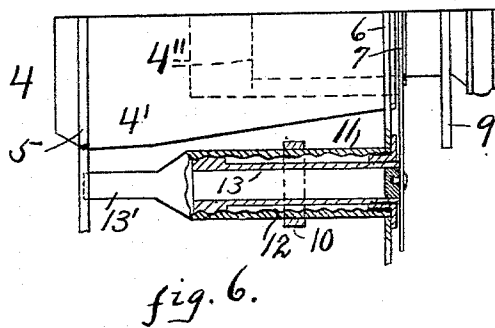
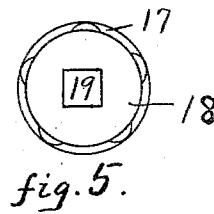
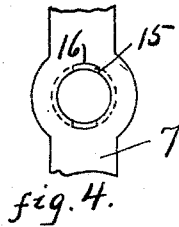
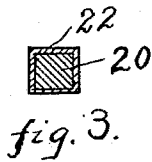
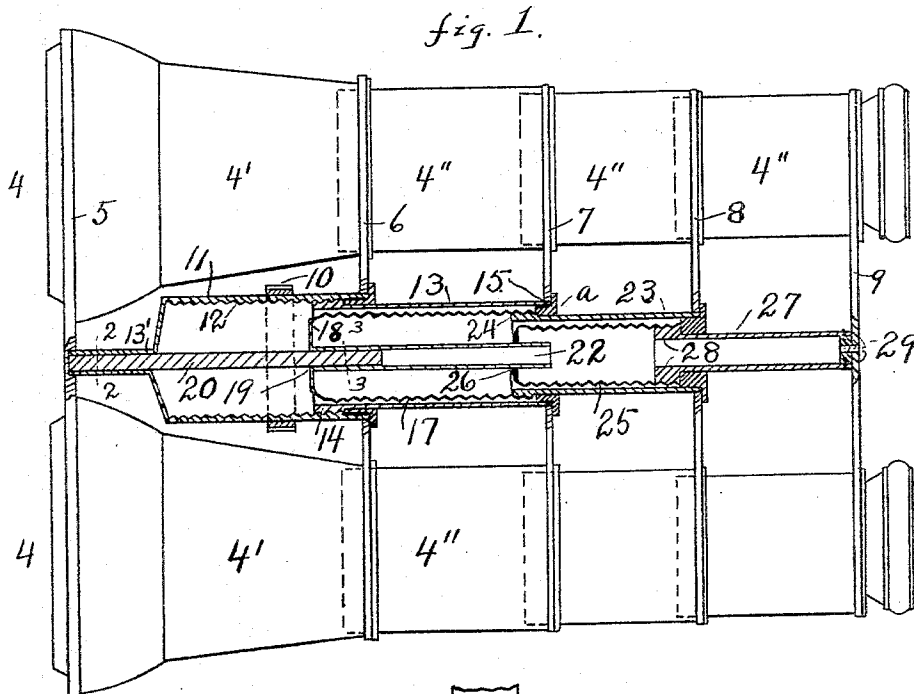


(No Model.)

N. A. SHIGON.
OPERA GLASSES.

No. 531,979.

Patented Jan. 1, 1895.



Witnesses
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C. L. Belcher

Inventor
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UNITED STATES PATENT OFFICE.

NATHAN A. SHIGON, OF NEW YORK, N. Y., ASSIGNOR TO HENRY LORSCH,
OF SAME PLACE.

OPERA-GLASS.

SPECIFICATION forming part of Letters Patent No. 531,979, dated January 1, 1895.

Application filed June 4, 1894. Serial No. 513,351. (No model.)

To all whom it may concern:

Be it known that I, NATHAN A. SHIGON, a subject of the Czar of Russia, and a resident New York, county of New York, and State

5 New York, have invented certain new and useful Improvements in Opera - Glasses, of which the following is a specification.

The present invention relates to opera glasses.

