

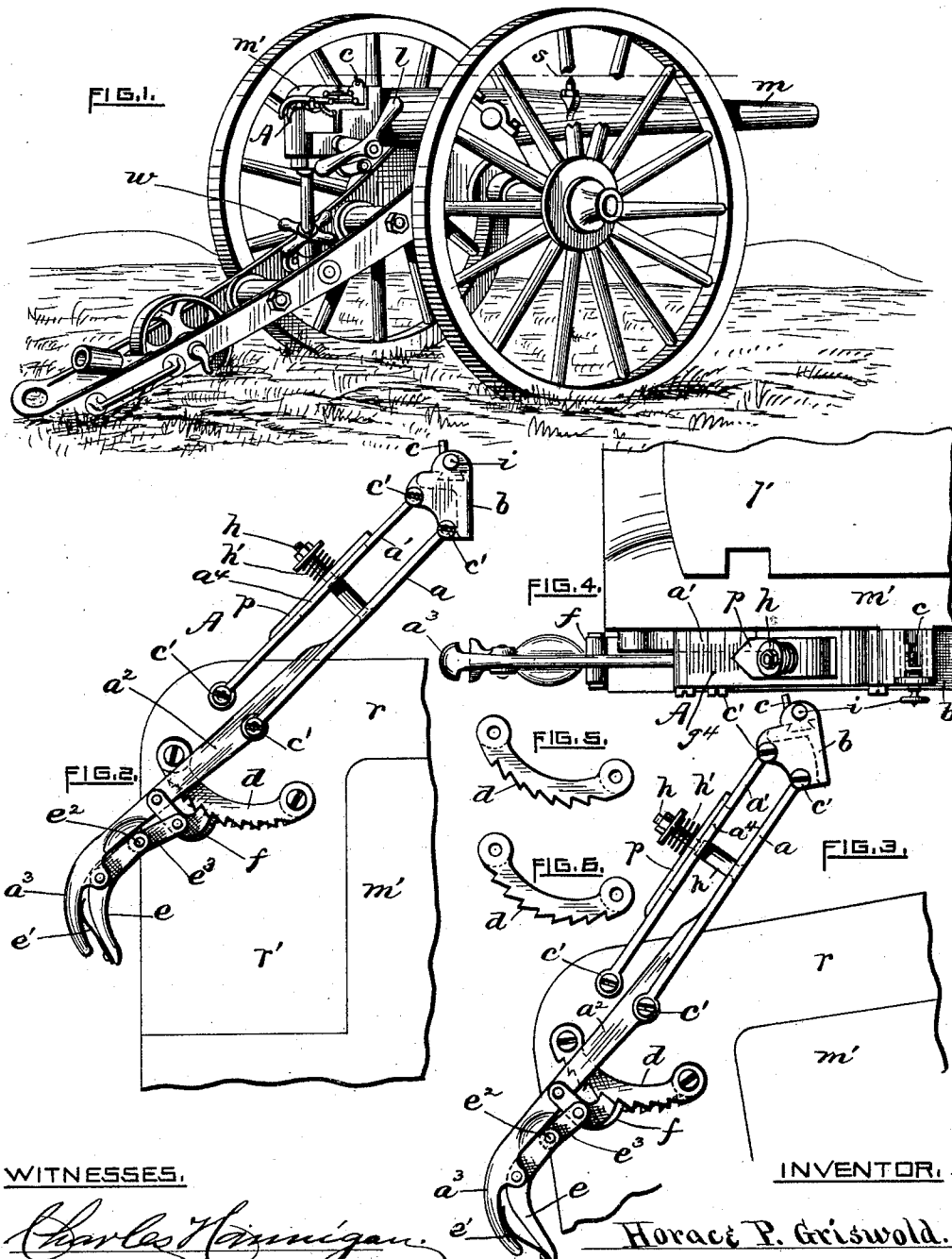
(No Model.)

3 Sheets—Sheet 1.

H. P. GRISWOLD.
ADJUSTABLE SIGHT.

No. 472,669.

Patented Apr. 12, 1892.



WITNESSES.

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H. E. Carpenter

INVENTOR.

Horace P. Griswold.
by Remington & Henthorne
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(No Model.)

