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PATENTED OCT. 30, 1906.

R. DE L. HASBROUCK.

GUN SIGHT.

APPLICATION FILED SEPT. 19, 1905.

3 SHEETS—SHEET 1.

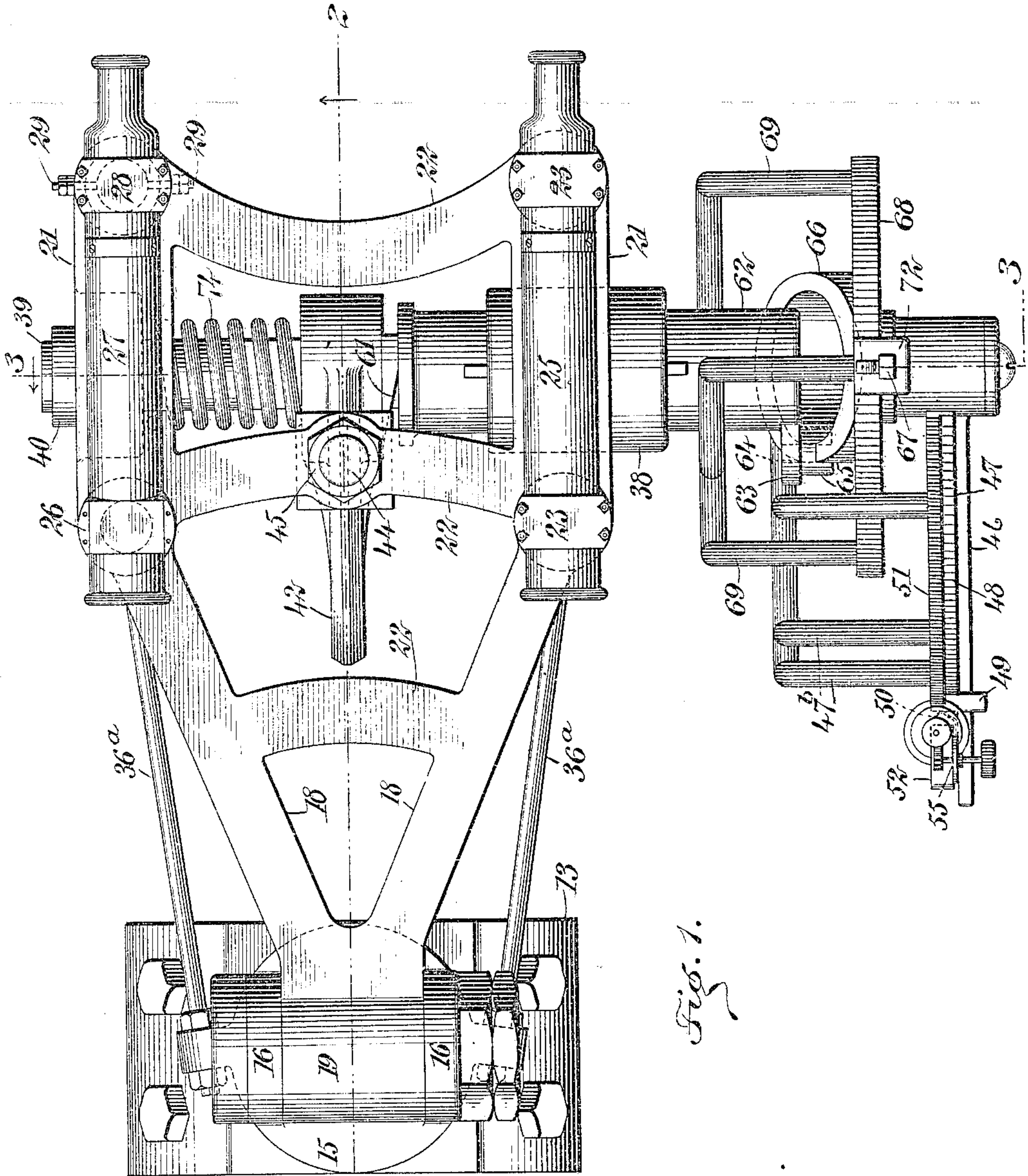


Fig. 1.

