

Jan. 7, 1936.

A. WOLLENSAK

2,026,722

MICROSCOPE

Filed Dec. 4, 1934

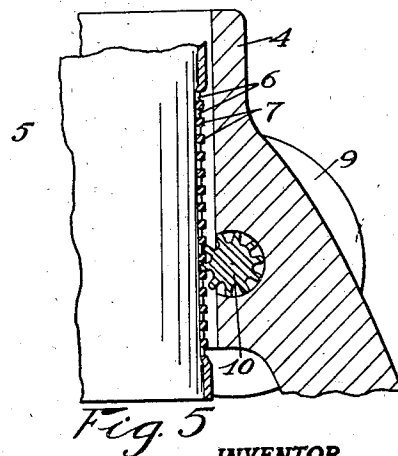
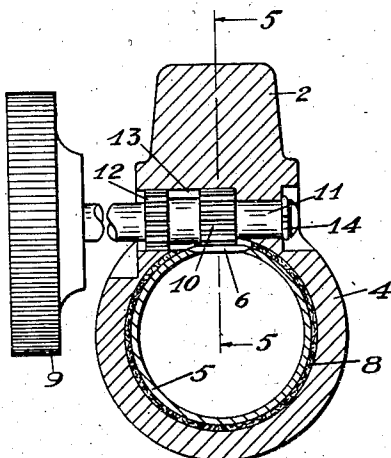
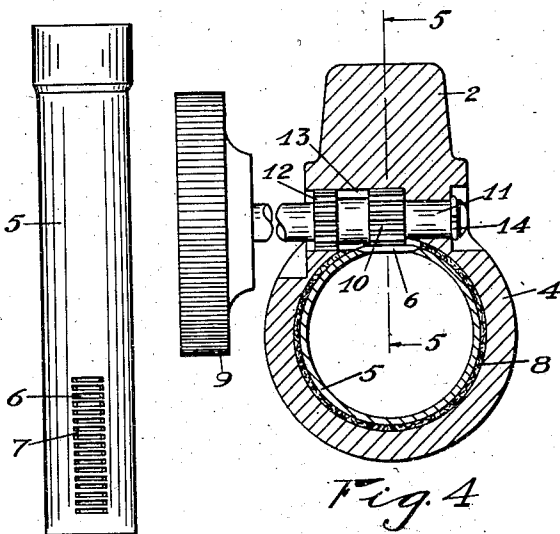
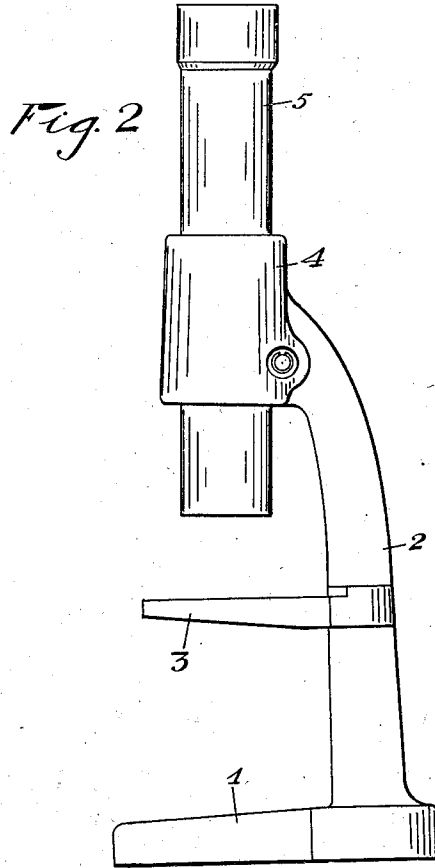
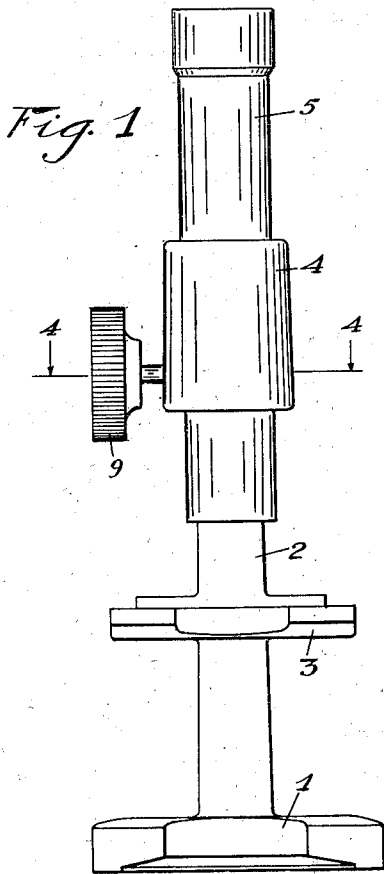