3 Sheets—Sheet 2.

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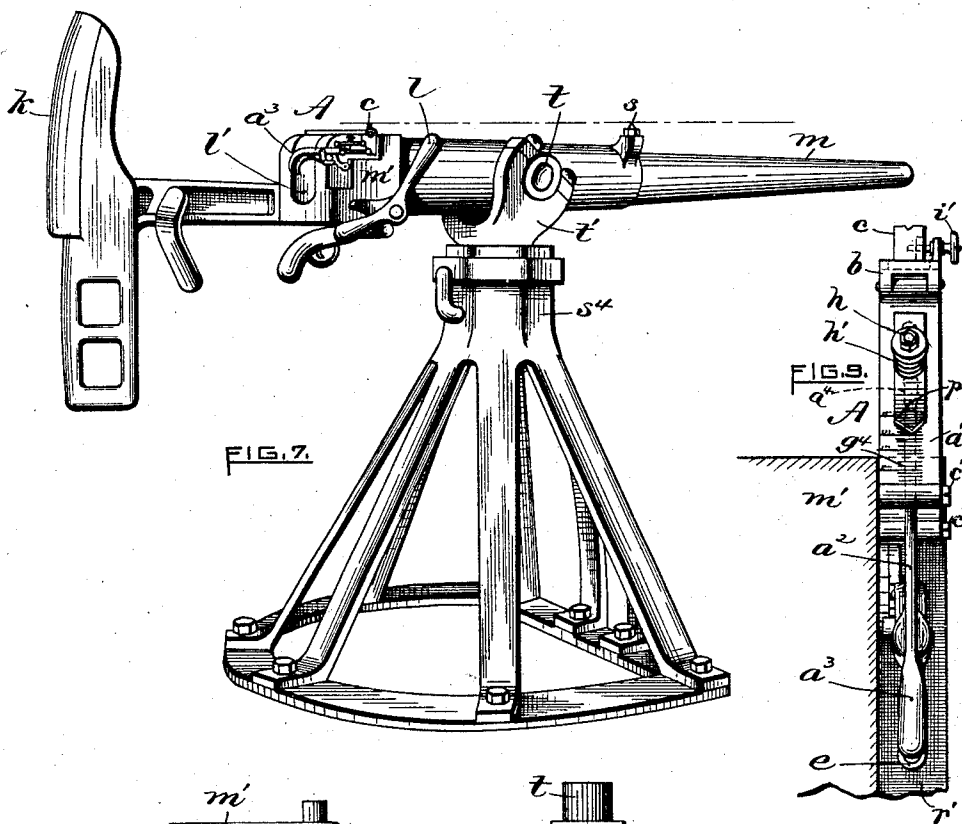


FIG. 7.

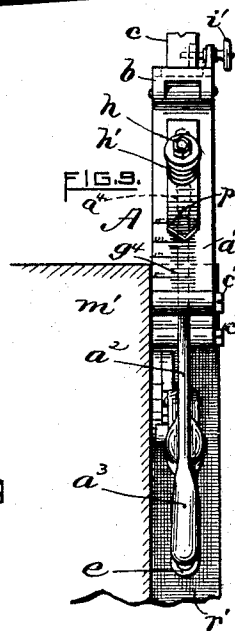


FIG. 8.

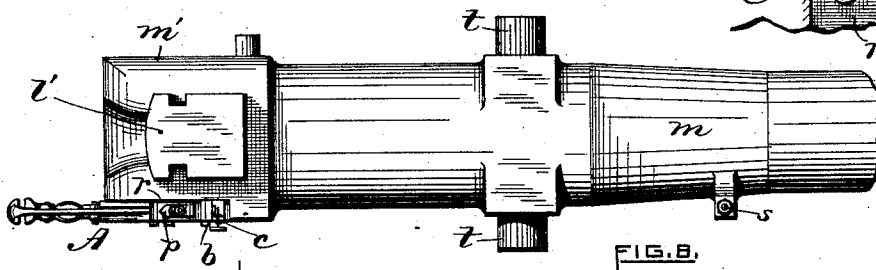


FIG. 9.

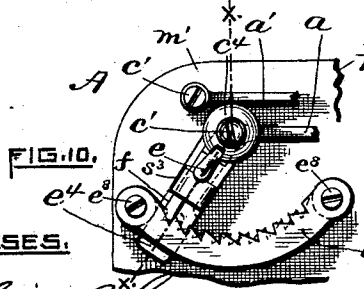


FIG. 10.

