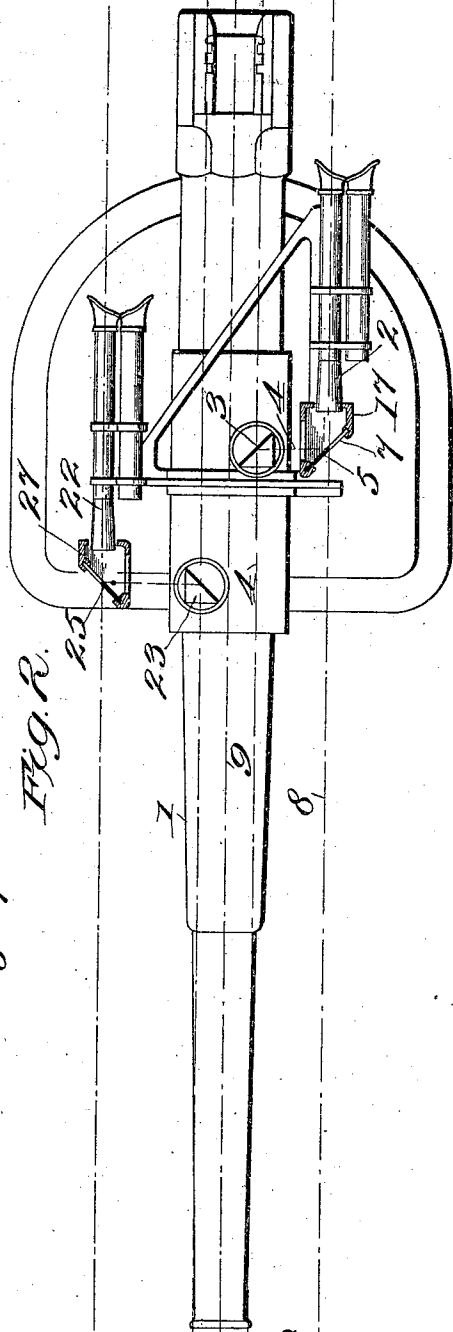
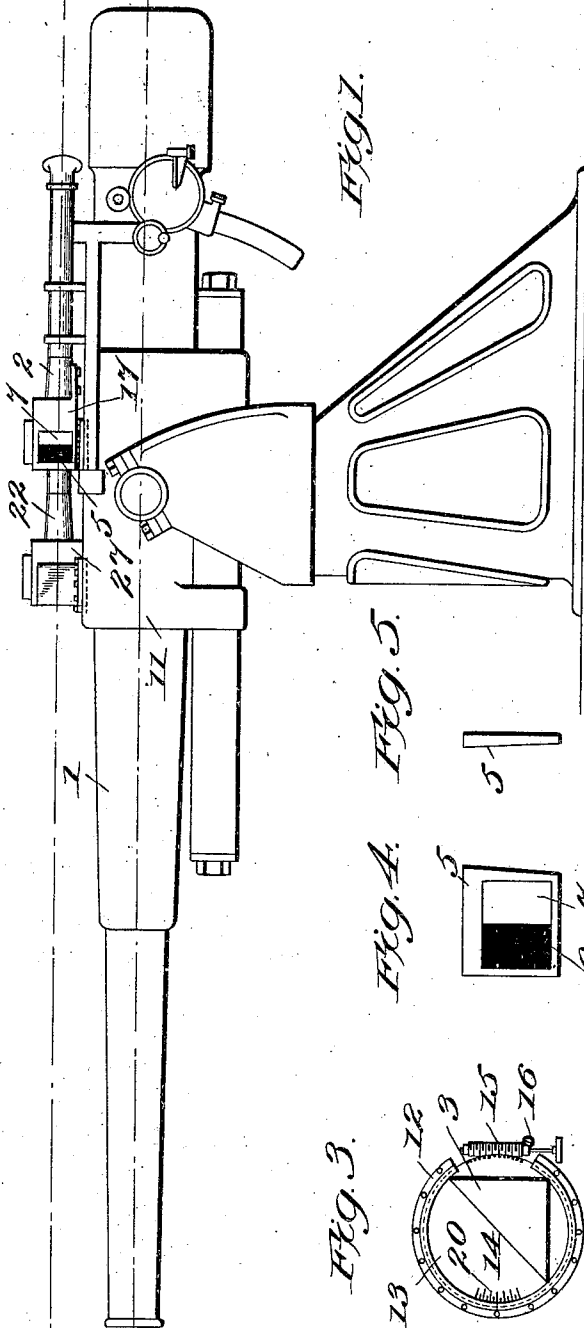


DE WITT C. CLEARY.
 MEANS FOR ADJUSTING GUN SIGHTS.
 APPLICATION FILED AUG. 28, 1909.

