(No Model.) 2 Sheets—Sheet 1.

E. H. GRIFFITH.

MICROSCOPIST'S TURN TABLE.

No. 354,130. Patented Dec. 14, 1886.

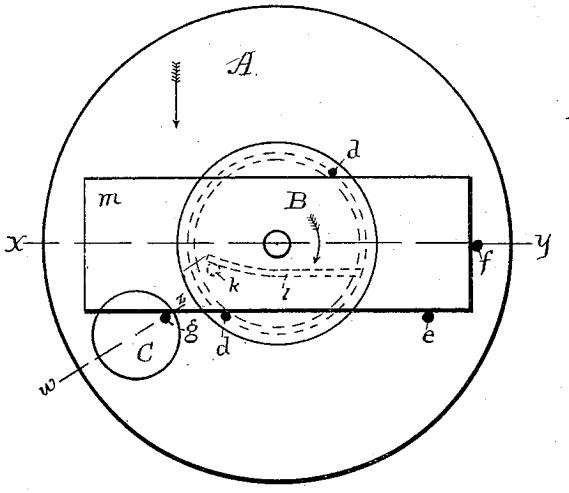


Fig. 1

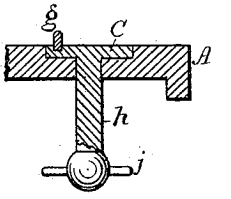
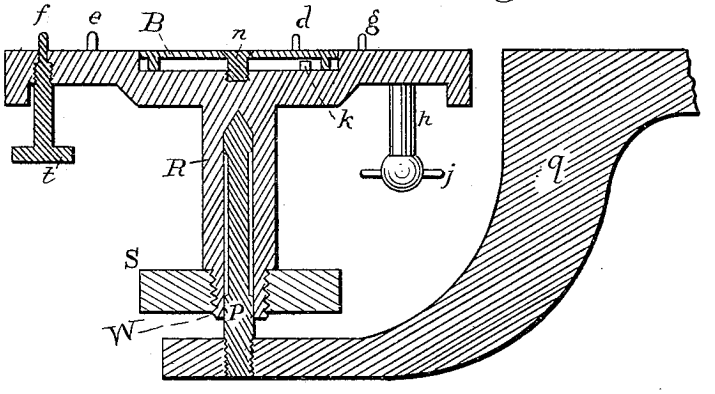


Fig. 4

Fig. 2



Witnesses:

W. H. Hutton

W. W. McGee

Inventor:

E. H. Griffith

by C. M. Orrice

Atty

(No Model.) 2 Sheets—Sheet 2.

E. H. GRIFFITH.

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Fig. 5

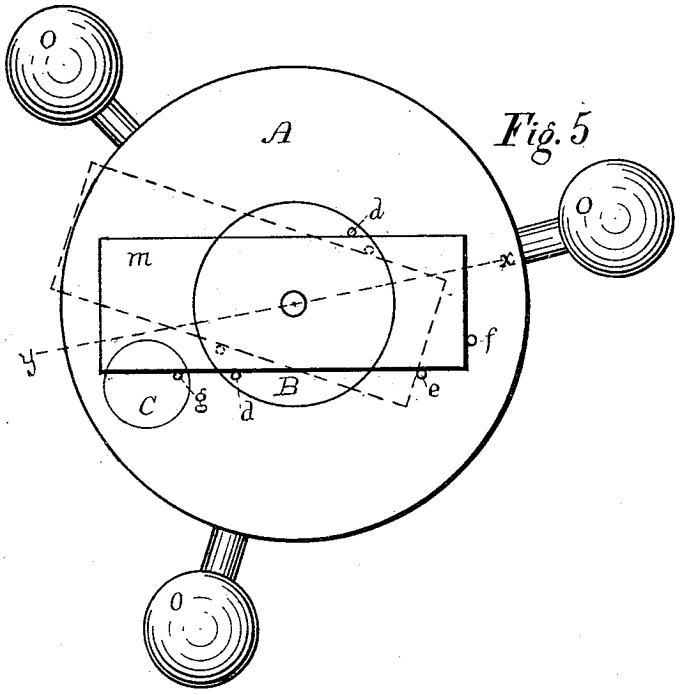


Fig. 3

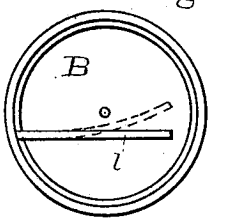
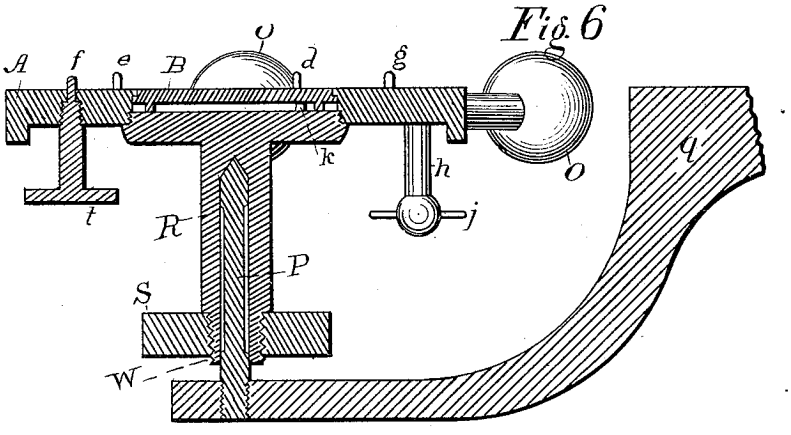