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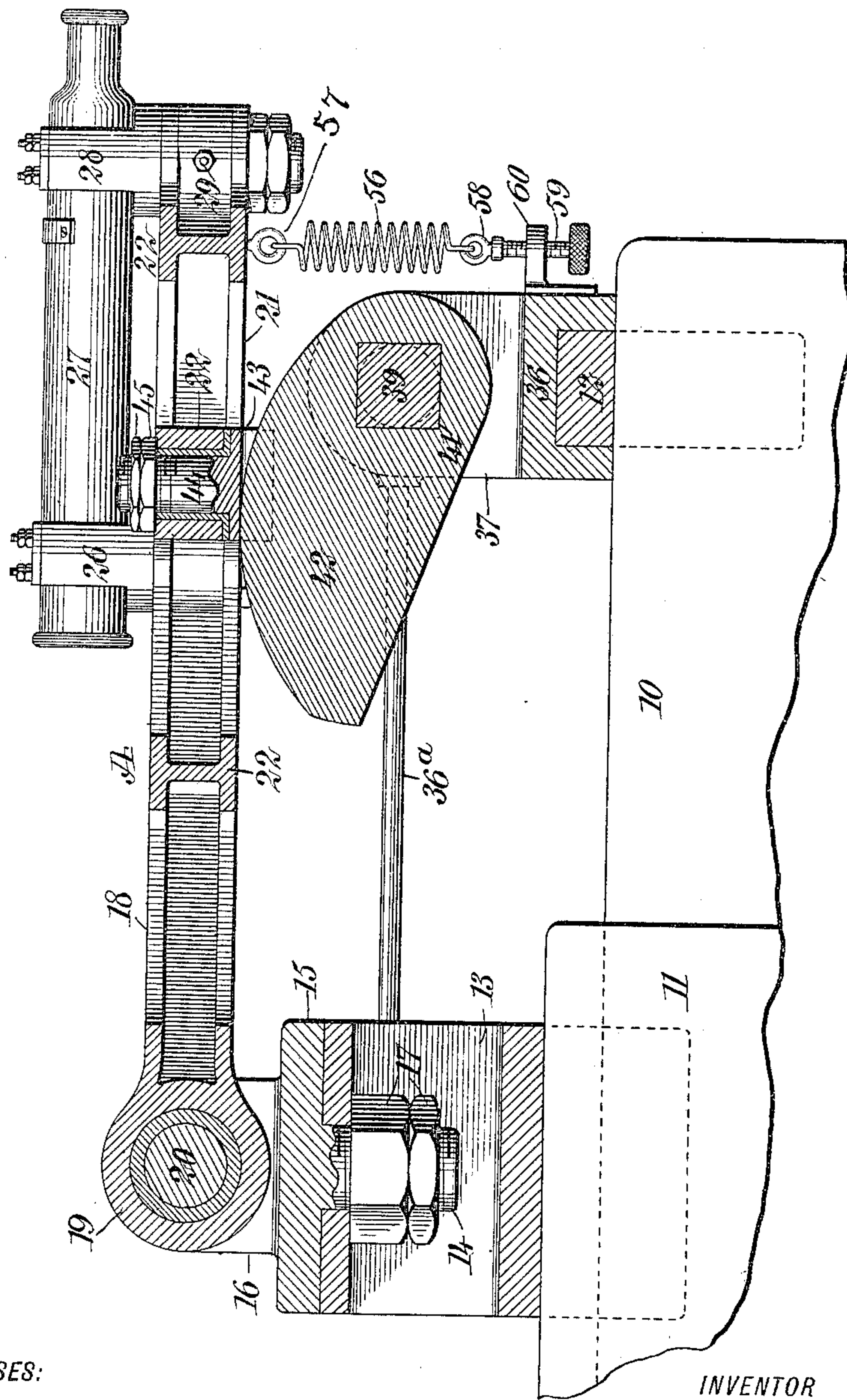
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3

