

Jan. 18, 1938.

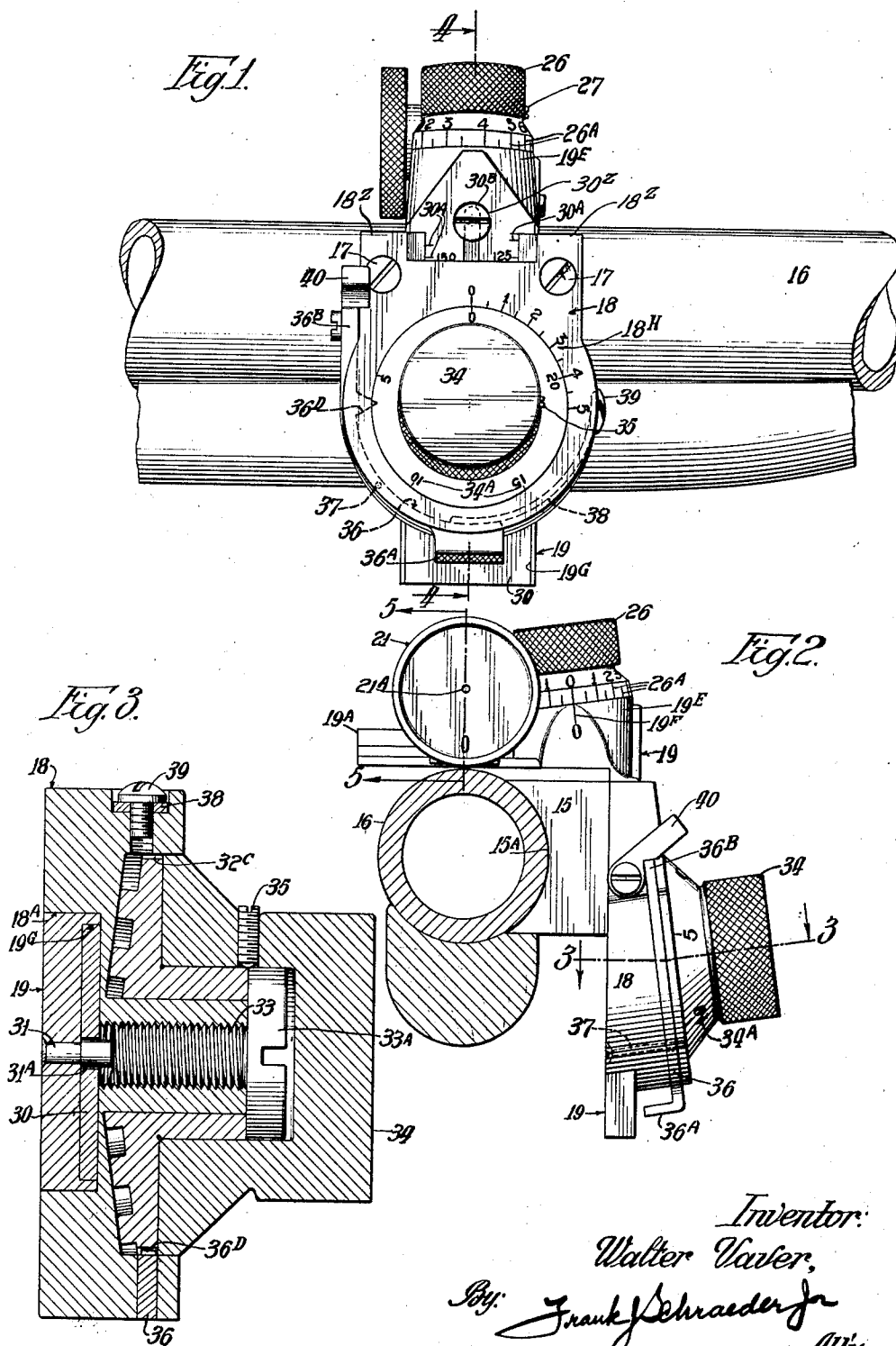
W. VAVER

2,105,564

GUN SIGHT

Filed June 21, 1933

3 Sheets-Sheet 1



Inventor:
Walter Vaver,
By: Frank Schroeder Jr.
Atty.

Jan. 18, 1938.

