

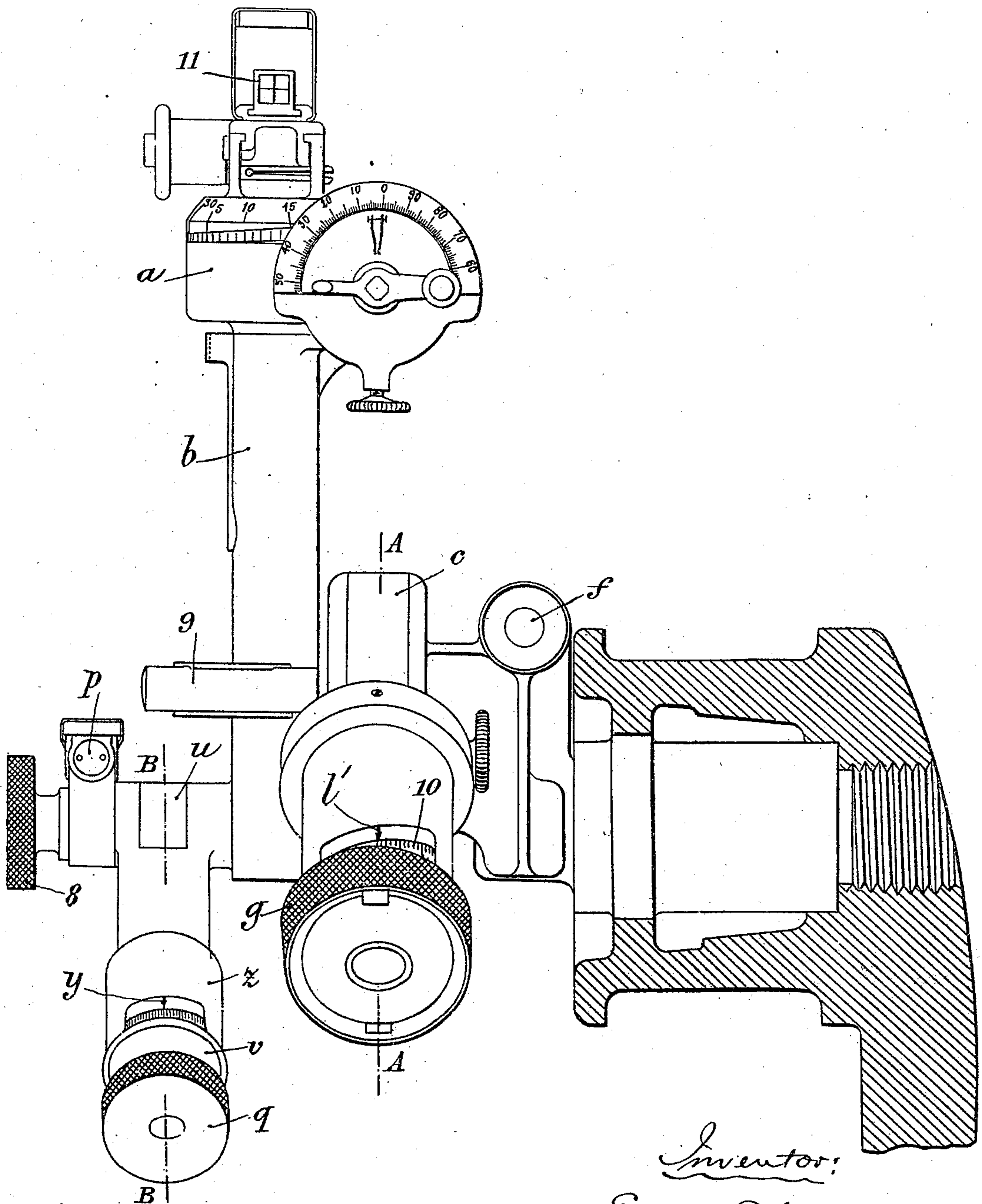
E. SCHNEIDER.
SIGHTING APPARATUS FOR GUNS.
APPLICATION FILED OCT. 22, 1907.

952,363.

Patented Mar. 15, 1910.