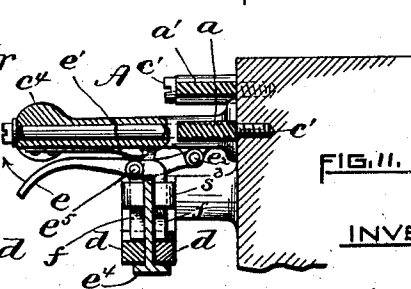


FIG. 11.

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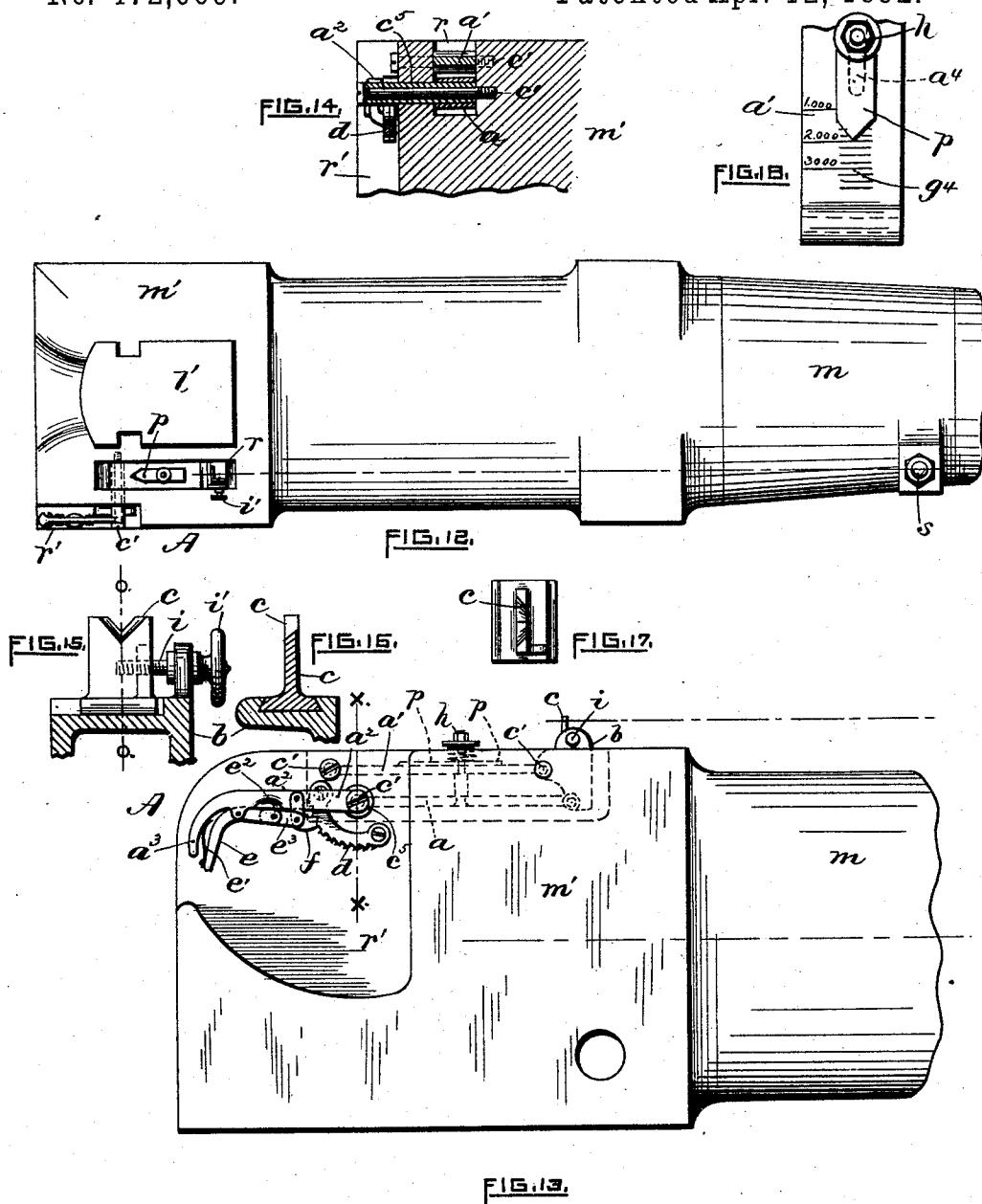
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

HORACE P. GRISWOLD, OF PROVIDENCE, RHODE ISLAND.

