

(No Model.)

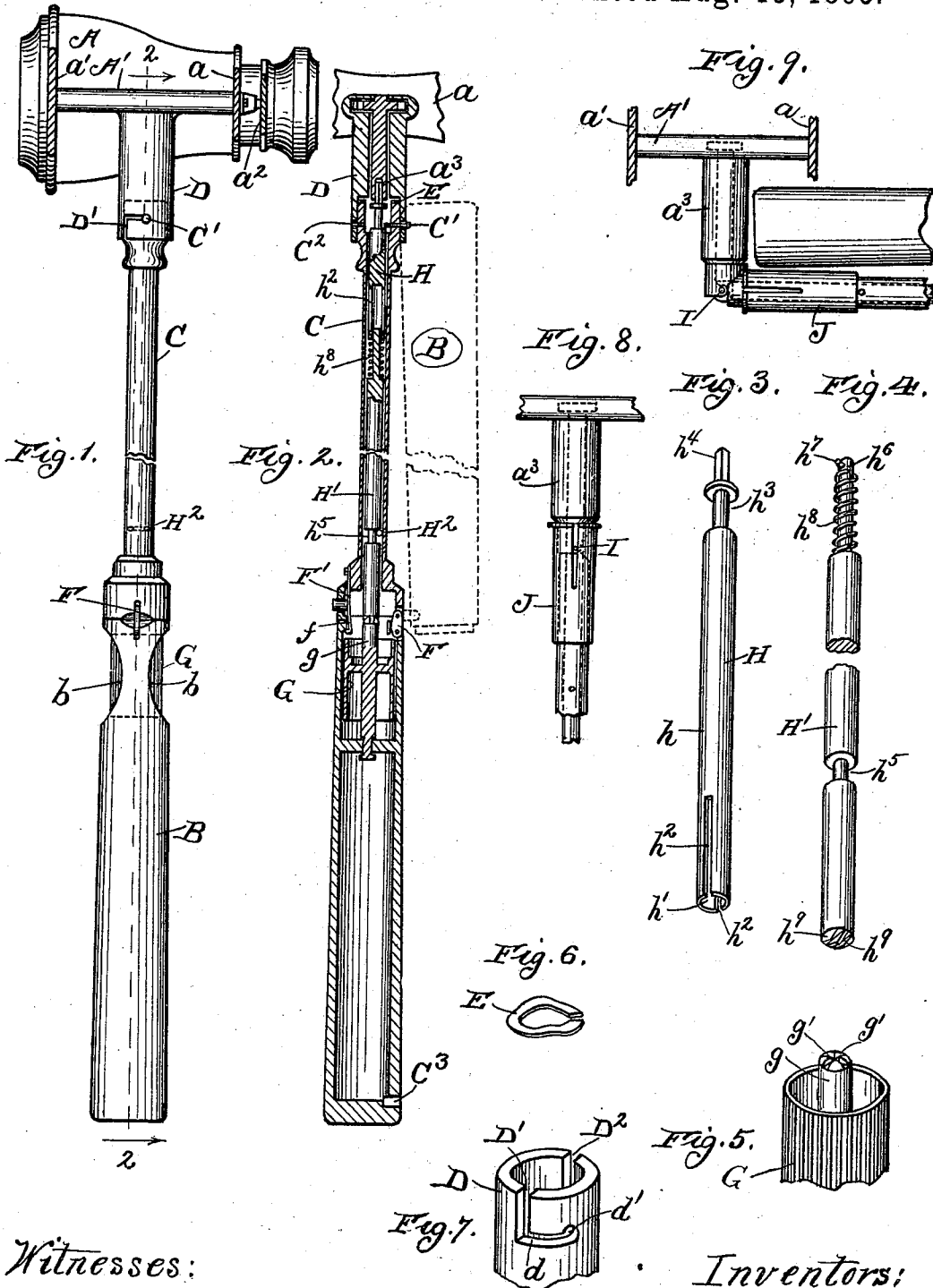
2 Sheets—Sheet 1.