960,153.

Patented May 31, 1910.

2 SHEETS—SHEET 1.



Witnesses
Geo. A. Ryne.
Byron B. Collings.

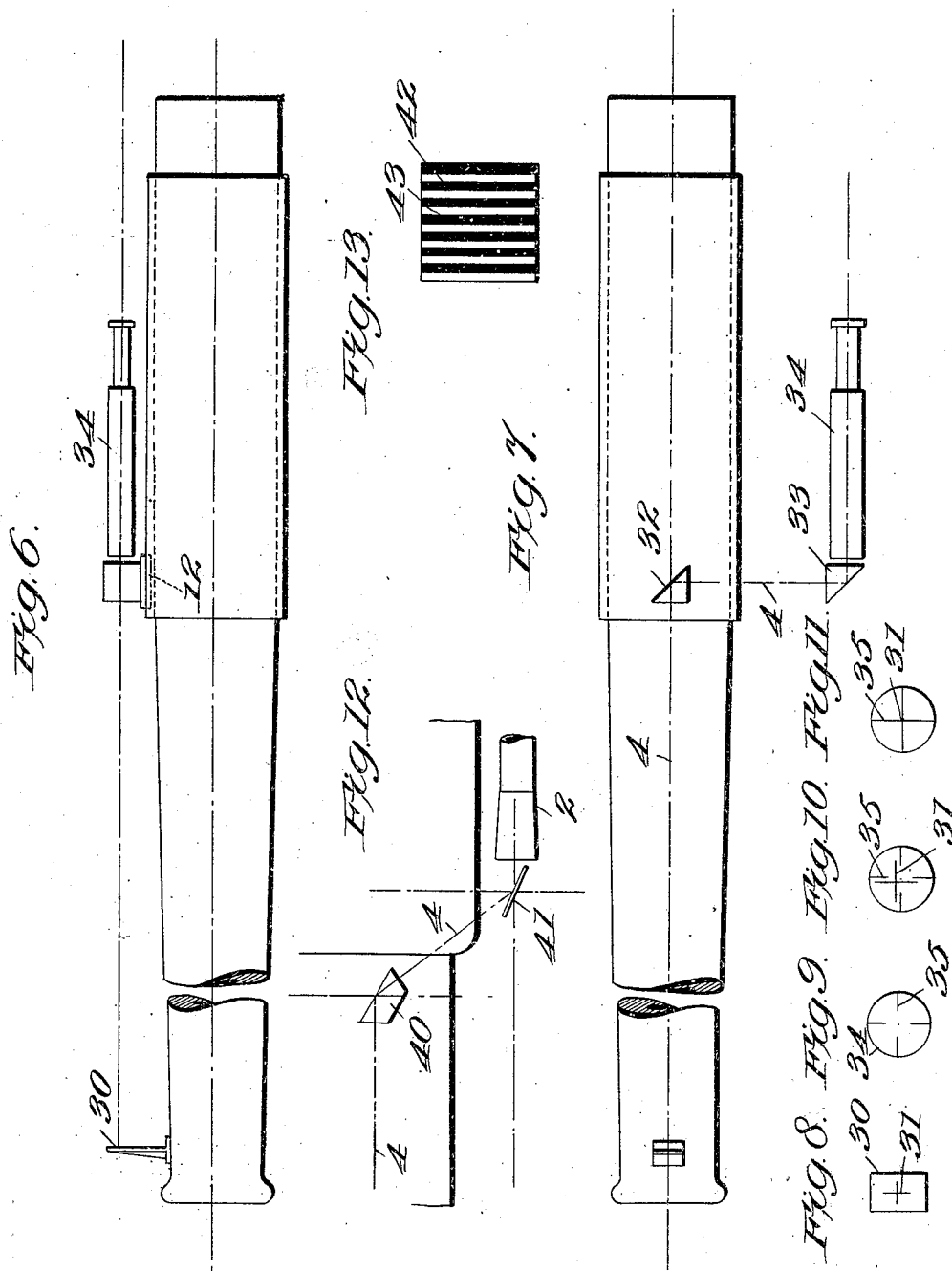
Inventor
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UNITED STATES PATENT OFFICE.

