(No Model.)

# M. J. HINDEN.

## LENS MEASURING INSTRUMENT.

No. 483,354. Patented Sept. 27, 1892.

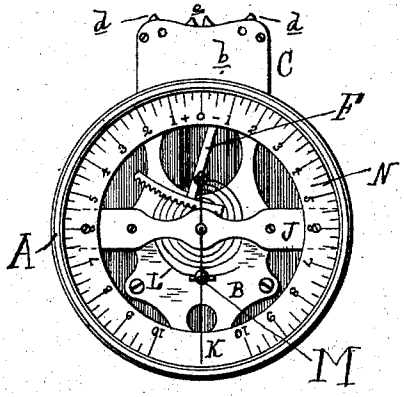


FIG. 1.

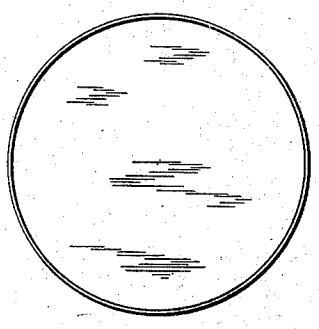

FIG. 2.

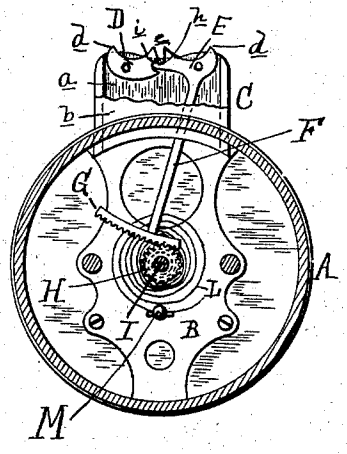


FIG. 3.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

MATHIAS J. HINDEN, OF CLEVELAND, OHIO, ASSIGNOR TO THE JULIUS KING OPTICAL COMPANY, OF SAME PLACE.

## LENS-MEASURING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 483,354, dated September 27, 1892.

Application filed March 29, 1892. Serial No. 426,909. (No model.)

*To all whom it may concern:*

Be it known that I, MATHIAS J. HINDEN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Lens-Measuring Instruments, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in devices for determining the curvature of a lens.

The object of my invention is to construct a device in the use of which the degree of curvature, either concave or convex, of a lens will be correctly indicated upon a properly-graduated dial or face.

The invention consists in the peculiar construction of the plates which carry the contact-points and in the construction, arrangement, and combinations of the various parts, all as more fully hereinafter set forth, and pointed out in the claims.

In the drawings, Figure 1 is an elevation of my improved instrument with the cover removed. Fig. 2 is an elevation of the said cover. Fig. 3 is a central vertical diametrical section to more clearly show the operating parts.

A represents a suitable case or box, in the bottom of which is secured a frame-plate B, which carries the operating parts of the device. A portion of this plate B is carried through the wall of the case A, so as to form the back plate *a* of a projecting case C, between which and the front plate *b* the contact-points are pivotally secured.

D E represent plates, the upper edges of which terminate in contact-points *d* and *e*. These plates are pivotally secured within the case C, and the plate E is provided with a single tooth or lug *h*, which is designed to engage with a notch *i* in the adjacent edge of the plate D.

F is a lever-arm rigidly secured at its upper end to the plate E, or it may be formed integrally therewith. This lever projects downwardly within the case A and carries upon its inner end a segmental rack G, said rack being formed upon the arc of a circle of which the pivotal point of the plate E is the center. This rack engages with a small pinion H, secured to the central shaft I, the upper end of which latter projects through a transverse retaining-bar J and carries a suitable index-pointer K. A hair-spring L encircles the shaft and has one end secured to said shaft, while its opposite end is secured adjustably to a suitable post M.

N is a graduated dial-ring.

The parts being constructed and arranged substantially as herein shown and described, care should be taken in the adjustment of the device that the two contact-points *d* be substantially on the same plane, with the points *e* slightly below such plane, and the pointer being vertically downward, as shown in Fig. 1. By applying a lens upon the points *d* and then pressing down upon them until the central points *e* come in contact with the lens the plates are compelled to turn upon their fulcrums and the segmental rack causes the finger-shaft to partially rotate, thus passing the pointer over the face of the dial. Should the lens applied be convex, its degree of convexity will be indicated upon the scale left of zero. If concave, the degree of concavity will be indicated by the needle passing to the right of zero, while if it be perfectly flat the needle will rest upon zero. Upon removing the lens the action of the spring returns the parts to their normal positions.

What I claim as my invention is—

1. In a lens-measuring instrument, the combination of pivoted plates carrying contact-points, said plates engaging each other, and indicating mechanism, said mechanism consisting of a lever connected to one of said plates and carrying at its inner end a segmental rack and the connections for moving an index-finger over a graduated dial, substantially as set forth.

2. The combination of two plates D E, carrying contact-points *d e*, lever F, shaft I, pinion H, pointer K, and a graduated dial N, substantially as and for the purposes described.

3. The combination of two movable plates D E, carrying contact-points *d e*, lever F, shaft I, pinion H, pointer K, and spring L, the parts being constructed, arranged, and operating substantially in the manner and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 26th day of March, 1892.

MATHIAS J. HINDEN.

Witnesses:
H. S. SPRAGUE,
H. L. WARREN.