

No. 694,904.

Patented Mar. 4, 1902.

W. YOULTEN,
SIGHTING DEVICE FOR FIREARMS.

(Application filed May 13, 1901.)

(No Model.)

4 Sheets—Sheet 1.

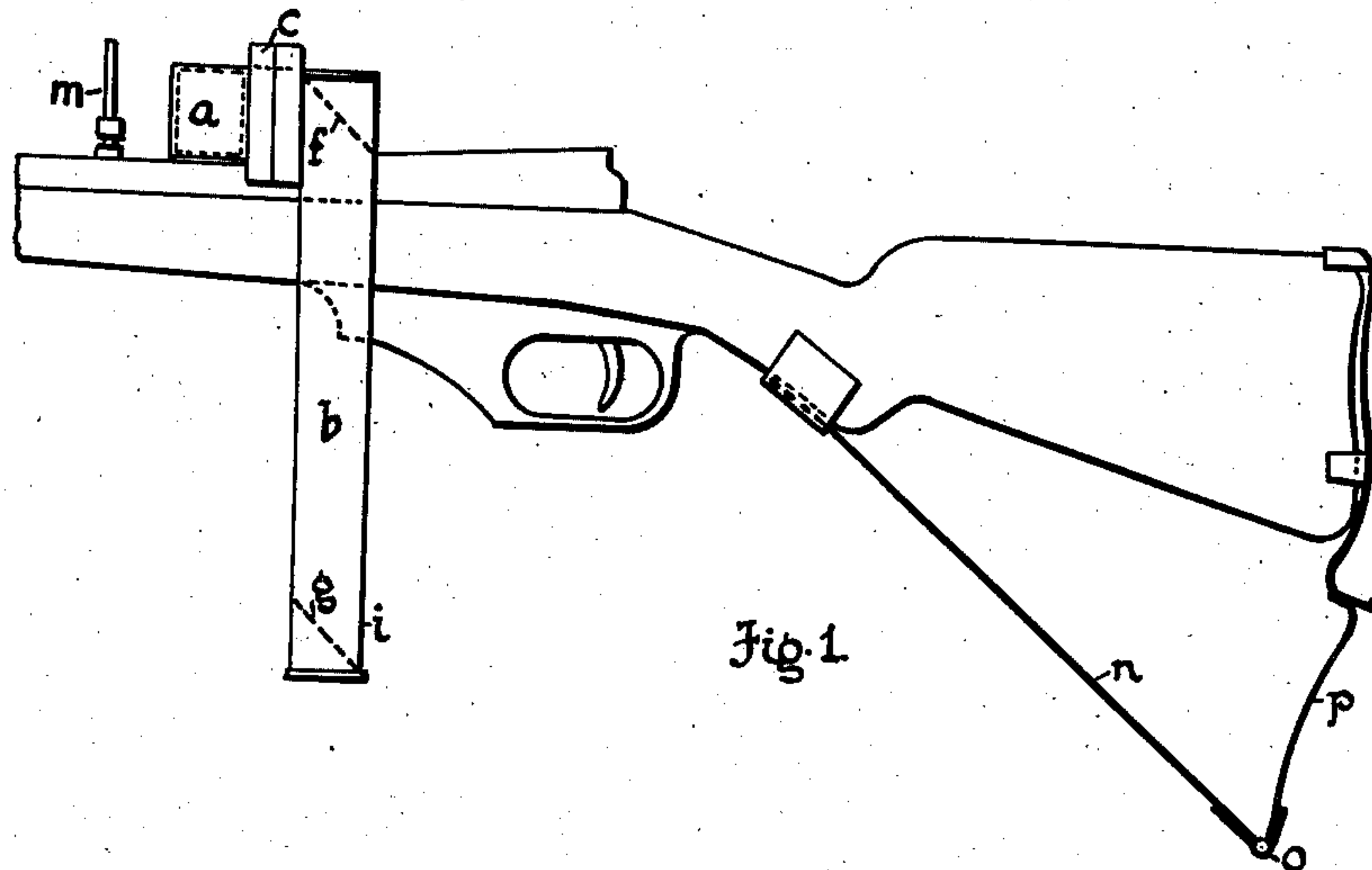


Fig. 1.

