

No. 614,110.

Patented Nov. 15, 1898.

T. B. JEBB.
OPTOMETER.

(Application filed Dec. 31, 1897.)

(No Model.)

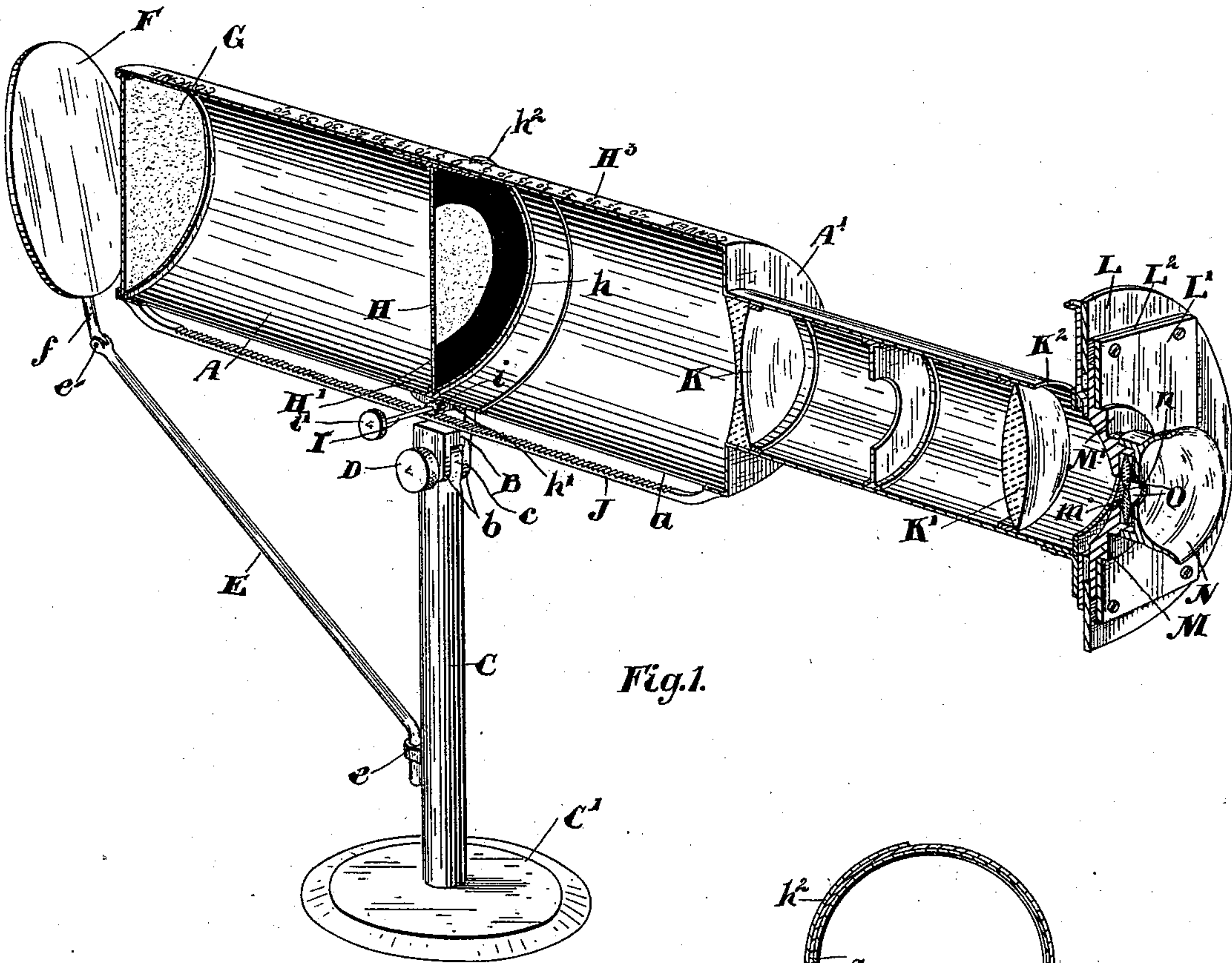


Fig. 1.

