(No Model.) 2 Sheets—Sheet 1.

B. A. FISKE.

TELESCOPE SIGHT FOR GUNS.

No. 556,048. Patented Mar. 10, 1896.

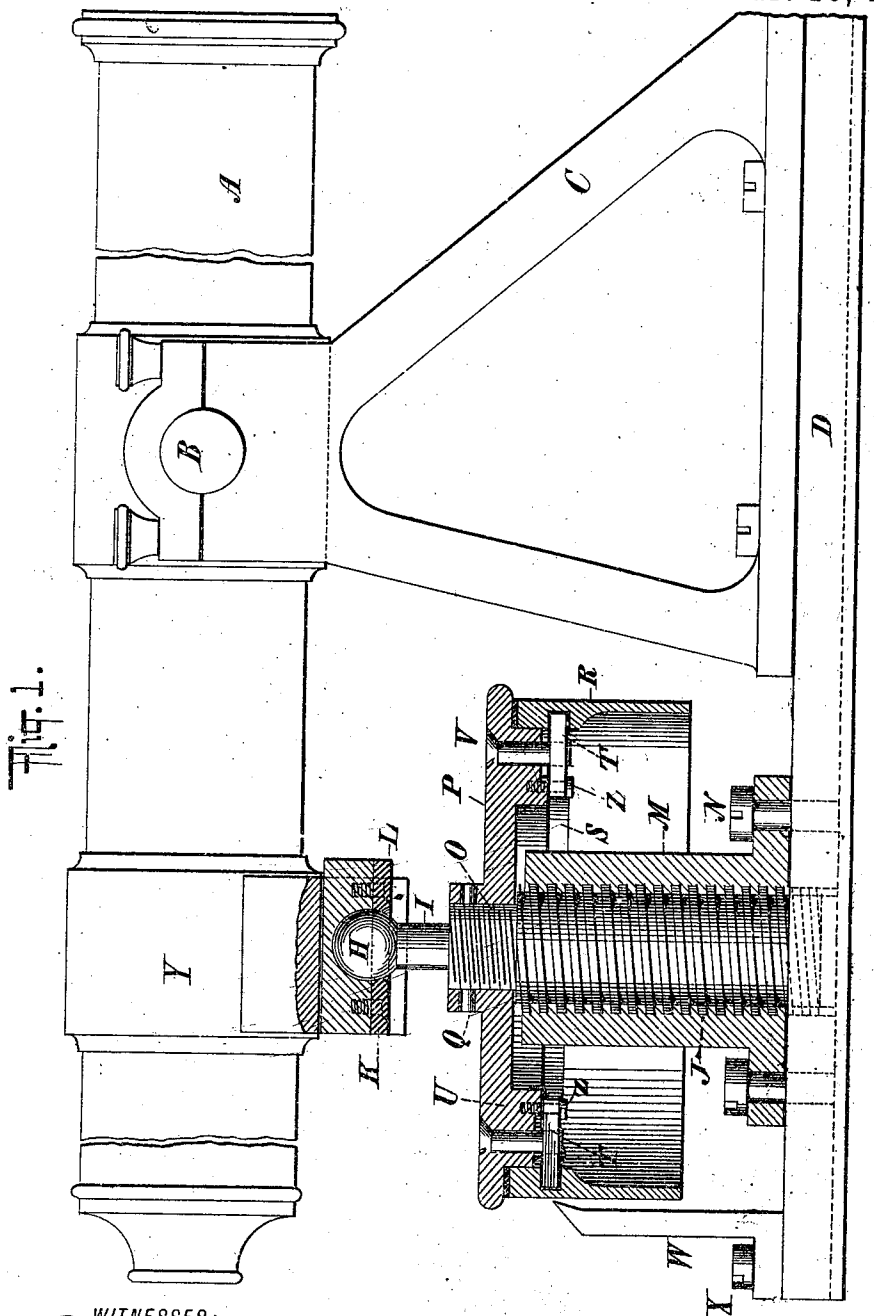

Fig. 1.

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Fig. 2.

