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ADJUSTMENT MEANS FOR GUN SIGHTING SCOPE

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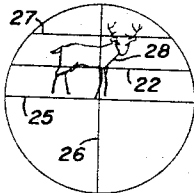


FIG. 1a.

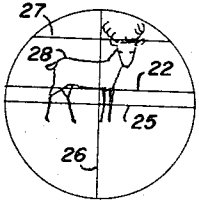


FIG. 2a.

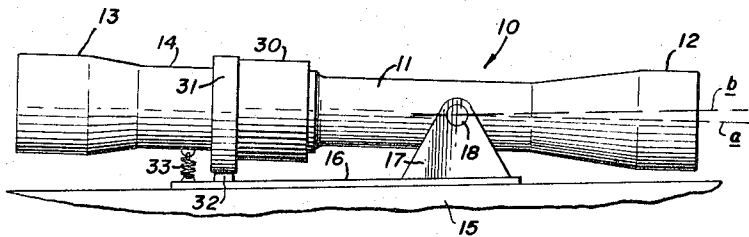


FIG. 1.

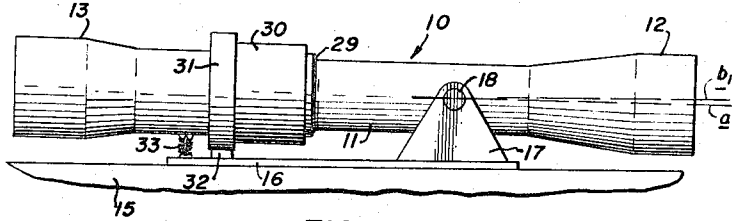


FIG. 2.

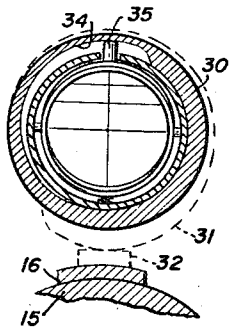


FIG. 4.

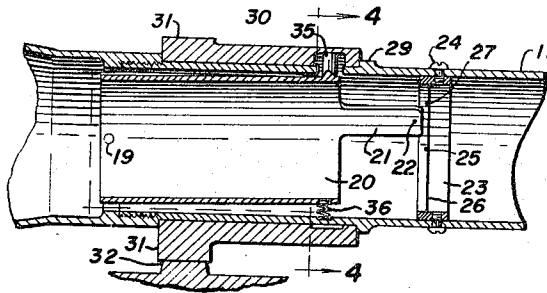


FIG. 3.

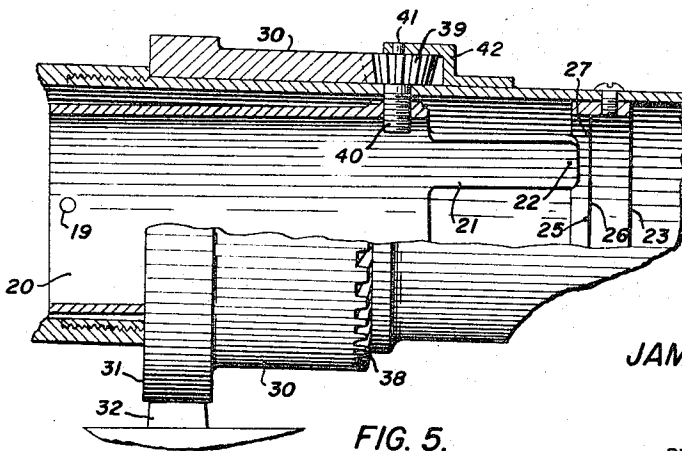


FIG. 5.

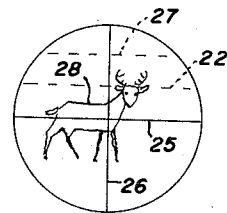


FIG. 6.

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1

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**ADJUSTMENT MEANS FOR GUN SIGHTING SCOPE**

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2 Claims. (Cl. 33—50)

This invention relates to telescopic sights for guns and has for its primary object improved means automatically adjusting the trajectory of a gun when framing a target through the sight even though the distance to the target is unknown. Although the invention is adaptable for use on various types of guns, it is particularly useful on hunting rifles because it may be quickly and accurately operated even though the hunter may be under nervous tension at the time of use.

A particular object of the invention is to provide a simplified construction which is adaptable to either fixed focus scopes or variable power scopes.

A further object is to provide a cam operated gun sighting scope which compensates for increased drop of the missile near the end of the trajectory path.

These and other objects will become apparent from the following description and accompanying drawing, wherein:

FIGURE 1 is a side elevational view of a telescopic sight in accordance with the invention and mounted on the top of a gun barrel.

FIGURE 1a is an enlarged schematic view of a distant target as seen through the scope when angularly positioned as in FIGURE 1.

FIGURE 2 is a view similar to FIGURE 1, but showing the decreased angular position of the scope relative to the barrel when the target is relatively close.

FIGURE 2a is a view similar to FIGURE 1a showing the target as seen through the scope when positioned as in FIGURE 2.