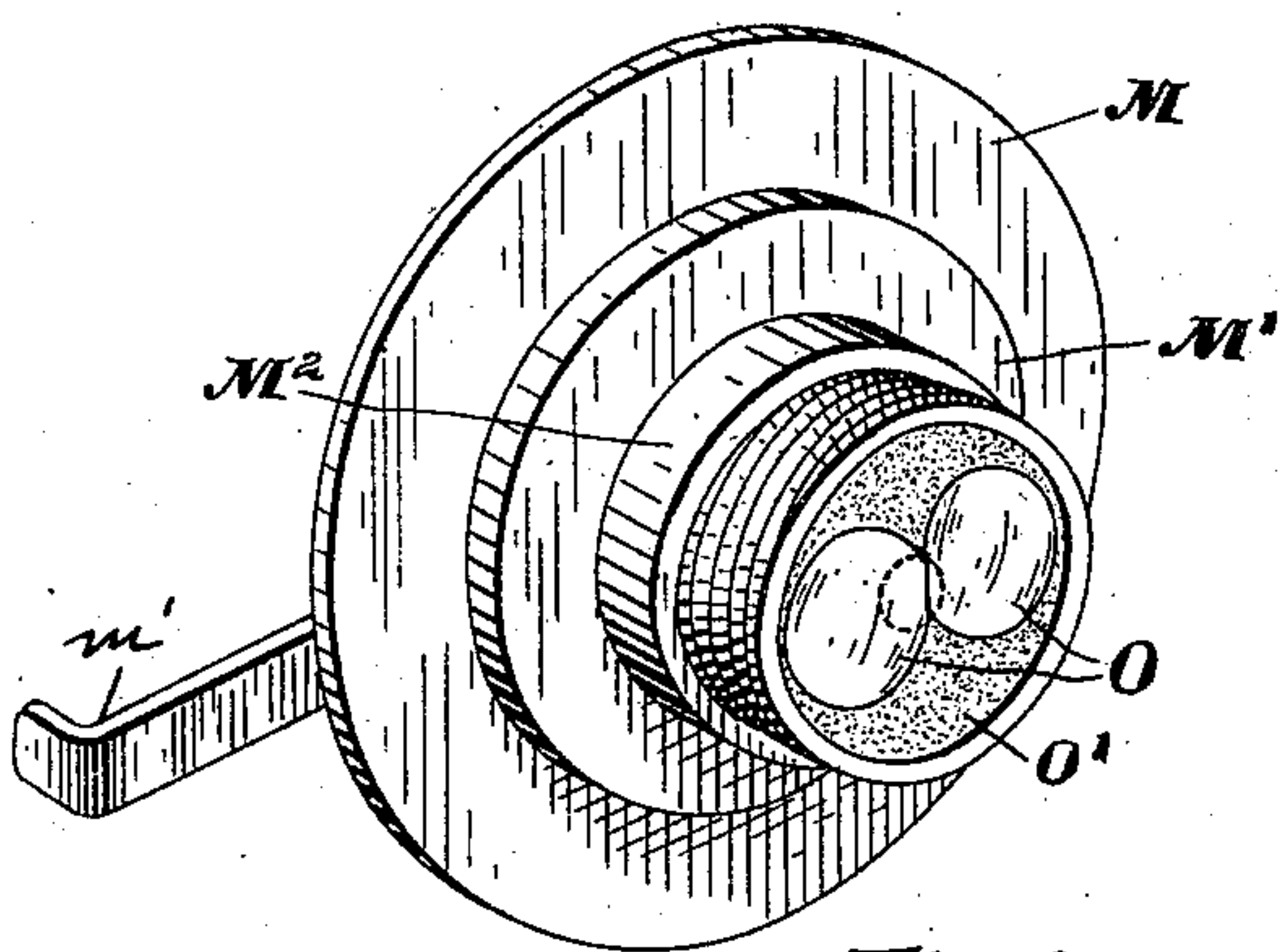


Fig. 2.

