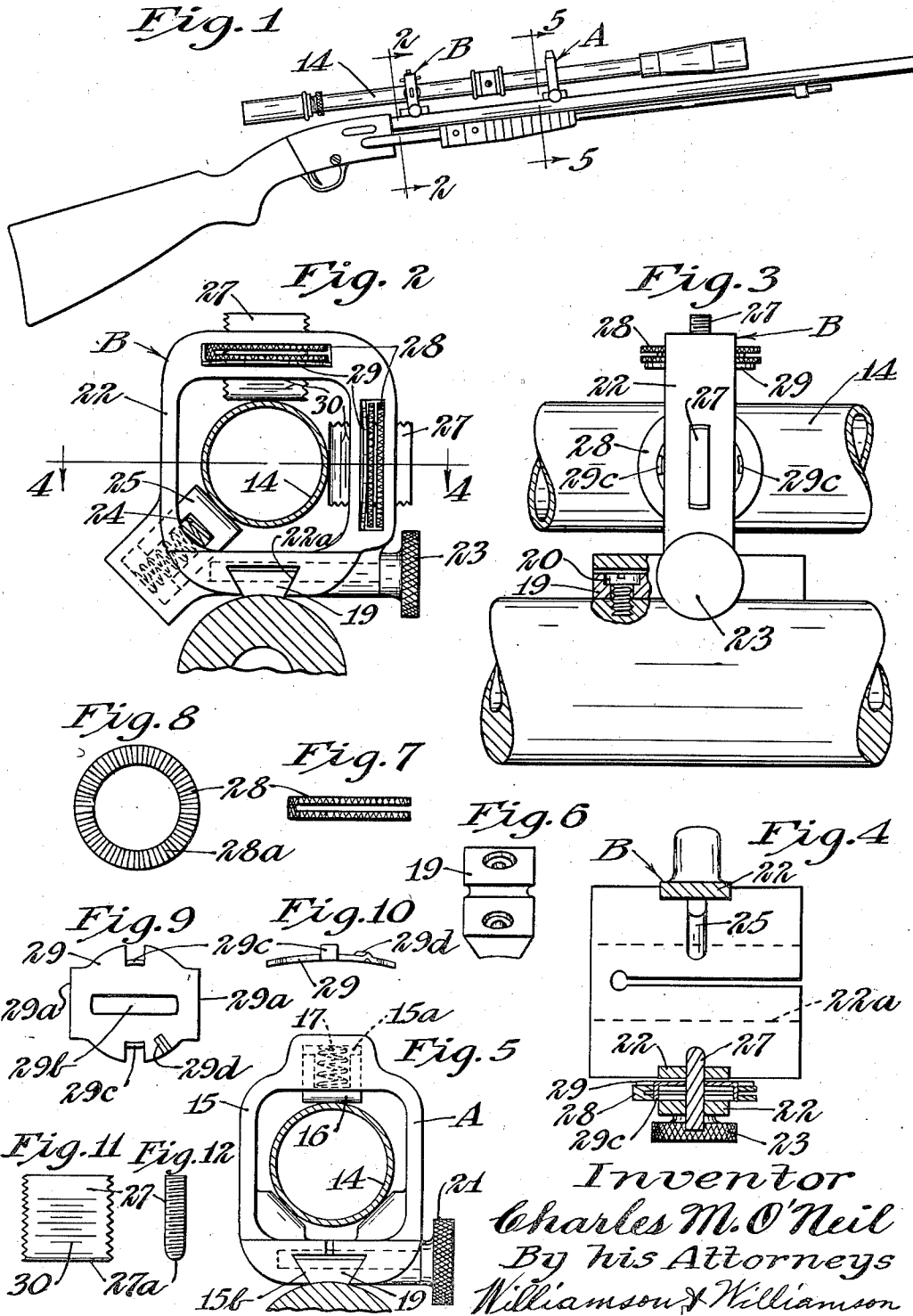


Dec. 7, 1937.

2,101,037

C. M. O'NEIL
TELESCOPIC SIGHT FOR GUNS

Filed Jan. 11, 1936



UNITED STATES PATENT OFFICE

2,101,037

TELESCOPIC SIGHT FOR GUNS

Charles M. O'Neil, Hopkins, Minn.

Application January 11, 1936, Serial No. 58,663

7 Claims. (Cl. 33—50)

This invention relates to telescopic sights for guns, artillery and firearms of various types, including the adjustable mountings for the same.