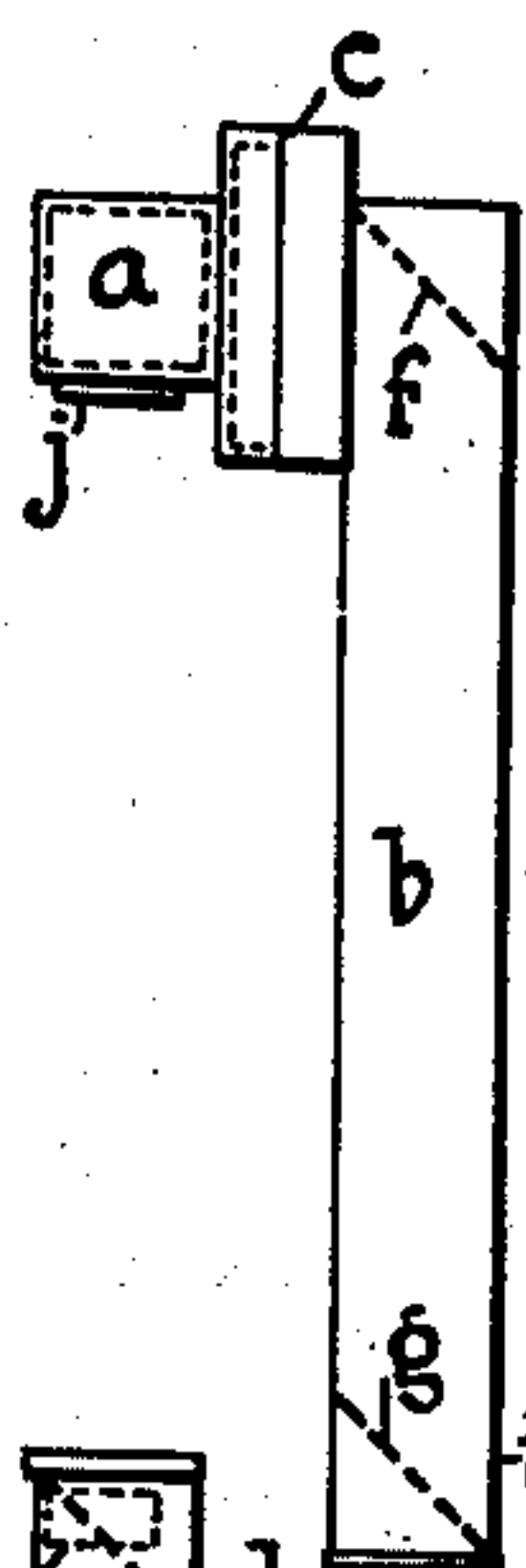


Fig. 3.

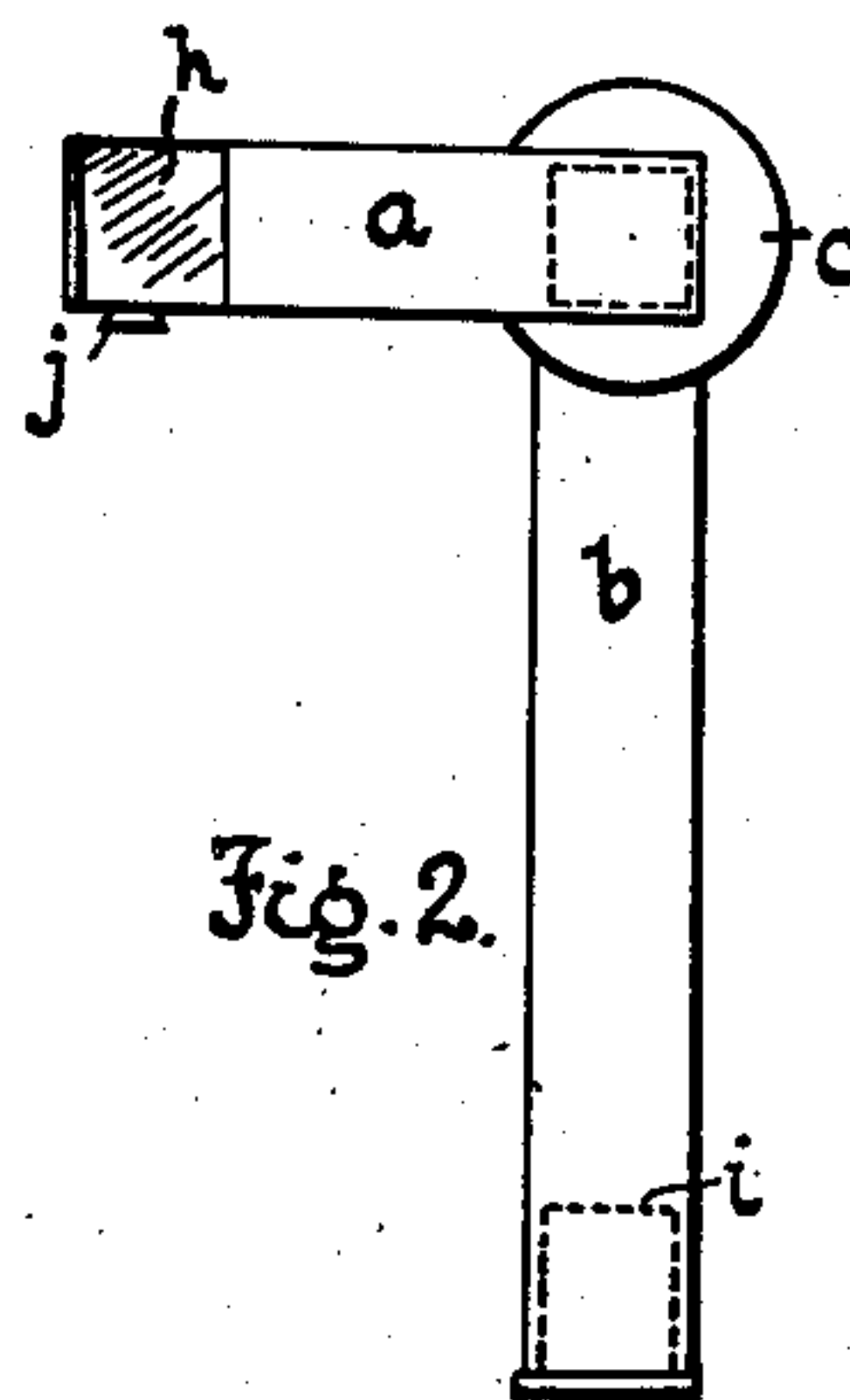


Fig. 2.