5 SHEETS—SHEET 1.

Fig. 1.



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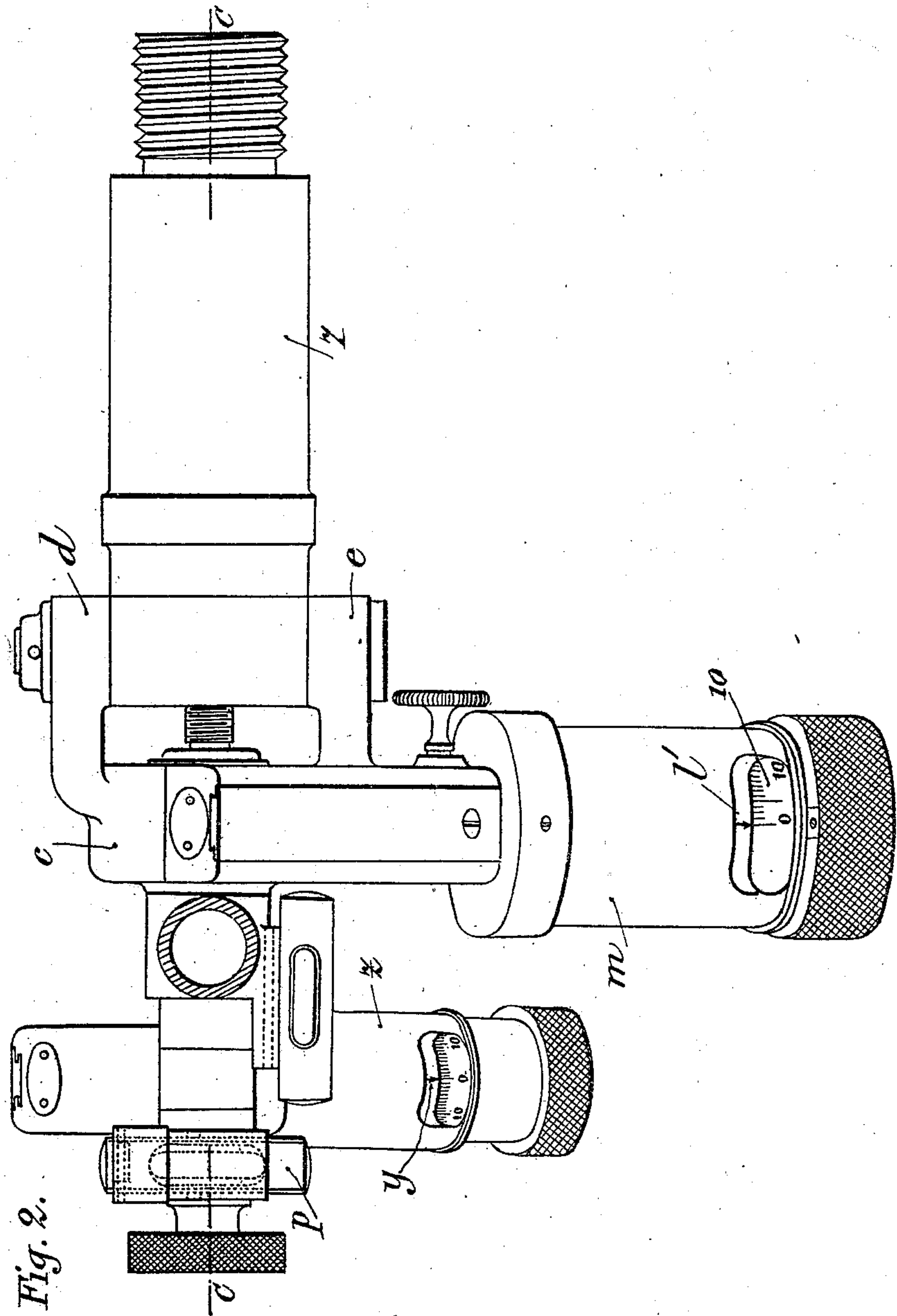


Fig. 2.