FIGURE 3 is an enlarged fragmentary vertical longitudinal sectional view of a preferred form of the invention.

FIGURE 4 is a transverse sectional view taken on line 4—4 of FIGURE 3.

FIGURE 5 is an enlarged view similar to FIGURE 3 showing a modified form of the invention.

FIGURE 6 is a schematic view of the target and position of the conventional cross hairs when firing the gun.

The scope 10 includes the usual tube portion 11, objective lens assembly 12 and ocular lens assembly 13 which includes a barrel portion 14 for connection with the tube portion. The scope 10 is mounted for pivotal movement in a vertical plane on top of a gun or rifle barrel 15 by means of an elongate mounting plate 16, supports 17 on the plate, and trunnions 18 on the tube portion 11, which trunnions are journaled in the supports. For the purpose of this description, that portion of the scope 10 including the ocular lens assembly 13 will be referred to as the rear end of the scope, and that end including the objective lens assembly 12 will be referred to as the forward end. At the rear end of the tube portion 11, and pivotally supported on opposing horizontal pins 19, there is an inner tube 20 having forwardly projecting arms 21 which support a horizontal framing hair 22. Just forward of the arms 21 there is a reticle frame comprised of a ring 23 secured in the tube

2

portion 11 by screws 24, and which ring supports the usual horizontal and vertical cross hairs 25 and 26. Above the horizontal cross hair 25 and above the movable horizontal framing hair 22 carried by the inner tube 20, and supported by the ring 23, there is a stationary framing hair 27. As will become apparent, the movable hair 22 and the stationary hair 27 have to do with framing the target 28, and which framing automatically adjusts the trajectory of the gun, after which the scope is aligned with the target in the usual manner, as in FIGURE 6.

Relatively near but spaced from the rear end of the tube portion 11 there is a shoulder 29 therearound for locating a sleeve bearing 30. Around the sleeve bearing 30, and best shown by dotted lines in FIGURE 4, there is an external cam 31 which rides on a cam block 32 on the mounting plate 16. A tension spring 33 between the scope barrel 14 and the plate 16 assures contact between the cam 31 and the block 32.

Within the bearing sleeve 30 and near the forward end of the inner tube 20 there is an internal cam 34. On the forward end of the inner tube 20 there is a cam pin 35 which projects through a hole, not numbered, in the scope tube portion 11 and makes contact with the internal cam 34, and which contact is assured by a compression spring 36 beneath the forward end of the inner tube 20 and bearing against the inner surface of the tube portion 11.

The modified form of the invention illustrated in FIGURE 5 is substantially like the first, but instead of the internal cam 34 this form of the invention employs a gear and screw mechanism for raising and lowering the movable wire 22. Around the forward end of the sleeve bearing 30 there are gear teeth 38 which mesh with a gear 39 supported for free rotation on the tube portion 11. Integral with the gear 39 and threadedly engaged in the upper forward end of the inner tube 20, there is a screw 40 which raises and lowers the arms 21 and movable wire 22. A pin 41 projecting from the gear 39 is journaled in a bracket 42 on the tube portion 11.

The operation of the invention is based on the premise that the height of a portion of the target is of a known average distance. The framing of that distance between the stationary hair 27 and the movable hair 22 elevates the gun barrel 15 to the correct trajectory, after which the gun is sighted on target 28 through the scope 10 using the conventional cross hairs 25 and 26. Lines *a* and *b*, FIGURE 1, represent the line of sight through the axis of the scope 10 and a line parallel with the axis of the gun barrel 15. Lines *a* and *b*, FIGURE 2, represent the line of sight through the axis of the scope 10 and the axis of the barrel 15 when the target 28 is framed at a closer distance. The rises of the two cams 31 and 34 may be determined by calculated or empirical test. In the second form of the invention the pitch of the screw 40 may also be determined by such tests.

The invention is not limited to the exemplary constructions herein shown and described, but may be made in various ways within the scope of the appended claims.

What is claimed is:

1. In a telescopic sight mounted for pivotal movement in a vertical plane only on the barrel of a gun, an external cam mounted for rotation about the axis of said sight, a stationary cam block supported on said gun barrel and contacting the rise of said cam, and reticle framing means

3

in said sight synchronized with said cam, said reticle framing means being comprised of a stationary horizontal hair within said sight, a vertically movable hair parallel with the first said hair, a second cam connected to and rotatable with the first said cam, and means mechanically linking and vertically moving said movable hair with the action of said second cam.

2. In a telescopic sight mounted for pivotal movement in a vertical plane only on the barrel of a gun, an external cam mounted for rotation about the axis of said sight, a stationary cam block supported on said gun barrel and contacting the rise of said cam, and reticle framing means in said sight synchronized with said cam, said framing means comprised of a stationary horizontal hair within said sight, a vertically movable hair parallel

4

with the first said hair, gear teeth around said sight and rotatable with said cam, a gear carried by said sight, a screw rotated by said gear, and vertically movable means threadedly engaged by said screw and carrying said movable hair.

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