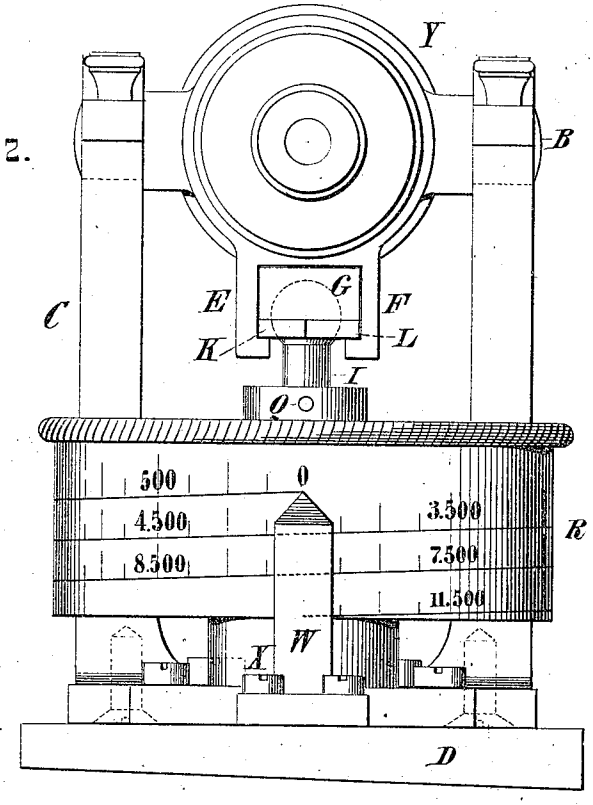
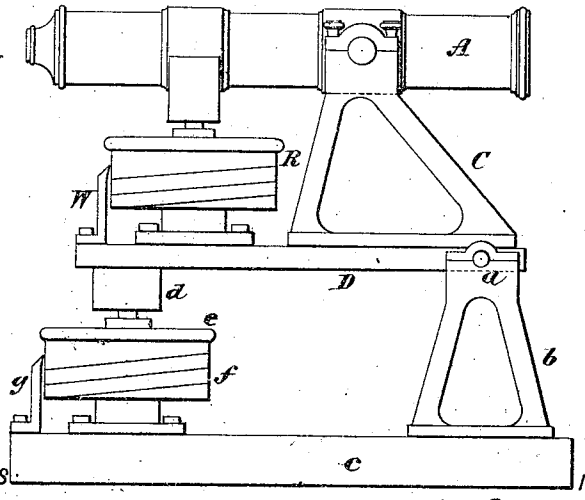


Fig. 3.



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BRADLEY ALLAN FISKE, OF THE UNITED STATES NAVY.

TELESCOPE-SIGHT FOR GUNS.

SPECIFICATION forming part of Letters Patent No. 556,048, dated March 10, 1896.

Application filed November 20, 1895. Serial No. 569,487. (No model.)

To all whom it may concern:

Be it known that I, BRADLEY ALLAN FISKE, of the United States Navy, have invented a new and useful Improvement in Telescope-Sights for Guns, of which the following is a specification.

The invention relates to telescope-sights for guns, designed to secure greater accuracy of fire, and is an improvement upon the telescope-sight described in Letters Patent No. 504,337, granted to me September 5, 1893.

The invention consists more particularly in the construction and arrangement of the telescope and mechanism whereby the same is protected from the effects of concussion, in the novel disposition of the scale and index, and in the various combinations of parts especially pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation. Fig. 2 is a rear elevation. Fig. 3 represents the construction of my said sight as adapted for use in connection with the guns in ships' turrets.

Similar letters of reference indicate like parts.

A represents the telescope, which is mounted upon trunnions B in standards C, the standards being supported upon a suitable base D. Near the sight end of the telescope are brackets E and F, which are formed upon or attached to the ring Y which encircles the telescope. Between the brackets E and F is inserted first a block G, having a hemispherical cavity to receive the globe H. The globe H is at the upper end of a rod I, which is carried by the elevating-screw J. After the globe H is inserted in the hemispherical cavity of the block G, two smaller blocks K and L are inserted also into the space between the brackets E and F, so as to rest upon the inwardly-turned flanges of said brackets. These blocks K and L have their inner faces shaped to conform to the globe-surface with which said faces are in contact. In this way the block G and the blocks K and L form a bearing for the globe H, in which said globe is retained. Hence there is a positive connection between the elevating-screw J and the telescope, so that when the screw J is raised or lowered it moves the telescope with it, while on the other hand the telescope cannot be moved by the concussion of the gun to which it is applied, because it is held at two points along its length—namely, at its trunnions and at the point of its positive connection with the screw.

While I prefer to employ the globe H held in the cavity between the blocks G K L, it is to be understood that I do not herein limit myself to this construction, because I may omit the blocks and provide the rod I simply with an enlarged head which enters the space between the brackets E F and will not pass through the interval between their flanges.

The elevating-screw J enters a threaded opening in the fixed nut or cylinder M, which is secured by bolts N to the base D. Above the screw J and between the said screw and the rod I is a threaded portion O, of less diameter than the screw J. This threaded portion O enters the central threaded orifice of the disk P. When said disk P rests upon its seat on the upper shouldered part of the screw J, a pin Q is passed through the flange of said disk, and also through the threaded part O, thus securing the disk P and the screw J firmly together.