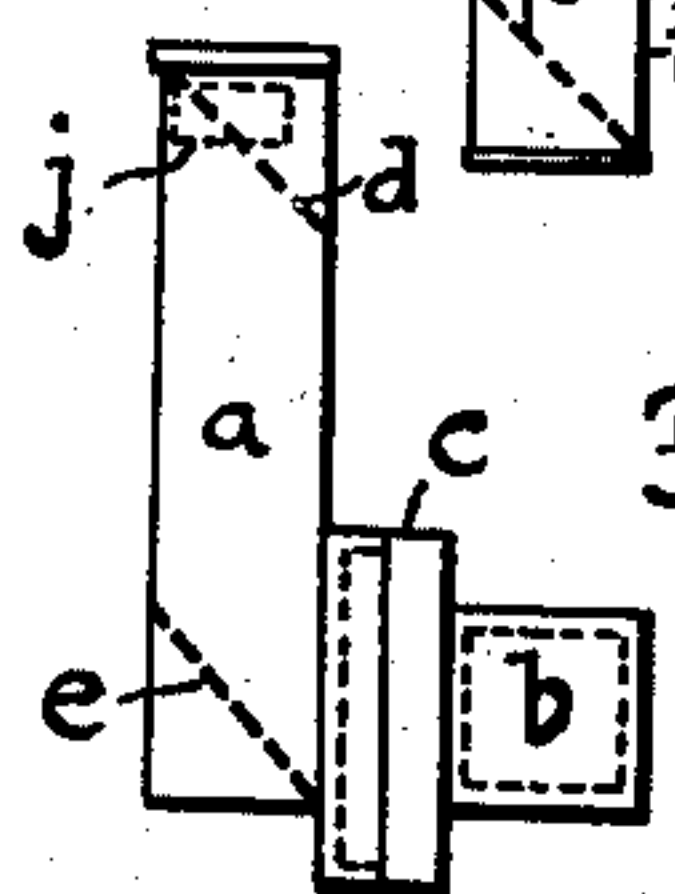


Fig. 4.

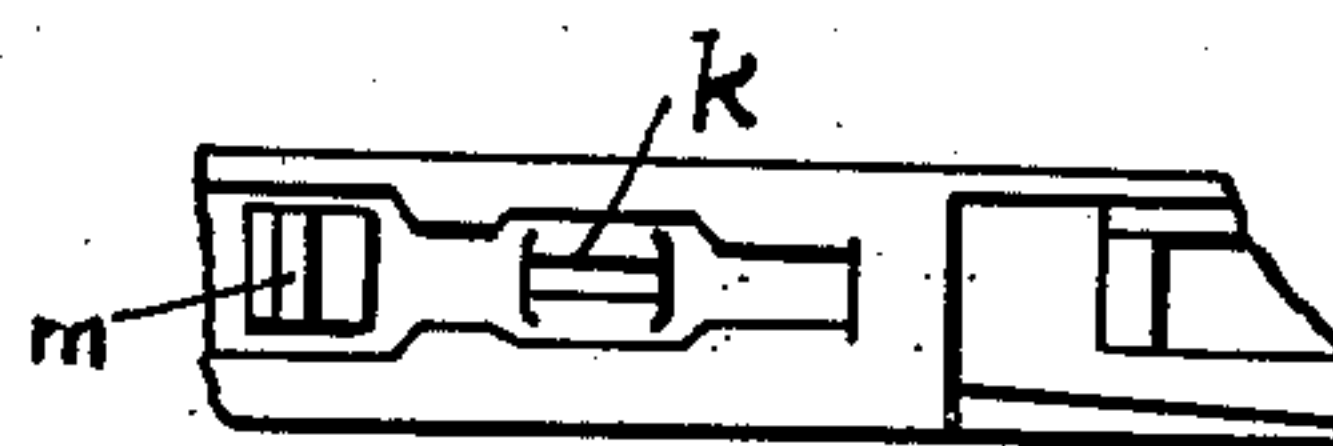


Fig. 5.