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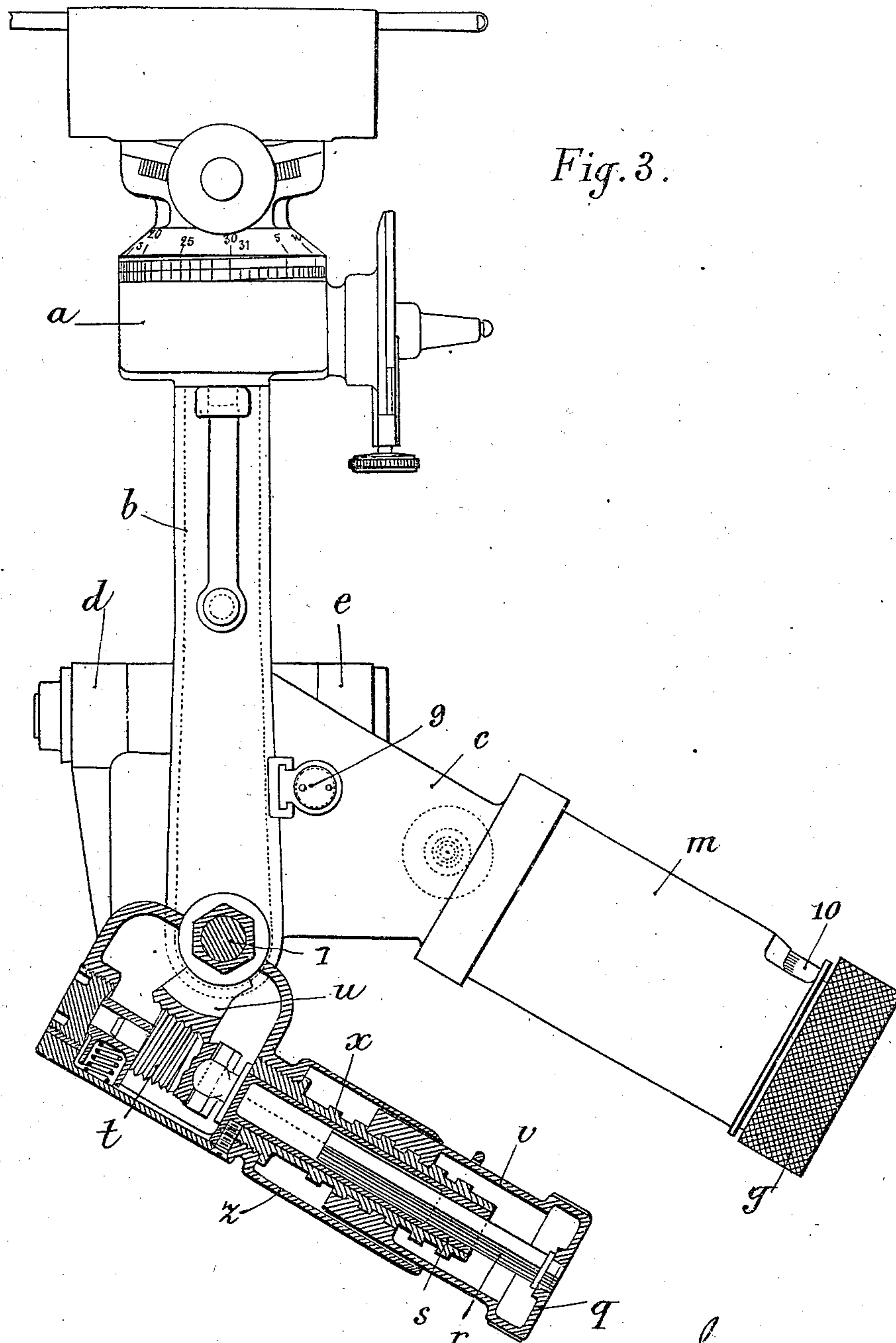
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5 SHEETS—SHEET 3.



