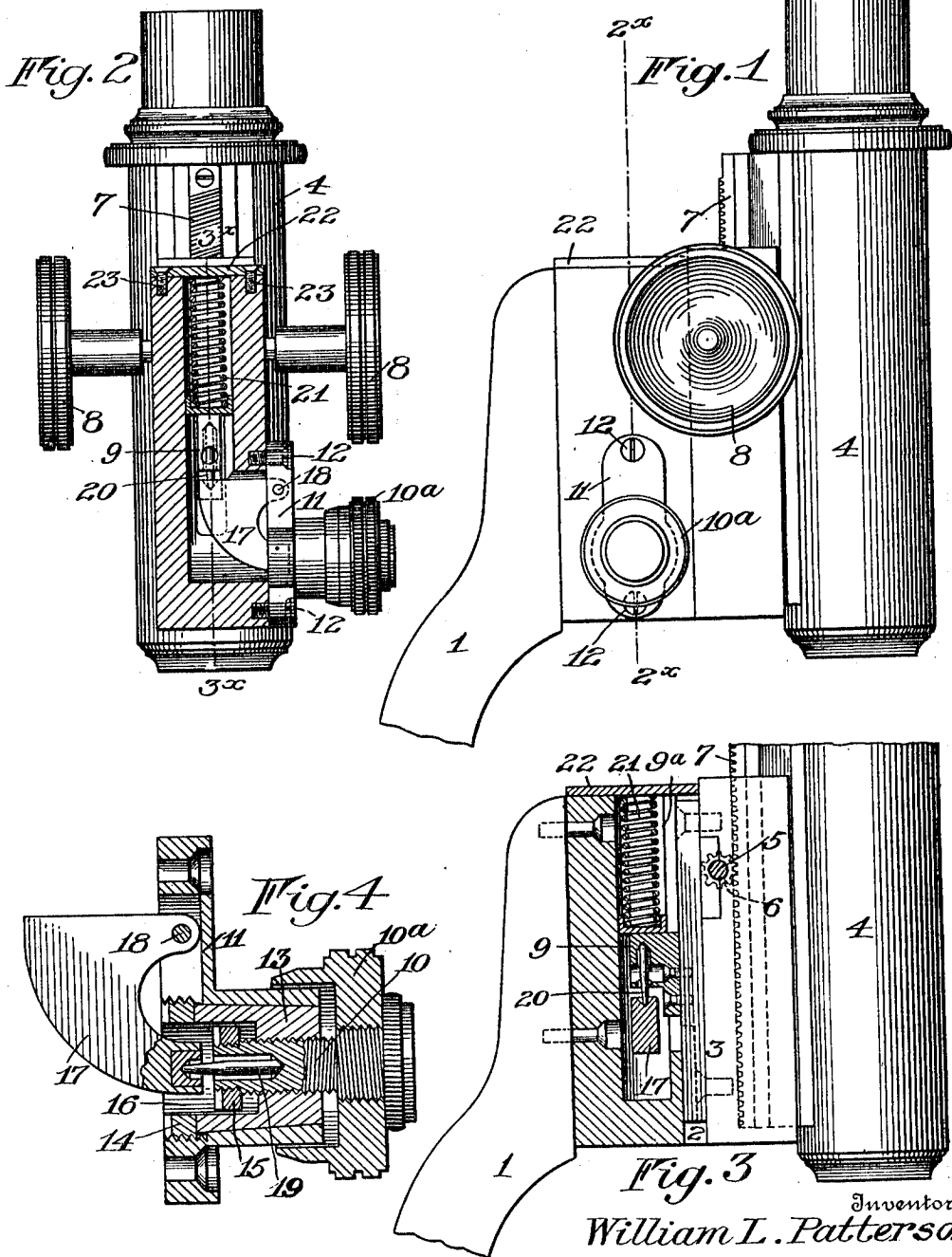


W. L. PATTERSON.
 MICROSCOPE.
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1,115,011.

Patented Oct. 27, 1914



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UNITED STATES PATENT OFFICE.

