(No Model.)

F. A. HARDY.

OPERA GLASSES.

No. 572,540. Patented Dec. 8, 1896.

FIG. 1.

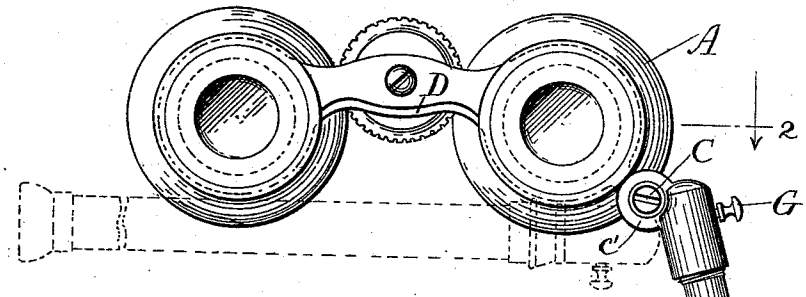
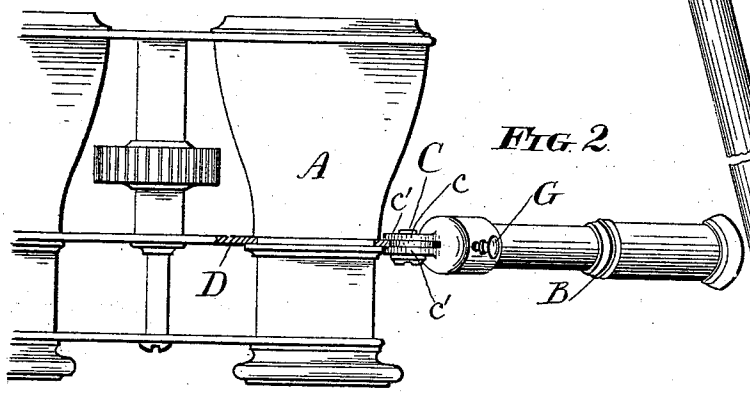


FIG. 2.



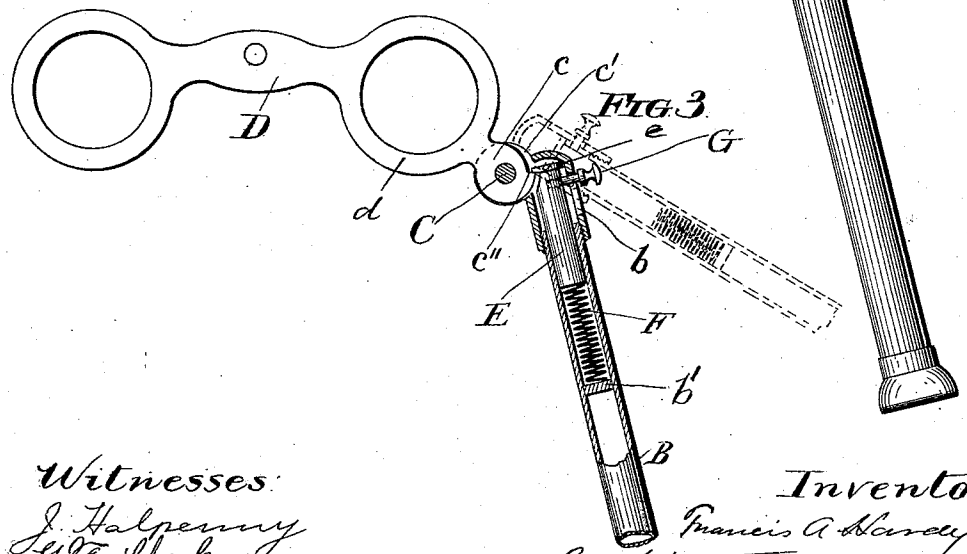


FIG. 3.

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OPERA-GLASSES.

SPECIFICATION forming part of Letters Patent No. 572,540, dated December 8, 1896.