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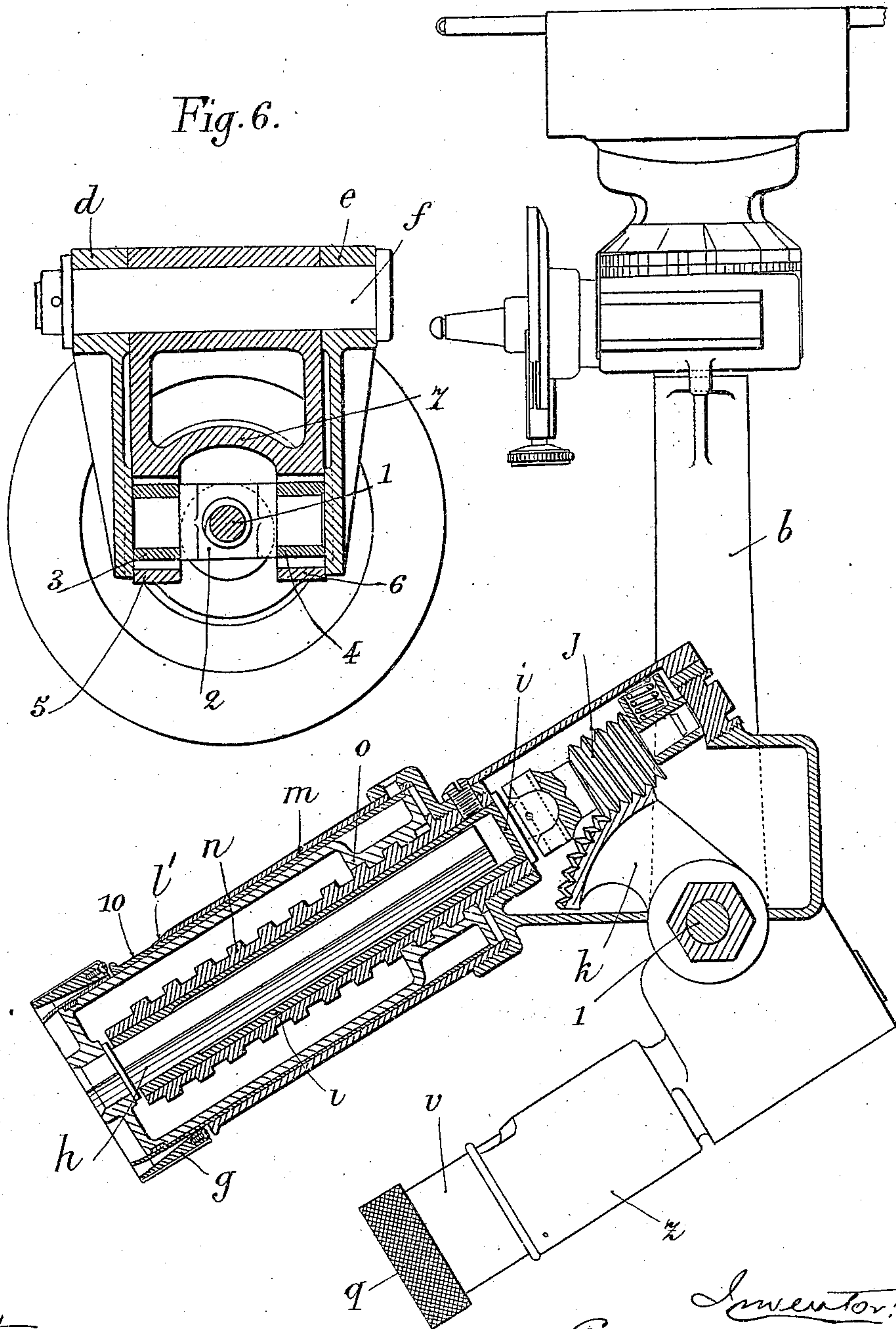
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5 SHEETS—SHEET 4.

Fig. 4.

Fig. 6.