J. MURPHY, O. F. ENGWALL & C. A. TIDEN.

OPERA GLASSES AND HANDLE THEREFOR.

No. 544,643.

Patented Aug. 13, 1895.



Witnesses:
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Inventors:
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By Charles Turner Brown
Att'y.

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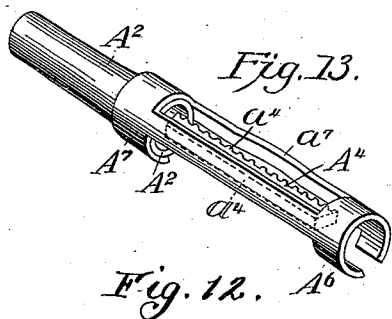
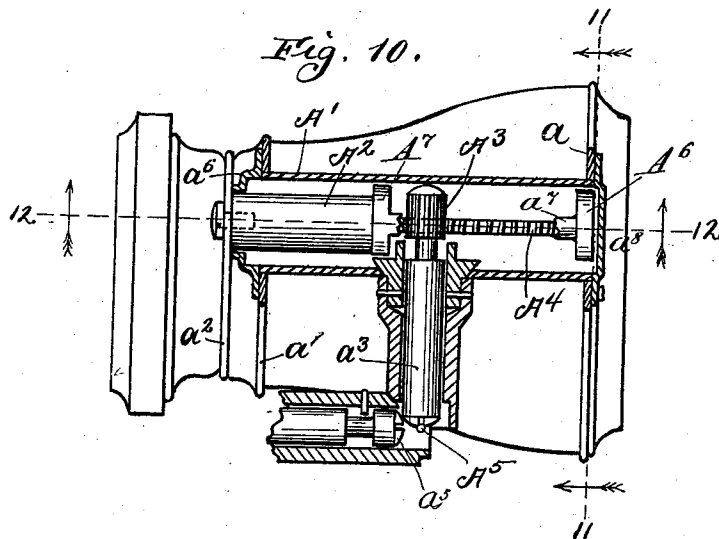
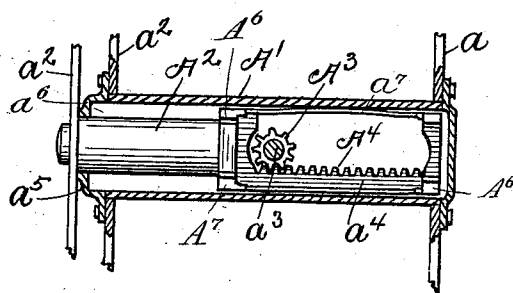
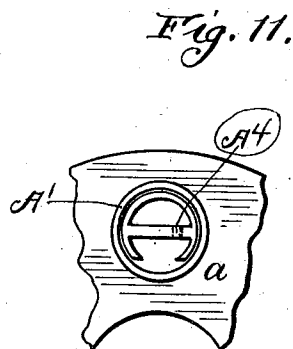


Fig. 12. A^6



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UNITED STATES PATENT OFFICE.

JEREMIAH MURPHY, OSCAR F. ENGWALL, AND CHARLES A. TIDEN, OF
CHICAGO, ILLINOIS.

OPERA-GLASS AND HANDLE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 544,643, dated August 13, 1895.

Application filed March 20, 1895. Serial No. 542,505. (No model.)

To all whom it may concern:

Be it known that we, JEREMIAH MURPHY, OSCAR F. ENGWALL, and CHARLES A. TIDEN, residents of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Opera-Glasses and Handles Therefor, of which this specification is a full and complete description, when taken in connection with the drawings accompanying and forming a part hereof, sufficient to enable those skilled in the art to understand, make, and use the same.