10 The main object of the invention is to construct binocular glasses so that glasses of any particular size shall have longer sight tubes when open, than in old constructions, without having the main body of the glasses corre-

15 spondingly lengthened, so that when the instrument is contracted, as usual when out of use, it shall not be unnecessarily bulky.

Another object is to provide for rapidly expanding and contracting the sight tubes. The advantage of long tubes for these glasses is well known by those familiar with them. The lengthening of the main body, as is usual when a long tube is desired, is objectionable since it necessitates a larger receptacle for

25 carrying the glasses, and for other reasons. In the accompanying drawings, Figure 1 is a plan view, partly in section, of an opera glass, having my improvement applied thereto, and open. Fig. 2 is a section on line 2—2.

30 Fig. 3 is a section on line 3—3. Fig. 4 illustrates a detail to be described. Fig. 5 is an end view of a sleeve to be described; and Fig. 6 shows a modification.

Referring to the drawings, 4, 4, indicate the 35 two tubes of an opera glass, field glass, or similar binocular glass. Each of these tubes consists of a body portion 4', and several tube sections 4'', the first sliding within the body 4', the second sliding within the first, and the

40 third sliding within the second. If a fourth section were used it would fit within the third, and so on. 5, 6 are cross bars or plates secured to the opposite ends of the bodies 4' and forming the main frame of the instrument. 7 is a similar cross plate secured to the outer ends of the first pair of tube sections 4''. 8 is a similar cross plate secured to the second pair of tube sections; and 9 is a similar cross plate

50 secured to the third pair of tube sections. If more tube sections were employed there would

be additional cross plates corresponding to 7, 8, 9.

Between the two bodies 4', 4', is a handle consisting of a milled head 10 secured to a ro- 55 tatable sleeve 11, having an internal screw thread 12, and a cylindrical extension 13' adapted to turn in a bearing in the cross plate 5. The opposite end of the sleeve 11 is adapted to turn in a bearing in cross plate 6. 60

13 is a sleeve having at one end a screw threaded section 14, engaging with the thread 12 and adapted to move into and out from sleeve 11. The opposite end of this sleeve 13 is held in cross plate 7 in such a manner that 65 it cannot rotate or slide therein. For example, the sleeve may terminate at the rear of plate 7, as indicated by the dotted lines, Fig. 4, said sleeve having, however, projecting lugs 15 extending into correspondingly shaped grooves 70 16 in said cross plate. The inner faces of the lugs have screw threads which are engaged by the flanged screw threaded ring *a*.

Within sleeve 13 is a screw threaded sleeve 17, the thread of which has the same pitch as 75 the threads 12, 14. This sleeve 17 has an end 18, having an opening 19 through which the rod 20, which is preferably square, passes, said opening being of the same shape as the cross section of the said rod (see Fig. 5), and 80 adapted to slide but not turn thereon. Rod 20 fits into the extension 13' and is so secured to said extension, for example, by screw 21, as to turn therewith.

22 is a tube adapted to fit over rod 20, as 85 indicated in Fig. 3, and to slide but not turn thereon.

23 is a sleeve, similar in shape to 13, having at one end a screw threaded section 24 engaging with the thread of sleeve 17, and 90 at the opposite end secured to the cross plate 8 in the manner described in connection with Fig. 4, or in any other suitable manner. Within sleeve 23 is another screw threaded rotatable sleeve, 25, the bottom of which has 95 an opening 26 fitting the tube 22 and adapted to slide thereon. Fig. 5 serves also as an end view of sleeve 25.

27 is another sleeve, corresponding to sleeves 13, 23, having at one end a screw 100 threaded section 28 the thread of which has the same pitch as threads 12, 17 and 25, which

section engages with thread 25. The opposite end of sleeve 27 is secured to the cross plate 9, for example, by screw 29 and is held from rotation.

