point 86 provided on the inclined rear face of the block B.

On the upper end of the sight bar C there is formed a sight member 90 illustrated herein as a peep sight. When the sight bar is in its lowered position, the member 90 will be well within the confines of the protective ears 16.

In the operation of the gun sight, the extreme right elevation thumbwheel 52, which partially overlies the windage thumbwheel 42, may be operated to rotate the shaft 34 upon which it is mounted in either direction, thus translating motion through the pinion 32 and rack 28 and apply vertical corrections corresponding to distance, mirage or other conditions encountered in sighting.

The inner thumbwheel 42 operates irrespective of the position of the movable sight bar C through the medium of the threads 40 on the shaft 36 and movable member B to translate motion to the movable base, thus moving the sight member 90 laterally in an amount which is interpreted in terms of windage and drift.

In assembling the gun sight, the sight bar C is first inserted for guiding movement in the slots 22 and channel 26, after which the windage shaft assembly, including the shaft proper and its thumbwheel, is passed through the aligned apertures 12—12 in the side walls 11—11 and also through the aperture 30 in the base member B which is properly positioned between the two side walls 11—11. When the shaft assembly is thus fully received within the apertures 12—12, the pinion 32 will register with the rack 28 for cooperation between these parts. The windage shaft or sleeve 36 is then passed through the aperture 12 in the right side wall 11 and the threads 40 thereon are threadedly received within the threaded portion of the aperture or bore 30 in such a manner that the squared portion 54 of the elevation shaft 34 is exposed in the recess 48. The coil spring 56 is then inserted over the squared portion of the windage shaft 34 and finally the thumbwheel 52 is telescoped over the squared portion of the shaft 34 to such an extent that the latch 60 is clear of the recess 58. The latch is then properly oriented with respect to the recess 58 and, when the thumbwheel 52 is released, the spring 56 forces the thumbwheel 52 outwardly so that the latch 60 completely fills the recess.

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It is to be noted that the thumbwheel **42** has an over-all area which is considerably greater than the over-all area of the thumbwheel **42**. Furthermore, the two thumbwheels, in addition to the discrepancy in their relative sizes are of characteristically different shape, the windage wheel being generally of square configuration with rounded corners and the elevation thumbwheel **42** being generally rectangular in configuration with rounded ends. In this manner, a gunner is readily able to distinguish between the two adjustments he is required to make from time to time, whether the basis for his distinction exists as a matter of visual inspection or merely through the sense of feel. It will also be seen that both of the thumbwheels **42** and **52** are characterized by an absence of sharp projections, while at the same time means are provided affording ample leverage for overcoming the latching effect exerted by the spring **56**.

From the above description of parts it will be seen that the improved gun sight is extremely strong and compact and will withstand severe usage without the likelihood of getting out of order. The positioning of the windage and elevating thumbwheels on the same side of the fixed base enables easy manipulation of either of them while the difference in their relative sizes and their relative contours affords little opportunity for confusion in making the necessary adjustments.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawing or described in this specification as various changes in the details of construction may be resorted to without departing from the spirit of the invention. Only insofar as the invention has been particularly pointed out in the accompanying claim is the same to be limited.

What is claimed is:

A rear gun sight comprising in combination a stationary base having a pair of spaced upstanding side walls, a movable block disposed on said base between said side walls and shiftable laterally therebetween, a hollow windage shaft rotatably journaled in one of said side walls for shifting the position of said block upon rotation thereof, a sight element movably mounted on said block and having a vertical component of motion, an elevation shaft projecting through said hollow windage shaft and block and controlling the elevation of said sight element upon rotation of the former, a thumbwheel on said windage shaft exteriorly of said side walls, there being a recess in said thumbwheel surrounding said elevation shaft, one end of said elevation shaft being slotted, a latch member pivotally mounted in the slotted end of said elevation shaft and movable from a retracted position wherein it is contained wholly within the confines of said shaft to an extended position wherein a portion thereof projects outwardly beyond the confines of the shaft, a thumbwheel slidably mounted on said slotted end of the elevation shaft, and a spring disposed in said recess and normally urging said last mentioned thumbwheel against said latch member when the latter is in its extended position.

WILLIAM J. A. BAILEY.