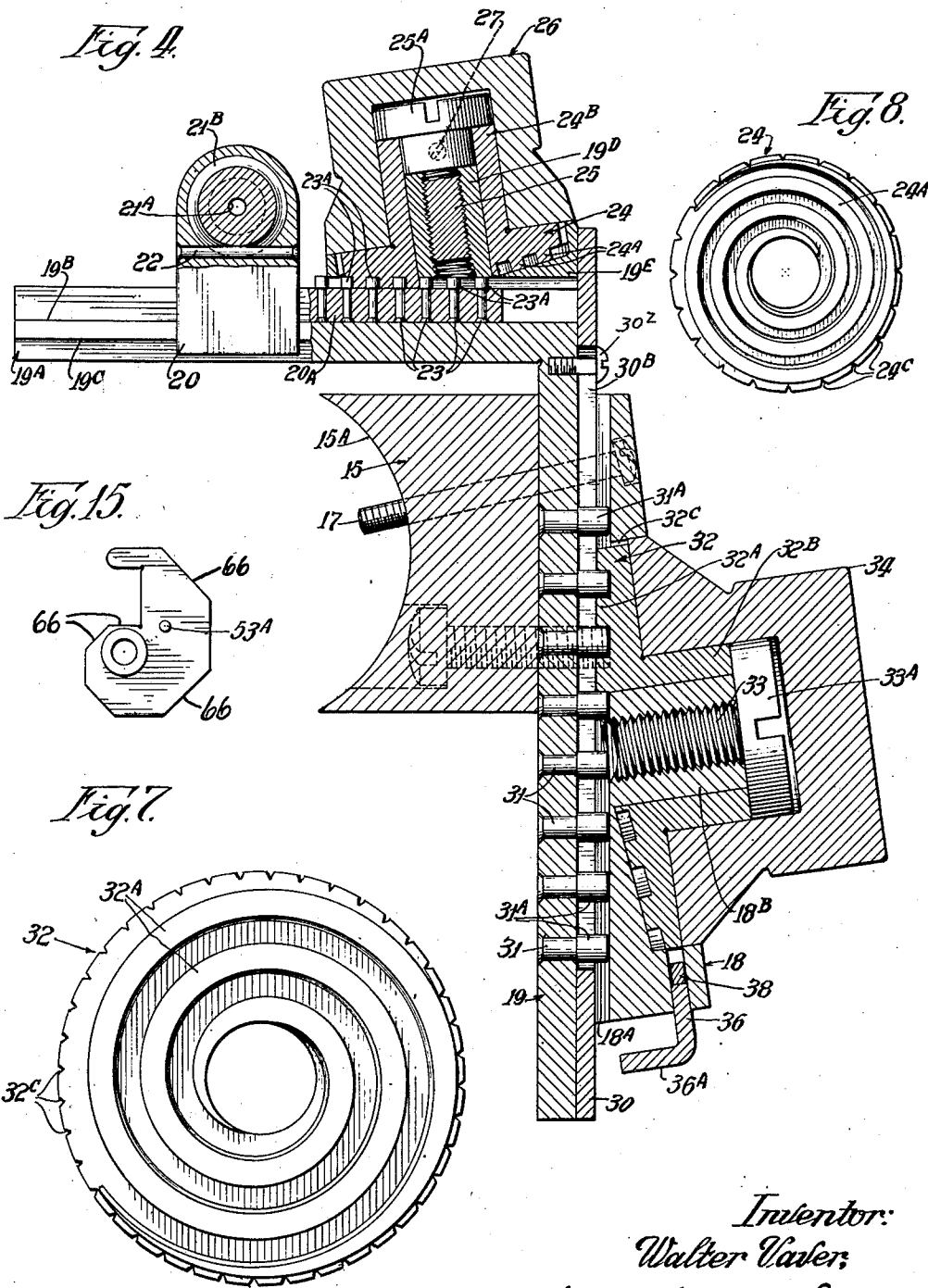
W. VAVER

2,105,564

GUN SIGHT

Filed June 21, 1933

3 Sheets-Sheet 2



Inventor:
Walter Vaver,
By: Frank J. Schraeder Jr.
Atty.