DE WITT C. CLEARY, OF SENECA FALLS, NEW YORK.

MEANS FOR ADJUSTING GUN-SIGHTS.

960,153.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed August 28, 1909. Serial No. 515,062.

To all whom it may concern:

Be it known that I, DE WITT C. CLEARY, a citizen of the United States, residing at Seneca Falls, in the county of Seneca and State of New York, have invented certain new and useful Improvements in Means for Adjusting Gun-Sights; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to means for adjusting gun sights, and has for its object to provide a device which will be simple and accurate in operation and one which can be put into use on ship board while the guns are at sea and even without unloading the same.

As is well known the accuracy of sights depends upon the principle that at great ranges the line of collimation or optical axis of the telescope or other sight must be parallel to the axis of the bore of the gun both in a horizontal and in a vertical plane, when the sight is at zero elevation and at zero of the sliding leaf. It is also well known that at shorter ranges the two lines must intersect at the target.

In order to cause the axis of the sighting telescope to be fixed parallel to the axis of the bore of the gun, it is at present customary to insert another telescope or sighting device in the bore of the gun with its line of collimation coincident with the axis of said bore, to then sight both telescopes on the same mark on a distant object, when the axis of the sighting telescope is considered to be parallel with the axis of the bore; and in this position, the sliding leaf and the elevating scale are placed at zero all as is well known. But in order to do this at least two observers are required, one at each telescope, and the chances of error are great. Also, the ship and the distant object must be stationary and the bore of the gun must be clear. If two sighting telescopes are used, as is the case with modern ordnance, three observers are required, and the chances of error are still further increased.

Each of the above requirements makes it practically impossible to readjust the sights of guns at sea during and after a battle, or after any accident during target practice has rendered such adjustment necessary. They each, also, render it impossible at sea of checking the accuracy of the sights upon ap-

proaching the enemy after prolonged periods at sea.

This invention overcomes the above difficulties and consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views: Figure 1 is a side elevational view of a gun with this improvement attached thereto; Fig. 2, is a plan view; Figs. 3, 4, and 5, are detail views of various parts of the invention; Fig. 6, is an elevational view of a modified form of the invention; Fig. 7, is a plan view of the device shown in Fig. 6; Figs. 8, 9, 10, and 11, are diagrammatic views showing the cross lines used in connection with the form shown in Fig. 6; and, Figs. 12 and 13, are diagrammatic views of still further modified forms of the invention.

1 indicates any suitable form of gun, in this instance a piece of ordnance, 2 any suitable sighting device, here shown as a telescope, 3 any suitable reflecting device as a prism, adapted to receive a ray 4 parallel to the axis of the bore of the gun, and to reflect the same at a predetermined angle to said axis, while 5 is another reflecting device such as a partially silvered mirror adapted to receive the angularly reflected ray 4, and to again reflect it through the telescope 2. This partially silvered mirror has a reflecting portion 6 and a clear portion 7, and while the image of the distant object is reflected from the portion 6, the said object may also be directly viewed through the clear portion 7; so that when the direct and reflected images coincide in the telescope, it is known that the line of collimation 8 of the telescope is parallel with the axis 9 of the bore of the gun. If said images do not coincide, then the axis of the telescope is adjusted until they do when it will be known that the sights are in correct adjustment, provided the prisms are correctly placed. The latter are fixed in position when the gun is made or afterward and can not easily become disarranged, as will now appear.

At any suitable position on the gun or slide, preferably on the slide 11, is suitably fixed as by counter sinking a block 12, and on this block is preferably pivotally mounted a revoluble block 13, carrying the prism 3, the reflecting face 14 of which is so posi-

tioned, that a beam of light 4 will be reflected at a predetermined angle to the axis 9 of the bore. The block 13 is preferably adjustable on the block 12, as by means of a micrometer screw 15, and when the prism is once accurately adjusted in the shops when the gun is made it may be fixed in position by means of the locking screw 16 or other device. In the same way, the support or casing 17 for the mirror 5, is accurately fixed to the mount when the gun is made, and all the parts accurately tested by sighting through the bore before the guns are put into use. The mirror 5 is preferably readily removable from the casing 17, and is slipped into place only when the sights are to be adjusted.