Application filed April 7, 1896. Serial No. 586,496. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS A. HARDY, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Opera-Glasses, of which the following is a specification.

The present invention relates to that class of opera-glasses that are provided with permanent handles, by which they may be held when in use, and more especially to that class in which the handle is hinged to an arm proceeding from one of the two rings that are integral with the intermediate cross-bar of the glass. In one instance of a known glass of this class the arm to which the handle is hinged proceeds from the ring of the right-hand tube at a point outside of the vertical plane and above the horizontal plane of the axis of the right-hand lens, and the axis of the hinge is in the central line of the handle and is far enough above the line touching the upper sides of the tubes in the plane of the cross-bar to permit the folding of the handle against the top side of the glass. When desired for use, the handle is moved about the axis of the hinge through nearly three-quarters of a circle and comes to a bearing either against the side of the right-hand tube or against a suitably-arranged stop. This construction is objectionable for the reason that, because of the described location of the axis of the hinge with relation to the central line of the handle, in order to fold the handle against the top of the glass it is necessary to make the arm to which it is hinged of such length that it is not only unsightly, but materially increases the over-all dimensions of the glass. Furthermore, since the thickness of the arm must be proportional to its length if a proper standard of strength is to be observed, it follows that there is a disadvantage, manifesting itself in an increased weight and incidentally in an increase in the cost of manufacture, in the use of a long arm. The construction above described is also objectionable for the reason that, because of the described location of the axis of the hinge with relation to the horizontal plane of the axis of the right-hand lens, it is necessary to use a handle that is longer than it would be if the axis of the hinge were located in a lower plane, and there is the same disadvantage in the use of a long handle as there is in the use of a long arm. In order to overcome all of these objections, I connect the handle to the intermediate cross-bar of the glass by means of a hinge-joint, the axis of which is offset with relation to the central line of the handle and is located below the horizontal and outside of the vertical plane of the axis of the right-hand lens and upon a line which touches the peripheries of the two rings of the cross-bar, or thereabout. This enables the use of a short handle and of a short arm to which it is connected, since it avoids the necessity for carrying the handle to a point above the plane of the under side of the glass and enables the folding of the handle against said under side. This latter is, however, only an incident to the described construction and not an object of the invention.

In order to securely hold the glass and handle in the relative positions which they must occupy when in use, I provide the hinge-joint connecting them with a lock which is under the control of the operator. Preferably the bolt of the lock is constantly under the influence of a spring, by which it is caused to engage automatically, and preferably, also, it is located within the handle, which is hollow and made of a number of telescopic sections.

The invention consists in the features of novelty that are particularly pointed out in the claims hereinafter, and in order that it may be fully understood I will describe it with reference to the accompanying drawings, which are made a part hereof, and in which—

Figure 1 is a rear elevation of an opera-glass and its handle connected in accordance with the invention. Fig. 2 is a plan view thereof, only a portion of the glass being shown. Fig. 3 is a sectional elevation showing the details in the construction of the hinge-joint.

A represents the opera-glass, and B its handle, which are connected by means of a hinge-joint of such construction that when it is de-

sired to do so the handle may be folded against the under side of the glass, as indicated by dotted lines in Fig. 1.

Preferably I construct the hinge-joint of a plurality of ears *c* and *c'*, secured to the glass and to the handle, respectively, said ears being perforated for the passage of the pivot-pin C, this being a simple and inexpensive and at the same time efficient and durable construction, and preferably the ear which is secured to the glass is integral with the right-hand ring *d* of a part D, which enters into the construction of every opera-glass and is technically known as the "intermediate cross-bar." The ear *c* proceeds from the ring *d* at a point below the horizontal and outside of the vertical plane of the axis of the right-hand lens, and its perforation is so disposed that the axis of the hinge will fall in a line touching the peripheries of the two rings of the cross-bar. The ears *c'* project laterally from the handle, and their perforations are so disposed that the axis of the hinge will be offset with relation to the central line of the handle, the extent of the offset being sufficient, and only sufficient, to permit the folding of the handle against the under side of the glass. By reason of this particular location of the axis of the hinge-joint with relation to the glass and to the handle I am able to reduce to a minimum the length of the handle and the length of the arm to which it is hinged.

