R. AND G. R. MELING.

BINOCULAR.

APPLICATION FILED APR. 25, 1918.

1,338,241.

Patented Apr. 27, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

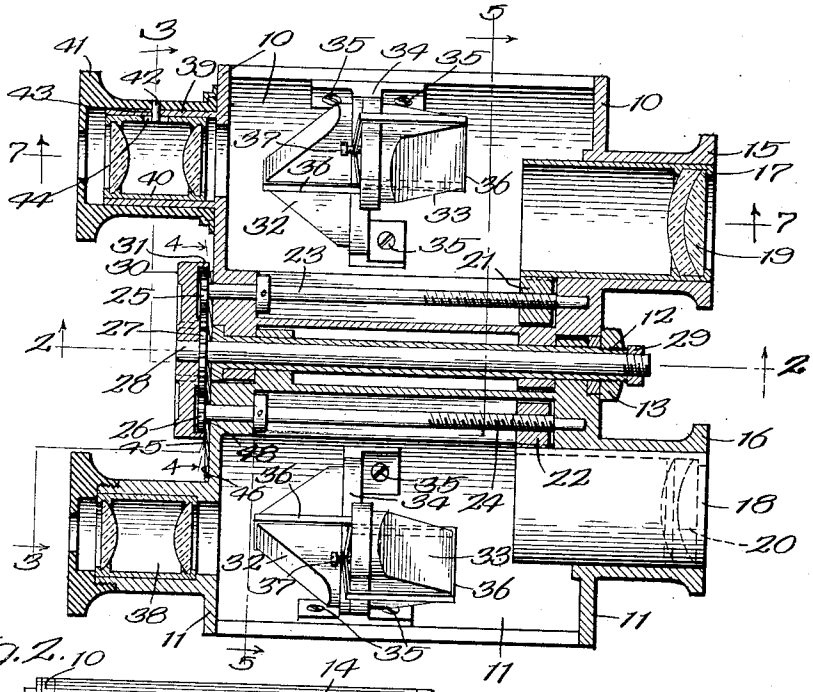


Fig. 2.

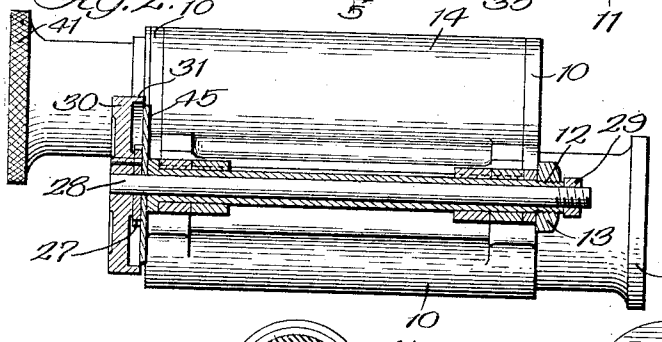


Fig. 4.

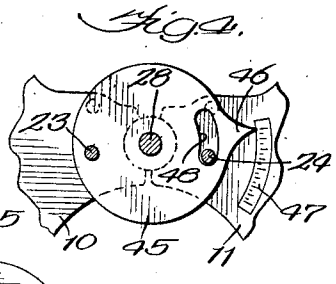
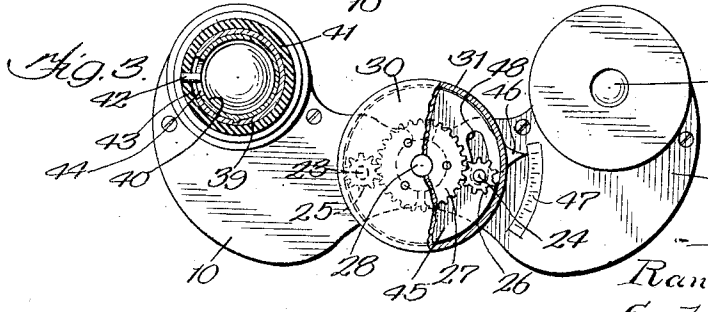


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 5.