Fig. 3

Fig. 4

Fig. 5

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2,026,722

MICROSCOPE

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Application December 4, 1934, Serial No. 755,960

4 Claims. (Cl. 88—39)

My invention relates to a microscope, and has for its object to afford a simple construction of few parts which can be economically manufactured, readily assembled, and provides an efficient and practical arrangement for supporting and adjusting a movable lens tube vertically in its supporting sleeve.

More particularly, the invention has for its object to afford a compact arrangement, doing away with the necessity of securing a separate rack to the lens tube and simplifying the structure of the adjusting means and the manner of supporting the same in the standard so that fewer parts are required than in prior constructions and they can be more quickly assembled and housed in a smaller space, thus producing a more economical and successful manufacturing assembly.

To these and other ends, the invention consists in the construction and arrangement of parts that will appear clearly from the following description when read in conjunction with the accompanying drawing, the novel features being pointed out in the claims following the specification.

In the drawing:

Fig. 1 is a front elevation of a conventional type of microscope equipped with a preferred embodiment of the invention;

Fig. 2 is a side elevation of the same;

Fig. 3 is a detail elevation of the lens tube;

Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 1, and

Fig. 5 is an enlarged sectional view, with parts broken away, on line 5—5 of Fig. 4.

Referring more particularly to the drawing in which like reference characters refer to the same parts throughout the several views, 1 designates a base, and 2 is a standard provided with the usual object support 3 and supporting sleeve 4 preferably formed integral with the standard 2, while 5 is the lens tube vertically adjustable in the supporting sleeve 4 through the instrumentalities now to be described.

The lens tube is provided in its wall with a series of transverse serrations, preferably in the form of slots 6 extending therethrough and affording rack teeth 7 by which the lens tube is engaged and actuated upwardly or downwardly, while 8 designates a layer of fabric or suitable soft material secured to the interior of the sleeve 4 and affording proper frictional engagement with the lens tube 5.

The lens tube is actuated by instrumentalities

comprising an arbor transversely mounted in a suitable opening in the standard. The arbor has a handle 9 at one end and is provided with a pinion 10 preferably formed integral therewith and engaging the aforementioned rack teeth 7 on the lens tube. The arbor is supported in the standard in suitable bearings, and for this purpose has a reduced end portion 11 that engages a corresponding reduced portion of the opening in the standard.

The reduced portion 11 is on one side of the pinion 10, and 12 designates an enlarged portion or collar on the other side of the pinion 10 and preferably of the same diameter as the pinion and spaced therefrom, said collar 12 engaging an enlarged portion 13 of the opening in the standard and rotating therein. 14 designates a split spring ring seated in an annular slot at the end of the arbor and engaging the adjacent outer surface of the standard and thereby holding the arbor and operating pinion 10 in assembled or operative position for moving the lens tube upwardly or downwardly as desired.

