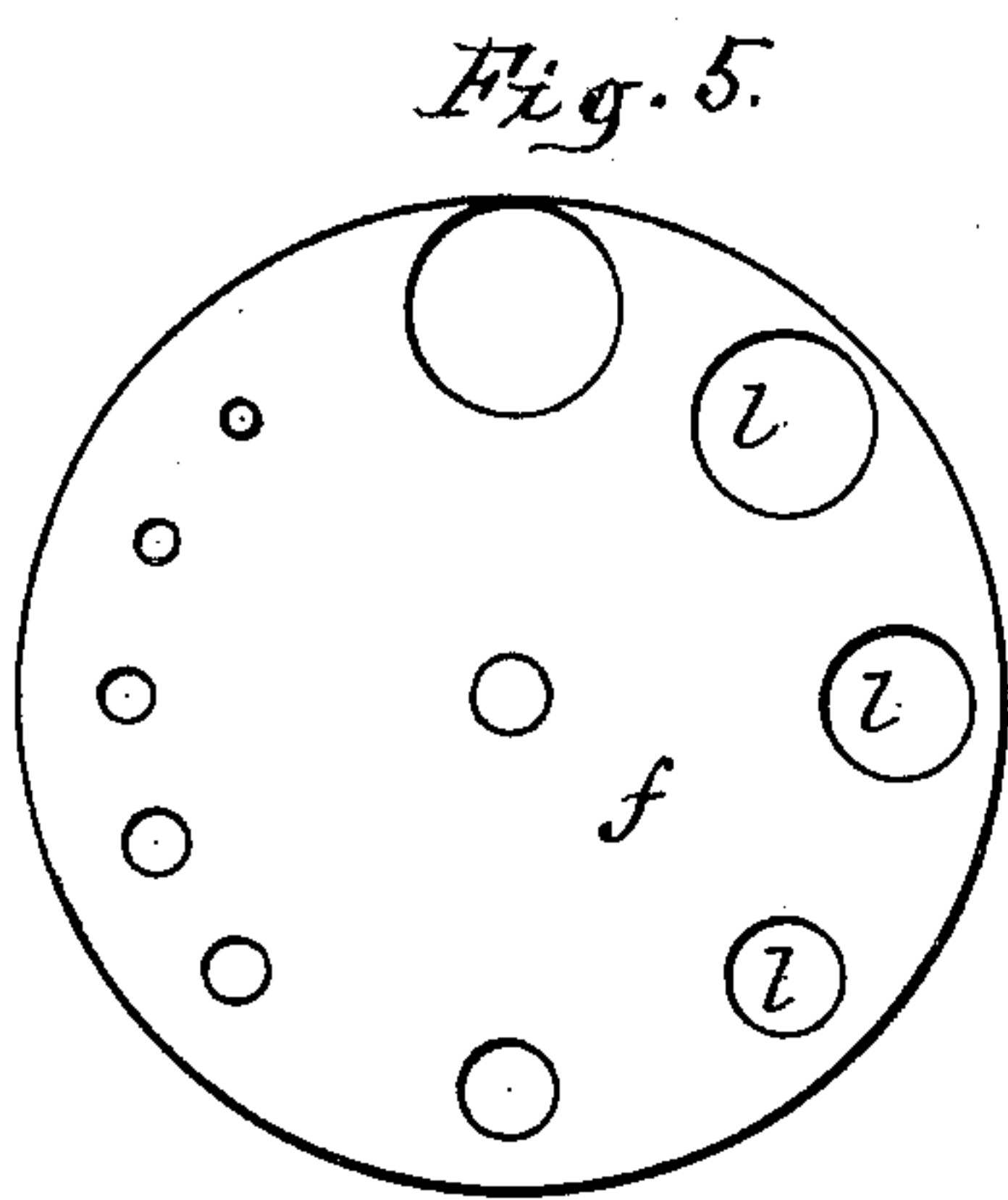
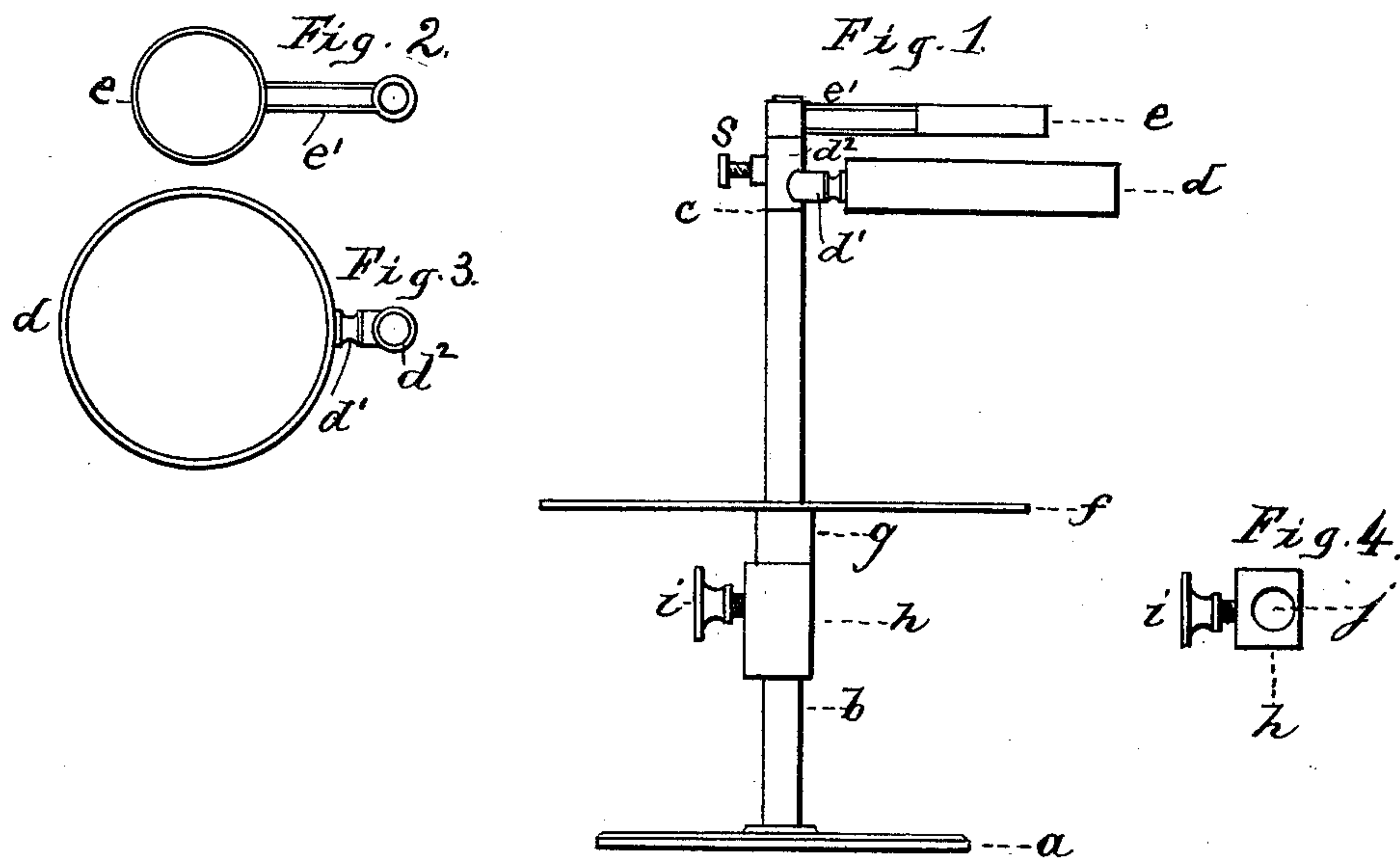