Witnesses:-

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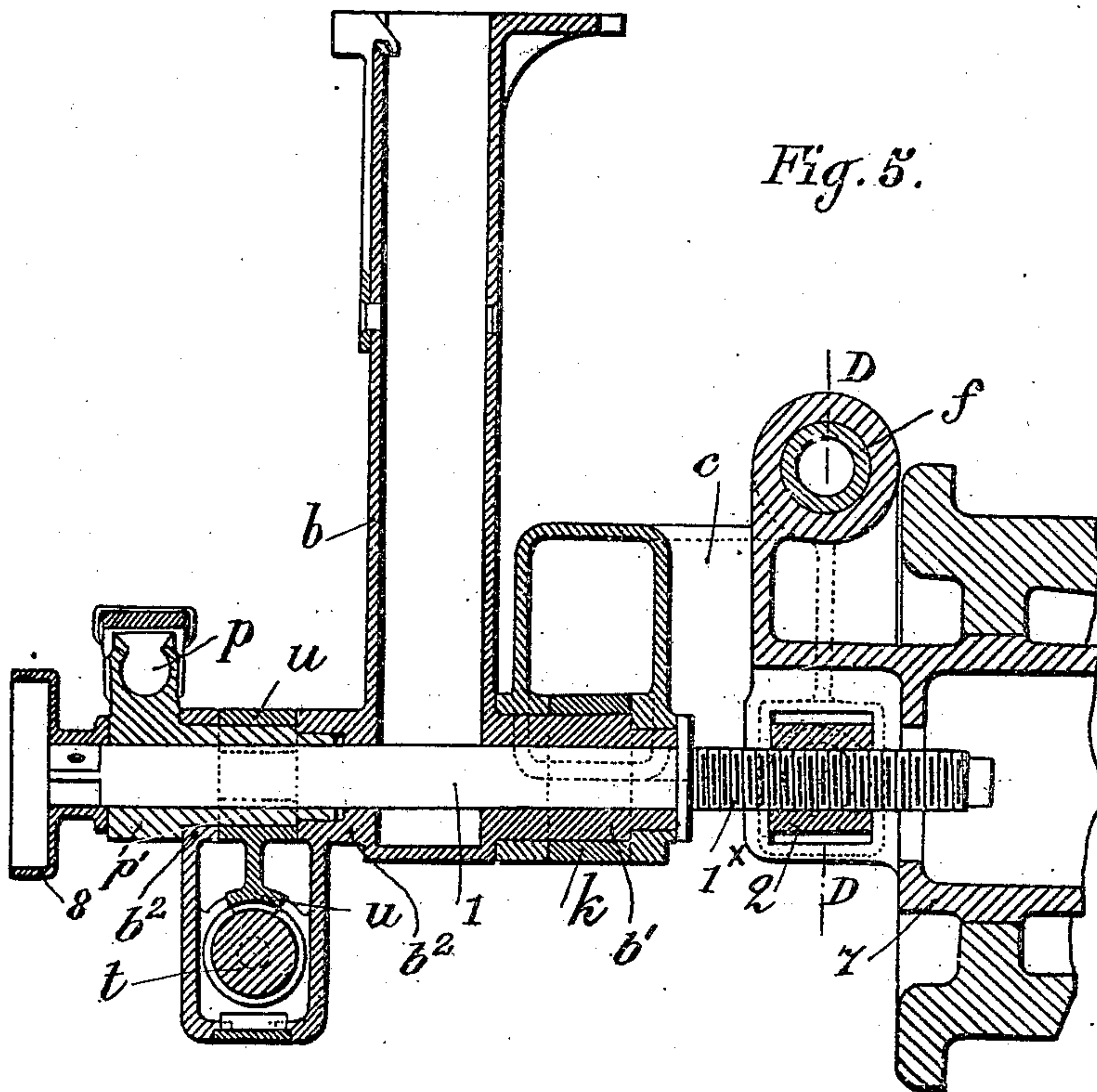
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UNITED STATES PATENT OFFICE.

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SIGHTING APPARATUS FOR GUNS.

952,363.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed October 22, 1907. Serial No. 398,555.

To all whom it may concern:

Be it known that I, EUGÈNE SCHNEIDER, citizen of the Republic of France, residing at Le Creuzot, Saône-et-Loire, France, have invented certain new and useful Improvements in Sighting Apparatus for Guns, of which the following is a specification.

Ordinary sighting apparatus composed of a back sight and a front sight attain considerable dimensions when fitted to guns firing at very large angles. They are not readily adapted to the reception of the number of graduations necessitated by the different charges employed with howitzers and mortars.

