July 10, 1934. A. WARMISHAM 1,965,755

BINOCULAR

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Fig-1

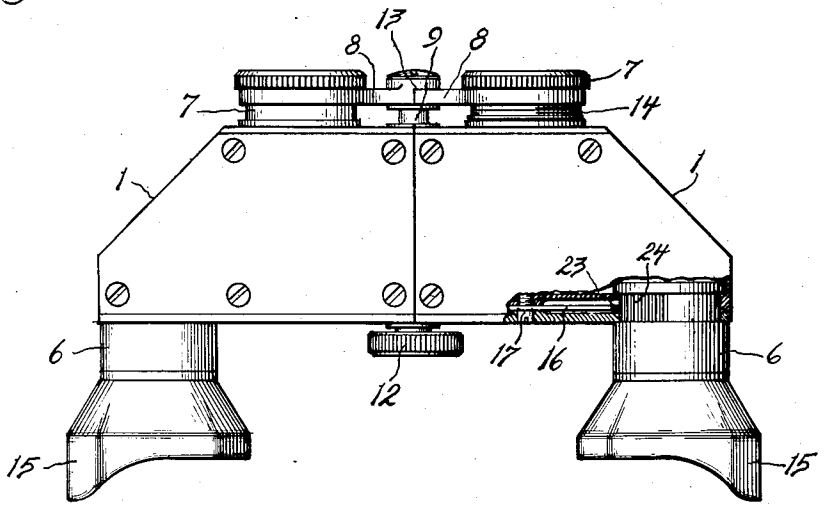


Fig-2

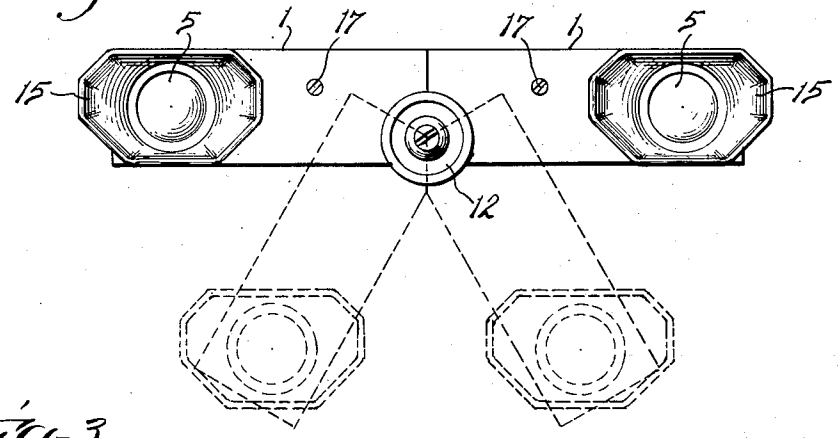
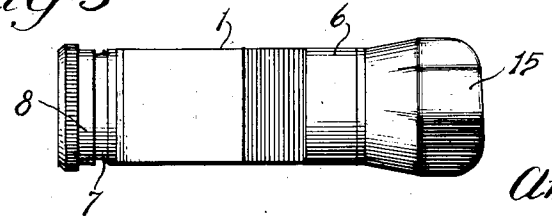