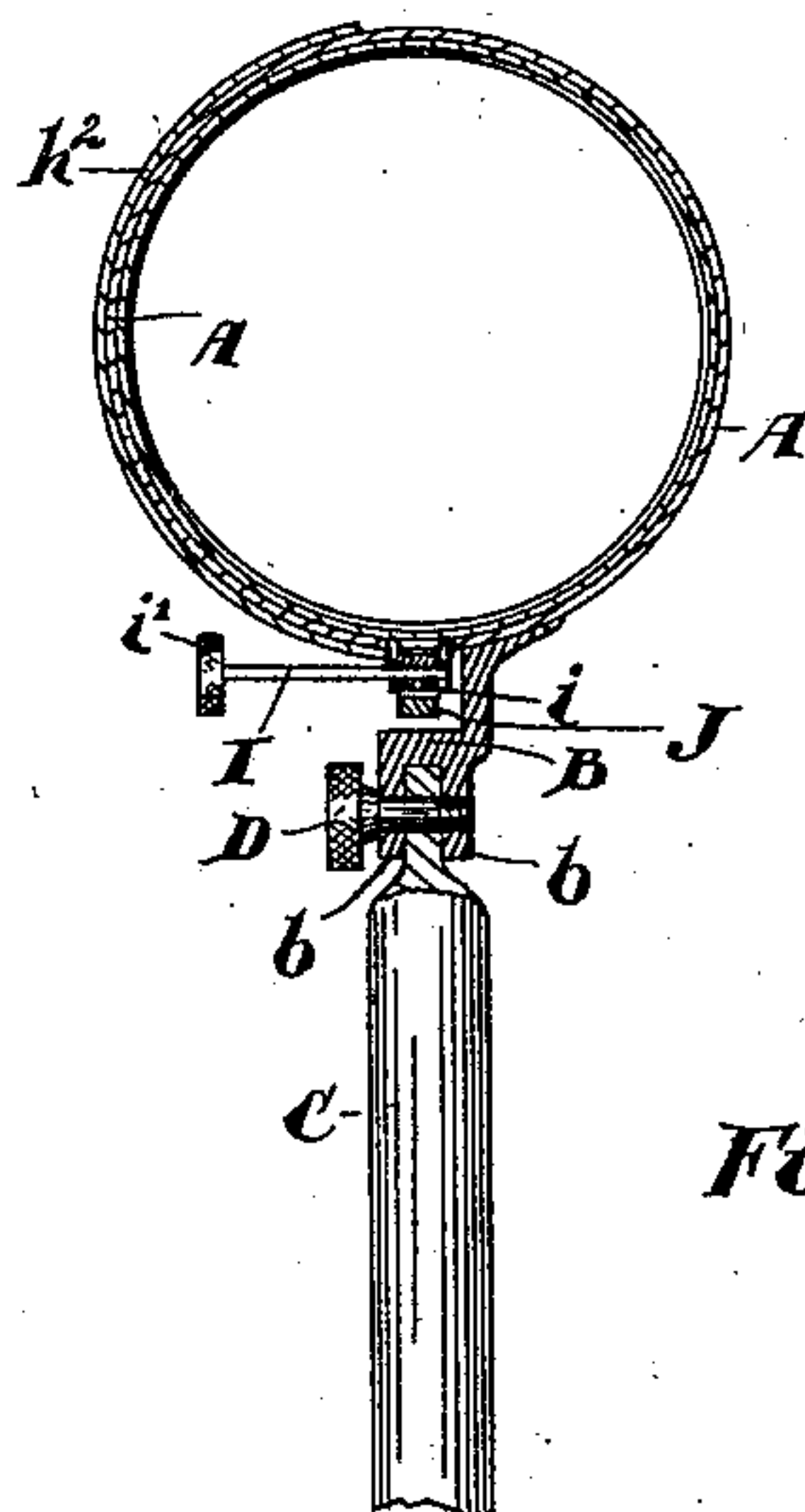


Fig. 3.