The invention relates to opera-glasses having holders attached thereto, such holder having mechanism mounted therein, which may be actuated by the thumb and forefinger of the hand grasping the handle of the holder, and such mechanism connected to the focusing apparatus of the opera-glass, so as to enable such glass to be focused thereby; and the nature of the invention consists in the constructions hereinafter particularly set forth, with the arrangement and combination of such constructions and the opera-glass and the focusing apparatus of such opera-glass.

The object of the invention is to obtain an opera-glass having a three-part holder, one of such parts being rigidly secured to the opera-glass frame, another of such parts removably or adjustably, as preferred, secured to the first-named and rigidly-secured part, and the remaining part of the holder adjustably secured to the part adjacent thereto, and all of the several parts of the holder having mechanism therein whereby, when the holder is in position to use, the opera-glass may be focused by the thumb and forefinger of the hand grasping the handle of the holder.

In the drawings referred to as accompanying and forming a part of this specification, Figure 1 is a side elevation of one of the barrels of an opera-glass with the bars connecting the barrels shown in cross-section, and such opera-glass having a holder embodying this invention attached thereto and in position for use; Fig. 2, a vertical cross-sectional view on line 2-2 of Fig. 1, viewed in the direction indicated by the arrows; Figs. 3 and 4, perspective views, respectively, of mechanism rotatably mounted in one and the middle part or portion of the holder, forming, when so mounted, a rotatable

spindle; Fig. 5, a perspective view of one end of the part or portion of the holder designed to be grasped by the hand of the person using the opera-glass and of a rotatable spindle therein; Fig. 6, a perspective view of a spring contained in the part or portion of the holder which is rigidly secured to the frame of the opera-glass; and Fig. 7 a perspective view of the end of one of the parts of the holder which abuts against the spring illustrated in Fig. 6 when the holder is in position for use, as illustrated in Figs. 1 and 2. Fig. 8 is an elevation of a modified construction of the device embodying the invention in one of the details thereof, and Fig. 9 is an elevation of such modified construction in position to be placed with the opera-glass in the case thereof. Fig. 10 is a central longitudinal section of a holder and a part of the opera-glass embodying this invention, with the part of the holder adjacent and secured to the frame of the opera-glass connected to the middle part of the holder by different means from which the same are connected in such Fig. 2, and showing the frame extending between the bars connecting the barrels constructed of a tube, and with a tubular bar having a geared rack thereon extending into such tubular frame. Fig. 11 is an end view of the construction illustrated in Fig. 10 on the line 11-11 of Fig. 10; and Fig. 12 is a horizontal cross-sectional view of the tubular frame illustrated in Fig. 10, and a bottom plan view, looking up, of the tubular bar and rack extending into such tubular frame, as indicated by line 12-12 of Fig. 10, and the arrows crossing such line. Fig. 13 is a perspective view of the inner bar and gear-rack, forming an element in the construction illustrated in Figs. 10, 11, and 12.

A letter of reference applied to a given part is used to designate such part wherever the same appears throughout the several figures of the drawings.

A is an opera-glass.

a a' are bars connecting the barrels of the opera-glass together.

A' is a frame, either tubular or other shape, as preferred, extending between bars *a a'* and secured to such bars. This frame A' has been heretofore secured in position, as illustrated in Figs. 1 and 2 of the drawings, and

for the purpose for which such frame is there placed by us; and we do not therefore claim, broadly, the frame or the bar A^2 , fitting thereinto, or the pinion engaging with the geared rack on bar or frame A^2 , but particular attention is directed to the tubular frame illustrated in Figs. 10, 11, and 12, and the tubular bar and rack extending thereinto, as such construction is by us considered to be both novel and useful and of good mechanical arrangement, and supplies means whereby the several inventions pertaining to the attachment of a holder to an opera-glass (and herein described) may be placed in such opera-glass when the same is first constructed, and may also be placed in an opera-glass heretofore constructed and having the ordinary means of focusing the same attached thereto as a substitute for such ordinary means of focusing. Neither do we claim, broadly, a detachable or adjustable holder having a thumb-wheel therein by which the opera-glass can be focused, whether such thumb-wheel be placed midway of the holder or at one end thereof.