Fig-3



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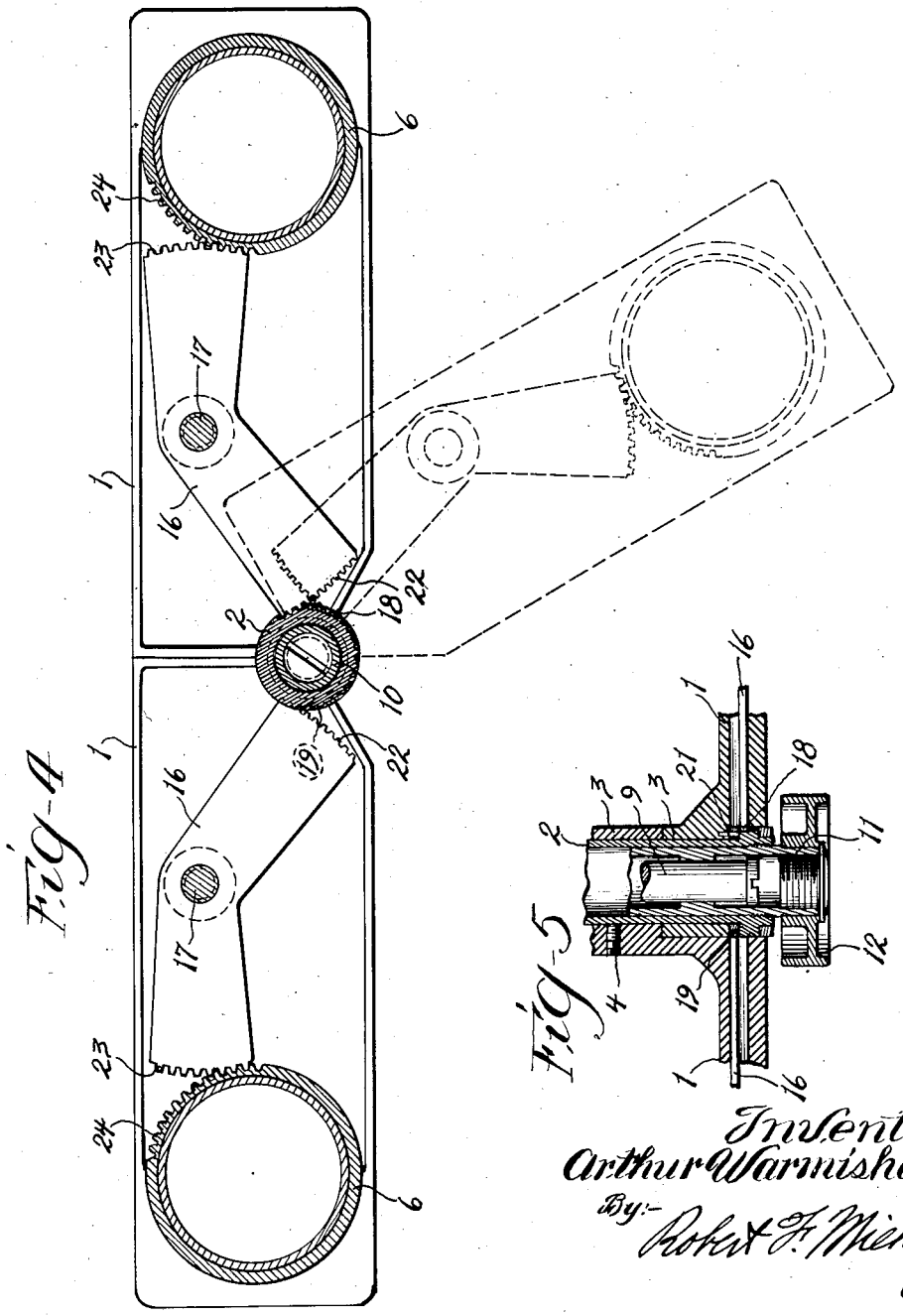


Fig-4

Fig-5

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Patented July 10, 1934 1,965,755

UNITED STATES PATENT OFFICE

1,965,755

BINOCULAR

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Application October 17, 1932, Serial No. 638,091

3 Claims. (Cl. 88—34)

My invention relates to binoculars of the folding type involving two body parts pivotally connected for relative angular movement and has for its main object the maintenance of non-circular eye cups, carried by respective of the body parts and affording adequate shading of the eyes of the user, in transverse alinement in the relative angular movement of the body parts.

The invention is illustrated in its present preferred embodiment in the accompanying drawings in which—

Figure 1 is a plan view of a folding binocular with parts broken away and shown in section;

Figure 2 is a rear elevation of the same;

Figure 3 is a side elevation of the same;

Figure 4 is an enlarged view in elevation similar to Figure 2 with parts removed and shown in section; and

Figure 5 is an enlarged partial sectional view on an axial plane of the pivotal axis of the body parts of the binocular.

Like characters of reference indicate like parts in the several views.

Referring to the drawings, 1 designates the body parts of the binocular, and these parts are hollow and are pivotally connected at the middle of the binocular by means of a hollow sleeve 2, see Figure 5, upon which bored parts 3 of the body parts are engaged, one of the body parts being angularly secured with the sleeve, as designated at 4, and the other being pivotally movable on the sleeve to provide relative angular movement of the body parts from a position in which they lie in a common plane, as shown, to positions in which they are angularly disposed as shown by the broken lines in Figures 2 and 4.

Corresponding optical telescope systems are carried by respective of the body parts 1 and consist of eye pieces 5 mounted within barrels 6 at the rear of the body parts, objective pieces mounted within barrels 7 at the front of the body parts, and suitable prism reflecting elements, not shown, arranged within the body parts for transmitting the light between the eye and object pieces, the eye pieces being spaced a greater distance than the object pieces for compactness.