Witnesses.

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THOMAS BARRY JEBB, OF ORILLIA, CANADA.

OPTOMETER.

SPECIFICATION forming part of Letters Patent No. 614,110, dated November 15, 1898.

Application filed December 31, 1897. Serial No. 664,932. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BARRY JEBB, optical specialist, of the town of Orillia, in the county of Simcoe, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Optometers, of which the following is a specification.

This invention has been patented to me in Canada under date of March 11, 1898, No. 59,245.

My invention relates to improvements in optometers; and the object of the invention is to devise a simple and compact machine of this class whereby binocular vision may be tested accurately at short range without any muscular strain on the eyes; and it consists, essentially, of a cylindrical case having an open end supported on a suitable stand and provided with a reduced cylindrical extension having secured at the end next the major cylindrical portion a concave lens and at the opposite end a convex lens and a slot for the test-lenses, such end being also provided with the holding-disk and abutting lenses supported in a suitable case opposite the eye-hole, the parts being otherwise arranged and constructed in detail, as hereinafter more particularly explained.

Figure 1 is a sectional perspective view of my improved optometer. Fig. 2 is an enlarged detail of the lens-holder. Fig. 3 is a cross-section through Fig. 1.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the major cylindrical portion, which is secured on the top of a suitable bracket B, having depending lugs *bb*, between which extends the reduced upper end *c* of the standard C, having a suitable base C'.

D is a suitable set-screw which extends through the lugs *b b* and reduced upper end *c*, serving to clamp the lugs to the upper end *c* and hold the cylinder at any desired angle. When the set-screw is loosened, the inclination of the cylinder may of course be changed.

E is a rod extending into the perforated lug *e*, attached to or forming part of the standard C.

F is a mirror secured at the end of the rod E on an arm *f*, stiffly but pivotally held between the jaws *e'* at the upper end of the rod

E, so that the angle of the mirror may be adjusted to deflect the light as may be desired.

G is a ground glass secured in the open end of the cylinder A. This ground glass may be provided or not, as may be desired.

H is a focus gage-ring, the central opening *h* of which is concentric to the axis of the cylinder. The focus gage-ring H has a double flange H', having secured at the bottom of it lugs *h'*, one only of which is shown, which extend through a longitudinal slot *a*, extending substantially from end to end of the cylinder, and a central ground glass.

I is a spindle extending through the lugs *h'* and provided between them with a pinion *i* and at one end with a turning-knob *i'*.

J is a rack secured to the ends of the bottom of the cylinder and with which the pinion *i* is designed to mesh in order to adjust the focus gage-ring longitudinally.

It will be noted that I provide a pointer *h²*, (see Fig. 3,) which extends from the lugs *h'* to the top of the cylinder, on which is provided a suitable scale H³, starting at zero in the center, one end of the cylinder being marked "Convex," as indicated, and the other "Concave." This scale indicates, when the pointer is moved along it, the number of the lens required for far-sighted people, and when the pointer is moved in the opposite direction the number of the lens required for near-sighted people, as will more particularly appear hereinafter.

A' is the inwardly-extending flange at the near end of the cylinder, to which is affixed the minor extension-cylinder, the axis of which is on a line with the axis of the major cylinder.

K is a concave lens secured on the inner end of the minor cylinder in proximity to the major cylinder, and K' is a convex lens secured near the opposite end of the minor cylinder.

K² is a slot for the insertion of trial-lenses should it be desired to use the same.

L is an end disk provided with a retaining-plate L', secured to an inner plate L², which has a circular hole in which fits the disk M. The disk M is provided with concentric outward extensions M' and M², the extension M² being threaded at its outer end, so as to re-

ceive the end cup-shaped eyepiece N, which is provided with a central eyehole *n*. The disk M is also provided with a central eyehole *m*.