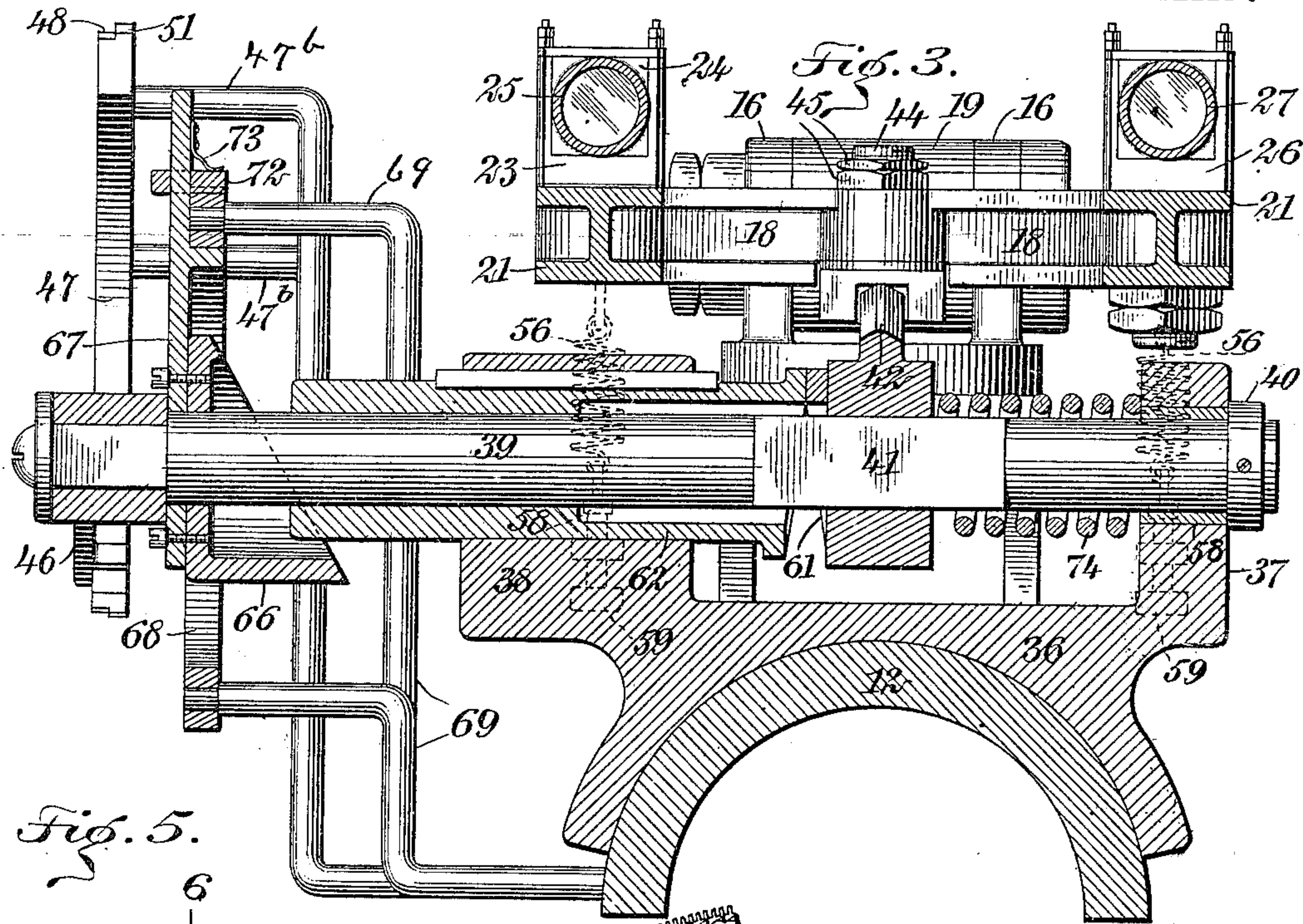


Fig. 5.

