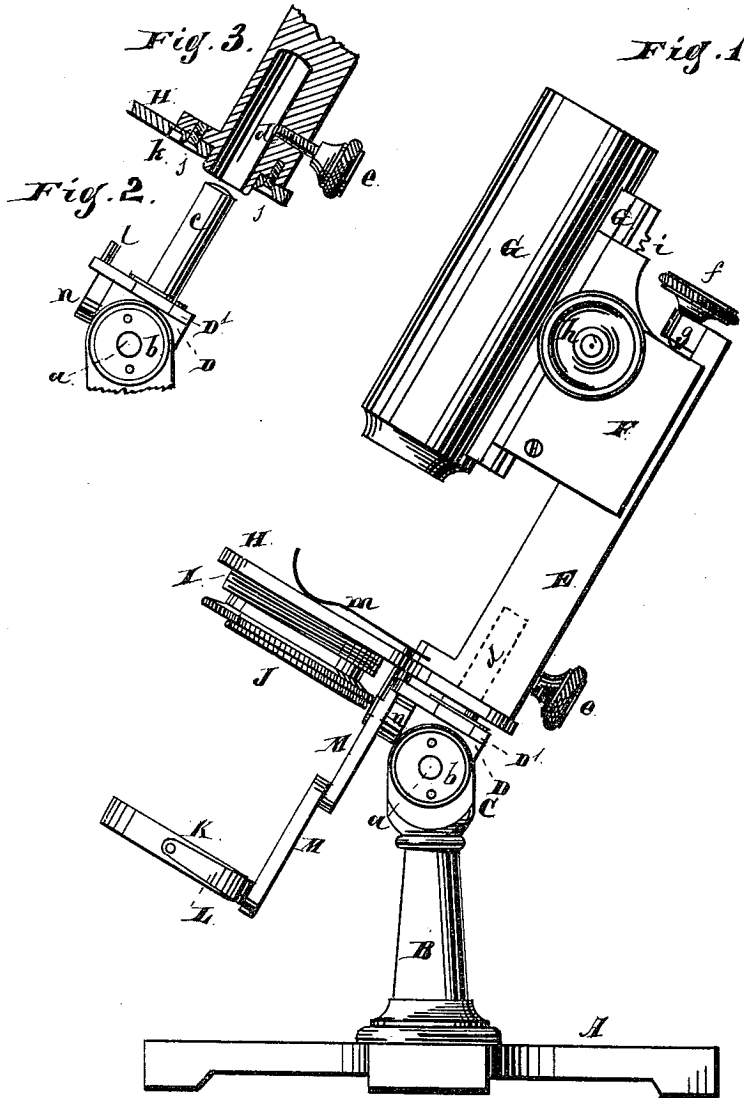


(No Model.)

L. D. McINTOSH.
MICROSCOPE.

No. 273,752.

Patented Mar. 13, 1883.



Witnesses:
Albert H. Adams.
Edgar J. Bond

Inventor:
Lyman D. McIntosh

UNITED STATES PATENT OFFICE.

LYMAN D. MCINTOSH, OF CHICAGO, ILLINOIS.

MICROSCOPE.

SPECIFICATION forming part of Letters Patent No. 273,752, dated March 13, 1883.

Application filed June 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, LYMAN D. MCINTOSH, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Microscopes, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a detail, showing the upper end of the standard or post with the connecting bracket and pin; Fig. 3, a detail in section of the lower end of the arm or bar carrying the lens-tube and the stage.

A microscope is used in what is known or termed a "heliostat" for the purpose of producing a solar microscope, and a patent has heretofore been granted to me, dated December 13, 1881, No. 250,672, showing such a combination in the class of instruments named. It is desirable to have the microscope so constructed that it can be readily attached to the heliostat for use, and be readily detached therefrom and applied to the stem or base for use as a monocular microscope.

The object of this invention is to construct a microscope and a stand or base therefor to enable the microscope to be used either as a solar or monocular, as may be desired, without requiring any special skill or labor in making the change or any waste of time in so doing.

The invention consists essentially in the combination of a post having a vertically-slotted head at its upper end, a bracket or head pivoted in the said slot by a transverse pivot, and provided with a projecting pin, a bar having its lower end provided with a socket into which the pin projects, and a lens-tube and stage carried by the bar.

In the drawings, A represents the base or support, which may be made of brass or other material that can be cast or otherwise formed into shape. The shape of this base may be in the form of a plate of a circular, square, rectangular, oval, or other form, or it may be in the form of arms, three or more, as shown.