5 O O are a pair of convex lenses which abut each other opposite the center of the eyeholes *m* and *n*, the edges of the lenses being preferably ground off, so as to form a substantially straight line through the center of
10 the eyehole. The lenses O are fitted into a suitable composition O', which hold them securely in position. The disk M is rotated by means of the handle *m'*, so as to partially rotate the lenses O. As the edges of the lenses
15 are in the center of the eyehole it will be seen that in looking through my optometer there will appear two openings at the end of the cylinder. As a convex lens is used in the minor cylinder next the eyehole and a
20 concave lens farther away from the eyehole it will also be seen that the imaginary double opening in the large cylinder will appear at a much greater distance or farther away than it is in reality, thus effectually preventing
25 any muscular strain on the eyes and enabling me to obtain in a compact machine all the advantages derived from the use of test-cards heretofore utilized at a distance.

By the use of the mirror F, hereinbefore
30 described, the instrument may be set so that the person has his back to the light, as the light will be reflected into the open end. The focus gage-ring may also be adjusted, as described, from the zero-point toward the eye-
35 piece in the case of far sight and away from the eyepiece in case of near sight, so as to obtain the requisite number of glass required. By this means binocular vision may be accurately determined. Of course the use of
40 the focus gage-ring does not in any way do away with trial-lenses, which may be inserted in the slot K², if thought necessary, in some cases where it is extremely difficult to obtain accurate lenses.

45 Although I show in this invention abutting convex lenses opposite the eyepiece it will of course be understood that I might use abutting concave lenses and produce practically the same effect. I, however, prefer the use
50 of the convex lenses.

What I claim as my invention is—

1. In an optometer, in combination suitably-abutting lenses, the holder for same provided with suitable eyeholes in which the
55 abutting edges of the lenses are in the central line of sight, the minor cylindrical portion provided next the eyehole with a convex lens and at the opposite end with a concave lens, the major cylinder forming an exten-

sion thereof and provided with an end opening as and for the purpose specified. 60

2. In an optometer, in combination suitably-abutting lenses, the holder for same provided with suitable eyeholes in which the
65 abutting edges of the lenses are in the central line of sight, the minor cylindrical portion provided next the eyehole with a convex lens and at the opposite end with a concave lens, the major cylinder forming an extension thereof and provided with an end opening and a suitable stand for the major cylinder as and for the purpose specified. 70

3. In an optometer, in combination suitably-abutting lenses, the holder for same provided with suitable eyeholes in which the
75 abutting edges of the lenses are in the central line of sight, the minor cylindrical portion provided next the eyehole with a convex lens and at the opposite end with a concave lens, the major cylinder forming an extension thereof and provided with an end opening, a bracket secured in the center of the major cylindrical portion and provided with
80 depending lugs, a stand provided with a reduced upper end and a clamping-screw extending through the lugs and reduced end as and for the purpose specified. 85

4. In an optometer, in combination suitably-abutting lenses, the holder for same provided with suitable eyeholes in which the
90 abutting edges of the lenses are in the central line of sight, the minor cylindrical portion provided next the eyehole with a convex lens and at the opposite end with a concave lens, the major cylinder forming an extension thereof and provided with an end opening, a suitable stand for the major cylinder and a mirror and arm supporting the same as and for the purpose specified. 95

5. In an optometer, the combination with
100 the eyepiece and lenses, adjacent to said eyepiece having abutting edges of the minor cylinder, the convex lens located in same next the eyepiece, the concave lens located at the opposite end, the major cylinder and the focus-gage ring and pointer and scale on the cylinder all arranged as and for the purpose specified. 105

6. In an optometer, in combination suitably-abutting lenses, the holder for same provided with a suitable eyehole in which the
110 abutting edges of the lenses are in the central line of sight and means for rotating the lenses as and for the purpose specified.

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Witnesses:

B. BOYD,

A. MCADAM.