5 The operation of the devices described for moving the tube sections is as follows: When handle 10 is turned in the usual manner, in the proper direction to cause its thread to draw in sleeve 13, it is evident that not only
10 the first pair of tube sections 4" is drawn toward the left, as shown in Fig. 1, but that all succeeding pairs are similarly moved. At the same time rod 20, being positively turned by the handle, turns the screw threaded sleeve
15 17, thus by means of sleeve 23 moving the second pair of tube sections into the first pair, carrying the third pair along toward the left. Simultaneously with the movements described, tube 22 is positively turned by rod
20 20, and in turn positively turns sleeve 25, and this sleeve engaging with thread 28 draws sleeve 27, connected to the third pair of tube sections 4", into itself, thus entirely closing
25 up the glasses. In opening the glasses the operation would be the reverse of that described. By using the several screws for moving the several tube sections the long tubes are contracted or expanded in the same time and with the same amount of movement of
30 the handle as a single pair of short sections 4" would be when only one such pair is used, as in old glasses. Evidently, the arrangement of screw sleeves, &c., described could be used with a glass having but one sight tube with-
35 out modification.

It is evident that the shape of parts 20, 22, may be varied, it being only necessary that they shall be capable of turning the sleeves 17, 25, and of allowing said sleeves to slide
40 thereon in substantially the manner indicated. It will also be evident that if only two pairs of tube sections 4" were to be used the tube 22, and sleeve 23, 25, would be omitted and 27 would take the place of sleeve 23.

45 I am aware that in telescopes it is old to use several tube sections for the purpose of obtaining a long sight tube, and this I do not claim broadly, my improvement relating to glasses having tube sections movable by
50 means of rotatable screws, and to binocular glasses with several tube sections movable by such screws or otherwise.

In the drawings, the sleeves 11, 13, and 23 and other parts of the feeding mechanism are
55 made somewhat larger than they would be in actual use, in glasses having bodies 4' of the size shown, for clearness of illustration.

A modification which I may use is shown in Fig. 6, where a portion of one of the sight
60 tubes of an opera glass, having my improvement applied thereto, is shown. The main

parts are the same as corresponding parts in Fig. 1. In this construction sleeve 13 is connected to cross plate 7 and through it to the first pair of tube sections 4", so that when
65 the sleeve is turned all the tube sections are moved out or in, according to the direction in which the screw is turned. No screw is provided to move cross plate 9 and the second pair of tube sections, but said parts can
70 be pulled out or pushed in directly by hand. It is convenient in opening this instrument to first pull out the tube sections connected to plate 9 and then by turning the handle to move out the other sections and to establish
75 the proper focus.

I claim—

1. A glass having two sight tubes, each consisting of a main body and several tube sections, movable one within another and in the same direction, a rotatable screw handle, and means consisting of as many screws and sleeves or parts moved thereby as there are tube sections for simultaneously moving all the said tube sections. 80

2. The combination with a sight tube consisting of a main body and several tube sections, fitting one within another, of a screw handle and means moved thereby for moving the section nearest the body, carrying there-
90 with succeeding sections, a second screw positively turned by said handle, and means moved by the second screw for moving the second tube section in the same direction as the first section moves. 95

3. The combination with two sight tubes, each consisting of a main body and several movable tube sections, a rotatable handle having a sleeve with a screw thread, a sleeve moved thereby and connected to the first pair
100 of tube sections, a rod secured to the handle so as to turn with it, a screw moved by said rod, and a sleeve or device moved by said screw and connected to the second pair of tube sections for moving them. 105

4. The combination of two sight tubes, each consisting of a main body and several movable tube sections, a rotatable handle having a sleeve with a screw thread, a sleeve moved by said thread and connected to the
110 first pair of tube sections, a rod secured to the handle so as to turn with it, a tube engaged and turned by said rod, a sleeve having a screw thread engaged and turned by said tube, and means moved by the latter
115 screw threaded sleeve connected to the next pair of tube sections for moving them.

Signed this 31st day of May, 1894.

NATHAN A. SHIGON.

Witnesses:

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