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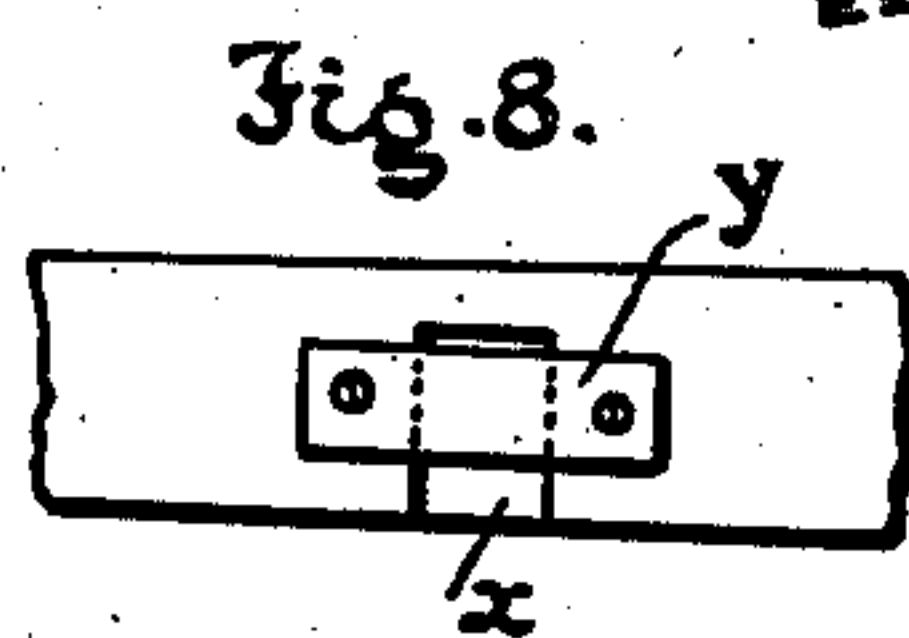
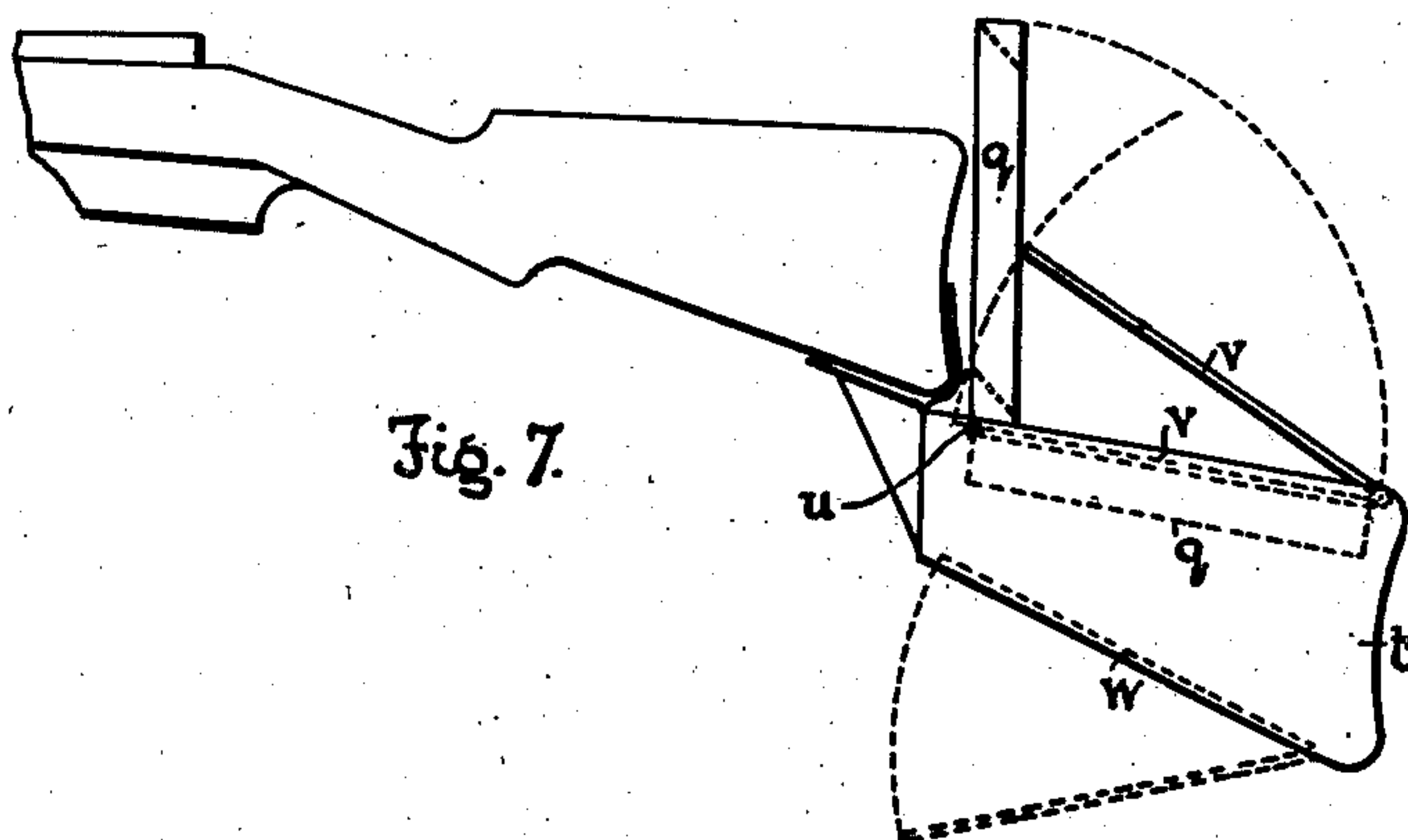
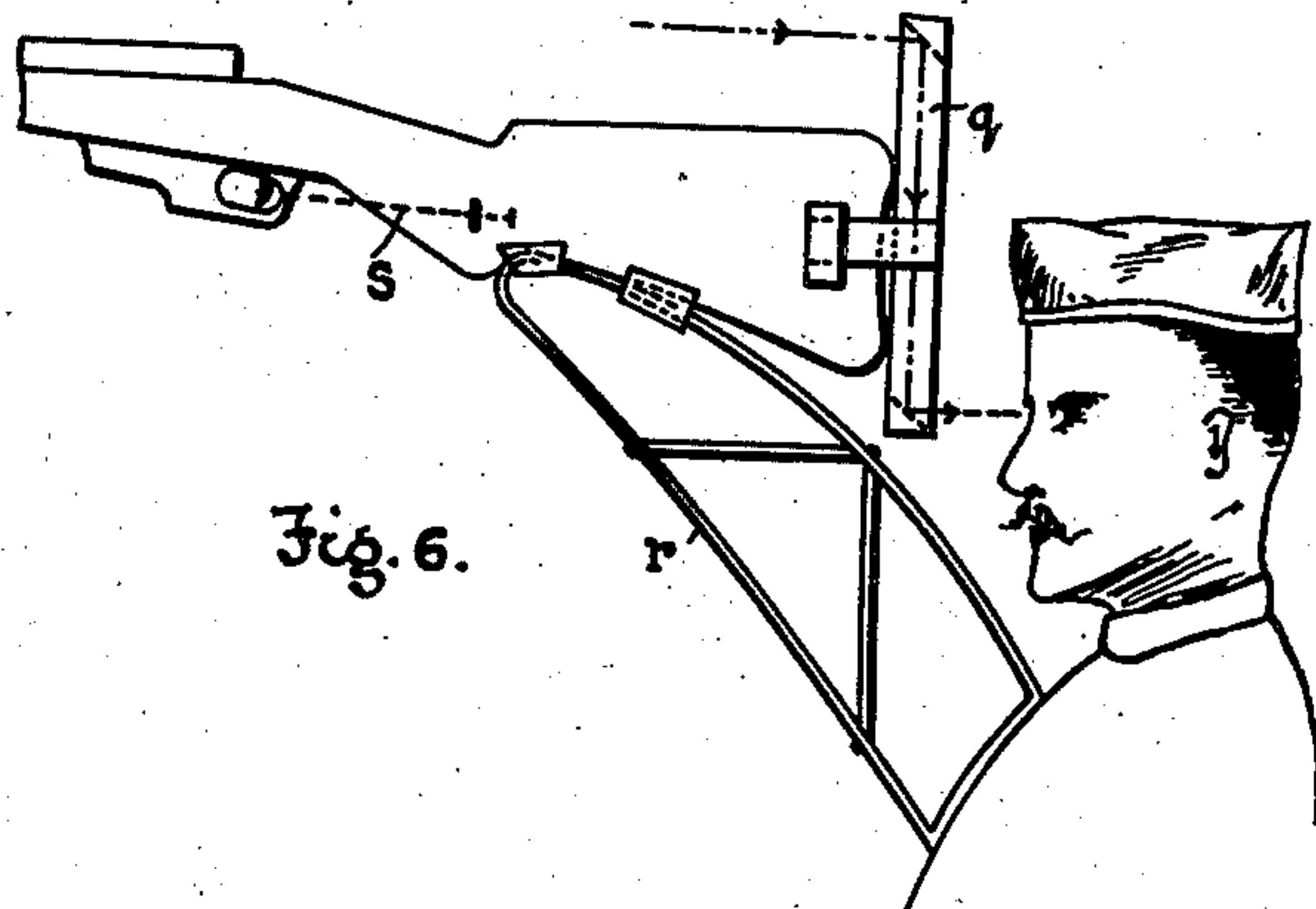
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(Application filed May 13, 1901.)

