(No Model.) 2 Sheets—Sheet 1.

H. E. STAUFFER.

TOY MICROSCOPE.

No. 493,529. Patented Mar. 14, 1893.

Fig. 1.

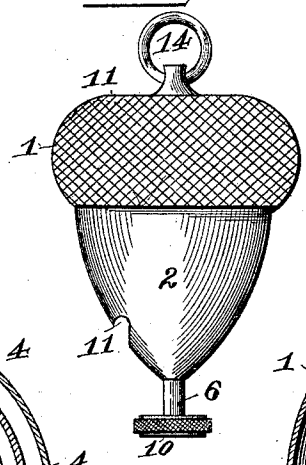

Fig. 3.

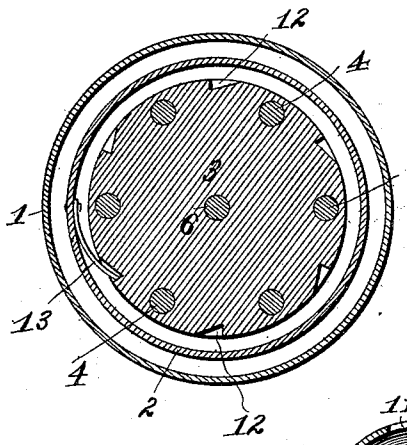

Fig. 4.

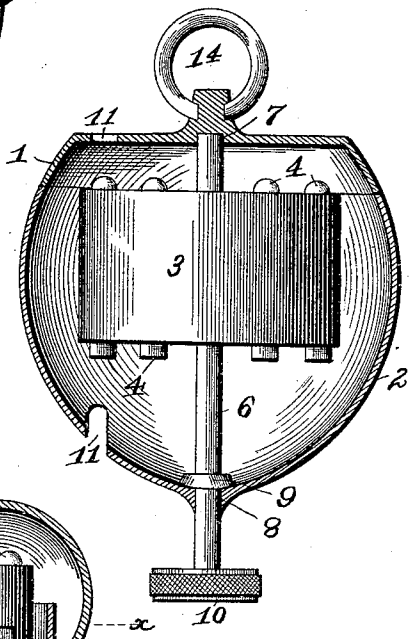

Fig. 2.

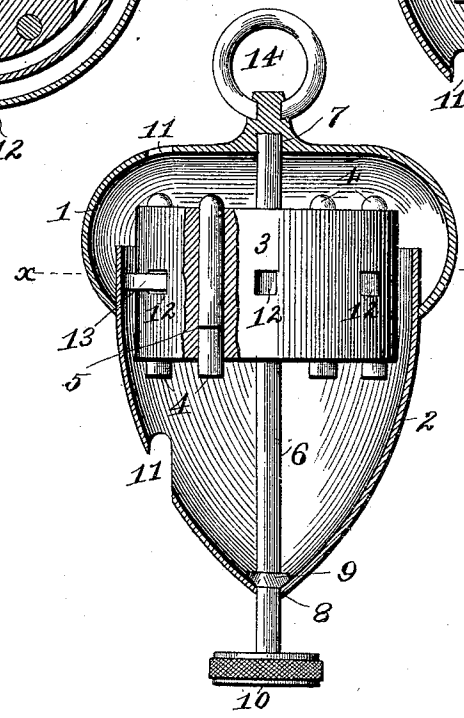

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Fig. 5

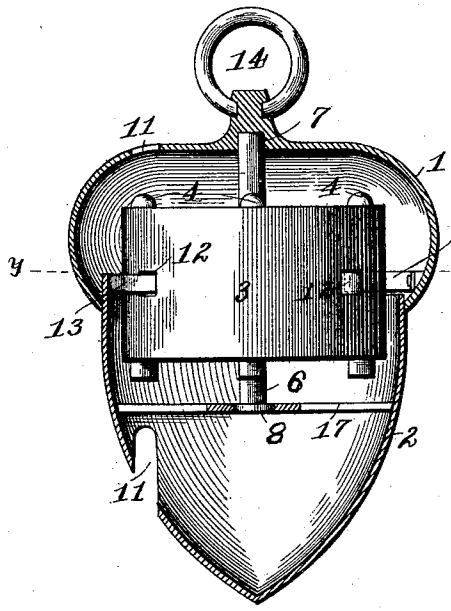
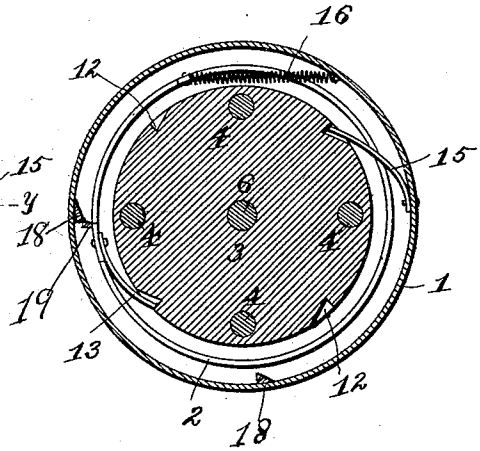


Fig. 6



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UNITED STATES PATENT OFFICE.