Fig. 6



Witnesses:

M. J. Sutton

W. W. McGee

Inventor:

E. H. Griffith

by C. A. Wood

Atty

UNITED STATES PATENT OFFICE.

EZRA HOLLIS GRIFFITH, OF FAIRPORT, NEW YORK.

MICROSCOPIST'S TURN-TABLE.

SPECIFICATION forming part of Letters Patent No. 354,130, dated December 14, 1886.

Application filed April 8, 1886. Serial No. 198,289. (No model.)

To all whom it may concern:

Be it known that I, EZRA HOLLIS GRIFFITH, a citizen of the United States, residing at Fairport, in the county of Monroe and State of New York, have invented a new and useful Improvement in Turn-Tables Designed for Microscopists' Use, which improvement is fully set forth in the following specification, which I declare to be a full, clear, and exact description of my invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings.

My invention relates to the class of turn-tables commonly designated as "centering turn-tables," in which, by appropriate mechanism, the glass slip on which objects are mounted by microscopists is, when placed on the turn-table for treatment, automatically brought to a certain definite position and held there during the subsequent manipulations of the operator; and the object of my invention is to afford the means of bringing the slips used for mounting objects automatically to a certain definite position, and also the means of varying at will the position of the slip on the turn-table to make the same conform to the position it would assume when placed upon different forms of turn-table, and to enable the turn-table to be used as a component part of other mechanism. These objects I accomplish by means of the mechanism shown in the accompanying drawings, in which—

Figure 1 is a plan view of the top of the turn-table, holding a glass slip as in ordinary use. Fig. 2 is a sectional view of the turn-table on the line *x y* of Fig. 1, the view being taken in the direction indicated by the arrow in Fig. 1. Fig. 3 is a plan view of the under side of the disk B; and Fig. 4 is a partial sectional view of Fig. 1 on the line *w z* of Fig. 1, viewed in the same direction as Fig. 2. Fig. 5 is a plan view of the turn-table with lugs or feet attached; and Fig. 6 is a sectional view on the line *x y* of Fig. 5, viewed in the same direction as Fig. 2.

Similar letters of reference indicate similar parts in all the figures.

A is a flat disk, of metal, forming the turn-table top, and by means of a hollow stem underneath poised centrally upon a spindle in the usual manner. B is a smaller disk revolving in a central depression formed in A, and so fitted that its surface is flush with that of disk A. C is a small disk, also revolving in a recess in the upper surface of A, with its surface flush with that of disk A. The glass slip in use lies partly upon all of these three disks A B C, as shown in Fig. 1. The disk B is actuated by a spring on its under side, which may be any form of spring so adapted as to tend to rotate the disk B in the direction indicated by the curved arrow on disk B in Fig. 1 for about one-quarter of a revolution.

In the drawings, *l* is a flat spring rigidly attached at one end to the under side of disk B, and with its free end bearing against a stud or pin, *k*, projecting from disk A, and so placed that when the disk B is rotated in a direction contrary to that shown by the arrow the spring *l* will bend, as shown by dotted lines in Fig. 3 and also in Fig. 1, and tend to return the disk B to its first position.

d d are two pins in the upper surface of disk B, near its edge, on opposite sides, and a little more than one inch apart, in order to easily admit between them the glass slips used, which are of a uniform or standard size of one inch in width and three inches in length.

e is a pin rigidly fixed in the surface of disk A, a little less than one and one-half inch from its center.

f is a pin threaded below and passing up through the disk A, near the pin *e*, and at a distance of exactly one and one-half inch from the center of disk A, which is also the center of revolution of the slip in use. The threaded part of pin *f* has sufficient bearing in disk A to allow it to be so far withdrawn that it will be wholly below the surface of disk A without being entirely removed. To facilitate the use of this pin, it is provided with a milled head, *t*, at its lower end.

g is a pin rigidly fixed in the disk C near its edge, and *h* is a stem centrally affixed to the disk C and extending down through disk A, below which it is provided with a suitable handle, *j*, for operating the disk C; but the

disk C may be eccentrically pivoted on the surface of the table A and the stem *h* and handle *j* be dispensed with.

m is the glass slip in use, placed in Fig. 1 in the position most commonly used.

n is a short screw, holding disk B in place and forming a pivot, upon which it rotates.