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4 Sheets—Sheet 2.



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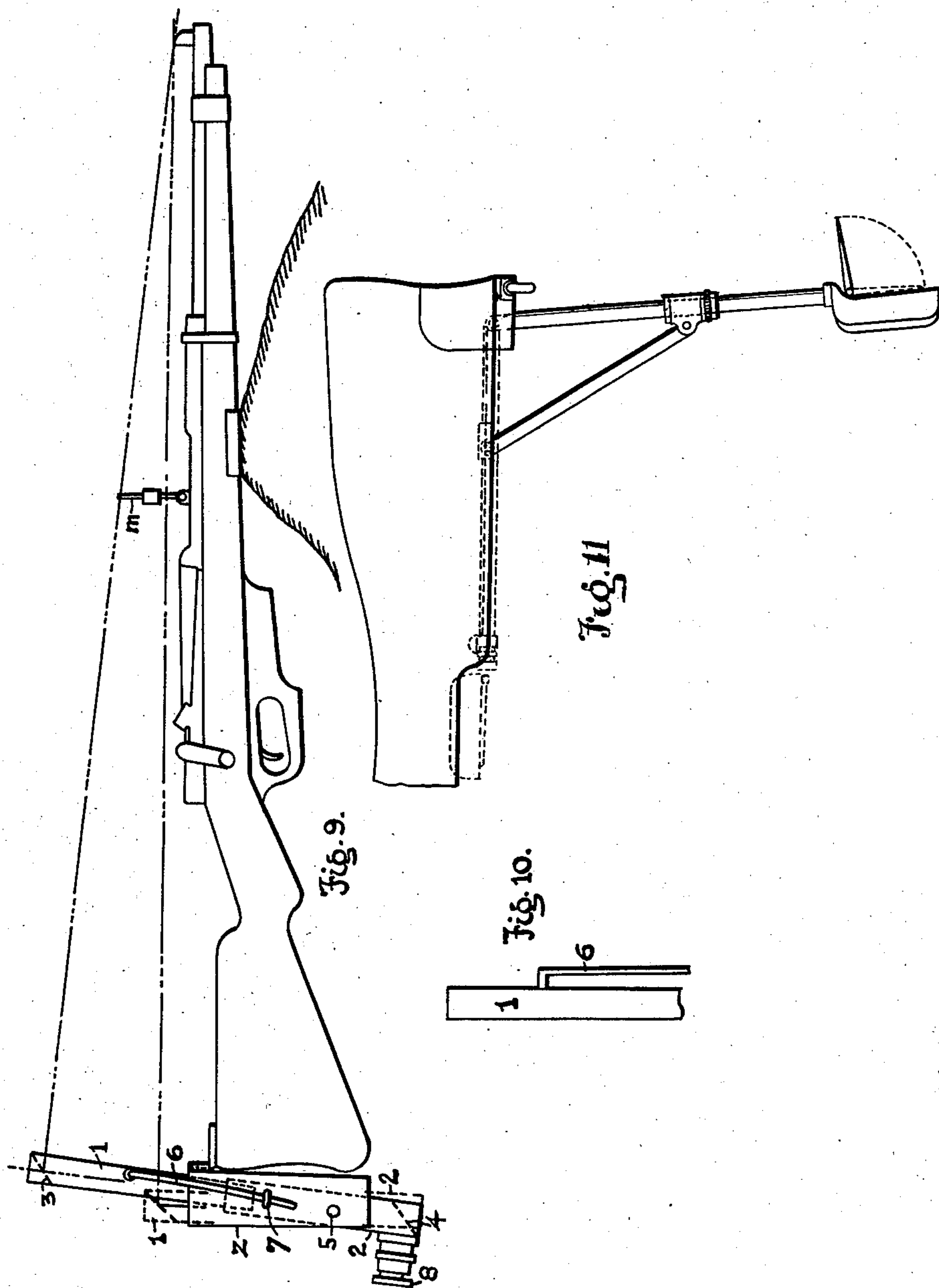
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(Application filed May 13, 1901.)

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4 Sheets—Sheet 3.