It is an object of my present invention to provide a relatively simple and highly efficient telescopic gun sight construction which is accurately adjustable for windage and elevation and which may be efficiently and easily mounted on firearms and the like.

It is a further object to provide a gun sight construction of the type referred to wherein protruding elements and vision obstructing members in the mountings, adjustment screws and the like are, as far as possible, eliminated.

Another object is the provision of strong, efficient, attachment means for the telescope mountings which will permit adjustment longitudinally of the sight.

These and other objects and advantages of the invention will be more fully set forth in the following description made in connection with the accompanying drawing, in which like reference characters refer to similar parts throughout the several views, and in which:—

Fig. 1 is a side elevation of a rifle having an embodiment of my improved telescopic gun sight mounted thereon;

Fig. 2 is a cross section on a considerably larger scale taken approximately on the line 2—2 of Fig. 1 showing the adjustable mounting for the telescope;

Fig. 3 is a fragmentary side elevation showing the adjustable mounting for the telescope with some portions broken away;

Fig. 4 is a section taken on the line 4—4 of Fig. 2;

Fig. 5 is a cross section taken on the line 5—5 of Fig. 1 showing the mounting for the forward portion of the telescope;

Fig. 6 is a detail perspective view showing one of the attachment plates for the mountings detached;

Fig. 7 is a detail side elevation of one of the adjustment nuts detached;

Fig. 8 is a plan view of the inner surface of said adjustment nut showing the teeth formed thereon;

Fig. 9 is a plan view showing the outer surface of a spring retaining plate for properly centering and retaining said adjustment nut;

Fig. 10 is a side elevation of the same;

Fig. 11 is a side elevation of one of the adjustable positioning members detached, and

Fig. 12 is a side elevation of said positioning member showing the threaded side edges thereof.

In the form of my invention illustrated, the telescopic sight proper, indicated as an entirety by the numeral 14 is of conventional construction having the smooth tubular portions adjacent its rear and forward ends.

Front and rear mountings A and B surround the said tubular portions of the telescope and are secured to the barrel of the gun as shown by suitable attachment means. The front mounting A is of any suitable type which permits limited oscillation of the telescope relative to the mounting on a substantially vertical axis as well as on a substantially horizontal axis. A suitable form of mounting A is illustrated in Fig. 5 comprising a telescope-surrounding member 15 of annular shape having in its upper portion a spring pressed telescope-engaging plunger 16, which plunger is seated in a suitable socket 15a and as shown has a tapped upper end wherein is seated a compression spring 17 which urges said plunger against the upper portion of the telescope. A pair of stationary telescope-engaging members in the form of fulcrums or knife-edges are provided by the telescope-surrounding member 15 extending inwardly therefrom in engagement with the telescope 14 and being related to each other and to the plunger 16 in triangular arrangement. The base portion of the telescope-surrounding member 15 is provided with a dove-tail slot 15b adapted to slidably engage a complementary shaped attachment plate 19 of the construction shown in Fig. 6. Attachment plate 19 may be secured longitudinally to the top of the gun barrel by suitable means such as a pair of counter-sunk screws 20. A clamping screw 21 extends through one side of the base portion of the mounting A and has its inner end threaded for engagement with the threaded socket on the opposite side of said base portion, the attachment plate 19 being transversely grooved to accommodate a portion of the screw 21. The base portion of the mounting A has sufficient resiliency to permit of its clamping tightly about the attachment plate 19 when screw 21 is tightened to draw the two portions defining the dove-tail slot together.

The rear and tubular portion of telescope 14 is adjustably engaged by the mounting B which includes a telescope-surrounding member or rectangular annulus 22 having a thickened base provided with a dove-tail attachment slot 22a of similar shape and dimensions to the slot provided in the base of mounting A. Another mounting plate 19 is secured in proper position upon the top of the gun barrel and the base of

the member 22 is provided with a clamping screw 23 of similar construction and operating function to the clamping screw 21 of the mounting A, the inner end of said screw being engaged with a threaded socket formed in a portion of the base.