A^2 is a bar (which may be tubular) extending into and longitudinally movable in the frame A' . Bar A^2 is connected at one end thereof to bar a^2 , extending between and connecting the tubes of the opera-glass.

A^3 is a pinion rotatably mounted in frame A' , the teeth of such pinion intermeshing with corresponding teeth A^4 on gear-rack a^4 of bar A^2 .

a^3 is the stem of pinion A^3 . Stem a^3 has a squared hole in the end thereof when the part C is made detachable from the part D; but when such part is merely adjustable, as will be hereinafter described, in relation thereto, there is no need of more than the grooves A^5 , Fig. 10, thereon. In any event the end of stem a^3 is made to rotatably engage with the spindle in the part C of the handle and holder.

a^5 are grooves on the spindle in part C corresponding with and engaging with grooves A^5 .

B is the handle of the holder.

C is the part of the holder intermediate between the handle B and part D.

D is the part of the holder which is rigidly secured to frame A' .

A^6 is a washer secured to frame or bar a^2 .

E is a common coil-spring in part D, around the pinion stem a^3 , and in position to receive the end-thrust resulting from the end of part C of the holder abutting against it and compressing the coils (one or more) of such spring when the holder is brought into position for use.

$D' D^2$ are slots in that end of part D of the holder which extends over part C when part C is made detachable from part D, and the construction preferred by us is adopted for joining such separable parts.

$C' C^2$ are pins or stops on part C arranged to fit into slots $D' D^2$, respectively.

d is the part or portion of the slots $D' D^2$ extending peripherally around such part C,

and d' is a notch in part d of the grooves. The spring E tends to force the pins or stops $C' C^2$ into the notches $d' d'$ (such notches forming abutments against which such pins are forced) when parts C and D are joined together. The holder is thus maintained firmly in place with relation to the opera-glass.

F is a hinge joining parts B and C together, and F' , Fig. 2, is a catch secured to part C and engaging with abutment f in part B of the holder when the parts B and C are in the same axial line.

C^3 is a recess in part B, into which recess pin or stop C' extends when part B is folded up against part C, as indicated by the dotted lines in Fig. 2.

To so dispose the several mechanisms contained in the holder, and by means of which the opera-glass is focused, as hereinbefore described, that the part B can be folded over on the part C and the part C can be separated from part D or folded thereover, we have constructed such mechanism and arranged and combined the same as follows:

$b b$ are openings in the handle B, and G is a thumb-wheel on shaft g , rotatably mounted in such handle B so as to come adjacent to the openings $b b$, so that it may be actuated therethrough.

$g' g'$ are grooves extending across the end of shaft g .

H H' are shafts or spindles rotatably mounted in part C of the holder.

H is constructed, preferably, as follows: Spindle h , having hole h' and slots $h^2 h^2$ at one end thereof and annular groove h^3 and squared end h^4 at the other end thereof. The squared end h^4 of the shaft H is arranged to enter the squared hole in the stem a^3 , as is well illustrated in Fig. 2 of the drawings. The pin or stop C' extends through the wall of part C and into the annular groove h^3 , thereby forming (relative to shaft H) an abutment against which the shoulder of such groove h^3 may be forced by spring h^8 , thus holding the shaft H in place in the part C, while permitting rotatory movement thereof and a limited longitudinal movement. The longitudinal movement is controlled and determined by the width of the annular groove h^3 . Shaft H' preferably consists of a spindle having annular groove h^5 and end h^6 , with abutments $h^7 h^7$ thereon and with spring h^8 mounted thereon so as to abut at one end thereof against the shoulder formed by the part h^6 , being of less diameter than the remaining part of such shaft H', and at the other end thereof against the end of part H when parts H H' are mounted in the part C, thus tending to force parts H H' longitudinally away from each other and so that the ends thereof shall project beyond the ends of part C—that is, into what we term an "extended position." The abutments $h^7 h^7$ are arranged to and do engage with the slots $h^2 h^2$, respectively, so that rotation of part H produces corresponding rotation of shaft H.