O are lugs or projections attached by any suitable means to the periphery of disk A, equidistant from each other, and so formed as to project above its upper surface at their extremities slightly more than the pins *d*, *e*, *f*, and *g*. The turn-table is operative and efficient without these lugs; but their weight adds to its momentum in revolution, and they serve as feet when the turn-table is reversed, as hereinafter described.

P is a spindle set rigidly in a foot or support, *q*, which forms part of a hand-rest of the common form.

R is a hollow stem fitting the spindle P, and having at its lower end a milled collar, S, attached to it, by which the whole may be revolved by turning it with the fingers. The stem R may be solid with disk A, or separately formed and rigidly attached thereto, in which case the screw *n* may be dispensed with, and disk B may be inserted within a countersunk recess in A from below, and held in place by the enlarged top of stem R, screwed into the lower part of such recess, as shown in Fig. 6, and bearing the pin *k*.

The operation of my improved turn-table is as follows: The slip to be operated upon is placed on the table between the pins *d d*, the slip-disk B and pins *d d*, when left to the action of spring *l*, being in the position shown by dotted lines in Fig. 5. By turning back the disk against the action of the spring the slip is brought to a position in which it can be pushed past the pin *e* to the position shown by full lines in Fig. 1, when it bears against pin *f* in its ordinary position, and the center of the slip *m* coincides with that of disk A, in which position it will be held by the pins *d d* and the action of the spring *l*, which remains in the bent position shown by dotted lines in Fig. 1, the disk C being so turned that pin *g* will not bear against the slip *m*.

It is always desirable and often necessary to be able to decenter slips upon a turn-table when in use, and for that purpose I have provided disk C and pin *g*, and by turning disk C by means of the handle *j* and stem *h* the pin *g* is caused to press against the slip *m* and force it away from the position shown in Fig. 1, the spring *l* giving way to permit this movement. In case it is found necessary to decenter the slip *m* in the direction of its length, the pin *f* is, by its milled head *t*, underneath the table, turned down below the surface of disk A, when the slip *m* may be pushed over and past it. By reversing the slip endwise any portion ordinarily used may be brought over the center of revolution of the turn-table and operated upon. This has not heretofore been accomplished in any centering turn-table without the use of supplementary wedges or blocks, which are very objectionable in use.

It is also desirable for many purposes to be able to remove the turn-table top with the slip in place from the spindle upon which it is supported. In my improved form of turn-table this may readily be done, and the turn-table so removed from its spindle may be placed top downward upon any smooth surface without injury to the slip *m* in place upon it, or to any object, cover, or cement attached to the slip *m*, the projection of the feet or lugs O above the surface of the turn-table top preventing the slip *m*, or object or cement attached to it, from touching the surface upon which the turn-table is so placed. When thus removed and placed face downward, the turn-table top forms a suitable and convenient base for the attachment of other apparatus used by microscopists—such as dissecting-lenses, heating-plates, and many others—and may be used as the foot or base of a microscope, the accessory apparatus used being attached to the turn-table by means of the screw-thread W thereon, for which purpose the milled collar S may be removed; or the stem R may be provided also with an internal screw-thread for the attachment of accessory apparatus.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A centering turn-table provided with a decentering disk and pin, substantially as described.

2. In a turn-table, the combination, with the revolving table A, poised centrally upon a spindle and having a rigid bearing, *e*, upon its surface, of the removable bearing *f*, and the rigid bearings *d d*, fixed upon a revolving disk centrally affixed to said table, substantially as described.

3. In a centering turn-table, the combination, with the table A, of the removable bearing *f* and the decentering-disk C, substantially as described.

4. The turn-table A, with fixed bearing *e*, and removable bearing *f*, having a central rotating disk, B, provided with fixed bearings *d d*, and actuated by a spring to hold the slide in use against the bearing *e*, substantially as described.

5. In a turn-table, the decentering-disk C, eccentrically pivoted to the table A and adapted to bear against the slide *m* when in use, substantially as described.

6. In a turn-table, the decentering-disk C, set flush with the surface of the table and bearing on its upper surface an eccentric-pin, *g*, to bear against and decenter the slide, substantially as shown and described.

7. The combination of the table A with the

decentering-disk C, pin *g*, and handle *h*, for operating the disk C, substantially as shown and described.

8. The combination of the table A, disk B, pins *d*, *e*, and *f*, and lugs O, substantially as described.

9. In a turn-table, the combination, with the table A, having on its surface bearings for clasping and holding a slip, of the lugs O, projecting above the surface of the table, and the hollow stem R, provided with a screw-thread for the attachment thereto of accessory apparatus, substantially as described.

EZRA HOLLIS GRIFFITH.

Witnesses:
SAMUEL W. DENNIS,
HOLLAND SMITH.