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TOY MICROSCOPE.

SPECIFICATION forming part of Letters Patent No. 493,529, dated March 14, 1893.

Application filed December 8, 1892. Serial No. 454,520. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. STAUFFER, a citizen of the United States, and legally a resident of Wilmington, in the county of New Castle and State of Delaware, have invented a certain new and useful Improvement in Toy Microscopes, of which the following is a full and accurate description.

My invention relates to that form of devices in which one or more lenses, each carrying a microscopic photograph or other object, are mounted in a frame convenient for carrying in the pocket, attaching to a watch chain, or similarly arranged, for easy portability.

Figure 1 is a perspective view of one form of my device, somewhat enlarged, arranged in a conventional acorn. Fig. 2 is a sectional longitudinal view of the same on a still larger scale. Fig. 3 is a sectional view taken on the line *x*—*x* of Fig. 2. Fig. 4 is a sectional view of the apparatus arranged in a hazel-nut shape. Fig. 5 is a modification of the device as shown in Figs. 1, 2, and 3, and Fig. 6 is a cross-section of Fig. 5 taken on the line *y*—*y*.

The outer part or frame of my device consists of two parts, 1 and 2, adapted to be secured together in any convenient manner, and affording a frame or case for mounting a disk or cylinder 3, carrying a series of lenses 4, each provided with a photograph 5. This disk is rigidly mounted on the spindle 6, adapted to turn in bearings 7 and 8 in the frame, and provided with a shoulder 9, to assist in keeping it in place, and with a milled head 10 to assist in turning the disk. An aperture 11, resembling a worm-hole, which, unless the lower part 2 of the frame is transparent, in whole or in part, must extend through the frame, is provided at a radial distance from the spindle equal to the traverse of the series of lenses. I have shown a holding device here, consisting of a ratchet 12, cut into the disk 3, and a holding pawl 13 secured to the frame to assist in maintaining any lens at the required position. This ratchet and pawl must obviously be so arranged as to hold any one of the lenses directly in front of the opening, but they may be dispensed with if the bearings of the spindle 6 are sufficiently tight to prevent too easy motion. A ring 14, is also provided for easy attachment to a watch guard or similar article.

In the modification of the device, shown in Figs. 5 and 6, the milled head 10 is dispensed with, and the spindle 6 is made shorter with its lower bearing in the spider 17 arranged within the case, and the two parts 1 and 2 are so arranged that the part 2 can be revolved around the part 1 a distance at least equal to that required to bring every successive lens before the opening 11. In revolving the two parts, 1 and 2, the pawl 13, which is attached to 2, engages in one of the notches of the ratchet on the cylinder 3 and carries it around sufficiently far to allow the pawl 15, which is attached to 1, to engage the notch of the ratchet which next succeeds the one with which it was engaged at the beginning of such revolution. After such revolution or part of revolution has been described the parts are brought to their original position by the retractile spring 16, which has one of its ends attached to the part 1 and the other to the part 2. The respective parts of the frame 1 and 2 are prevented from being moved too far by the lugs 18 being engaged by the lug 19.

In using the device the operator with one hand holds the device toward the light with the opening 11 directly in front of his eye, the upper or convex side being toward the eye, and with the other hand turns the milled head 10 until the desired view is brought opposite the opening; or in the modification shown in Figs. 5 and 6, the same result is obtained by turning the part 1, instead of the milled head.

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

1. A frame provided with an aperture, in combination with a series of lenses, each carrying a photograph, and means for bringing the lenses successively in line with the aperture, substantially as described.

2. A frame provided with an aperture, in combination with a disk mounted upon a spindle, a milled head for turning said spindle, and a series of lenses, each provided with a photograph, secured to said spindle so as to

be brought, by the rotation of the spindle, directly in front of the aperture in the frame, substantially as described.

3. A frame provided with an aperture, in combination with a disk for carrying a series of lenses and photographs, means for rotating said disk, and a holding device, whereby the location of the lenses with relation to the aperture may be maintained, substantially as described.

4. A spindle, in combination with a milled head for turning said spindle, a disk secured to said spindle, and a series of lenses and photographs carried by said disk, substantially as described.

5. A spindle, a milled head for turning said spindle, a shoulder for preventing its longitudinal motion, a disk secured to said spindle, a series of lenses carried by said disk, and an object mounted with each lens, in combination with a frame, said frame being provided with a ring, substantially as described.

6. A disk, and a series of lenses and photographs carried thereby, in combination with a spindle and means for turning said spindle, substantially as described.

HENRY E. STAUFFER.

Witnesses:
JOSEPH W. ANDERSON,
FRANK W. CARDEN.