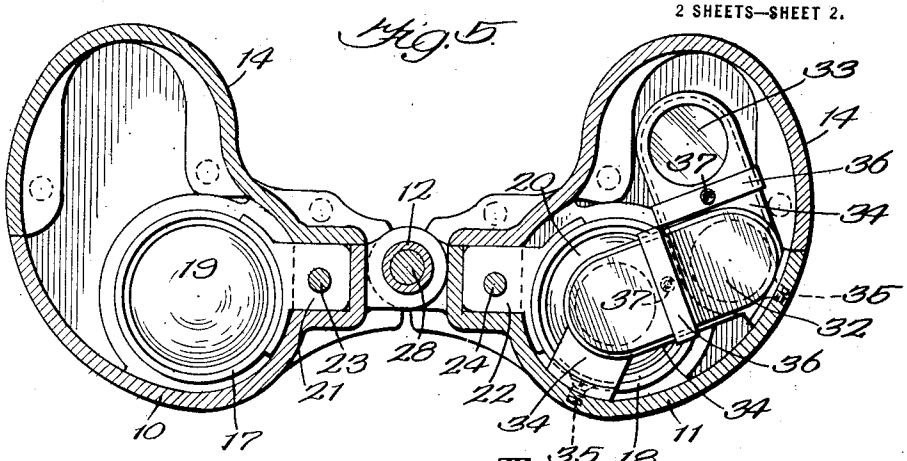


Fig. 6.

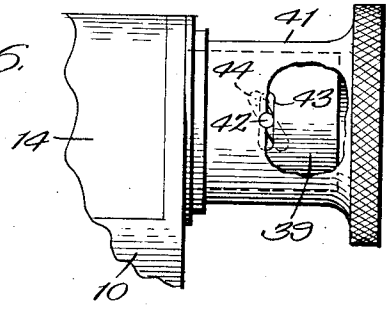


Fig. 7.

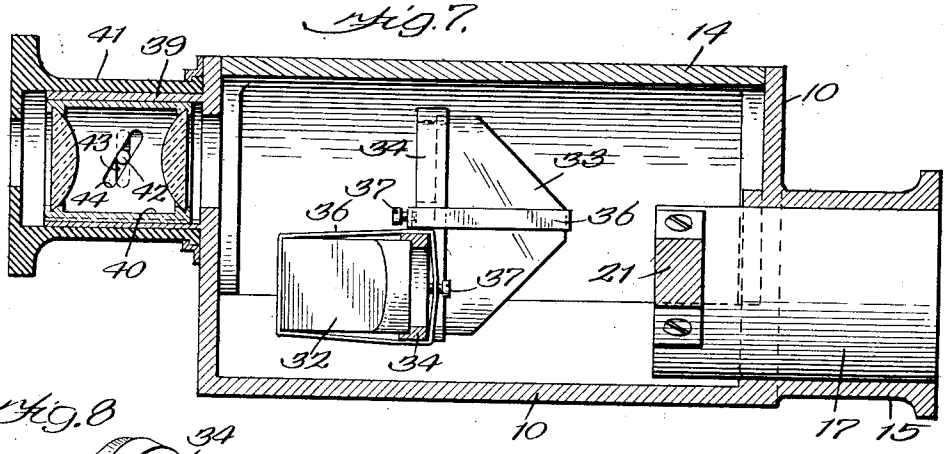
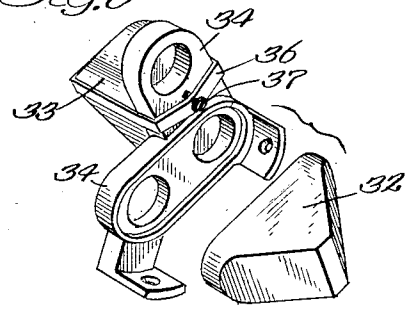


Fig. 8



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UNITED STATES PATENT OFFICE.

RANDOLPH MELING AND GUSTAVE R. MELING, OF CHICAGO, ILLINOIS.

BINOCULAR.

1,338,241. Specification of Letters Patent. Patented Apr. 27, 1920.

Application filed April 25, 1918. Serial No. 230,674.

To all whom it may concern:

Be it known that we, RANDOLPH MELING and GUSTAVE R. MELING, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Binoculars, of which the following is a specification.

The present invention relates to binocular telescopes, and more particularly to those in which the rays of light are deflected by prisms arranged in the respective barrels, such telescopes being commonly known in the trade as binoculars.

The objects of this invention are to improve the general construction of binocular telescopes; to provide telescopes of this character in which the movable tubes are all inclosed and having comparatively few exposed movable parts; to provide a device of this character in which the prisms are mounted in removable brackets or supports and may be adjusted therein prior to being inserted in the barrel; to provide means for readily adjusting and indicating the pupiliary distance; to provide a device of this character in which the shell or barrel is divided longitudinally whereby all of the mechanism may be secured to one half thereof so that the other half will serve as a cover; and in general to provide such an improved device of this character as will appear more fully from the following description.

In the accompanying drawings illustrating this invention:

Figure 1 is a longitudinal sectional view;

Fig. 2 is a sectional elevation taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a detail taken on the line 4—4 of Fig. 1;

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 1;

Fig. 6 is a detail of the adjustable eyepiece or ocular tube;

Fig. 7 is an enlarged sectional view taken on the line 7—7 of Fig. 1; and

Fig. 8 is a perspective view of one of the prism brackets or supports.