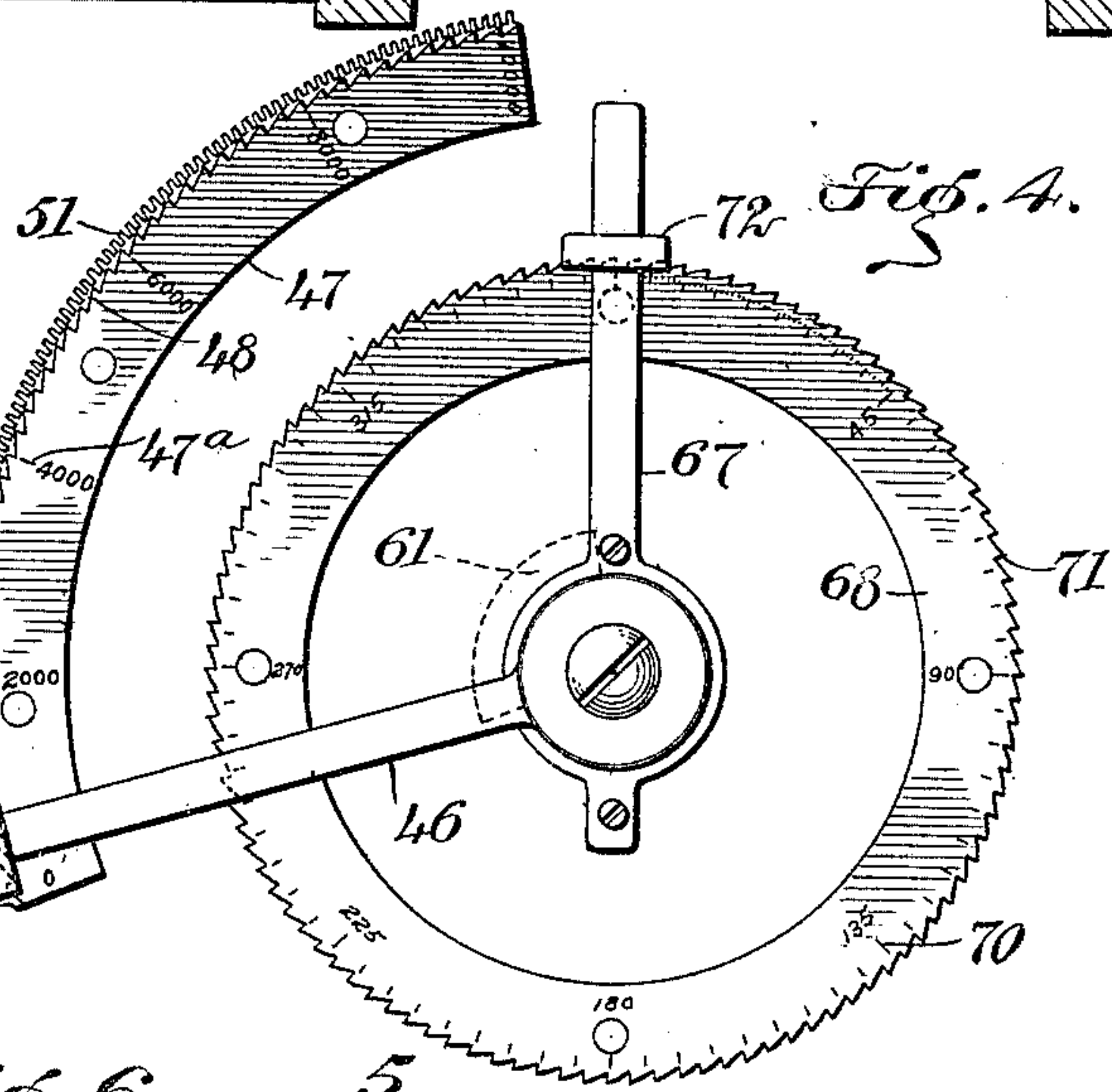
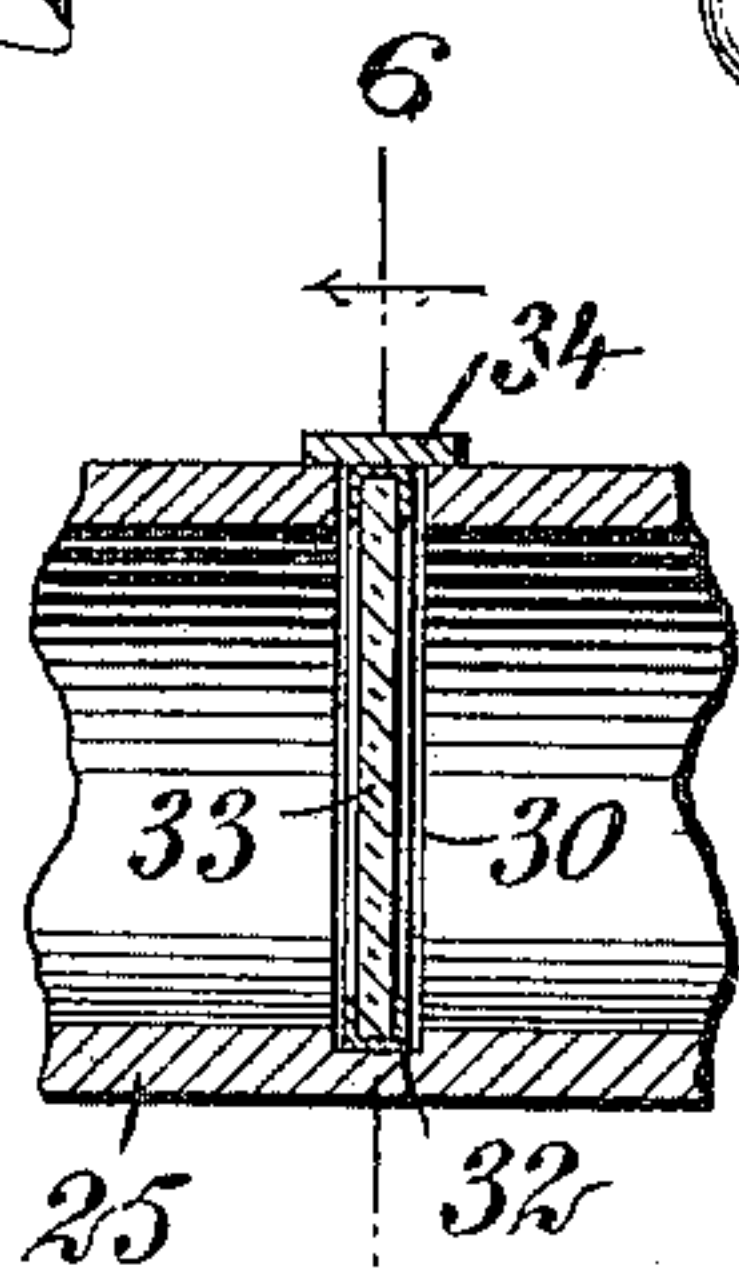