The object of the present invention is to provide a device which performs all the operations of the ordinary sighting apparatus but requires fewer parts and is more compact.

Figure 1 is a rear elevation of the mechanism mounted on the trunnion of a gun; Fig. 2 is a corresponding plan; Fig. 3 is an elevation partly in section on the line B—B of Fig. 1; Fig. 4 is a sectional elevation on the line A—A of Fig. 1; Fig. 5 is a section on the line C—C of Fig. 2; and Fig. 6 is a section on the line D—D of Fig. 5.

The device comprises the following principal parts: A goniometer *a*, of known arrangement, with reticulated lens or collimator 11; a goniometer support *b* carrying the mechanism for the correction for the angle of site described hereinafter; this support *b* is characterized by having at one side a hub *b'* revoluble on an axle *l* parallel with the trunnions of the cannon and being provided with a toothed sector controlled by a graduated drum serving to give angles of fire; the same support on the opposite side has a socket *b²* receiving a sleeve *p'* provided with a level carrier *p* and a toothed rack *u* controlled by a graduated drum *v* serving to effect corrections for angles of site. A frame *c* carrying the before-mentioned parts is provided with mechanism permitting the giving of angles of elevation corresponding to the ranges that it is desired to attain.

The frame *c* is articulated upon the gun carriage by means of two lugs *d*, *e* and of a

shaft *f* arranged parallel with the axis of the gun. The mechanism carried by this frame is of such construction that, by turning the milled knob *g* with its square shaft *h* (Fig. 4), a rotary movement is imparted to a sleeve *i* and the endless screw *j* actuated. This endless screw, by acting upon a sector *k* with helicoidal teeth, causes the support *b* of the goniometer *a* to turn angularly so as to give it, relatively to the shaft *f*, or to the axis of the gun with which this shaft is parallel, an inclination corresponding to the angle of elevation. This angle is obtained when the graduation which corresponds to it, and which is marked upon the drum 10, coincides with a guide mark *l'* engraved upon the cylinder *m* of the frame *c*.

The drum 10, which is detachable, is mounted upon the hub-nut *o* of the milled knob *g* (Fig. 4). This hub-nut *o* is in engagement with a fixed screw threaded sleeve *n* which causes it to effect a longitudinal movement in combination with its movement of rotation; it follows that the entire graduation of the drum 10, which occupies a helix parallel with the screw *n*, passes in front of the guide mark *l'*.

As stated above, the sector *k* turns angularly the support *b* of the goniometer which causes the participation in its movement of a spirit level *p* with its controlling mechanism. This mechanism, which is similar to the mechanism for controlling the support of the goniometer, is operated by means of a milled knob *q*, which, by the intermediary of a square shaft *r* (Fig. 3) and of a sleeve *s*, actuates an endless screw *t* and effects the turning of the sector *u* which is in operative connection with the level *p* (Figs. 1, 3 and 5).

The milled knob *q* carries a hub-nut *v* in engagement with the fixed screw *x*; the nut is displaced upon the screw *x* in imparting to the milled knob a movement of translation which combines with its movement of rotation. The result of this arrangement is that a graduation, intended for correcting for angles of site, and which is engraved in a helix upon the hub *v* of the milled knob *q*, passes in front of a guide mark *y* (Figs. 1 and 2) engraved upon the cylinder inclosing the mechanism.

From what has been stated it will be understood that in order to give the elevation it is only necessary to act upon the milled knob *g* until the corresponding graduation 5 carried by the drum 10 coincides with the guide mark *l'*. The object may then be sighted directly by means of the collimator 11 or of the reticulated lens. If there is a correction to be made corresponding to the 10 site (or altitude of the ground), the milled knob *g* is acted upon until the corresponding graduation carried by the hub *v* coincides with the guide mark *y* on the cylindrical casing *z*. The angle of elevation may then 15 be obtained by bringing the bubble of the spirit level between its guide marks by means of the aiming mechanism of the gun carriage. The direction is then given to the gun by means of the lens or of the collimator 20 11; with this object these parts may rotate in the known manner upon the goniometer in such a way that their optical axis may be brought in the known manner on a level with the object.