B is a standard or post, formed with or attached to the base A. This standard or post is to be of sufficient height to support the mirror and the microscope in position for use, as usual.

C is a head at the upper end of the standard, and having a central vertical slot.

D D' represent a bracket or head, the portion D of which enters the slot in the head C, and is pivotally secured therein by a pin or pivot, *a*, the end of which may be screw-threaded to receive a nut, *b*, by means of which the head C can be made to clamp D with greater or less force and control the turning of the bracket on its pivot and producing sufficient frictional contact to support the microscope at different elevations. The portion D' has a pin, *c*, attached thereto or formed therewith, which forms the means for attaching the microscope to a standard or post.

E is the bar or frame for the lens-tube, made of brass or other suitable material. The lower end of this bar is provided with a socket or recess, *d*, corresponding in diameter to the diameter of the pin *c*, into which the pin can slip, and when the pin is in the socket it is held therein by the set-screw *e*, the screw-threaded stem of which passes through the bar E, its end coming in contact with the face of the pin and locking the bar and pin together. Other means than the set-screw *e* could be used for locking the parts together; but the set-screw will be found very convenient, as by a simple turn in the right direction it can be made tight or loose to hold the bar or allow its removal.

F are guide-plates adjustably attached to the bar E, so as to be advanced or retracted by a thumb-screw, *f*, the stem of which passes through the stud *g* on the end of the bar E.

G is the eye lens-tube, attached to the bar or guide G', on the edge of which is a rack, *i*, with which a pinion on a shaft operated by a thumb-wheel, *h*, engages, by means of which rack and pinion the eye-tube is adjusted. These parts (represented by the letters F G G' *f g h i*) are of the usual construction and arrangement and operate in the usual manner.

H is the stage, attached to the lower end of the bar E by screws *j*, or in some other suitable manner. This stage is provided with an opening or hole, *k*, to receive a pin, *l*, located on the plate or portion D' in line with the center of the pin *c*. The pin and opening *k l* furnish a means for lining the microscope properly with the center of the standard, and also act to prevent side turning on the pin *c*. The stage H is provided with springs *m* for holding the object, as usual.

I is a circular flange, formed on the outer face

of the stage, around the object-opening, and having on its exterior a screw-thread, by means of which the microscope can be attached to the focus-tube of the heliostat.

5 J is a circular ring or rim, fitting the interior of the flange I, and carrying the object-lens of the microscope.

K is the mirror.

10 L is the support on which the mirror is sustained or hung.

M M' are links or arms pivoted together, onto the end of one of which, M, the frame or support L is pivoted, and the other one of which is pivoted at its inner end, by suitable screw or pin, to a boss or stud, *n*, attached to or formed with the bracket D D'. The mirror is arranged to swing in the arc of a circle from the pivot of the link M' to the stud *n*, and can be turned to reflect the light, as required, by reason of the pivotal connection between the links M M' and the pivot of L to M, and the pivoting of the mirror in its support D.

20 The mirror is left attached or connected with the bracket, so as to be in position for use by adjusting it to reflect the light properly, and the attachment of the microscope is made by slipping the pin *c* into the socket *d* and locking it, to prevent slipping off, by the set-screw *e*, or in some other suitable manner. When
25 attached to the post or standard the microscope can be used as a monocular, in the usual
30 manner.

When it is desired to use the microscope as a solar, the set-screw *e* is loosened, permitting

the disengagement of the pin and socket, so that the microscope can be attached by the flange *i* to the object-tube of the heliostat. 35

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a microscope, the combination of the post B, having a vertically-slotted head, C, the bracket or head D D', having its portion D' provided with the projecting pin *c*, and the portion D pivoted in the slotted head by a transverse pivot, the bar E, having its lower end provided with a socket, *d*, into which the pin projects, and the lens-tube and stage carried by the bar, substantially as described. 40 45

2. In a microscope, the combination of the post B, having a vertically-slotted head, C, the bracket or head D D', having its portion D' provided with the projecting pin *c*, and the portion D pivoted in the slotted head by a transverse pivot, the bar E, having its lower end provided with a socket, *d*, into which the pin projects, a device for locking the pin in the socket, and the lens-tube and stage carried by the bar, substantially as described. 50 55

3. The bar or frame E, having a socket, *d*, a plate or stage, H, having a hole, *k*, in combination with the bracket D D', pin *c*, pin *l*, and post or standard B, substantially as and for the purposes specified. 60

LYMAN D. McINTOSH.

Witnesses:

ALBERT H. ADAMS,
O. W. BOND.