(No Model.)

S. FROST.
MICROSCOPE.

No. 407,192.

Patented July 16, 1889.



Witnesses.
Geo. H. C. Thowelot.
Frank Brown

Inventor.
S. Frost

UNITED STATES PATENT OFFICE.

STILES FROST, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO GEORGE FROST,
OF SAME PLACE.

MICROSCOPE.

SPECIFICATION forming part of Letters Patent No. 407,192, dated July 16, 1889.

Application filed November 5, 1888. Serial No. 290,067. (No model.)

To all whom it may concern:

Be it known that I, STILES FROST, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Microscopic Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

The general object of my invention is to supply a more simple, cheap, durable, and efficient microscopic apparatus than those now in use for the study of botanical subjects, minerals, &c.

Figure 1 is a side view of a microscopic apparatus constructed in accordance with my invention. Fig. 2 is a top view of the smaller lens-frame and lens therein. Fig. 3 is a top view of the larger lens-frame and lens. Fig. 4 is a top view of the slide-clamp removed from the standard. Fig. 5 is a top view of the object-supporting disk.

The complete instrument is shown in side elevation in Fig. 1. It consists of a base *a* and its standard *b*, whose upper end is turned down to form a shoulder at *c*, which will serve to support the lens-frames *d e*, having arms *d'* and *e'*. These arms and frames revolve about the common axis *b*. The arm *d'*, which is soldered to the short tube *d²* to be placed upon the standard, is nearer one end of said tube, the object being to permit of the lenses being placed at different distances from each other by a transposition of the one marked *d*. Thus, the focal point being varied, different magnifying powers are obtained. In the same figure *h* is a slide which can be secured at any point on the standard by means of the thumb-screw *i*. *j*, in Fig. 4, is the aperture for the passage of the standard. Resting upon this slide is the collar *g* of the disk *f*, which may be plain or perforated, as shown in Fig. 5. This disk is intended to support or hold the flower, mineral, or other substance which it is desired to observe. If a flower, it is inserted in one of the holes *l*. (Shown in Fig. 5.) These holes have their centers coin-

cident with the focal axis of the lenses, the disk itself being, as above stated, adjustable vertically and rotating in a horizontal plane. Thus quickness and accuracy of adjustment of the object to be examined is secured, and the object can be moved to different parts of the field while being observed. By filling all the holes in the disk each can be observed in turn by either rotating the disk under the field of vision or by changing the position of the eye correspondingly with the lenses. Each lens can be used independently of or in conjunction with the other.

Having thus described my invention, what I desire to secure by Letters Patent is embodied in the subjoined claims:

1. In a microscopic apparatus, the combination of a standard, lenses *d e*, having arms of different lengths, a disk upon said standard, and a slide and thumb-screw, said slide being under and independent of said disk, whereby the disk may be rotated without disturbing the focus of the lenses, substantially as set forth.

2. In a microscopic apparatus, the combination of a standard, the lens *e* and its frame and arm, the tube *d²*, the lens *d* and its supporting-arm *d'*, secured to said tube nearer to one of its ends than to the other end, and a disk *f*, adjustably supported upon the standard, substantially as described.

3. In a microscopic apparatus, a lens *d*, with arm which rotates around and also has a vertical movement on the standard *b*, with a thumb-screw *s* on said arm to hold the lens *d* at any place on the standard *b*, with the disk *f* permanently attached to the standard *b*, as shown and described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 9th day of October, A. D. 1888.

STILES FROST.

Witnesses:

CHAS. W. LAVERS,
SAMUEL KLINE.