56

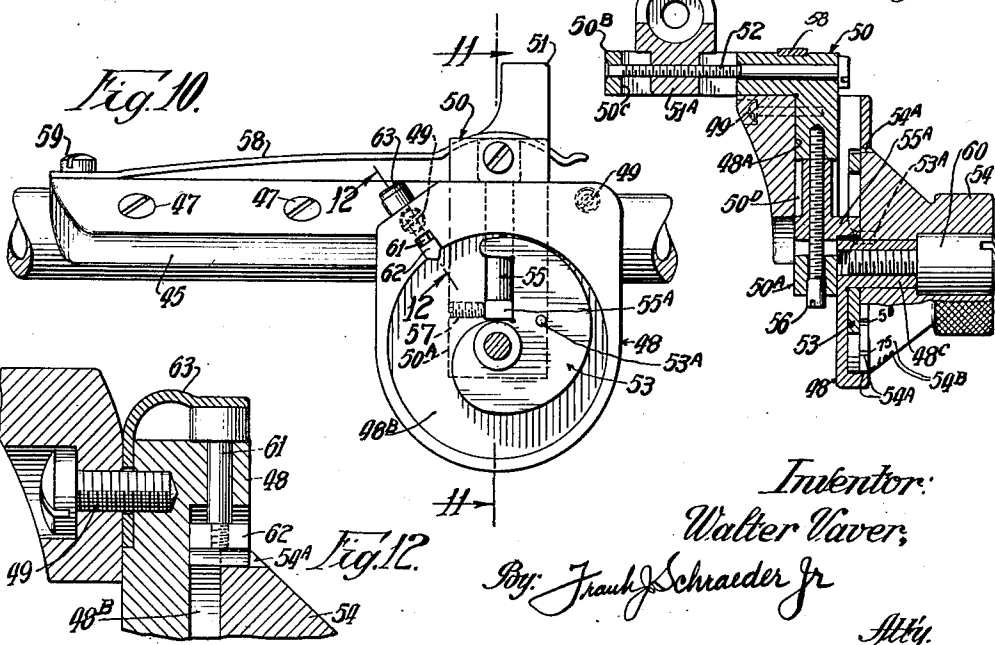
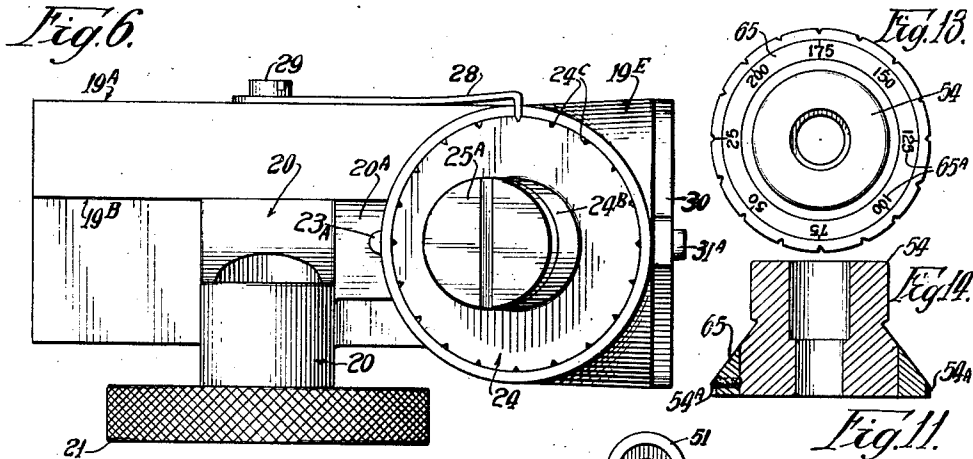
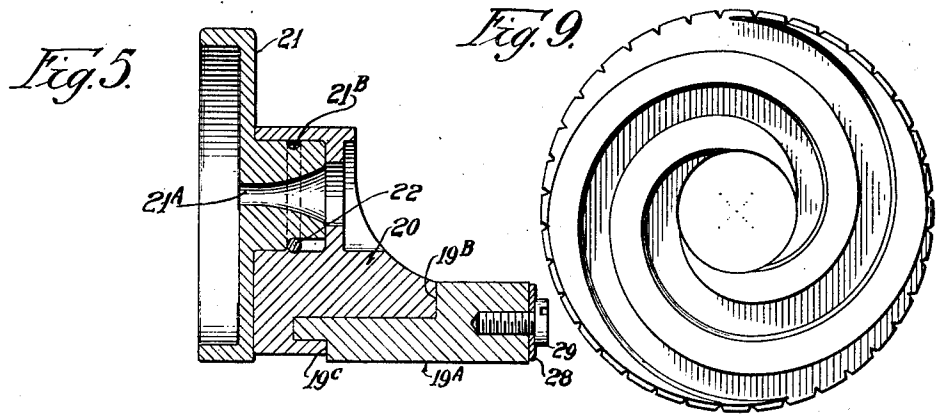
Jan. 18, 1938.

W. VAVER
GUN SIGHT

2,105,564

Filed June 21, 1933

3 Sheets-Sheet 3



Inventor:
Walter Vaver,
By: Frank J. Schraeder Jr
Atty.

56

Patented Jan. 18, 1938

2,105,564

UNITED STATES PATENT OFFICE

2,105,564

GUN SIGHT

Walter Vaver, Cicero, Ill., assignor of one-half to Benjamin A. Tetzlaff, Riverside, Ill.; Harriet Vaver administratrix of Walter Vaver, deceased

Application June 21, 1933, Serial No. 676,803

10 Claims. (Cl. 33—56)

This invention relates to improvements in sights for guns, rifles and firearms.

Design in sights follows the evolution or changes in ammunition used in guns. The flight of the bullet is dependent on a number of factors, chiefly, the power propelling it, the weight and shape of the bullet, the air resistance it meets, and the velocity of the wind to cause lateral movement from its true course.

With the improvement in ammunition to faster burning powders, a bullet can be projected at a higher velocity and to that extent overcome the attraction of gravity for a greater distance by its increased velocity, thus assuming a flatter trajectory than ammunition with slower burning powders. It is, therefore, evident that, given a certain gun, the trajectory of the bullet shot by that gun will vary in direct relation to the kind of powder, weight and shape of the bullet, and other known characteristics.

The sights in common use provide means for adjustment of the angle of elevation in minutes, as to distance, caliber of gun, and adjustments for windage, but have no included means for pre-determining angle elevation relative to distance to conform to variations in type or character of ammunition used.

As stated, the flight of the bullet is dependent on kinds of ammunition used, which are not uniform, but vary. Manufacturers of ammunitions know the characteristics of the different ammunition of their manufacture and have reduced these characteristics to tables specific to the various ammunitions. To illustrate, using ammunition of .30—'06 caliber in the same rifle, the following results are obtained by trial with the rifle zeroed at 100 yards. The inches represent the drop of the bullet at the respective yardage shown, and the angle of elevation refers to the required adjustment of the sight in minutes to compensate for the drop in the bullet, so that, at the yardages shown, the bullet will arrive at the center of the target.