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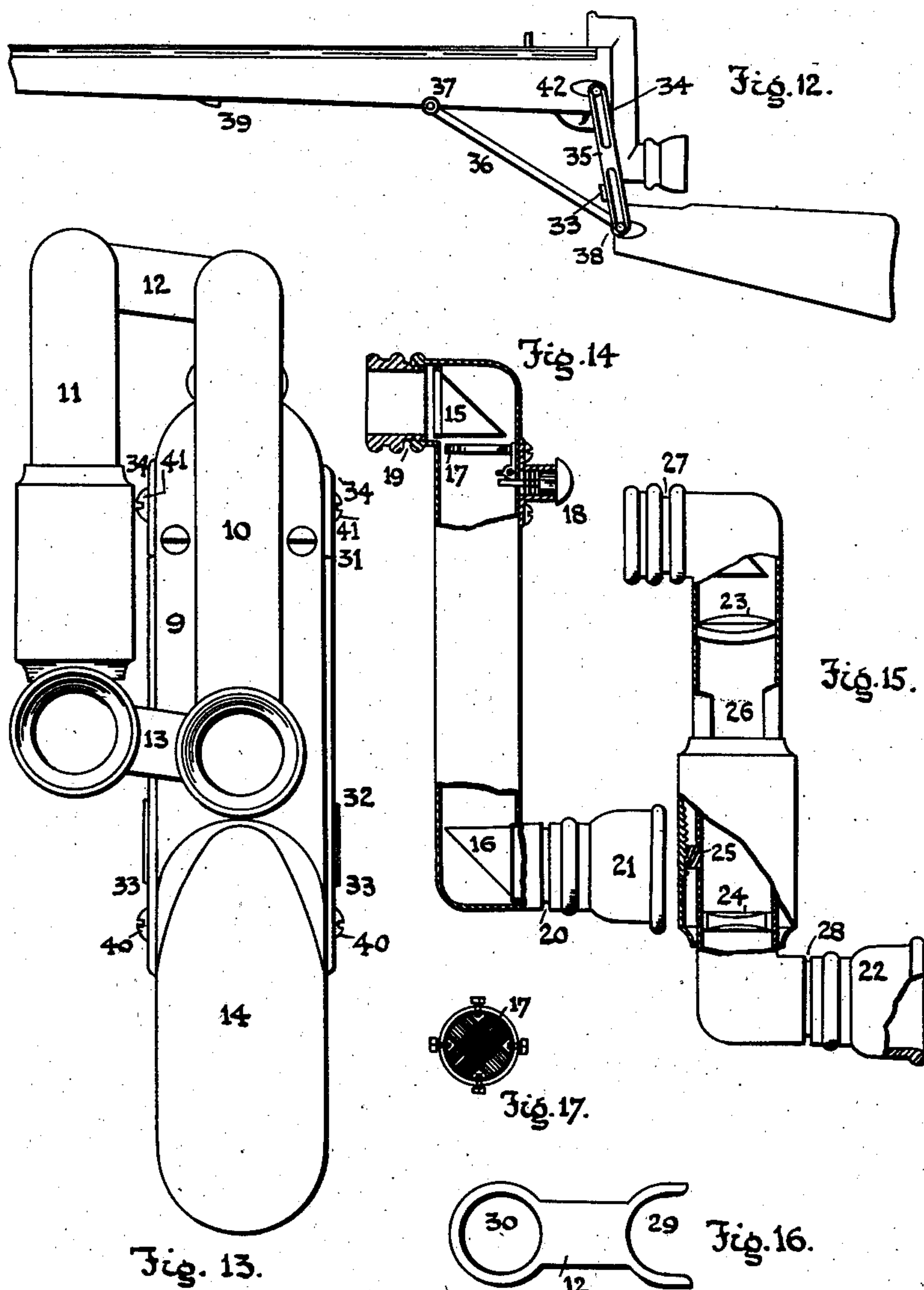
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SIGHTING DEVICE FOR FIREARMS.

(Application filed May 13, 1901.)

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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

WILLIAM YOULTEN, OF WESTMINSTER, ENGLAND.

SIGHTING DEVICE FOR FIREARMS.

SPECIFICATION forming part of Letters Patent No. 694,904, dated March 4, 1902.

Application filed May 13, 1901. Serial No. 60,114. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM YOULTEN, a subject of the King of Great Britain and Ireland, residing at 159 Victoria street, Westminster, in the county of London, England, have invented Improvements Relating to the Sighting of Rifles and other Firearms, of which the following is a specification.

This invention relates to an improved reflecting instrument by the use of which certain well-known principles in the science of optics are adapted to the sighting of rifles, small-arms, machine-guns, and the like from behind walls, boulders, and the like without the gunner being exposed to the view of the enemy.

According to this invention I mount two or more mirrors or other reflecting-surfaces in a tube or otherwise in such a manner that the first of these reflecting-surfaces may come behind the sights and in the line of aim of the gun, while the last reflector comes in front of the gunner's eye and enables him to aim the gun without exposing himself to the enemy's fire.

In order that my invention may be understood, I will describe several ways of applying it to a rifle.

Figure 1 shows an elevation of rifle, illustrating one method of attaching the reflecting instrument. Fig. 2 is a front elevation of the reflecting instrument shown at Fig. 1. Fig. 3 is a side elevation of the same instrument, and Fig. 4 is a plan of same; Fig. 5, a plan of part of rifle shown at Fig. 1. Fig. 6 shows a modification of the manner of attaching the reflecting instrument to a rifle. Fig. 7 shows a further modification. Fig. 8 shows a detail hereinafter referred to. Fig. 9 is an elevation showing a fourth method of fitting the instrument to a rifle. Fig. 10 shows a detail hereinafter referred to. Fig. 11 shows the construction of rifle-butt which I prefer to employ. Fig. 12 shows a rifle cut through the stock behind the lock and fixed in the cranked form in order to facilitate the application of the reflecting instrument. Fig. 13 is a back view of same on a larger scale. Figs. 14 and 15 show modified forms of the reflecting and telescopic instruments, respectively. Figs. 16 and 17 show details hereinafter referred to.