The telescope-surrounding member 22 contains three telescope positioning elements arranged in the corners of a triangle and two of which are preferably gauged for precise setting and the third of which is yieldingly mounted in the third corner of the triangle and urged against the telescope by suitable means, such as a coil spring 24. The last mentioned telescope-positioning member is of similar construction to the member 16 utilized in mounting A, as shown, comprising a plunger 25 tapped at its outer end to accommodate the compression spring 24, the spring and plunger being slidably mounted in a suitable socket provided in one of the corner portions of the telescope-surrounding member 22. The two adjustable telescope-positioning members with their adjusting elements are of identical construction and the corresponding parts of both will be numbered similarly for convenience. The right hand adjustable member operates to vary adjustment of the telescope 14 for windage, while the top adjustment member operates to adjust the telescope for elevation. In both instances a positioning member 27 of substantially rectangular shape having flat parallel sides and threaded longitudinal edges is employed. Positioning members 27 are somewhat longer than the thickness of the telescope-surrounding member at the portions wherein the members 27 seat and work through suitable rectangular slots formed in the outer and inner surfaces of the members 22 terminating at their inner ends in rounded edges 27a which engage the periphery of the telescope. The outer ends of the telescope-positioning members 27 are disposed parallel with the adjacent edges of the annular member 22 and in extreme outward position of the positioning members extend only a very short distance beyond the annular member.

For precise adjustment of the telescope-positioning members 27 I provide adjustment nuts 28 of annular construction being threaded internally to accurately engage the threaded longitudinal edges of the telescope positioning members 27. I prefer to centrally slit the adjustment nuts 28, as clearly shown in Fig. 7 to provide some resiliency between the slit portions for the purpose of causing perfect engagement of the adjustment nuts with the threads of the members 27 at all times. The adjustment rings or nuts 28 are housed in suitable rectangular recesses formed in the upper and right hand side portions of the telescope-surrounding member 22, as clearly shown in Fig. 2.

For the purpose of preventing slight displacement of the adjustment nuts 28 and for perfectly centering the same relative to the telescope positioning members 27, spring plates 29 are provided one for each of said nuts disposed inwardly thereof and each having parallel side edges 29a for abutment with the ends of the nut-receiving recesses provided in member 22 and having a central rectangular slot 29b which accommodates the medial portion of one of the positioning elements 27. The length of plates 29 is such that they must be slightly bowed for insertion in the confining portion of the telescope-surrounding member 22, as clearly shown in Fig. 2. Each of the spring plates 29 is provided with a pair of oppositely disposed upset lugs 29c disposed at

opposite sides of the telescope-surrounding member 22 and having outer guiding surfaces concentrically disposed with reference to the center of the slot 29b. Said concentric surfaces snugly engage the inner periphery of one of the annular adjustment nuts 28 and thus perfectly center the nut with respect to its related telescope-positioning member 27. Said spring plates are each further provided with a detent 29d which is adapted to engage the teeth of a rack 28a formed on the inner surface of the adjustment nut 28.

The peripheries of the adjustment nuts 28 are preferably roughened or knurled to facilitate turning thereof. The rear faces of the telescope-positioning members 27 may be provided with transverse graduations 30 cooperating with the inner adjacent edges of the surrounding member or frame 22 to show various settings.

In mounting the telescope 14 upon the gun the attachment plates 19 are first secured in alignment to the top of the gun barrel and in approximately the positions shown in Fig. 1. The mounting brackets A and B are then clamped to the attachment plates 19, being properly adjusted thereon longitudinally of the plates and are thus set for the particular gun. It will be also noted that the telescope 14 is adjustable longitudinally of the two mountings to position the eye piece closer or farther from the drop in the stock of the gun.

The sight may then be adjusted for windage by turning the right hand adjusting nut 28 in the proper direction, the graduations indicating to the marksman certain settings after the marksman has become familiar with the particular gun and sight. The upper adjustment nut 28 may be conveniently turned with the thumb and forefinger to vary elevation in accordance with distance, load of the cartridge, etc.

In the tilting of the telescope 14 both for elevation and windage, the telescope fulcrums on the knife edges of mounting A.

A very accurate and convenient adjustment means is provided in the construction of the elements associated with mounting B in that a micrometer adjustment is effected by means of the adjustment nuts 28 threadedly engaging the telescope-positioning members 27. The engagement of the detent 29d of the spring centering plate 29 with the teeth of the ratchet 28a on the inner surface of the adjustment nut enables the adjustment to be progressed step by step with accuracy. Graduations can be made to correspond with the teeth of ratchet 28a or with multiples of said teeth.

In no adjusted position will the outer ends of telescope-positioning members 27 be projected much beyond the outer edges of the mounting bracket B and no knobs, screw heads or other obstructing elements are present, as is the case in most adjustable sight mechanism now utilized.