Bullet	Muzzle velocity	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.
180 gr.	2,700 f. s.	0	6.0"	15.0"	28.0"	60.0"
Angle of elevation	Min.	0	3	5	7	12
180 gr. (boat tail).	2,600 f. s.	0	6.0"	19.5"	40.0"	65.0"
Angle of elevation	Min.	0	3	6.5	10	13
145 gr.	2,850 f. s.	0	4.0"	15.0"	36.0"	70.0"
Angle of elevation	Min.	0	2	5	9	14

The 200 gr. and 220 gr. bullet used in the .30—'06 caliber would present a different table.

To make a correct adjustment of the sight one must consult the chart provided by the ammunition manufacturer, or that obtained by actual trial, and use that chart in making the correct adjustments of the sight to obtain the proper results. In my improved sight, the above table which covers the characteristics of the various ammunition, is in each instance translated into yardage which is stencilled or otherwise indicated on a removable yardage plate or disk to be mounted on the dial or slide of the sight. This plate or disk reads in yards, therefore when shooting ammunition conforming with a given table, the yardage plate or disk corresponding to that table and graduated for that ammunition is mounted on the sight. To arrive at the correct angle of elevation it is then necessary only to adjust the sight to the correct yardage shown and the center of impact of the bullet will be the center of the target. It is obvious that the distance from the rifle to the target must be measured, computed, or estimated. Errors in estimates are readily corrected by further adjustment of the dial.

The graduations of the yardage disk and plates are mathematically computed to register the rise of point of impact of the bullet one inch at 100 yards. The commonly accepted formula in the graduations of sights in minutes, assumes that with a gun having sights in minutes, a rise of the angle of elevation of one minute, raises the impact of the bullet on the basis of one inch at 100 yards, 2 inches at 200 yards, 3 inches at 300 yards, etc., whereas the actual rise is 1.0407 at 100 yards, 2.0814 at 200 yards, etc.

It is further obvious, that the angle of elevation must vary in corresponding ratio with the variation in distance between the sights, therefore the graduations on the yardage disk and plates are graduated to read in yards, based on the true and known mathematical formula that the angle of elevation is measured by its subtended arc.

The path or drop of the bullet in relation to the prolongation of the axis of the barrel of the rifle represents a wedge which in effect is transposed to the cam in the dial of the sight and is graduated on the disk so that the rise in the cam compensates exactly for the drop in the bullet, at its respective yardage.

In my dial-operated cam sight, the rise is limited to the size of the cam. In my conical-cam sight, it is limited only to the length of the slide.

In the sight illustrated in Figs. 10 and 11, the adjustment of the dial is made through notations indicating yards only. The drop of a bullet is ascertained in inches, converted into points (one point may for instance, cause a change of center of impact of 1 inch at 100 yards) and indicated on dial in true relation to the rise of the lead of the spiral cam.

Illustration.—The rise of the spiral cam lead in one full turn is 30 points from the lowest to highest periphery. The dial is divided into fractional points to enable locating the rise of the cam in true relation to the drop of the bullet at its respective yardage as shown on the dial. The range obtained on dial would obviously be limited to the size of the spiral cam.

Windage

For windage adjustment, the conical spiral cam-operated type of sight is provided with notches in the periphery of the dial which is graduated and provided with suitable adjustment notations. Each click caused by spring engagement in such notches may, for instance, change the angle half a point. Windage adjustment is largely a matter of judgement as it depends on the velocity of the wind and direction of flight of the bullet in relation thereto, so that all that any sight can do is provide an adjustment with a given variation in angles. In the sight shown in Figs. 10 and 11, the windage adjustment is not of such consequence, however, a screw adjustment is provided for those who want to make adjustments in target practice. For hunting purposes and game shooting, the matter of windage is more a matter of judgment.

The invention, in its broad aspects, has particular reference to certain new and useful improvements in gun sights wherein provision is made for adjustments for elevation and windage and it is especially my purpose to provide a sight of this character wherein the adjusting means are so constructed, arranged, and disposed, that adjustments may be made in less time to a predetermined point of impact of the bullet with different ammunition at any known yardage, with greater facility to a marked advantage of the manipulator of the firearm.

The improved sight herein disclosed is not only adaptable for use with various types or variety of firearms wherein adjustments for elevation and windage are considered and desired, but the improvements also contemplate and embody novel constructions in the mechanical features and design, and in the provision of a sight which may be quickly and accurately manipulated while the operator is in action.

The improvements shown in the drawings include two sight designs; one may be termed the "spiral cone-cam" type, and the other, the "spiral cam" type.

In addition to the above objectives, one of the most important features or objects of my invention is to provide a sight for firearms, having an interchangeable, slidably mounted plate which permits adjustment of the sight for elevation (or the vertical movement of the sight) to be made in accordance with indicia thereon indicating correct elevations of the sight for definite ranges for a certain particular ammunition or bullet. Such indicia may indicate the distance of the target in yards.