With reference to Figs. 1 to 5 the reflecting instrument is shown made in two parts *a* and *b*, fitting together by means of cylindrical flanges or projections at *c*. *a* and *b* are tubes square in cross-section. The tube *a* contains two mirrors *d e*, Fig. 4, and the tube *b* two mirrors *f g*. Each tube has an aperture, the aperture *h* in the tube *a* being for the admission of the rays of light from the object aimed at and the aperture *i* in the tube *b* for the emission of such rays after reflection from the mirrors *d, e, f*, and *g*. A dovetail projection *j* is formed on the under side of the tube *a*. This projection slides in the groove *k* on the rifle, (see Fig. 5,) thereby holding the reflecting instrument near the back sight *m*. *n* and *p*, Fig. 1, show two strips of metal hinged together at *o* and attached to the butt of the rifle by clips. The part *p* forms a false butt to rest against the shoulder of the person using the rifle. The strips *n* and *p* are readily detached from the rifle and packed in a small compass.

With reference to Fig. 6 the reflecting instrument is shown attached in a vertical position to the butt of the rifle. The instrument in this case consists of a single tube *q*, provided with two parallel mirrors aforesaid. *r* shows a skeleton butt attached to the rifle by clips, enabling the marksman to take the recoil of the rifle upon his chest. *s* shows a wire proceeding from the trigger, so that the marksman may fire the rifle by pulling on the wire *s* instead of having to reach to the trigger.

With reference to Fig. 7, *t* shows a false butt suitably clipped to the butt of the rifle. This false butt *t* is in the form of a box, and the instrument *q* is contained in this box, being hinged at *u*, so that upon raising the lid *v* the said instrument may be swung up into a vertical position, as shown in the figure. The bottom *w* of the box is also hinged, so that the said box may be used to contain other articles. The lid *v* may be used to support the instrument when raised. In this case an aperture would be provided in the said lid *v* for the purposes of observation.

In Fig. 8, *x* shows a slot or groove cut in the rifle, and *y* shows a metal plate fixed over such slot or groove. This forms a means for attaching the reflecting instrument to the

rifle, a projection from the instrument fitting tightly in the slot x .

With reference to Fig. 9, which shows another method of applying the instrument, z shows short tube or socket attached in a vertical position behind the butt of the rifle. 1 and 2 are telescopic tubes, the tube 1 being provided with a mirror 3 at its outer end and the tube 2 with a mirror 4. The lower tube 2 is pivoted at 5 to the socket z . 6 is a curved rod fixed to the tube 1 and projecting therefrom, as shown in side view at Fig. 10. The curve of the rod 6 is very slight, and in practice an inclined straight rod may be employed. 7 shows an eye or ring fixed to the socket z . The rod 6 works in the eye 7. 8 shows a small telescope attached to the tube 2 at the emission-aperture opposite to the mirror 4. In order to adjust the instrument to various ranges, the telescopic tube 1 is raised or lowered in the tube 2, and at the same time the rod 6, engaging in the fixed eye 7, cants the tubes 1 and 2 over about the pivot 5, thus keeping the center line of the instrument always at right angles to the line of aim. The socket z must be attached to the butt of the rifle in such a way that when the reflecting instrument is telescoped down into its lowest position the center line of the said instrument shall be at right angles to the line of aim for the shortest range. To effect this, I mark lines on the butt of the rifle and other lines on the sides of the socket, and in placing the socket in position I adjust the said socket so that the lines on the butt and socket are parallel, or other means may be employed to effect this object.

In the case of an instrument fitted to the rifle in the manner shown at Fig. 9 I propose to mark the scale of ranges on the instrument to show where the telescopic tubes must be set for a given range. The use of such a scale would enable the back sight to be dispensed with. Apertures are in each case provided in order that the rays of light may enter and leave the instrument. When the instrument is applied to the butt of the rifle, a suitable skeleton butt, such as that shown at Fig. 6 or such as the folding projection shown at Fig. 11, is provided in order that the marksman may take the recoil either upon the chest or shoulder. The extending or false butt shown in Fig. 11 folds into a groove in the under side of the rifle, as indicated in dotted lines in the figure referred to.

With reference to Figs. 12 to 17, 9 shows a plate, preferably of steel, to which the sighting-glass 10 is fixed. 11 is a telescopic or single-barrel field-glass attached to 10 by the pieces 12 and 13. 14 is the butt-end of the stock. 15 and 16 are prismatic reflectors, such as are used in the best long-distance field-glasses, by the use of which in turning an angle there is no error of refraction, and the loss of illumination is considerably less than five percent. 17 is a metal ring (shown detached in front view at Fig. 17) placed behind the

prismatic reflector 15. The ring 17 is formed with a fine-wire grid, as shown, and it will be obvious that the fixed point-blank back sight of the rifle will be exactly in line with the front sight on an undefined position on the reflector. The fine grid seen through from the center of the eyepiece will show that spot through the grid at a rather uncertain relative position with the intended zero-point—say the lower angle of one of the squares in the grid at or near the bottom of the vertical diagonal line of squares. This relative position is converted into the coincident position by adjusting the grid to it. This may be done by the maker of the apparatus by means of accurate measurement, or if the ring is fixed in the tube by means of four screws tapped into the ring after passing through four plain holes in the tube (which is slightly larger in diameter than the ring) the ring 17 can be readily adjusted, so that the intended "point-blank" point of sight on the grid is regulated to the actual coincidence of the two sights on the barrel. This once done will enable the marksman to ignore the adjustable back sight on the rifle and simply elevate or lower the stock as many squares as will bring the object the proper number of squares above zero or point-blank spot to correspond with the known or indicated range. The indication of range is approximately given by the relative size of a man, for example, compared with the size of the squares. The horizontal lines of squares will serve in a similar manner for making the requisite allowance for wind. 18 shows a knob or button by means of which the wire grid 17 may be dropped clear as its normal position, and interposed between the eye and the object (or sights on the barrel) when desired by pressure of the thumb while the forefinger is in command of the trigger. The annular grooves 19 and 20 receive the two connecting-pieces 12 and 13. Fig. 16 shows the shape of these connecting-pieces. 21 and 22 show flexible india-rubber eyepieces, which if quite flexible and of suitable diameter—say one and a half inches—will be sufficient protection against concussion, provided the rifle butt-end is brought well up against the shoulder.