In the particular form of our invention, as shown in these drawings, the main barrels or casing members 10 and 11 are hinged together on a tubular pintle 12 having a head at one end thereof and a nut 13 at the opposite end whereby sufficient tension may be placed on the joint to hold the barrels in adjusted position. Instead of the usual unitary structure, each of these barrels is divided longitudinally, or provided with covers 14 which may be secured in any convenient manner, and which provide ready access to the interior mechanism.

The barrels or casings 10 and 11 are provided respectively with cylindrical projections 15 and 16 for the objective tubes 17 and 18, which carry the objectives or object-glasses 19 and 20. These tubes have threaded projections 21 and 22 which are engaged respectively by adjusting screws 23 and 24 mounted in the barrels 10 and 11. These screws project out through the casings and have gears 25 and 26 secured to their outer ends. These gears are engaged by gear 27 on a shaft 28 which extends through the tubular pintle 12 and is held in position by nut 29. The shaft 28 is turned by means of a wheel 30 which has a projecting flange 31 to cover the gears. It will be seen that, by turning the wheel 30, the objective tubes may be moved inwardly and outwardly to focus the glass.

Each barrel or casing is provided with prisms 32 and 33 which are of the usual character, but which are adjustably mounted in brackets or holders 34. These brackets are secured in the hinged portions of the casings in any convenient manner as by means of screws 35. The prisms are held in position by means of yokes or loops 36 having adjusting screws 37 for tightening the prisms against the bracket. The prisms and brackets may be formed with sufficient accuracy so that no adjustment will be necessary, or a slight play may be left between the prisms and the bases on which they rest so that the prisms may be adjusted on the bases and then held in position by the yokes. On account of having the removable covers, it will be seen that the prisms may be assembled and placed in position much more readily and accurately than in the usual construction having a cylindrical or unitary barrel structure. The principal adjustment for focusing is secured through the movement of the objectives, but we also provide means whereby one or both of the eyepieces may also be adjusted. The barrel or casing 11 in this instance is shown with a fixed eyepiece 38 and the barrel 10 with an adjustable eyepiece. The latter barrel has a tubular projection 39 for receiving the ocular tube

or eyepiece 40. A sleeve 41 is rotatably mounted on the projection 39 and has a pin 42 secured in the side thereof. This pin projects inwardly through a transverse slot 43 in the projection 39 and engages with a diagonal slot 44 in the tube 40. When the collar 41 is rotated, the pin 42 causes the ocular tube 40 to move in or out as may be desired.

A substantially circular plate 45 is mounted on the shafts 28 and 23 so as to move with the barrel 10 when adjustment of the pupilary distance is made. This plate serves as a partial cover for the gears, and is provided with a pointer 46 which coacts with a scale 47 on the casing 11 to indicate the pupilary distance. This plate is provided with an annular slot 48 which receives the shaft or screw 24 and serves to limit the movement of the barrels on the pintle. When this adjustment is made, the gears 25 and 26 tend to move with relation to the gear 27, but they may not both be rotated the same amount. This would make a slight difference in the positions of the objective tubes. Any variation of this character may be readily corrected by adjustment of the adjustable ocular tube or eyepiece 40.

From this description, and the accompanying drawings, it will be seen that we accomplish the objects above set forth and provide a binocular telescope which may be easily constructed and which will be exceedingly durable on account of having all of the movable parts inclosed and protected. Furthermore, the necessary adjustments, particularly of the prisms, may be readily made on account of the accessibility of the interior parts, and also can be much more readily cleaned than in the glasses as ordinarily constructed.

It will be noted that changes may be made in the details of construction without departing from the general scope of this invention, and, therefore, we do not wish to be limited to the exact construction herein shown and described, except as specified in the following claims in which we claim:

1. A binocular having two barrels hinged together, cylindrical projections extending from said barrels, objective tubes slidably mounted in said projections, threaded lugs on said tubes arranged within the barrels, adjusting screws engaging with the respective lugs, and means for simultaneously turning said screws.

2. In a binocular telescope, the combination of two casings hinged together, a tubular pintle for said hinge, projections extending from said casings, objective tubes slidably mounted in said projections, threaded lugs on said tubes arranged within the casings, adjusting screws mounted in each of said casings adjacent to the hinge and engaging with the respective lugs, gears on said screws, a shaft mounted in said tubular pintle, a gear on said shaft engaging with the gears on the screws, and a hand-wheel for turning said shaft.

3. In a binocular telescope, the combination with the barrels, of brackets mounted therein, prisms secured to said brackets, said barrels having lateral openings through which the brackets and prisms may be removed, and covers for said openings.

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