Preferably the ear *c* is cut away on its outer side to provide a shoulder *c''*, presented upward, and within the hollow handle is arranged a bolt E, which is adapted to coöperate with the ear *c* and the shoulder thereof and with means for limiting the endwise and sidewise movement of the bolt for locking the joint. When the parts are in the positions shown in the drawings, the shoulder *c''* is in engagement with the under side of a flange or head *e*, formed on the bolt, and under the influence of the weight of the glass the ear will force the bolt endwise and sidewise, its movement in these directions being resisted by the end and side of the handle, respectively; or, if desired, its endwise movement may be resisted by the contact of a pin G with the end of a slot *b*, with which the handle is provided and through which the pin passes, its inner end being suitably secured to the bolt.

If desired, the head *b'* and the abrupt shoulder *c''* may be dispensed with, since the interposition of the bolt between the cam-like ear and the side of the handle will effectually lock the parts for all practical purposes. The bolt is preferably under the influence of a coiled spring F, arranged within the handle and bearing at one end against a plug *b'* and at the other against the bolt.

In construing the terms "upper," "lower," "vertical," "horizontal," &c., as used in this specification it is to be presupposed that the glass is being considered in the position which it occupies when in use.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination with an opera-glass having an ear projecting downward from the right-hand ring of the intermediate cross-bar and lying in the plane thereof, of a handle hinge-jointed to said ear and adapted to fold against the under side of the glass, and means for locking the handle and glass when brought to the relative positions necessary for use, substantially as set forth.

2. The combination with an opera-glass having a perforated ear projecting downward from the intermediate cross-bar and lying in the plane thereof, of a handle having a perforated ear, a pivot-pin occupying the perforations of said ears and connecting the handle and cross-bar, and means for locking or unlocking the ears, the parts being so arranged that the handle may be folded against the under side of the glass, substantially as set forth.

3. The combination with an opera-glass and its handle of a hinge-joint connecting the handle to the intermediate cross-bar of the glass and adapted to permit the handle to be folded against the under side of the glass and a lock for locking the joint, when the handle is brought to a given position with relation to the glass, and thereby preventing the handle from folding against the under side of the glass until the joint is again unlocked, substantially as set forth.

4. The combination with an opera-glass and its handle, of a hinge-joint connecting the handle to the intermediate cross-bar of the glass and adapted to permit the handle to be folded against the under side of the glass, and a lock, having a spring-actuated bolt, adapted to automatically lock the joint when the handle is brought to a given position with relation to the glass, and means for withdrawing said bolt, substantially as set forth.

5. The combination with an opera-glass and its handle, of a hinge-joint connecting them and adapted to permit the handle to be folded against the under side of the glass, said joint consisting of a perforated ear projecting from the glass and having a shoulder, a perforated ear, carried by the handle, and a pivot, a bolt carried by the handle and adapted to engage said shoulder, a spring for moving said bolt in one direction and means for moving it in the other direction, substantially as set forth.

6. The combination with an opera-glass and its handle, of a hinge-joint connecting them and adapted to permit the handle to be folded against the under side of the glass, a bolt arranged within the handle and adapted to lock the joint, and a pin projecting from the bolt and through a slot in the handle, substantially as set forth.

7. The combination with an opera-glass and

its handle of a hinge-joint connecting them, said joint consisting of a non-circular perforated ear projecting from the glass, a perforated ear projecting laterally from the handle and a pin occupying said perforations, and a bolt arranged within the handle and adapted to be inserted between the non-circular ear and the side to the handle, substantially as set forth.

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