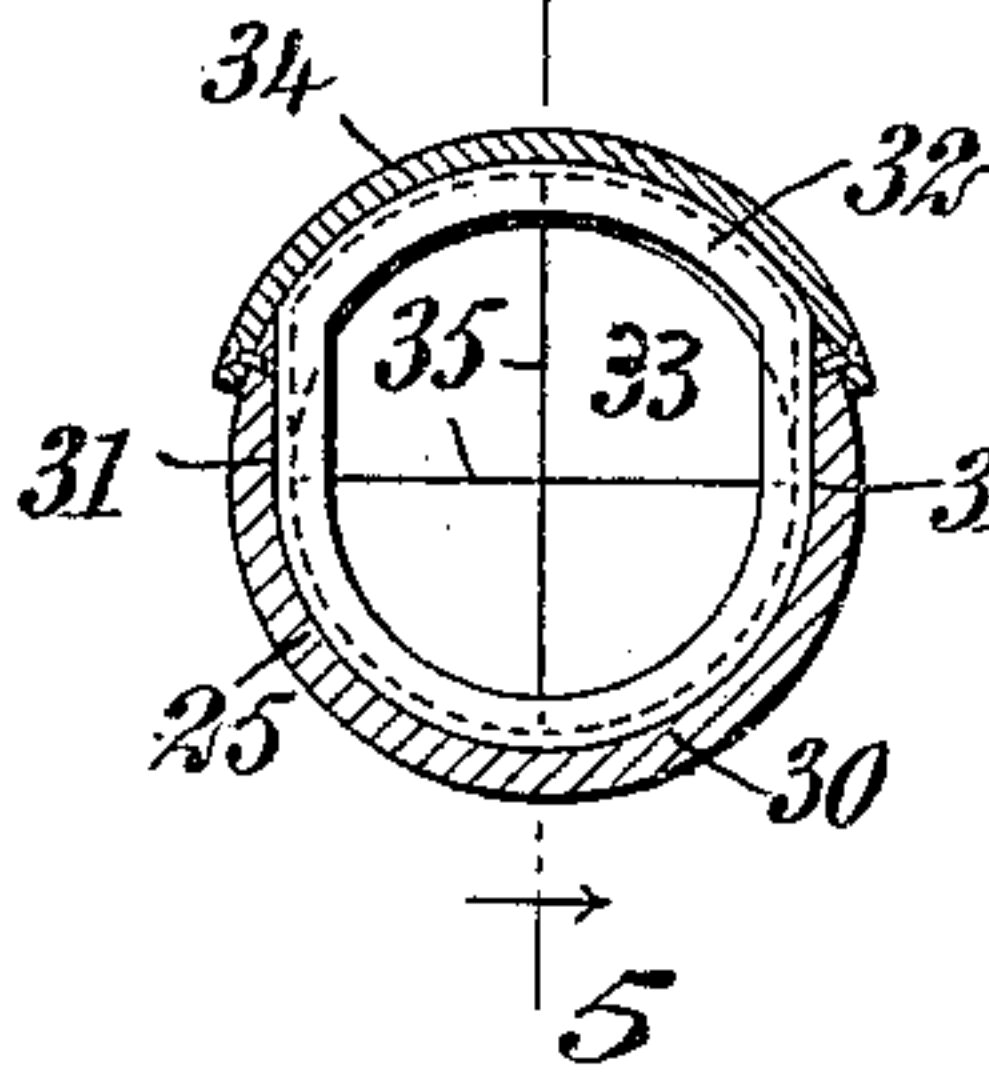