Another object of my invention is to provide an interchangeable dial for operating such interchangeable yardage plate which dial is also graduated

for such particular ammunition or bullet.

Another object of my invention is to provide an adjustment dial with a removable and interchangeable yardage-indicating ring.

Another object is to provide a cam-operated carrier for a peepsight to afford its vertical adjustment for elevation and separate means for independently adjusting the peepsight horizontally as to windage.

Another object of the invention is found in the provision of a slidable carrier having a vertically adjustable peepsight which is movable by a conical spiral cam.

Another object of the invention is to provide a sight-operating mechanism having audible sounding means to indicate the turns of the dial.

Another object of the invention resides in the provision of a peepsight which is provided with independently operated graduated dials for adjusting such sight as to elevation and windage according to such graduations or by audible sounding means operable by such dials and including means for operatively disengaging such sounding means.

A further object of the invention is to provide interchangeable cam operating means with single or multiple leads and such leads cut in clockwise or anti-clockwise direction.

A further object is found in the quickly removable and interchangeable peepsight.

A still further object of the invention is found in the novel driving or transmission mechanism embodying means for converting rotary motion into slow movement of a sliding element or into slow reciprocating movement.

With the above and other objects in view, my invention consists in the novel combination construction and arrangement of the parts and members shown in preferred embodiment in the attached drawings, described in the following specification and particularly pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is a side elevation of a sight embodying my invention.

Fig. 2 is a cross section through a rifle barrel showing the sight in end elevation.

Fig. 3 is a cross section of the elevation adjustment mechanism taken on line 3—3 of Fig. 2.

Fig. 4 is a vertical section through the sight taken on line 4—4 of Fig. 1.

Fig. 5 is a vertical section through the peephole taken on line 5—5 of Fig. 2.

Fig. 6 is a plan view of the peephole and operating mechanism therefor.

Fig. 7 is a side view of the face of the improved conical spiral cam for the elevation adjustment.

Fig. 8 is a side view of the face of the improved conical spiral cam for the windage adjustment.

Fig. 9 is a side view of modified form of conical spiral cam having a double lead.

Fig. 10 is a side elevation of a modification of my invention with the peephole elevating dial removed to show the plate cam.

Fig. 11 is a vertical section taken on line 11—11 of Fig. 10, and

Fig. 12 is an enlarged section taken on line 12—12 of Fig 10, showing the audible sounding pin.

Figs. 13 and 14 show respectively a plan view of a modified dial and cross-section thereof wherein the notations for adjustment thereof are indicated on a removably mounted interchangeable ring.

Fig. 15 is a plan view of a modified form of cam.

Referring now to the illustrations shown in Figs. 1 to 9 inclusive, the sight comprises an adapter block 15 of substantially rectangular form having a concave side 15^A adapted for attachment to the side of the firearm barrel 16 by means of a pair of screws 17 which extend through the stationary frame 18 into the barrel 16.

The stationary frame 18 is provided with a vertical recess 18^A within which is slidably mounted a movable carrier generally indicated by numeral 19.

The carrier 19 is substantially L-shaped in form having a horizontal rail extension 19^A which is recessed as at 19^B and 19^C to receive thereon the slidable block 20 which carries the peepsight 21 (see Fig. 5).

The peepsight 21 is provided with a peephole 21^A and is removably secured within the block 20 by any suitable means, as for instance, the short straight pin 22 which is disposed to lie within a groove 21^B of the peepsight extension; said extension having a flattened portion to permit the removal of the peepsight.

The slidable block 20 is provided with an integral rack extension 20^A having a plurality of spaced pins 23 riveted therein and having heads 23^A protruding a short distance about the upper face of the rack extension.

A micrometer mechanism is provided for slidably reciprocating the block 20 and its rack extension 20^A on the rail 19^A through propulsion imparted to the projecting heads 23^A of the pins 23 by means of a rotary cam 24 having a spiral lead 24^A disposed conically outwardly from the periphery of its base; the portion of the lead 24^A near the center of the cam being nearer the constructive apex of the cam than the portions of the lead near the periphery of the cam, so that the conical face of the cam at the root of the lead is frusto-conical.

As shown in the cross sections, the sides of the lead 24^A are cut substantially right-angularly to the face of the cam and of a width to engage between the pin heads 23^A so that a rotation of the cam 24 will slide the block 20 back and forth.

The axis about which the cam 24 rotates is inclined or disposed angularly to the face of the rack extension 20^A so that the pins 23 are engaged by the spiral lead 24^A only on one side of the axis of the cam to permit the rack extension 20^A and its pins 23 to move past the axis of rotation of the cam and obviously not to interlock with the portion of the spiral lead on the other side of the axis of the cam. Fig. 4, shows clearly that the pins clear the portions of the spiral lead on the elevated side of the cam 24 and cannot interlock.

The cam 24 is rotatably mounted with its hub extension 24^B on the tubular inclined extension 19^D of the enlarged head portion 19^E at the top of the carrier 19, and is held against displacement by means of a screw 25 having threaded engagement within the extension 19^D and provided with a head 25^A.