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MICROSCOPE.

1,115,011.

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To all whom it may concern:

Be it known that I, WILLIAM L. PATTERSON, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Microscopes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to improvements in microscopes and it has for its object to provide a fine adjustment which may be readily operated, and which is of simple construction, easy of manufacture, and capable of being readily assembled.

It further consists in mounting the parts of the adjusting mechanism in a removable member so that the mechanism is self-contained and interchangeable as a whole from one microscope to another, thus facilitating assembling or replacing of parts in case of injury.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a side elevation of a portion of a microscope illustrating my improved adjusting device; Fig. 2 is a vertical sectional view on the line 2^x—2^x of Fig. 1; Fig. 3 is a view similar to Fig. 1, but with a portion of the standard in section on the line 3^x—3^x of Fig. 2, and Fig. 4 is a detail vertical sectional view through the bracket carrying the adjusting screw and angle lever.

Similar reference numerals throughout the several figures indicate the same parts.

The standard 1 of the microscope is provided with vertical ways 2 in which is guided a slide 3 carrying the lens tube 4, the lens tube being independently adjustable on said slide 3 by means of the usual coarse adjusting device consisting of a horizontal shaft 5 journaled in the slide and having a pinion 6 engaging a rack bar 7 on the lens tube. The shaft 5 has at one or both ends an operating knob or thumb piece 8 by which it may be rotated. A projection 9 on the slide extends into a recess 9^a in the standard, in rear of the ways 2, said recess being open

at the upper end and at one side of the standard.

My invention comprehends mounting a fine adjusting means on a removable bracket which is attached to the standard in such a position that the adjusting means may cooperate with the slide 3 to actuate the latter.

In the embodiment shown, the fine adjusting means comprises an adjusting screw and an intermediate member cooperating therewith and also with the slide whereby motion of the screw may be transmitted to the slide. The adjusting screw 10 is carried by a removable bracket 11 fastened by screws 12 to one side of the standard 1, and is provided on its outer end with a knurled thumb piece 10^a. The screw is threaded in a removable nut 13 held in a tapered recess in the bracket by a lock nut 14, and the screw itself is held against accidental removal by a stop collar 15 threaded on the inner end thereof and accommodated in a recess 16 in the inner end of the nut. The intermediate member is also carried by the bracket 11 and is preferably made in the form of an angle lever 17 pivoted at 18 on the bracket. The member 17 translates the horizontal movement imparted to the screw 10 into a vertical movement by which the tube 4 is caused to rise or fall and an articulated connection between the member 17 and said screw and the projection 9 is obtained by means of the pins 19 and 20, interposed between the member and said parts respectively, recesses or seats for the ends of the two pins being formed between the contiguous faces of the parts, as shown, at points such that the connection 19 is in substantial alinement with the pivot in a direction longitudinally of the lens tube while the connection 20 is in substantial transverse alinement with the pivot, or in other words the points of connection of the lever with the screw and lens tube are so located that radial lines from them to the pivot are substantially at right angles to the axis of the screw and direction of motion of the lens tube, respectively. A spring 21 inserted in the recess 9^a, bears upon the projection 9 and is held in place by a cover plate 22 secured by screws 23, said spring serving the dual function of preventing lost motion and retaining the pins in their proper operative relations.

The pin 20 constitutes a connecting member between the slide and intermediate mem-

ber 17 for allowing a relative lateral motion of the slide and said member at the points where said pin engages them, said lateral motion being due to the rocking of the intermediate member about its pivot 18.

The recess receiving the nut 13 tapers outwardly from the inner face of the bracket and therefore the tendency of the spring 21 is at all times to hold the nut firmly in place, regardless of the lock nut 14.

The arrangement of the parts in the manner illustrated is advantageous in that the adjusting screw, the pivoted operating member and connecting pin 19 may all be assembled in proper working condition on the bracket 11 and applied directly to the standard 1 of the microscope by merely inserting the screws 12. The few number of parts employed and their comparatively simple design and mechanical construction not only reduces the cost of manufacturing but adapts them for microscopes intended for use under severe conditions. The location of the fine adjustment screw adjacent to and parallel with the coarse adjustment screw is an obvious advantage as the operator may easily carry his hand from one to the other solely by his sense of feeling and without removing his eye from the eyepiece of the instrument.

