

A. V. RYDER.

Improvement in Spy-Glass Adjustment.

No. 126,838.

Fig. 1.

Patented May 14, 1872.

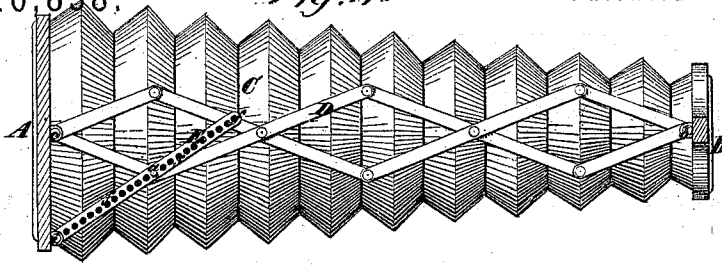


Fig. 5.

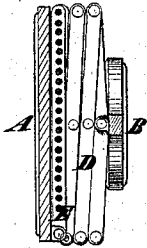


Fig. 3.

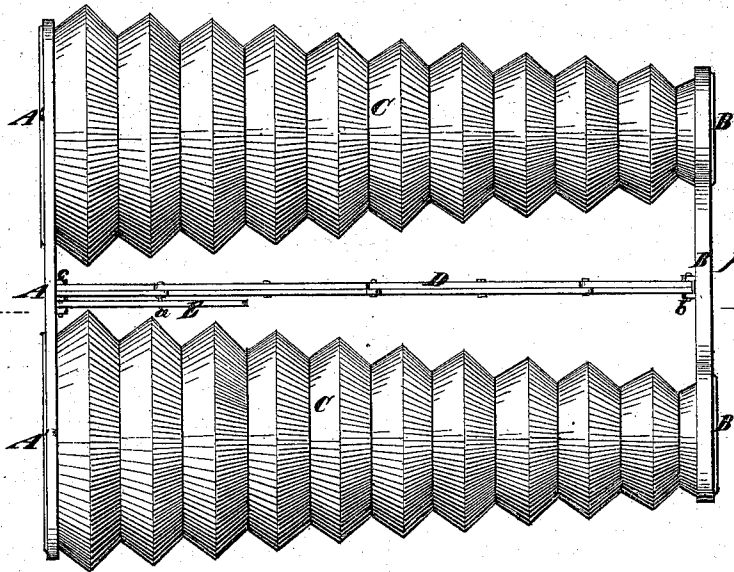
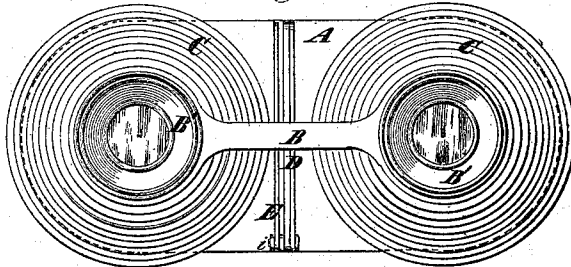
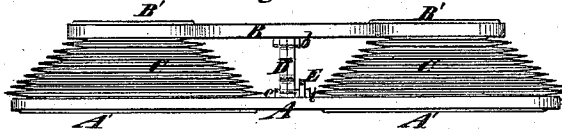


Fig. 1.

Fig. 2.



Witnesses.

Fred Haynes
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ALFRED V. RYDER, OF NEW YORK, N. Y.

IMPROVEMENT IN SPY-GLASS ADJUSTMENTS.

Specification forming part of Letters Patent No. 126,838, dated May 14, 1872; antedated April 30, 1872.

To all whom it may concern:

Be it known that I, ALFRED V. RYDER, of the city, county, and State of New York, have invented a new and useful Improvement in Telescopic Glasses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification.

By the term telescopic glasses I intend to comprehend opera and field glasses, telescopes, &c.

The object of this invention is to provide for the closer shutting up of the glasses when not in use, so that they can be conveniently carried in the pocket. To this end it consists of a bellows-like tube of flexible material, by which the socket of each object-glass is connected with that of its respective sight-glass in such manner as to provide for the movement of the said glasses toward and from each other to adjust their foci. It also consists in a lazy-tongs brace and a locking device for the same, whereby the said tubes may be uniformly extended or contracted longitudinally, and the glasses moved toward or from each other, and may be locked in any desired position to retain the glasses at their proper foci.

In the accompanying drawing, Figure 1 is a full-size side view of a pair of opera-glasses made according to my invention, showing them extended; Fig. 2 is a similar view, showing them contracted; Fig. 3 is an end view thereof; Fig. 4 is a longitudinal section taken between the two tubes, showing the tube extended; and Fig. 5 is a similar view, showing the tube contracted.

Similar letters of reference indicate corresponding parts in all the figures.

A and B are two frames, in which are formed or secured the sockets A' A' and B' B', which receive the lenses, such sockets being like those provided in the tubes of opera-glasses of ordinary construction. The tube C C, which connects the sockets A' A' of the object-glasses with those, B B, of their respective sight-glasses, are made of leather or other flexible material. These tubes are of bellows-like con-

struction, consisting of a series of alternately reversed frustums of cones, and they may either be made of a series of rings united alternately at their inner and outer edges or peripheries, or may be made of a single piece of material which, after having been made into a tube, is stretched on blocks to the required shape. These tubes may be tapered like the tubes of ordinary telescopes. The frames A and B are connected between the said tubes or shells C C by a set of lazy-tongs levers, D, which constitute a brace. The extremities of these levers are pivoted at *c* and *b* to the said frames. To the pin *a*, by which one pair of the levers are pivoted together, there is also pivoted a thin metal bar, E, which extends through a hole, *h*, in the frame A. This bar is made in two pieces, hinged together by a hinge, *d*, which is at such distance from the pin *a* that when the opera-glasses are contracted the projecting outer part of the bar may be folded over the outside of the said frame A. By means of a set-screw, S, which screws through a tapped hole in the frame A into the hole *h*, the bar, and thereby the lazy-tongs brace to which it is pivoted, may be secured in any desired position. When the outer part of the bar is folded over as described it fits in a recess provided therefor in one of the sockets A', and is thereby made to lie flat against the glass.

The frames A and B are moved toward or from each other as may be requisite to adjust the foci of their glasses. The set-screw is then screwed up to bite and hold the bar E, and the frames are thereby locked in position.

Telescopes and other glasses of that class can be made in substantially the same manner as the opera-glass herein described, and when thus made can be contracted or depressed into a very small space, so that they can be conveniently carried in the pocket; and they are much less liable to be broken than those of ordinary construction on account of their flexibility. The tubes of the glasses, instead of being made in the form described, may be made plain.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A telescope, opera, or field glass, in which the object and sight lenses are connected by bellows-like tubes, and adjusted to proper focus by the lazy-tongs connection of the frames A and B carrying said lenses, substantially as and for the purpose specified.

2. In combination with the lazy-tongs D, I

claim the hinged adjusting slide E and set-screw S, arranged for operation essentially as shown and described.

ALFRED V. RYDER.

Witnesses:

FRED. HAYNES,

R. E. RABEAU.