It is evident from the structure so far disclosed, that the sight 2 may be directed to a distant object at sea or even at the enemy, and the parallelism of its axis with the axis of the bore tested, or adjusted while the ship is in motion, and without even unloading the gun.

If, on the other hand, it is desired to so adjust the sight 2 that its axis will intersect the axis of the bore at the target, it is only necessary to unlock the micrometer adjusting device 15, and turn the prism 3 the proper amount as indicated on the scale 20, tables being prepared which will show the distance of the point of intersection for each graduation of the scale 20; the micrometer adjusting device being again locked, after the adjustment has been effected.

In actual practice, in order to get the best results, it is preferred to duplicate the above described parts on the gun by providing the additional telescope 22, the prism 23, the mirror 25, and the casing 27, although such parts are not essential.

In the form shown in Figs. 6 to 11, instead of employing a distant object, a target provided with cross lines 31, may be so fixed on the gun in relation to the prism 32, that the point of intersection of said lines will be reflected by the prism along the axis of an additional telescope 34 provided said telescope is in its correct adjustment and focus. If it is not in adjustment, its cross hairs 35 will fail to register with the cross lines 31, as indicated in Fig. 10; while said cross hairs and cross lines will coincide as in Fig. 11, when the axis of said telescope is in its desired position. In actually using this modified form of the invention the regular sighting telescope 2 or 22 is located alongside the telescope 34 and is employed to view the distant object, as will be understood.

It is sometimes desirable to place the prism directly on the gun barrel, and in such cases, the beam may be reflected as indicated in Fig. 12, wherein 40 represents a suitable prism, 41 a suitable reflecting surface, and

the other parts are as in the previous figures. It is also sometimes desirable instead of employing a half silvered mirror, to employ a mirror provided with alternate silvered and clear spaces 42 and 43, respectively, as illustrated in Fig. 13, which spaces are very narrow. The advantage of such a mirror is its ability to reflect the image from any part of its surface, and, therefore, the failure of the gun to return entirely to battery will not affect the image.

It is evident that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of my invention, and, therefore, I do not wish to be limited to such features, except as may be required by the claims.

What I claim is:

1. In a gun the combination of a sight; a reflecting means attached to the exterior of the gun; a support for said reflecting means; means by which the axis of said sight may, with the aid of said reflecting means be brought into parallelism with the bore of said gun; and an independent support for said last mentioned means, substantially as described.

2. In a gun, the combination of a sighting telescope; a reflecting means attached to the gun; a second reflecting means in front of said telescope, adapted to reflect in connection with said first means and to independently transmit images of the same distant object, and independent supports for said reflecting means; the arrangement of the parts being such that when said reflected and transmitted images coincide, the axis of the telescope will be parallel to the axis of the bore of the gun, substantially as described.

3. In a gun, the combination of a reflecting means attached thereto; means for angularly adjusting said reflecting means; a second reflecting means provided with a clear and a reflecting surface adapted to reflect and to transmit images of the same distant object; and a telescope adapted to receive said images; substantially as described.

4. A gun provided with a plurality of sights; a plurality of reflecting means having a fixed relation to the axis of the bore one for each sight and mounted on independent supports; and a plurality of additional reflecting means adapted to reflect in connection with said first mentioned means, and to transmit independently, images of the same distant object, the arrangement of the parts being such that when said reflected and transmitted images coincide, the axis of the telescope will be parallel to the axis of the bore of the gun, substantially as described.

5. A gun provided with a slide; a plurality of angularly adjustable prisms at-

tached to said slide; a plurality of partially
silvered mirrors placed at predetermined
angles to said prisms; and a plurality of
sighting telescopes adapted to receive re-
5 flected and transmitted images of the same
distant object through said mirrors; sub-
stantially as described.

In testimony whereof, I affix my signa-
ture, in presence of two witnesses.

DE WITT C. CLEARY.

Witnesses:

BENJAMIN C. MEAD,
ALICE D. BYRNE.