Fig. 6.



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UNITED STATES PATENT OFFICE.

RAYMOND DE LANCEY HASBROUCK, OF THE UNITED STATES NAVY.

GUN-SIGHT.

No. 834,471.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed September 19, 1905. Serial No. 279,078.

To all whom it may concern:

Be it known that I, RAYMOND DE LANCEY HASBROUCK, of the United States Navy, a citizen of the United States, and a resident of Boise, in the county of Ada and State of Idaho, have invented a new and Improved Gun-Sight, of which the following is a full, clear, and exact description.

My invention relates to sights for guns, and more particularly to those applicable to ordnance.

Its principal objects are to provide a simple, durable, convenient, and accurate apparatus of this character.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar reference characters designate similar parts in all the views.

Figure 1 is a top plan view of one embodiment of my invention. Fig. 2 is a longitudinal section therethrough on the line 2 2 of Fig. 1. Fig. 3 is a transverse section on the line 3 3 of Fig. 1. Fig. 4 shows in side elevation the range and speed scales and their associated arms. Fig. 5 is a longitudinal sectional detail through one of the telescopes, it being taken on the line 5 5 of Fig. 6; and Fig. 6 is a transverse section on the line 6 6 of Fig. 5.

A portion of a gun is indicated at 10, it having a trunnion-carrying sleeve 11 and a guide-sleeve 12. Secured to the gun-sleeve is a table or support 13, through which is an opening to receive the stem 14 of a bearing 15, which has separated lugs 16 16. The lower end of the stem extending below the table is threaded and has operating upon it nuts 17, serving to retain the bearing in place while allowing its pivotal movement upon the table. Mounted upon the bearing is a carrier in the form of an open frame A, comprising side members 18 18, converging to a sleeve 19, through which and through openings in the bearing-lugs extend a bolt 20, about which the frame may turn, it thus being capable of a compound movement in both horizontal and vertical planes, the former being by virtue of the pivoting of the bearing, while the latter is dependent upon the movement of the frame upon the said bearing. From the outer ends of the side members 18 18 project substantially parallel portions 21, which, with the converging members, are connected by cross members 22, all these carrier members being illustrated as of I-section. At the opposite ends of one of the