ADJUSTABLE SIGHT.

SPECIFICATION forming part of Letters Patent No. 472,669, dated April 12, 1892.

Application filed July 3, 1891. Serial No. 398,368. (No model.)

To all whom it may concern:

Be it known that I, HORACE P. GRISWOLD, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Adjustable Sights for Guns; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention relates more especially to "sights" for quick-firing guns; and it consists, essentially, of a sight-piece jointed to a suitably graduated or indexed parallel-motion mechanism hinged to the rear portion of the gun and means for controlling the vertical movement of the sight and retaining it in position, as will be fully hereinafter set forth and claimed.

Heretofore, so far as I am aware, gun-sights have been elevated and brought to bear upon the forward sight and object by means of adjusting screws or gearing, which process is slow, and thus much time is necessarily consumed in adjusting the gun for the range.

The object of this invention is to dispense entirely with such slow-working devices and introduce a very simple quick-acting mechanism whereby the gunner upon grasping the operating-lever at once frees the operating mechanism, and at the same time elevates the sight-block until the finger or pointer engages or corresponds with the predetermined range indicated upon the graduated face of the parallel mechanism; or, in other words, a quick-firing breech-loading gun provided with my improvement may be "sighted" with much greater facility and rapidity than guns having movable sights, as usually constructed. The double operation of adjusting or setting the sight to the desired range and elevating the forward portion of the gun to the corresponding angle may by my improvement be effected almost simultaneously—that is to say, the gunner may with one hand elevate the sight to the predetermined point or range indicated by the gage, and at the same time depress the rear portion of the gun until the

fixed and movable sights and the object or target are in the same line or range. If desired, the gun can be as readily readjusted for greater or less ranges or distances by a corresponding elevation or depression of the parts.

To properly illustrate my invention I have prepared the annexed three sheets of drawings, wherein—

Figure 1, Sheet 1, represents a perspective elevation of a breech-loading field-gun embodying my improved sight. Fig. 2 is a side elevation of the rear portion of the gun, enlarged, showing the sight-block, &c., first elevated for a given range, the axis of the gun being level. Fig. 3 is a corresponding side view, the several parts being elevated so as to bring the fixed and movable sights in line with the target. Fig. 4 is a plan view of the parts represented in Fig. 2. Figs. 5 and 6 are detached side views of right and left racks adapted when in use to lock the device in any desired position. Fig. 7, Sheet 2, is a perspective side elevation showing my improved sight as applied to another form of quick-firing gun. Fig. 8 is a plan view of the gun, showing the relation of my improved mechanism to the breech-block, &c. Fig. 9 is an end elevation of the device corresponding to the position shown in Fig. 2. Fig. 11 is a side elevation showing a modification of the handle and operating mechanism. Fig. 10 is a transverse sectional view taken on line *x x* of Fig. 10. Fig. 12, Sheet 3, is a plan view of a gun, showing my improvement mounted in recesses formed in the breech portion thereof and wholly confined within the outline of the gun when not in use. Fig. 13 is a side elevation, enlarged, of the several parts constructed and arranged as represented in Fig. 12, the links and sight-block being below the top surface of the breech and the operating-lever, rack, and pawls being located within a shallow recess in the side thereof, thus protecting them from injury when the device is not in use. Fig. 14 is a transverse sectional view taken on line *x x* of Fig. 13, showing the several parts located within their respective recesses. Fig. 15 is a sectional end elevation, enlarged, of the sight, showing means for laterally adjusting the same to compensate for windage. Fig. 16 is a vertical sectional view

of the same, taken on line *o o* of Fig. 15. Fig. 17 is a plan view of the adjustable portion of the sight; and Fig. 18 is a front elevation of the lower portion of the upper link, provided with graduations for various ranges.

The following is a more detailed description of my invention, including its construction and application.