With reference to the telescopic finder shown at Fig. 15 the achromatic object-lens 23 and the double-concave eyepiece-lens 24, if of the best make, are all that is necessary for magnifying power and good definition up to, say, two thousand yards; but a complete telescopic series for a "one-draw" action may be used. This, like the sighting-glass shown at Fig. 14, is all in one piece in outward appearance, as the piece of toothed rack 25, fixed to the inner tube which carries the "oculaire" (double-concave) lens and the inner screw-thread on the outer section of tube, are out of sight in the real instrument; but the wide gap (shown at 26) in the main tube allows the movable inner tube to show through

the wide gap (which is covered dust-tight by a piece of transparent celluloid or the like) as the glass needs focusing to ranges of five hundred yards and upward and the divisions of focal distances on the marked scale come into view through the celluloid-covered gap. 27 and 28 are annular grooves similar to those marked 19 and 20 in Fig. 14; but I propose to modify the method of fixing. The pieces 12 and 13 are shown in Fig. 16 as having one end gapped out, (29.) The ends 30 are permanently attached to the telescopic glass, Fig. 15, at 27 28; but the ends 29 are slipped into the grooves 19 20, Fig. 14, and held tight by a half-turn of the screw-nozzle, thus enabling the rifleman to instantly unship and pocket the glass when occasion requires.

Referring again to Figs. 12 and 13, it will be seen that the plate 9 is the connecting and supporting base to which all the pieces named are attached. It is about one-sixteenth inch thick with a side edging about one-eighth inch wide turned over at right angles toward the barrel from 31 to 32 to stiffen and give rigidity to the crank fittings. The portions 33 and 34 not turned over form lugs, 34 forming front stays and 33 forming back stays pressing against the front of the slotted side pieces 35, Fig. 12, at 34 and at the back at 33. The angle stay-rod 36, Fig. 12, hinges at 37 and is forced into a spring-socket at the back of the plate 9 at 38, and when the cranking-gear is upset 36 folds back into a groove in the stock and is held close by a spring-clutch at 39. The slotted side pieces 35 are hollowed and feather-edged toward the stock and by the loosening of the screws 40 and 41 about two turns the bottom end of the plate 9 drops into a slight narrow gap between a steel face-plate and the wood at the front end of the butt, and the lugs 33 pass behind the slotted side pieces 35. The screws 40 41 are then turned home nearly tight and the stay-rod 36 is pressed into the spring-socket on the plate at 38, and the screws are turned tight home. The plates covering the cross-sections of the stock on the barrel end and butt-end, respectively, have side earpieces at 42, Fig. 12, turned over at right angles on the stock to help to give strength and rigidity to the whole.

The method of applying this invention to machine-guns is similar to that heretofore described for rifles, the only alterations being those of detail.

For use when required I provide a slide of violet or other suitably-tinted glass to cover, say, the aperture, in order to prevent the flashing of the mirror when the sun's rays are upon it and to enable the position of guns using smokeless powder to be readily located by increasing the visibility of the flash.

What I claim, and desire to protect by Letters-Patent, is—

1. In a small-arm, the combination with a rifle or the like; of an attachment secured

near the rear end thereof and adapted to move therewith, reflecting devices carried by said attachment, one of said reflectors being in line with the object, and a second reflector below the first, upon which the object is to be observed, substantially as described.

2. In a small-arm, the combination with a rifle or the like; of an attachment secured near the rear end thereof and adapted to move therewith, reflecting devices carried by said attachment, one of said reflectors being in line with the object, a second reflector below the first, upon which the object is to be observed, and an extension or false butt secured to the rear end of the rifle and extending downwardly therefrom, substantially as described.

3. In a small-arm, the combination with a rifle or the like; of an attachment secured near the rear end of the rifle and adapted to move therewith, a reflector mounted in the upper part of said attachment, in line with the sights of the rifle, and a second reflector mounted below the first upon which the image is to be observed, substantially as described.

4. In a small-arm, the combination with a rifle or the like; of an attachment secured near the rear end of the rifle and adapted to move therewith, a reflector mounted in the upper part thereof in line with the sights of the rifle, a second reflector mounted below the first, upon which the image is to be observed, and an extension or false butt secured upon the end of the rifle-stock forming a shoulder below the stock of the rifle, substantially as described.

5. In a small-arm, the combination with a rifle or the like; of an attachment detachably secured to the rifle behind the rear sight, a reflector mounted in the upper part of said attachment in line with the sights of the rifle, and a second reflector mounted below the first upon which the image is to be observed, substantially as described.

6. In a small-arm, the combination with a rifle or the like; of an attachment detachably secured to the rifle behind the rear sight, a reflector mounted in the upper part of said attachment in line with the sights of the rifle, a second reflector mounted below the first upon which the image is to be observed, and an extension or false butt detachably secured upon the rear end of the rifle and forming a shoulder-rest below the stock of the rifle, substantially as described.

7. In a small-arm, the combination with a rifle or the like, and the sights carried thereby; of a perforated tube or casing detachably secured to the firearm, and oppositely-disposed reflectors within said casing, one of said reflectors being in a direct line with the sights of the rifle, and the other below the first reflector, substantially as described.

8. In a small-arm, the combination with a rifle or the like, and the sights carried thereby; of a perforated tube or casing, oppositely-

disposed reflectors within said casing, and means for detachably locking said casing to said firearm, substantially as described.

9. In a small-arm, the combination with a
5 rifle or the like, and the sights carried thereby; of a tube or casing, adapted to be detachably locked upon said firearm, an upper reflector mounted in said casing in line with

said sights, and a lower reflector also mounted in said casing beneath the upper reflector, 10 upon which the image in line with the sights may be observed, substantially as described.

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