H² is a pin forming an abutment in part C, (see Figs. 1 and 2,) which extends through the annular groove h⁵, and whereby shaft H is maintained in longitudinal position in the part C without being prevented from rotating freely. The annular groove is of sufficient width in relation to the abutment formed by pin H² that a limited longitudinal movement of the shaft H is permitted.

h⁹ are grooves across the end of shaft H' which comes adjacent to shaft g of the thumb-wheel G, and such grooves intermesh with the groove or grooves g' g' on the end of such shaft g.

Because of the construction of the shafts H H', as last above described, the ends of such shafts are yieldingly held in an extended position by spring h⁸, as hereinbefore described, one end of such spring tending to force shaft H longitudinally outward in part C and the other end of such spring tending to force shaft H' longitudinally outward, the movement and force of the spring being sufficient to maintain both of such shafts in their extreme outward, or longitudinally extended, position, thus obtaining, by means of the shafts or spindles H H', being longitudinally movable relative to each other and to the tube C, a shaft or spindle in part C, which is extendible—that is, having elasticity; but when the part B is brought from the position thereof indicated by the dotted lines in Fig. 2 into the position thereof illustrated by full lines in such figure, (and in Fig. 1,) if the grooves g' g' and h⁹ h⁹ do not intermesh the shaft H' will be forced back into a retracted position in the part C until such time when the shaft g has been turned sufficiently to bring the grooves into proper relation with each other so that such grooves may intermesh, at which time the shaft H' will be forced into an extended position by the spring h⁸ and the grooves g' g' and h⁹ h⁹ come into engagement; and when the part C is joined to the part D, (being constructed so as to be separable, as in Figs. 1 and 2,) if the squared end h⁴ is not in position with relation to the squared hole in stem a³ to engage therewith, such shaft will be forced back into a retracted position in part C, until by rotation of the thumb-wheel, shaft g thereof, and shafts H H', such squared end is in position to enter such squared hole, at which time the part H' will be automatically forced into such hole by the spring h⁸, thus intermeshing, so far as rotatable movement is concerned, with stem a³. Further rotation of the thumb-wheel G will then rotate the pinion A³ and focus the opera-glass.

In the construction illustrated in Figs. 8 and 9 the only change from the construction hereinbefore described is in the hinging of part C to part D, so that part C can be folded back, as illustrated, without such part C being separable from part D, the placing of the longitudinally-movable sleeve J on the parts C and D, so that it may be slid over the pivotal hinge connecting such parts when the longi-

tudinal axis of the parts are in the same line, and there maintain them, and slid off from such hinge and permit parts C and D to be folded, relative to each other, and in the slightly-different construction of the ends of the stem a³ and shaft H' by making corresponding grooves A⁵ a⁵, as hereinbefore described, in place of the squared end and squared hole into which such squared end extends.

When the modified construction illustrated in Figs. 8 and 9 is adopted, the part B is folded over on the part C of the holder with the pin or stop C' in recess C³, such pin C' and recess C³ being respectively so related to the pivot of the hinge joining the parts C and D together—that is, at such distance from such pivot that the pin C' enters recess C³ in a way to hold the parts together from accidental disarrangement—and then the parts B C are folded over (after removing from off the pivot-hinge the sleeve J) and the opera-glass can be placed in its case.