Again referring to the drawings, A indicates my improved adjustable gun-sight as a whole and as applicable to the breech portions of field or other quick-firing guns of any class.

a' and *a* designate a pair of parallel upper and lower links, the same being of uniform length and having the rear ends thereof pivoted at *c'* to the breech portion *m'* of the gun *m* and having the sight-block *b* pivoted to the forward ends, the whole when thus mounted and arranged serving as a parallel motion to elevate the sight in a line exactly at right angles to the axis of the gun.

Mounted in the lower link *a* and central therewith is the indicator-carrying pin *h*, the same being square in cross-section and passing upwardly through the longitudinal slot *a⁴* of the top link *a'*. The pin is provided with an indicator or finger *p*, arranged to move up and down thereon in unison with the lever's movement. A spring *h'*, mounted upon the pin *h* and interposed between the nut and the face of the indicator, serves to retain the latter in position and in contact with the face of the link *a'* as it is moved longitudinally on the surface by the joint action in the arc of a circle of the two links, whose distance apart transversely varies according as the sight *b* is raised or lowered to suit any desired range. On the upper surface of the upper link *a'* are formed graduations *g⁴*, Fig. 18, &c., corresponding to different ranges, substantially as usual, to guide the gunner in accurately firing the gun.

The operating-lever *a²*, which is a continuation of the lower link *a*, terminates at its free end in a downwardly-curved handle *a³*, carrying a finger-lever *e*, held under pressure and in position by the spring *e'*. To this lever *e* is jointed at *e²* the link *e³*, which in turn is jointed to a pawl *f*, pivoted to the lever *a²*. Into the face or free end of the pawl are cut two reversely-beveled angular teeth, one being ahead of the other, to engage the curved right and left racks *d*, secured on the faces of the recesses *r r'*, cut in the breech of the gun. (See Sheet 1 of the drawings.) It will be seen that the teeth of these two ratchets or racks *d* are so cut that when in position the pitch or distance from tooth to tooth is divided, as clearly shown in Figs. 2 and 3.

The disengagement of the pawl from the rack is accomplished by grasping the levers *a³* and *e* by the hand. The pressure thus exerted acts to compress the spring *e'*, thereby depressing the forward end of the lever *e* and link *e³* and withdrawing the pawl from contact with the teeth of the racks, after which

the mechanism may be raised or lowered at pleasure, and thus bring the sight in position for any desired range.

When the hand-lever is in its normal position—*i. e.*, the pawl being in contact with the teeth of the racks—the tension of the spring *e'* serves to keep the whole in place, and further, also, by reason of the center-pin *e²* of the toggle-jointed link *e³* having passed upwardly beyond the central line of the two outer pins connecting the finger-lever and pawls.

The racks *d* are duplicates; but when located upon pins screwed into the breech of the gun the teeth of the same are reversed, thus standing oppositely from one another. This arrangement serves to lock the lever *a³* and prevent its accidental movement in either direction when the pawls *f* are in engagement with the ratchet-teeth.

At the outer extremity of the links *a* and *a'* at *c'* is jointed the sight-block *b*, the latter having a dovetailed groove formed in its upper face, in which is mounted the laterally-adjustable sight *c* proper, provided, as usual, with a V-shaped notch and forming the rear sight. This gage or sight *c* is movable laterally in order to allow for windage, the adjustment being effected by the screw *i*, operated by the small hand-wheel *i'*. (See Fig. 15, &c.) As the two links and their connected sight-block are moved downwardly by the operating-lever to the lowest position they become parallel to the axis of the gun, the face of the sight-block then being at right angles to the same by means of the "parallel motion" produced by the links *a* and *a'*. When in this position the parts are practically concealed in the recesses *r* and *r'* cut in the lateral side or face of the breech of the gun and corresponding to a point-blank range.

In applying my improvement to different classes of guns it is sometimes more convenient and desirable to confine the whole mechanism within the outline limits of the breech of the gun, substantially as represented by Figs. 12, 13, and 14, the difference in the construction being only a lateral separation or offset of the links from the operating-handle, although attached together by the bushing *c⁵*, upon the inner end of which the lower link *a*, located in the recess *r*, is secured, the whole rotating upon the corresponding pin *c'*, screwed transversely into the breech of the gun. This form of construction retains the operating-lever *a²*, with its connected lever, pawl, and ratchets, in a recess *r'*, cut in the side of the breech *m'* of the gun, while the links and sight-block are, as before stated, located in the shallow recess *r*, cut longitudinally in the top surface of the breech.