It will, of course, be understood that various changes may be made in the form, details, proportions and arrangement of the parts, without departing from the scope of my invention, which, generally stated, consists in a device capable of carrying out the objects above set forth and in the novel parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. In telescopic gun sight construction, a telescope, a mounting engaging the forward portion of said telescope and permitting limited oscillation of said telescope relative to said mounting on a substantially vertical axis as well as on a

substantially horizontal axis, a second mounting surrounding said telescope adjacent its rear end and comprising a telescope-surrounding member, a telescope-engaging member yieldingly mounted in said surrounding member and an adjustable telescope-positioning member, said positioning member being externally threaded and mounted in a portion of said surrounding member and an annular adjustment nut internally threaded and engaged with said positioning member and mounted also in a portion of said telescope-surrounding member, said positioning member extending normal to said adjustment nut.

2. In telescopic gun sight construction, a telescope, a mounting engaging the forward portion of said telescope and permitting limited oscillation of said telescope relative to said mounting on a substantially vertical axis as well as on a substantially horizontal axis, a second mounting surrounding said telescope adjacent its rear end and comprising a telescope-surrounding member, a telescope-engaging member yieldingly mounted in said surrounding member and a pair of adjustable telescope-positioning members having engagement at their inner ends with said telescope at points arranged in the corners of a triangle with respect to the point of engagement of said telescope-engaging member, said positioning members being externally threaded and mounted in portions of said surrounding member, annular adjustment nuts internally threaded and engaged with said positioning members and mounted for rotation only within the confines of said telescope-surrounding member.

3. In telescopic gun sight construction, a telescope, a mounting engaging the forward portion of said telescope and permitting limited oscillation of said telescope relative to said mounting on a substantially vertical axis as well as on a substantially horizontal axis, a second mounting surrounding said telescope adjacent its rear end and comprising a telescope-surrounding member, a telescope engaging member yieldingly mounted in said surrounding member and a pair of adjustable telescope-positioning members having engagement at their inner ends with said telescope at points arranged in the corners of a triangle with respect to the point of engagement of said telescope-engaging member, said positioning members being externally threaded and mounted in portions of said surrounding member, annular adjustment nuts internally threaded and engaged with said positioning members and mounted in recessed portions of said surrounding member and inwardly of the outer edges thereof and nut centering members also mounted in said recessed portions and having elements engaging the inner peripheries of said annular adjustment nuts.

4. Positioning mechanism for telescopic gun sights and the like comprising a mounting frame,

a positioning member having an external thread and mounted in a portion of said frame for longitudinal movement therein, an annular adjustment nut internally threaded and engaged with said positioning member and mounted in a recessed portion of said frame surrounding said positioning member and nut centering means comprising a plate also mounted in said recessed portion of said frame and surrounding said positioning member, said plate being restrained against rotation by abutment with the ends of said recessed portion and said plate having upstanding guiding elements engaging the inner periphery of said adjustment nut.

5. The structure set forth in claim 4 and said adjustment nut overlying said centering plate and having a ratchet face opposed to said plate, said plate being of resilient material and having a detent engaged with said ratchet face.

6. A telescopic gun sight construction, a telescope, a mounting engaging the forward portion of said telescope and permitting limited oscillation of said telescope relative to said mounting on a substantially vertical axis as well as on a substantially horizontal axis, a second mounting disposed about said telescope adjacent its rear end and comprising a frame, a telescope engaging member yieldingly mounted in said frame and a pair of adjustable telescope positioning members having engagement with said telescope at points arranged in the corners of a triangle with respect to the point of engagement of said telescope engaging member, and means for longitudinally moving said positioning members, said means comprising in each instance a rotatable element positioned within a recess formed within said frame and having threaded connection with its related telescope positioning member.

7. In a telescopic gun sight, a telescope, a mounting engaging the forward portion of said telescope and permitting limited oscillation of said telescope relative to said mounting on a substantially vertical axis as well as on a substantially horizontal axis, a second mounting supporting said telescope at its rear end and comprising a yieldably mounted telescope engaging member, a supporting frame therefore, and an adjustable telescope positioning member, said positioning member being longitudinally threaded and mounted in a portion of said frame, and an annular adjustment nut internally threaded and engaged with said positioning member and mounted also in a portion of said supporting frame member, said annular adjustment nut being divided through substantially its entire cross-section, and a spring member interposed between said adjustment nut and said frame to yieldingly hold said nut in firm frictional engagement with the external threads of said positioning member.

CHARLES M. O'NEIL.