The dial 26 is mounted over the hub 24^B and removably secured thereto with a set screw 27.

The dial 26 is provided with numbered graduations 26^A adapted to register with the indicator zero line 19^F.

It is now readily apparent that rotations of the dial 26 will cause a rotary movement of the cam 24 so that its conical spiral lead will propel

the pins 23 and thus shift the block 20 back and forth to provide the desired windage adjustment of the peepsight 21, and the degree of such shifting of the peepsight may be readable on the graduations 26^A as they are registered with the zero line 19^F.

In order to provide a clicking sound to audibly appraise the operator of the degree of movement of the peepsight 21 during windage adjustment (see Fig. 6), I provide notches 24^C on the periphery of the cam 24 which are engaged by a bent end of a leaf spring 28 the other end of which is secured to the back of the extension 19^A by a screw 29.

Referring now to the adjustment of the elevation of the peepsight and the carrier 19 therefor, it will be observed by reference to Figs. 1, 3 and 4, that the outer face of the vertical leg of the carrier 19 is channeled as at 19^C to receive a removable interchangeable elevation indicating plate 30.

In this instance also, I provide a micrometrically adjustable mechanism for slidably reciprocating the carrier 19 vertically within the recess 18^A of the frame 18 through propulsion imparted to the projecting heads 31^A of the spaced pins 31 which are riveted to the carrier 19, and which heads 31^A are operatively engaged by the spiral lead 32^A of the cam 32. The spiral lead is here also disposed conically outwardly from its peripheral base, and conforms generally to the windage adjusting cam above-described.

As shown in the cross sections, the sides of the lead 32^A are cut substantially right-angularly to the face of the cam 32 and is of such width to permit it to operatively engage between the heads 31^A, so that the rotation of the cam 32 will slide the carrier 19 within the frame 18.

In this instance also, the axis about which the cam 32 rotates is inclined or disposed angularly to the face of the carrier 19 so that the heads 31^A are engaged by the spiral lead only on one side of the axis of the cam 32 to permit the carrier 19 and the elevation indicating plate 30 to move past the axis of rotation of the cam 32 and not to interlock with the portion of the spiral lead on the other side of the axis of the cam 32. (See Fig. 4.)

The cam 32 is rotatably mounted with its hub extension 32^B on the tubular extension 18^B of the frame 18 and is held against displacement by a screw 33 having threaded engagement within the tubular extension 18^B and provided with a head 33^A.

An operating dial 34 is mounted over the hub 32^B of the cam and removably secured thereto with a set screw 35.

As aforesaid, the carrier 19 is provided with a removable, interchangeable elevation-indicating plate 30 which is provided with graduations 30^A numbered to indicate in yardage the trajectory of a certain ammunition or bullet for a particular rifle or firearm. Other blank trajectory or elevation indicating plates 30 may be graduated by the operator to conform to the characteristics of other particular bullets by the zeroing operation, and when the ammunition is changed, the operator may then replace the used yardage or trajectory plate with another plate 30 which has been previously graduated for such particular substituted ammunition.

The graduations 30^A on all plates 30 are marked for zero adjustment and reading with reference to a horizontal line defined by the aligned upper

ends 18² of the frame 18 and are held in fixed position on the carrier 19 by screw 30².

The elevation or yardage plates 30 are made with a longitudinally centrally disposed slot 30^B to permit the projection of the heads 31^A there-through.

In addition to the visible adjustment of elevation afforded by the elevation plate graduations 30^A, the elevation indicating mechanism is also provided with indicating graduations 34^A on the face of the dial 34 which cooperate with the vernier scale 18^B to afford additional means for correction.

As a further additional feature, the cam 32 is provided at its periphery with spaced notches 32^C which cooperate with a pointed projecting portion 36^D of the lever 36 to produce an audible clicking sound as the elevation cam is rotated, thus affording the adjustment of elevation by sound.

The lever 36 is arcuate in form and is positioned in a slot in the side of the frame 18 and pivoted about a screw or pin 37 intermediate its ends. A leaf spring 38 (Fig. 1) secured at one end by a screw 39 and disposed in the peripheral slot of the frame 18 engages with its opposite end against the inner side of the lever 36 to thereby normally retain such lever with its pointed projection 36^D in engagement with notches 32^C.

If it becomes desirable to dispense with the sound adjustment just described for the elevation dial 34, the lever 36 may be oscillated about its pivot 37 against the pressure of the spring 38 by applying slight upward pressure against the thumb-plate extension 36^A to thereby move the opposite end 36^B of the lever 36 outwardly so that the pointed portion 36^D clears the notched periphery of the cam 32. The "click" sounding lever 36 may then be readily locked or retained in inoperative position by interposing the small pivoted lever 40 between the outwardly moved end 36^B and the side of the frame 18.

Referring now to the modification of my invention as shown in Figs. 10, 11 and 12, an adapter block 45 is provided which is attachable to a firearm barrel by screws 47.

A stationary frame 48 is secured to one side of the adapter 45 by means of screws 49.