In Fig. 7 I have represented my improvement as applied to a quick-firing gun of small bore, such as is often found on ships and in fortifications, and which is adapted to be raised or lowered for range by the gunner applying his shoulder to the breech-stock *k*,

the whole being mounted upon the standard s^4 , which in turn may be secured to the deck or other surface, as usual.

Figs. 10 and 11 represent still a different form of arranging my improved sight, which I find very desirable for a certain class of smaller guns. The features of this construction are essentially the same as before described and illustrated, the only material difference being that I here have a round operating-handle c^4 projecting horizontally or in a lateral direction from the side of the breech and loosely mounted upon the pin c' , screwed into the gun. Integrally formed with or secured to this handle are the lower link a and the pendent arm e^4 , forming the guide for the double pawls f , which latter are adapted to vibrate longitudinally between the faces of the curved racks d , secured by screws e^3 to the corresponding face of the breech. The under side of the handle c^4 is recessed for a portion of its length to receive the spring e' for holding the pawls and finger-lever e under pressure, said lever e being pivotally mounted at e^2 between ears or projections cast on the handle c^4 . The pawls are vertically guided by projections s^3 and are joined at e^5 to the finger-lever. (See Fig. 11.) To operate this type of gun-sight, the gunner first grasps the handle c^4 , thereby compressing the spring and finger-lever e in the arrow direction, thus withdrawing the pawls from contact with the teeth of the racks d . He then by a rotative movement of the wrist swings the arm e^4 forward to an approximate position, thereby at the same time causing the links $a a'$, together with the sight-block, to be correspondingly elevated until the desired range is indicated by the sliding finger upon the graduated surface of the upper link. As drawn, such indication is accomplished simultaneously by the upward movement of the links and the consequent downwardly-sliding movement of the pointer or finger p , the precise point being determined when the pointer engages the line or graduation corresponding to the distance or range sought—as, for example, two thousand yards—as represented in Fig. 18. Such elevation brings the front and rear sights s and c , respectively, into proper relation, after which the axis of the gun itself is—say by means of the hand-nut w , Fig. 1, or breech-stock k —elevated until the two thus-adjusted sights are in alignment with the object or target two thousand yards distant, thus completing the operation, the gun now being ready for firing. I would state that the spring e' acts to depress the pawls f into the teeth, thereby auto-

matically locking the sight in position upon releasing the lever e .

The great advantage of my improvement is the extreme simplicity of its construction and the ease and quickness that a gun may be sighted for any given range, the last-named feature being very important in the class of quick-firing guns, and, in fact, is essential for any service.

It is sometimes necessary to provide for wind-pressure or "windage," as it is termed. Therefore in order to effect a corresponding adjustment of the sight c to neutralize its effect upon the ball the sight must be moved in a lateral direction. Such lateral adjustment may be effected by means of the screw z , tapped into the sight-block, the same being readily turned by the hand-wheel z' , secured thereto. (See Fig. 16.)

I claim as new and desire to secure by United States Letters Patent—

1. In a gun, the combination of a forward sight, a rear sight, parallel-motion mechanism jointed to the rear sight and attached to the gun, and an operating-lever or equivalent means whereby the sight may be moved up and down, substantially as hereinbefore described, and for the purpose set forth.

2. The adjustable gun-sight, substantially as hereinbefore described, consisting of parallel links adapted to be jointed to the gun, a sight-carrying block jointed to the opposite ends of the links, an indicator attached to and moving in unison with the links, and means for vibrating the links and securing them in position.

3. The combination, with a pair of parallel links adapted to be jointed to the breech of a gun and a sight c , adjustably mounted in a block jointed to the other ends of the links, of toothed segments also adapted to be secured to the gun, pawls arranged to engage said teeth, and an operating handle or lever carrying the pawls and attached to the links, substantially as described.

4. In a gun of the class hereinbefore described, a graduated or indexed parallel-motion mechanism hinged to the rear portion of the gun, a sight-piece jointed to said parallel mechanism, and means for controlling the vertical movement of the sight and retaining it in position, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

HORACE P. GRISWOLD.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.