I claim as my invention:

1. In a microscope, the combination with a standard having ways, and a slide movable on the ways, and carrying a lens tube, of a bracket removably attached to the standard, and an adjusting means carried by the bracket and cooperating with the slide.

2. In a microscope, the combination with a standard having ways and a slide movable on the ways and carrying a lens tube, of a bracket removably attached to the standard, an adjusting screw carried by the bracket, and an intermediate member also carried by the bracket and interposed between the screw and slide for the purpose of transmitting motion from the former to the latter.

3. In a microscope, the combination with a standard having ways, and a slide movable on the ways and carrying a lens tube, of a bracket removably attached to the standard, an adjusting screw carried by the bracket, and an angle lever pivoted to the bracket and interposed between the screw and slide for the purpose of transmitting motion of the former to the latter.

4. In a microscope, the combination with a standard having ways, and a slide movable on the ways and carrying a lens tube, of a bracket removably attached to the standard, an adjusting screw carried by the bracket, an intermediate member also carried by the bracket, and a connecting member between the slide and intermediate member whereby a relative lateral motion of the two lat-

ter is allowed, at the points where the connecting member engages them.

5. In a microscope, the combination with a standard having ways and a recess in rear of the ways, a slide movable on the ways and carrying a lens tube and a projection on the slide extending into said recess, of a bracket removably attached to one side of the standard, a lever pivoted to the bracket, and an adjusting screw arranged in the bracket at an angle to the direction of travel of the slide, pins on opposite sides of the lever interposed respectively between it and said projection and the screw, and a spring engaging the projection and normally operating to move the slide in one direction and retain the pins in their operative position.

6. In a microscope, the combination with a standard having ways, and a slide movable on the ways and carrying a lens tube, of a bracket removably attached to the standard, having a recess therein tapering from the inner face of the bracket, a nut removably secured in the recess, an adjusting screw carried by the nut, a lever pivoted to the bracket and cooperating with the slide and screw, and a spring engaging the slide, and tending to hold the nut within the recess.

7. In a microscope, the combination with a standard having a recess opening at one side surface thereof, and a lens tube movable on the standard, of an angle lever operating within the recess and pivoted at the side of the standard, and an adjusting screw mounted on the standard at the side thereof, the angle lever being operatively connected to the screw and lens tube at points such that radial lines through said points are substantially at right angles to the axis of the screw and direction of movement of the lens tube, respectively.

8. In a microscope, the combination with a standard having a recess opening at one side thereof, and a lens tube movable on the standard, of an angle lever operating within the recess and pivoted on the standard at a point near the surface thereof, a collar projecting outwardly from said side surface below the pivot of the lever, and a screw mounted in the collar, the angle lever being operatively connected to the screw and lens tube at points such that radial lines through said points are substantially at right angles to the axis of the screw and direction of motion of the lens tube, respectively.

9. In a microscope, the combination with a standard having a recess opening at one side thereof, and a lens tube longitudinally movable on the standard, of an angle lever operating within the recess and pivoted at the side of the standard, a collar projecting from the same side of the standard, and a screw threaded in the collar, with its inner end operatively connected to the lever at a point in substantial longitudinal alinement

with the pivot, the lever being operatively connected to the lens tube at a point in substantially transverse alinement with the pivot.

5 10. In a microscope, the combination with a standard having ways and a recess therein in rear of the ways, said recess opening at the upper end and at one side of the standard, a lens tube slide movable on the ways,
10 a projection on the slide extending into the recess in the standard, an adjusting screw, a lever pivoted at the side of the standard

and projecting through the opening at the side thereof, and operatively connected to the projection and the adjusting screw, a 15 spring within the recess bearing on the projection on the slide, and a cover for the recess at the upper end of the standard inclosing the spring.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."