When the construction of the frame A² and A' shown in Figs. 10, 11, and 12 is employed, they may be readily substituted for the ordinary focusing apparatus of an opera-glass. In this construction A' is a tube corresponding substantially in diameter with the tube for which it is to be substituted. A² is circular in cross-section, and may consist of a tube secured at one end thereof to the bar a². A³ is the geared pinion on the stem a³, and A⁴ the geared rack engaging with such pinion. Geared rack A⁴ is secured to or forms a part of the bar a⁴ connecting open rings A⁶ and A⁷ together. a' is a bar connected at the ends thereof, respectively, to open rings A⁶ A⁷. Bar a', as well as open rings A⁶ A⁷, has frictional contact with the inner wall of the tube A'. Open ring A⁶ is secured to A². a⁶ and a⁸ are washers covering the ends, respectively, of the tube A' and secured to the respective bars a a'. When these washers a⁶ a⁸ are secured in place, the tube A' is held rigidly between such bars a a'; but when such washers are not secured to the respective bars the tube can be slid first out of one bar and then out of the other.

To substitute this apparatus for the ordinary focusing apparatus it is merely necessary to remove the tube, thumb-wheel, and connecting parts of such ordinary focusing apparatus and replace such tube with the tube A' and connecting parts just described, and then secure the washers a⁶ a⁸ in place on bars a a'.

To use the holder, parts B and C are brought into axial line and the catch between such parts brought into engagement, and part D is joined to part C in like position. The turning of the thumb-wheel will then turn the pinion A³ and focus the glass. The manner of turning the thumb-wheel is the same as in other opera-glass holders wherein a thumb-wheel is placed midway of the length of the holder, and such thumb-wheel is connected

to the focusing apparatus of the opera-glass by the rotatable shafts in the handle, as hereinbefore described.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of the three part holder one of such parts rigidly secured to the opera glass frame, one of the parts removably secured to the first named part, and the remaining part forming the handle adjustably secured to the second named part, with mechanism rotatably mounted in the several parts whereby the opera glass can be focused by the thumb and forefinger of the hand grasping the handle part of the holder; substantially as described.

2. The combination of a three part holder, one of such parts rigidly secured to the opera glass, a second part removably secured to the first named part, and a third part, forming a handle to the holder, adjustably secured to the second named part, with a spindle rotatably mounted in the first named part, a pinion on the spindle engaging with a corresponding rack of the focusing mechanism of the opera glass, a spindle rotatably mounted in the second named part, the ends of such spindle being respectively yieldingly held in an extended position, and a thumb wheel in the handle part of the holder, the intermediate spindle arranged to engage with the spindle of the thumb wheel and the spindle of the pinion, substantially as described.

3. The combination with an opera glass of a three part holder, one of such parts secured to the opera glass, the adjacent part adjustably secured to the first named part, and the remaining part adjustably secured to the second named part, with mechanism rotatably mounted in the several parts whereby the opera glass can be focused by turning a thumb wheel in the last named part and adjacent to

the second named part by the thumb and forefinger of the hand grasping the third named part; substantially as described.

4. The combination with an opera glass of a holder consisting of a tube secured to the frame of the opera glass, a spindle rotatably mounted therein, a pinion on the spindle engaging with a rack, a rack secured to the bar connecting the tubes of the opera glass, a tube connecting with the first named tube, spindles rotatably mounted in the second named tube, such spindles engaging rotatably with each other and being independently longitudinally movable in the tube, means for yieldingly holding the spindles in an extended position relative to the tube, and a handle connecting with the second named tube, with a spindle having a thumb wheel thereon mounted in such handle, all of such spindles being rotatably connected when the several parts of the holder are in an operative position; substantially as described.

5. In a three part opera glass holder, the combination of a thumb wheel rotatably mounted in the handle part of the holder, a spindle rotatably mounted in the part of the holder adjacent to the handle part, such spindle consisting of two shafts connected together so as to rotate in unison and to move longitudinally independently of each other, a spring yieldingly holding both of such shafts in an extended position, and a spindle mounted in the remaining part of the holder; and all of such spindles coming in contact at the ends thereof when the holder is in position for use and engaging so as to rotate in unison; substantially as described.

JEREMIAH MURPHY.

OSCAR F. ENGWALL.

CHARLES A. TIDEN.

In presence of—

J. W. KENEVEL,

CHARLES TURNER BROWN.