25 The graduated drum 10 is rendered detachable so that it may be readily replaced by another drum when the charge is changed in firing mortars or howitzers.

In addition to the arrangements which 30 have been described, the sighting mechanism is furnished with a device for the correction for the inclination of the trunnions, which permits of bringing the axis of the goniometer into a vertical plane by causing 35 the entire apparatus to rotate about the shaft *f* parallel with the axis of the gun. This device comprises:—a screw threaded rod *l'* mounted on the axis of rotation of the support *b* of the goniometer and of the level 40 *p*; a nut 2 with journals; two bearings 3 and 4 for the journals; two forks 5 and 6 for the bearings, cast with the part 7 which serves for the attachment of the sighting mechanism to the gun carriage; a spirit 45 level 9 fitted to the support for the goniometer; a milled knob 8. It will be readily understood that by means of this device, by acting upon the milled knob 8 so as to displace the screw threaded rod *l'* in its nut 2 50 and cause the sighting mechanism to turn upon the shaft *f*, the bubble of the spirit level can be placed between the guide marks and the sighting mechanism erected.

What I claim is:—

55 1. In sighting apparatus for guns, a shaft and means for supporting the same adapted to participate in the movements of the trunnions of the gun, a sighting device support and means for applying corrections for an- 60 gles of site both revolubly mounted on said shaft, a screw-threaded member fast to said shaft supporting means, a hand-operated revoluble drum longitudinally displaceable

on said screw and provided with helicoidal range graduations, means operated by the 65 rotation of said drum for simultaneously rotating said devices on said shaft and means for rotating one device relative to the other.

2. In sighting apparatus for guns, a shaft 70 and means for supporting the same adapted to participate in the movements of the gun trunnions, a sighting device support and a device for applying corrections for angles of site both revolubly mounted on said 75 shaft, a screw-threaded member fast to the shaft support, a hand-operated nut engaging said member and provided with a drum having helicoidal range graduations, a 80 toothed sector fast to said sighting device support, an endless screw actuated by said nut and engaging said sector for simultane- ously rotating said devices and means for rotating one device relatively to the other.

3. Sighting apparatus for guns in which 85 the support for the sighting apparatus is adapted to turn about an axle parallel to the gun trunnions, comprising an axle adapted to be supported parallel with the gun trunnions, a sight-supporting column 90 having on one side a socket and on the other a hub extension revoluble on said axle, a sector fast to said hub and having helicoidal teeth, a drum provided with a heli- 95 coidal graduation for giving angles of fire and controlling the rotation of said sector, a level supporting sleeve engaging said socket, a sector fast to said sleeve having helicoidal teeth, and a drum having a heli- 100 coidal graduation for giving angles of site and controlling the rotation of said sleeve independently of the movement imparted thereto by rotation of the sight-supporting device.

4. In sighting apparatus for guns, a shaft, 105 a support for the same participating in the movements of the trunnions, a sighting device support and a device for correcting for angles of site both mounted to revolve on 110 said shaft, a screw-threaded hollow member fast to said support, a hand-operated nut having engagement with said member and provided with a removable drum for re- 115 ceiving helicoidal range graduations, and a drive shaft movable with said nut and within said hollow member, and means engaging said drive shaft to turn said sighting device support.

5. In sighting apparatus for guns, a shaft, 120 a revoluble frame supporting the same and adapted to swing on an axis parallel to the axis of the gun, and participate in the movements of the gun trunnions, a sighting de- 125 vice support and means for applying corrections for angles of site both revolubly mounted on said shaft, a screw-threaded

member fast to said supporting frame, a
hand-operated revoluble drum longitudi-
nally displaceable on said screw and adapt-
ed to carry helicoidal range graduations,
5 means operated by the rotation of said drum
for simultaneously rotating said devices on
said shaft, means for rotating one device
relative to the other, and means engaging

said shaft to rotate said shaft supporting
frame. 10

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

EUGÈNE SCHNEIDER.

Witnesses:

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