arm portions 21 are fixed pedestals 23, in which are rectangular depressions to receive similarly-squared portions 24 of a telescope or sighting device 25. Upon the other portion 21, at its inner extremity, is a pedestal 26, mounted to turn upon the frame and having a squared depression similar to the pedestals just described to receive a second telescope 27. At the opposite end of this last-named portion 21 is a pedestal 28, provided with opposite set-screws 29, by which the angle of the telescope 27 upon the frame may be varied to permit it to be brought into parallelism with its companion. Channels 30 are formed in the barrels of the telescopes and have opposite rectilinear walls 31 to receive and retain against rotary movement frames 32, which hold transverse partitions 33, preferably of glass. Caps 34 extend over the openings of the channels through the barrels to prevent accidental displacement of the partitions. Inscribed upon the partitions are cross-lines 35, which may be conveniently ruled by a Rowland machine, these giving such fine lines that they do not obscure the target and at the same time are not subject to displacement by the concussion of the gun.

Fixed upon the guide-sleeve is a bearing 36, preferably connected with the table 13 by braces 36^a. At opposite sides of this bearing are uprights 37 and 38, in which are openings to receive a shaft 39, which is held against longitudinal movement in one direction by a collar 40, contacting with the outer face of the upright 37. The shaft between the uprights is squared at 41, and mounted upon this squared portion for rotation with the shaft, while being longitudinally movable thereon, is a range-cam 42. The working face of the cam lies within a depression in a contact member 43, which has a stem 44 projecting through an opening in one of the cross members 22 of the frame and secured against downward displacement by nuts 45, threaded upon the upper end of the stem. This connection allows the cam to move the frame both vertically and laterally, the latter turning upon its bearing and with said bearing and the contact member rotating in the frame. The shaft may be rotated by an arm 46, squared upon its end opposite the collar 40 and traveling over a sector 47, which has upon its outer face a scale 47^a, graduated to read in units of length. The sector is shown as supported by brackets 47^b, project-

ing from the guide-sleeve. This range-arm 46 is conveniently retained in place upon its sector by teeth 48, formed upon the outer edge of the latter and engaged by a similarly-serrated block 49, which, as illustrated, is held in coöperation with the teeth by a spring 50. Fine adjustments may be secured by a rack 51 adjacent to the teeth 48, these teeth having meshing with them a worm 53, rotatable in a frame 52, pivoted upon the range-arm outside the block and forced toward the sector by a spring 54. A vernier 55, carried by the frame 52, gives the readings for these closer adjustments. The contact member of the frame may be held against the range-cam by springs 56, secured at one end to eyes 57, mounted upon the frame A, and having attached to the other end swivels 58, rotatable upon screws 59, threaded through brackets 60, projecting from the bearing 36. By turning the screws 59 the tension of the springs, and therefore the force of contact of the member 43 with the cam, may be varied.

Situated upon the side of the range-cam toward the upright 30 is a cam-face 61, which is equal in extent to the range arc and the contour of which corresponds to the curve of drift for the initial velocity. With this cam-face contacts the inner end of a sleeve 62, surrounding the shaft within the opening in the upright 38 and furnishing a bearing for it. The sleeve is splined in the upright, so that it is capable of longitudinal movement while being held against rotation, and has projecting at one side a lug 63. In this lug is an opening to receive the stem 64 of a contact member 65, which has a depression to receive the edge of a cylindrical speed-cam 66, rotatable about the shaft 39. Secured to the speed-cam is an arm 67, movable over a circle 68, carried upon brackets 69, projecting from the guide-sleeve and having a scale 70, graduated in degrees. Upon the periphery of the circle are teeth 71, engaged by a toothed block 72, which, as illustrated, is pressed toward the circle-teeth by a spring 73. This provides for the retention of the speed-cam in position upon its circle, as was previously described in connection with the range-cam, the finer adjustment being here unnecessary. The range-cam, speed-cam, and intermediate sleeve are forced into coöperation by a spring 74, surrounding the shaft 39 and being situated between the upright 37 and the range-cam, this spring exerting its tension to press all the coöperating members toward the arm 46, which retains them against displacement from the shaft.