The frame 48 is provided with a recess 48^A on its inner side for the vertical leg 50^A of an L-shaped sight carrier 50 of which the horizontal leg 50^B is an integral part.

The horizontal leg 50^B of the carrier is provided with a longitudinally extending slot 50^C within which a depending portion 51^A of the peep-hole sight 51 is movable laterally for windage adjustment by the screw 52 which is loosely held in the carrier portion 50^B and in threaded engagement with the sight portion 51^A.

The sight carrier 50 is slidably mounted in the frame recess 48^A. The frame 48 is also provided, on its outer side, with a circular recess 48^B, and in the center of said circular recess, is formed with an integral tubular interiorly threaded sleeve portion 48^C.

A comparatively thin disk cam 53 is loosely mounted on the sleeve 48^C within the recess 48^B and a short connector pin 53^A is fixed to the outer face of the cam 53 to provide an operative connection with the dial 54 into which said pin projects, so that when the dial 54 is turned, the cam 53 will likewise turn.

This cam 53 is adapted to gradually raise the sight carrier 50 upon the rotation of the dial 54 to thereby provide the desired elevation adjust-

ment of the peepsight 51, and the raising operation is accomplished through the operative engagement of such cam 53 with a tooth 55^A which is an integral part of the block 55 mounted within a recess 50^D of the vertical carrier leg 50^A. An adjusting screw 56 having threaded engagement with said block 55 and loosely mounted within the carrier leg 50^A, is provided for accurate adjustment of the block 55 relatively to the cam 53. Upon proper adjustment of the block 55 the same is adapted to be held in such fixed adjusted position in the carrier leg 50^A by means of a set screw 57 within the leg 50^A.

The return or lowering movement of the sight carrier 50 is made through the pressure against the top of the carrier 50 exerted by the free end of leaf spring 58. This free end is curved and positioned in a slight recess on top of the carrier leg 50^B and the opposite end is fixed to the top of the adapter 45 by screw 59.

Referring now to the circular dial 54, the inner face thereof is fitted within the recess 48^B against the cam 53 and it is held against displacement by the enlarged head of a screw 60 which is threaded within the sleeve 48^C.

The dial 54 is free to rotate about the sleeve 48^C and the head of the screw 60, and is provided with spaced notches 54^A arranged peripherally thereof and representing corresponding relative predetermined radii of the cam 53. The outer face of the dial 54 is also provided with numerals 54^B indicating the elevation in yardage.

The frame 48 is provided with a loosely mounted pin 61 carrying a pointed tooth 62 at its end, which tooth is held in engagement with the notched periphery of the dial 54 by a leaf spring 63 to thereby retain such dial in fixed selected position and furthermore, provides an audible "click" means whereby the operator may readily change the elevation adjustment of the sight by the sound of such tooth 63 as it engages within the notches 54^A.

Referring to Figs. 13 and 14, the dial notations 65^A are indicated on a notched ring 65 which may be removably mounted on the periphery of the dial 54. This ring 65 is interchangeable with other similar rings which are notched and graduated and provided with notations corresponding to designs of cams, such as 53, for other ammunition.

From the description and illustrations it will be observed that the spiral cam leads are disposed in a substantial frusto-conical formation.

In the modification of the cam shown in Fig. 15 the periphery consists of a plurality of flat surfaces 66 arranged at predetermined varying radii from its center of revolution. Each flat surface 66 is calculated to raise the sight a correct distance corresponding to a predetermined yardage. While fine progressive adjustments cannot be made with this cam as with the cam shown in Fig. 10, it is believed that it has a practical field of application and affords a simple means of adjustment. The dial employed in connection with this cam obviously is not notched in its periphery as the flat surfaces provide a seat for the sight block 55. Changes in ammunition would necessitate the substitution of a cam and yardage ring designed for the particular ammunition used.

It is believed that the operation and advantages of my invention will be readily understood from the attached drawings and aforesaid description.

While I have shown and described a preferred

56

2,105,564

5

embodiment of my invention, it is understood that various changes and modifications in the construction and arrangement of the parts and members may be made without departing from the spirit of my invention, and I therefore do not wish to limit myself to such particular details, construction, arrangements and uses, but claim my invention as broadly as the state of the art permits.

10 I claim:

1. In a firearm sight, and in combination, sighting means, a frame, a carrier for said sighting means slidably mounted on said frame, a cam for raising said carrier and said sighting means, a rotatable dial for operating said cam, resilient means exerting pressure against said carrier for lowering said carrier and said sighting means upon the actuation of said cam and dial to permit such lowering in degree proportionately to the degree of rotation of said cam and dial, and separate means for adjusting said sighting means horizontally as to windage independently of said cam-controlled vertical adjusting means.

2. A sight as embodied in claim 1, wherein said dial has notations thereon coordinating said dial and said cam with the trajectory of ammunition of predetermined characteristics, and wherein said cam and said dial are removable and interchangeable to accord with the change in ammunition of different characteristics.