R is a hollow cylinder of metal, having on its outer periphery a scale graduated to show ranges in yards, meters or other units corresponding to angles of elevation of the telescope A. In the inner surface of the cylinder R is a groove S. Entering this groove are small disks T, which are supported by the screws V, which pass down through the disk P. In order to prevent the small disks T from turning when the screws V are rotated I provide screws Z, which pass through said disks T and into the disk P. Finally, W is an index-point, which is rigidly secured to the base D by screws X.

In adjusting the apparatus it is necessary, first, to bring the zero-point of the scale on cylinder R to coincidence with the fixed index W when the line of sight of the telescope A is laid parallel to the axis of the bore of the gun which the apparatus is to control. To this end the screws V are loosened, so that the scale-cylinder R may be turned independently of the disk P, the circular groove S then sliding freely over the small disks T. This turning of the cylinder R is effected by hand, and in this way the zero-point on the said cylinder R is easily brought into coinci-

dence with the index W. This accomplished, the screws V are tightened, forcing the disks closely against the side of the groove S, and so binding the cylinder R and disk P firmly together.

To elevate the telescope A to the desired angle the disk P is turned and the screw J thereby rotated, so that said screw then moves longitudinally in the cylinder M, carrying with it the globe H. Thus the sight end of the telescope A is raised or lowered as desired. Of course, a point on the telescope A moves over a circular arc, of which the center is the center of the trunnions B, while the globe H carried by the screw J moves up and down in a right line; but this difference in movement is permitted by the sliding of the blocks G K L in the brackets E and F in a direction parallel to the longitudinal axis of the telescope. As the screw J moves up or down while rotating, it of course carries with it the graduated cylinder R. Therefore said cylinder moves spirally in front of the fixed index W. Hence I inscribe on the cylinder-surface a spiral line of a pitch similar to that of the screw J, and upon said line I mark ranges, as shown in Fig. 2, corresponding to the angular position of the telescope A and to the angle of elevation which will be given to the gun which the apparatus is to control.

This apparatus practically supersedes the ordinary sight on the gun. In order to adapt the telescope for a given range, the disk P is turned until the mark indicating that range comes opposite the index-point W, and by reason of the turning of the said disk the globe H engaging with the blocks in the brackets E and F raises or lowers the sight end of the telescope to an angle corresponding to said range.

The form of apparatus which is specifically represented in Figs. 1 and 2 is more particularly designed for use on the saddle of a gun which recoils along the line of fire in the saddle, which saddle is moved by the operator to elevate or depress the gun.

In adapting the device for use with turret-guns, where the sight is necessarily placed in the sighting-hood at a distance above the gun, I may use the construction represented in Fig. 3. It is necessary to know the angle of the telescope-sight to the axis of the bore, and incidentally to provide means whereby said telescope can be laid parallel to said axis. This is sometimes done by means of a mechanical device in the nature of a parallel motion, which connects the gun with the base on which the telescope is secured, so that the act of elevating or depressing the gun will, through said mechanical connection, correspondingly elevate or depress the base of the telescope. My present device exhibits a mode of accomplishing a like result without the use of such connecting mechanism. I mount the base D of the telescope on trunnions *a* on a standard *b*, which in turn is mounted on the base *c*. At the end of the base D, I provide brackets *d*, similar to the brackets E and F. In these brackets is received a globe (not shown) which in turn rises from a screw which carries a disk *e* and cylinder *f*. The arrangement of the parts *d e f* is similar to that of the parts E, F, P, and R. The index *g* secured to the base *e* is located with reference to the cylinder *f* in the same way as index W is located with reference to the cylinder R. The cylinder *f*, however, instead of being graduated for ranges corresponding to angles of elevation, may be graduated directly in angles of elevation. Hence, when the gun is given a certain initial elevation, the base D of the telescope A is brought parallel to the axis of the bore of the gun by manipulating the disk *e* and cylinder *f*, the disk *e* being rotated until the angle of the elevation of the gun is indicated on the cylinder *f* opposite the pointer *g*. The disk P and cylinder R are then operated in the manner already described to give to the telescope A an angle corresponding to the desired range. In some cases it may be convenient to graduate the cylinder *f* in angles of elevation and the cylinder R in ranges.