In using the sight the telescopes are separately employed by the gun-pointer and gun-trainer, their permanent parallelism for all adjustments of the apparatus preventing disputes between these two operators. The adjustment for vertical correction is made by moving the arm 46 upon its scale to the

proper graduation, this rotating the range-cam and swinging the frame upon its bearing. To correct for speed, the arm 67 is similarly traversed over its circle. This forces the speed-cam against the contact member upon the sleeve 62, which in turn shifts the range-cam along the squared portion of the shaft 39, and by the engagement of said range-cam with the depression of its contact member swings the frame A laterally with its bearing. Simultaneously with the movement of the range-cam the drift correction is made by the travel of the cam-face 61 upon the end of the sleeve 62, this varying the lateral movement of the frame A to the necessary extent.

In addition to the advantages which have been hereinbefore urged it should be noted that my improved sight readily lends itself to stable and durable construction, that it is extremely simple and allows the elimination of lost motion, that the design may be readily varied to suit different types of gun, and that speed and accuracy in making adjustments may be attained without liability to confusion on the part of the operator.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A gun-sight comprising a support, a bearing member mounted upon the support, a carrier mounted for vertical and horizontal movement on the bearing member, a sighting device attached to the carrier, a cam for imparting vertical movement to the carrier, and means for constraining the cam to follow the horizontal movement of the carrier.

2. A gun-sight comprising a support, a bearing member pivoted upon the support, a carrier mounted for vertical and horizontal movement upon the bearing member, a telescope fixed to the carrier, a second telescope attached to said carrier, one of the telescopes being adjustable whereby they may be maintained in parallelism with each other.

3. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, a cam mounted upon the shaft and coöperating with the carrier, and means for constraining the cam to follow the horizontal movement of the carrier.

4. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, a cam mounted upon the shaft and coöperating with the carrier, means for constraining the cam to follow the horizontal movement of the carrier, and a spring for forcing the carrier toward the cam.

5. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a

shaft journaled in proximity to the carrier, a contact member provided with a depression and pivoted upon the carrier, a cam mounted upon the shaft and extending into the contact member depression, whereby said cam is constrained to follow the horizontal movement of the carrier.

6. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, a cam movable longitudinally upon the shaft and cooperating with the carrier, a sleeve surrounding the shaft and coacting with the cam, and a second cam cooperating with the opposite end of the sleeve to that first named.

7. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, a cam movable longitudinally upon the shaft and cooperating with the carrier, a sleeve surrounding the shaft and coacting with the cam, a contact member provided with a depression and being pivoted upon the sleeve, and a cam extending into the contact member depression.

8. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, a cam movable longitudinally upon the shaft and cooperating with the carrier, a sleeve surrounding the shaft and coacting with the cam, a second cam cooperating with the opposite end of the sleeve to that first named, and independent means for rotating the cams.

9. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, a cam movable longitudinally upon the shaft and cooperating with the carrier, a sleeve surrounding the shaft and coacting with the

cam, a second cam cooperating with the opposite end of the sleeve to that first named, arms projecting from the shaft and second cam, and graduated members over which the arms may move.

10. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, a cam movable longitudinally upon the shaft and cooperating with the carrier, a sleeve surrounding the shaft and coacting with the cam, a spring for forcing the sleeve and cam into cooperation, and a second cam cooperating with the opposite end of the sleeve to that first named.

11. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, a cam movable longitudinally of the shaft and cooperating with the carrier, said cam being provided with an auxiliary cam-face, and a sleeve surrounding the shaft and contacting with the cam-face.

12. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, and range, speed and drift cams associated with the shaft and acting upon the carrier.

13. A gun-sight comprising a carrier movable in horizontal and vertical planes, a sighting device attached to the carrier, a shaft journaled in proximity to the carrier, and range, speed and drift cams associated with the shaft and acting upon the carrier, the drift-cam being carried by the range-cam.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RAYMOND DE LANCEY HASBROUCK.

Witnesses:

J. C. TOWNSEND,
O. D. COOPER.