3. In a sight for firearms as embodied in claim 1, a removable ring mounted on said dial, said ring having notches spaced along its periphery and notations on its face corresponding to points in the trajectory of a particular bullet, and including spring-actuated means cooperating with said notches to produce audible clicking sounds to indicate predetermined positions of the sighting means relatively to predetermined points in the trajectory of a particular bullet.

4. A firearm sight comprising sighting means, a frame mounted on said firearm, a substantially inverted L-shaped carrier for said sighting means having a horizontal portion and a vertical portion, said vertical portion being slidably mounted in said frame, said sighting means being slidably mounted on said horizontal portion, means for adjusting said sighting means horizontally relatively to said carrier vertical portion, a cam movably mounted on said frame, said carrier having an extension relatively adjustable to said carrier which is operatively engaged by said cam, a spring exerting pressure against said horizontal portion of said carrier, and means for operating said cam to raise said carrier against the pressure of said spring.

5. In a firearm sight, the combination of sighting means, and means for adjusting said sighting means in two directions comprising a pair of separate racks, each rack including a plurality of spaced and aligned cylindrical pins, a cam for operating each rack, each cam having a conically disposed spiral lead adapted for moving each rack in two directions, and each cam being adapted to engage simultaneously two or more of said pins.

6. The combination in a firearm sight, of sighting means including a vertically slidable member for supporting said sighting means, a cam for adjusting said sighting means as to elevation, means carried on said slidable member adapted to be engaged by said cam, said cam-engaging means carried on said slidable member being adjustable relatively to said slidable member,

said cam being shaped to provide the proper elevations for all ranges in the trajectory of a particular bullet, said cam being removable and interchangeable for other cams having leads designed respectively for ranges in trajectories of bullets of differing characteristics, and means for operating said cam.

7. A sight for firearms comprising a frame mounted on the firearm and having a vertically disposed recess therein, a movable carrier mounted in said frame recess, said carrier being substantially L-shaped and having a horizontal portion and a vertical portion, a peepsight-supporting-block slidably mounted on said horizontal portion, a peepsight mounted on said block, said block having a rack extension with a plurality of spaced pins projecting above the face of said block extension, an interchangeable plate removably mounted on said carrier vertical portion, said plate having notations thereon indicating target points in the trajectory of a particular bullet, a plurality of spaced pins mounted on said carrier vertical portion and projecting beyond the face thereof, a pair of spiral cams each having a lead disposed in slightly frusto-conical formation, one of said cams being arranged to operatively engage the pins on said peepsight-supporting-block extension to afford adjustment of said peepsight as to windage, the other of said cams being arranged to operatively engage the pins on said carrier vertical portion to afford adjustment of said peepsight as to elevation, the axis of rotation of said cams being angularly disposed to the plane of movement of said pins to thereby retain the spiral cams in tilted relative position to said pins whereby said spiral cams are engaged with said pins only on one side of the axis of rotation of said cams, a rotatable operating dial connected with each of said cams having notations thereon facilitating the adjustments of the peepsight.

8. A firearm sight having, in combination, means for adjusting the sight including a vertically slidable member, and an interchangeable plate removably mounted on said slidable member, said plate having notations thereon indicating the correct elevations of the sight for definite ranges for a particular kind and type of bullet, the sight being adapted for adjustment for a selected range in the trajectory of such bullet through adjustment of said slidable member in accordance with the notations on said plate.

9. A sight for firearms comprising a frame mounted on the firearm and having a vertically disposed recess therein, a movable carrier, said carrier being substantially L-shaped and forming a horizontal portion and a vertical portion, said vertical portion being slidably mounted in said recess, a peepsight-supporting-block slidably mounted on said horizontal portion, a peepsight mounted on said block, an interchangeable plate removably mounted on said carrier vertical portion, said plate having notations thereon indicating the correct elevations of the sight for definite ranges for a particular bullet, a plurality of spaced pins mounted on said carrier vertical portion and projecting beyond the face of said plate, a spiral cam having a lead disposed in slightly frusto-conical formation arranged to operatively engage the pins on said carrier vertical portion to afford adjustment of said peepsight as to elevation, the axis of rotation of said cam being angularly disposed to the plane of movement of said pins to thereby retain the spiral cam in tilted relative position to said pins whereby said

spiral cam is engaged with said pins only on one side of the axis of rotation of said cam, a rotatable dial connected with said cam having notations thereon facilitating the adjustment of the
5 peepsight.

10 10. The combination with sighting means for firearms, of an interchangeable plate removably mounted on said sighting means, said plate having indicia thereon indicating the correct elevations of the sight for definite ranges for a particular bullet, said plate being interchangeable with other plates each of which is calibrated with indicia thereon indicating the correct elevations of the sighting means for definite ranges of a

different bullet having different trajectory characteristics, and means for raising and lowering the sighting means in accordance with the indicia on said plate comprising a plurality of spaced pin-like members aligned in a straight
5 line on said sighting means and movable with the sighting means, and a rotatable spiral cam having a conically disposed lead which is adapted to engage one or more of said spaced pin-like members between spaced portions of said
10 lead, the axis of rotation of said cam being disposed obliquely to the plane of movement of said pin-like members.

WALTER VAVER.