In addition to possessing all of the advantages incident to the type of telescope-sight which is described in my prior patent aforesaid, the following additional ones are secured by my present apparatus: The telescope is firmly held at two points of support in the position to which it may be adjusted, and cannot be thrown out of such position by the concussion of the gun when the latter is fired. The sight may therefore be adjusted once and for all, and need not be readjusted for every firing of the gun, unless the range is changed. The construction of the elevating and depressing mechanism is such that the telescope can be moved over a considerable angle, while the graduations for range will be far apart, thus enabling the instrument to be set at any range with especial accuracy. So, also, the center of the trunnions may be set low down, thus minimizing the effect of vibration of the instrument and rendering it more solid and compact. It will also be observed that the elevating-screw is completely protected and has a large bearing in its supporting-cylinder. It is also possible, as I have already explained, to adjust the cylinder R to the zero-mark without moving the screw J by simply loosening the clamping-screws V. This enables the apparatus to be readily adjusted on any gun.

I claim—

1. The combination in a telescope-sight of a sight-tube movable on a transverse axis, a base on which said telescope is supported, a screw received in a fixed bearing in said base and having at its upper end a projection received in a longitudinally-sliding bearing connected to said telescope, a cylinder carried by said screw and a fixed index in proximity to said cylinder; the periphery of said cylinder being provided with a scale marked correspondingly

to angular positions of the sight-tube, substantially as described.

2. The combination in a telescope-sight of a sight-tube movable about a transverse axis, a supporting-base therefor, a fixed nut in said base, a screw entering said nut, a sliding bearing connected to said sight-tube, a projection on the upper end of said tube received in said sliding bearing, and means for indicating the extent of movement of said screw, substantially as described.

3. The combination in a telescope-sight of a sight-tube movable about a transverse axis, a screw operating to cause said motion, a disk carried by said screw, a cylinder detachably secured to and carried by said disk; and provided on its periphery with a scale marked correspondingly to angular positions of the sight-tube, and a fixed index in proximity to said cylinder, substantially as described.

4. The combination in a telescope-sight of a sight-tube movable about a transverse axis, a screw operating to cause said motion, a disk carried by said screw, a cylinder carried by and rotating on said disk and provided on its periphery with a scale marked correspondingly to angular positions of said sight-tube, a fixed index in proximity to said cylinder, and means for clamping said cylinder rigidly to said disk, substantially as described.

5. The combination in a telescope-sight of the sight-tube A movable about a transverse axis, base D therefor, fixed nut M on said base, screw J in said nut and having projection I a sliding bearing connected to said sight-tube receiving the end of said projection, and means for rotating said screw, to cause movement of said sight-tube about said axis, substantially as described.

6. The combination in a telescope-sight of the sight-tube A movable about a transverse axis, base D therefor, fixed nut M on said base, screw J in said nut having projection I and globular end II, a sliding bearing connected to said sight-tube receiving said end II, and means for rotating said screw to cause movement of said sight-tube about said axis, substantially as described.

7. The combination in a telescope-sight of the sight-tube A movable about a transverse axis, base D therefor, fixed nut M on said base, screw J in said nut having projection I, a sliding bearing connected to said sight-tube receiving the end of said projection, disk P on screw J, cylinder R carried by said disk P and provided on its periphery with a scale marked correspondingly to angular elevations of the tube and a fixed index W in proximity to said cylinder, substantially as described.

8. The combination in a telescope-sight of the sight-tube A movable about a transverse axis, base D therefor, fixed nut M in said base, screw J in said nut having projection I, a sliding bearing connected to said sight-tube receiving the end of said projection, disk P cn screw J, cylinder R having internal groove S, blocks T entering said groove, clamping-screws V for said blocks, and a fixed index W in proximity to said cylinder; said cylinder being provided on its periphery with a scale marked correspondingly to angular elevations of the tube, substantially as described.

9. The combination in a telescope-sight of a sight-tube movable about a transverse axis, a supporting-base therefor also movable about a transverse axis, a fixed table and means for varying the inclination of said base with reference to said fixed table, substantially as described.

10. The combination in a telescope-sight of a sight-tube movable about a transverse axis, a supporting-base therefor also movable about a transverse axis, a fixed table means for varying the inclination of said sight-tube with reference to said base, and means for varying the inclination of said base with reference to said fixed table, substantially as described.

11. The combination in a telescope-sight of the fixed table *c*, base D supported on trunnions *a* thereon, a screw interposed between table and base and operating to move said base on its trunnions, a cylinder *f* carried by said screw and marked to show angular displacement of said base, a fixed index *g*, in proximity to said cylinder, a sight-tube A supported on trunnions B and carried by said base, a screw interposed between sight-tube and base and operating to move said tube on its trunnions, a cylinder R carried by said screw and marked to show extent of movement of said screw, and a fixed index W in proximity to said cylinder, substantially as described.

BRADLEY ALLAN FISKE.

Witnesses:
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