In assembling the parts, the lens tube is first positioned in sleeve 4 with the rack teeth 7 at the rear, as shown in Fig. 4. The arbor, with the spring ring 14 removed therefrom, is then inserted into the opening in the standard, the reduced end portion 11 of the arbor passing through the reduced part of the opening in the standard until the pinion 10 engages the teeth on the lens tube and abuts against the adjacent part of the standard surrounding the reduced opening in which the portion 11 of the arbor is located. The spring ring 14 is then slipped on to the end of the arbor, as shown in Fig. 4, and holds the latter in operative position.

The collar 12, which may be the same diameter as the pinion 10, engages closely in the opening of the standard, which thus serves as a bearing for the collar 12 and holds the arbor in proper alinement as it is turned. The collar 12 is shown as of toothed formation similar to pinion 10, since it may be convenient to manufacture this unit of toothed stock which is milled out to form the reduced portion 11 and the portion between the pinion 10 and the collar 12, the latter reduced portion being cut away to lessen the friction, and thus facilitate movement of the parts.

The structure described affords an extremely simple and efficient method of manufacture and assembly, and while the invention has been set forth with reference to a particular construction, it is not confined to the details herein shown, and this application is intended to cover

such modifications or departures as may come within the purposes of the improvement or the scope of the following claims.

I claim:

5 1. A microscope comprising a standard and a supporting sleeve integral therewith, a lens tube adjustably mounted in the supporting sleeve and having a series of transversely arranged serrations in its wall affording rack teeth, and oper-
 10 ating means for the lens tube comprising an arbor, pinion teeth on the arbor engageable with said rack teeth on the lens tube, a reduced portion on the arbor on one side of said pinion teeth, a bearing in the standard for said reduced
 15 portion, a collar on said arbor on the other side of the pinion teeth having the same diameter as the pinion, the standard having a transverse opening extending from one side of the same diameter as said pinion and collar on the arbor
 20 whereby the arbor may be assembled by sliding it endwise into said opening, and means for holding the arbor in operative position in the standard.

25 2. A microscope comprising a standard and a supporting sleeve integral therewith, a lens tube adjustably mounted in the supporting sleeve having a series of transversely arranged slots in its wall affording rack teeth, and operating means for the lens tube comprising an arbor, a pinion on the arbor engageable with said rack teeth, a re-
 30 duced portion on the arbor at one side of said pinion, a bearing in the standard for said reduced portion, the aforesaid pinion engaging one end of said bearing, means removably secured to one
 35 end of the arbor and engaging the opposite end of said bearing to hold the arbor in the standard, a collar on the arbor on the other side of said pinion and having the same diameter as said pinion, the standard having a transverse opening ex-
 40 tending from one side of the same diameter as

said pinion and collar on the arbor whereby the arbor may be assembled by sliding it endwise into said opening, and a handle on the opposite end of the arbor.

3. A microscope comprising a standard and a 5 supporting sleeve integral therewith, a lens tube adjustably mounted in the supporting sleeve and having a series of transversely arranged slots in its wall affording rack teeth, the standard having a transversely arranged opening with a reduced 10 portion at one end, and means for adjusting the lens tube comprising an arbor carrying a pinion engageable with said rack teeth, the arbor being supported in the reduced portion of the opening of the standard, a collar on the arbor, the stand- 15 ard having an enlarged opening extending from one side thereof of the same diameter as said pinion and collar whereby the arbor may be assembled by an endwise movement into said open- 20 ing, a handle on one end of the arbor, and means removably secured to the other end of the arbor and engageable with the outer surface of the standard for holding the arbor in position.

4. A microscope comprising a standard and a 25 supporting sleeve integral therewith, a lens tube adjustably mounted in the supporting sleeve and having a series of transversely arranged serrations in its wall affording rack teeth, operating means for the lens tube comprising an arbor, a pinion on the arbor engageable with said rack 30 teeth on the lens tube, a reduced portion on the arbor, a bearing in the standard for said reduced portion, the standard having an enlarged opening extending from one side thereof of the same diameter as said pinion whereby the arbor 35 may be assembled by an endwise movement into said opening, and means engageable with the reduced portion of the arbor for holding the same in operative position in the standard.

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