The barrels 7 of the objective pieces are axially adjustable with reference to the body parts 1 for focusing by means of arms 8 connected to the front end of a stem 9 disposed coaxially with the pivotal axis of the body parts 1 and extending within the sleeve 2, and a coaxially bored rotatable stem 11 extending within the sleeve 2 and provided with an operating wheel 12 at its rear end and having the usual screw thread connection, not shown, with the stem 9 for axially adjusting this stem with rotation of the stem 11, the arms 8 being pivotally connected with the stem 9, as indicated at 13, to permit relative angular movement of the body parts. See Figure 1. One of the barrels 7 of the objective pieces has a screwthreaded engagement 14 with its arm 8 for the individual axial adjustment of this barrel and its lens to accommodate for differences between the eyes of the user.

The barrels 6 carrying the eye pieces 5 project within the body parts 1 and are mounted thereon for angular movement on their axes with respect thereto, and mounted on the outer ends of respective of these barrels for angular movement on their axes therewith, are non-circular eye cups 15 affording adequate shading of the eyes of the user. See Figures 1, 2 and 3.

Gear members 16 are disposed within respective of the body members 1 and are pivoted thereon, as designated at 17, see Figures 1 and 4, intermediate the axes of the sleeve 2 and eye piece barrels 6. An enlarged rear portion of the sleeve 2 is provided with gear teeth 18, and a gear ring 19 surrounds the sleeve 2 immediately in front of the aforesaid enlargement of the sleeve and is rotatable with respect thereto and is angularly secured, as designated at 21 in Figure 5, with the body member 1 which is not angularly fixed with the sleeve.

The adjacent portions of the gear members 16 are provided with gear teeth 22, and these teeth of the gear member, carried by the body member which is not angularly secured with the sleeve 2, mesh with the gear teeth 18, while these teeth of the other gear member carried by the body part, which is angularly secured with the sleeve 2, mesh with the gear ring 19, so that, as the body members are relatively moved angularly, the gear members are moved angularly with reference to the body members by which they are carried.

The outer portions of the gear members 16 are provided with gear teeth 23 which mesh with gear teeth 24 formed on the eye piece barrels 6, see Figures 1 and 4, so that, as the body members are relatively moved angularly, the barrels 6 and with them the eye cups 15 are moved angularly with reference to the body members 1 to maintain the eye cups in transverse alinement, as indicated in Figure 2.

When the body members lie in a common plane the binocular may be conveniently carried in a clothing pocket, the body members being angularly disposed at the proper angle to correspond with the pupillary distance of the user's eyes

when the binocular is used, the eye cups being always maintained in transverse alinement. Inasmuch as the focusing is accomplished by adjustment of the object piece barrels 7, the eye piece barrels 6 are mounted for angular movement in the simple manner shown.

While I have described and shown the preferred embodiment of my invention, I do not wish to be liimted to the precise details of construction as changes may readily be made without departing from the spirit of my invention, but having thus described my invention, I claim as new and desire to secure by Letters Patent the following:

1. In a binocular the combination with two body parts pivotally connected for relative angular movement, of non-circular eye cups carried by respective of said body parts for pivotal movement on their axes with respect thereto, and means actuated by relative pivotal movement of said body parts whereby said eye cups are maintained in transverse alinement, said means comprising operating members carried by respective of said body parts for movement with respect thereto and each having an operative connection with the body part carrying the other operating member.

2. In a binocular the combination with two body parts pivotally connected for angular relative movement, of non-circular eye cups carried by respective of said body parts for pivotal movement on their axes with respect thereto, and means actuated by relative pivotal movement of said body parts whereby said eye cups are maintained in transverse alinement, said means comprising gear members carried by respective of said body members for angular movement with respect thereto and each having a gear connection with the adjacent eye cup and with the body part carrying the other gear member.

3. In a binocular the combination with two hollow body parts pivotally connected for relative angular movement, of eye piece carrying barrels projecting within respective of said body parts and mounted thereon for angular movement on their axes with respect thereto, non-circular eye cups mounted on the outer ends of respective of said barrels for angular movement therewith on their axes, and means actuated by relative pivotal movement of said body parts whereby said eye cups are maintained in transverse alinement, said means comprising gear members carried within respective of said body members for angular movement with respect thereto and each having a gear connection with the adjacent barrel and with the body part carrying the other gear member.

ARTHUR WARMISHAM.