W. L. E. KEUFFEL.

MAGNIFIER FOR SLIDE RULES.

APPLICATION FILED JUNE 16, 1908.

996,039. Patented June 20, 1911.

Fig. 1.

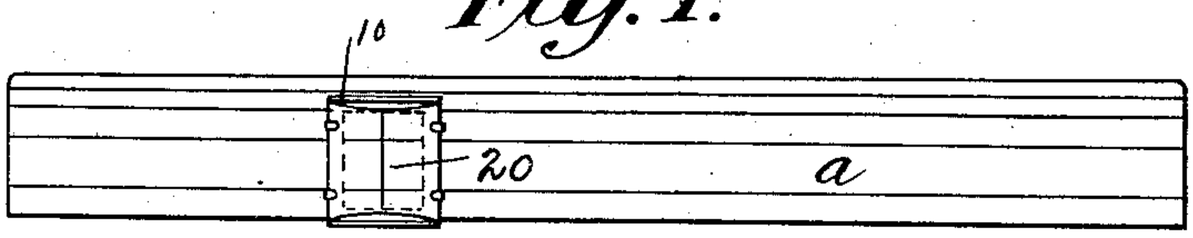


Fig. 2.

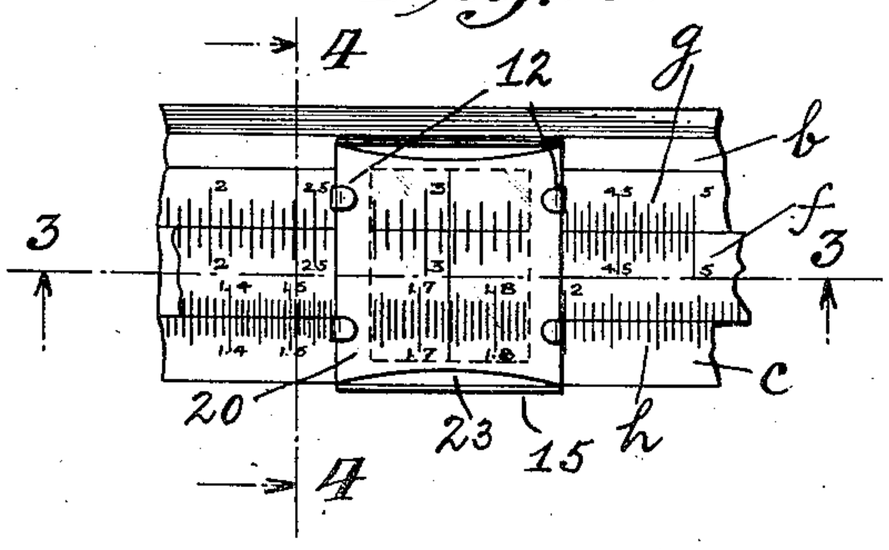


Fig. 3.

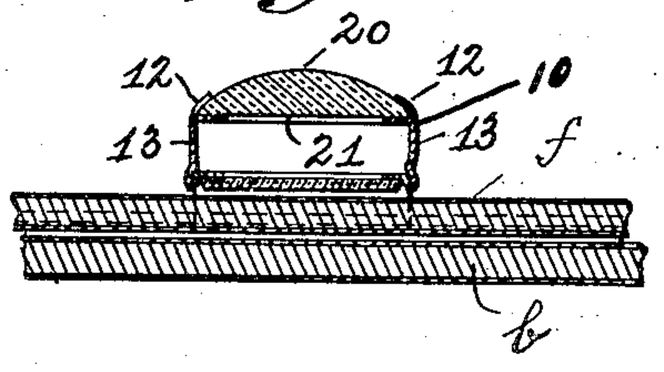


Fig. 4.

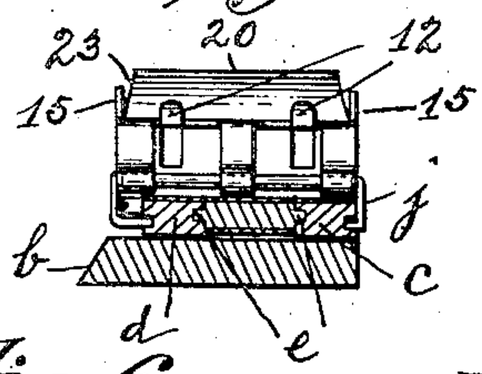


Fig. 5.

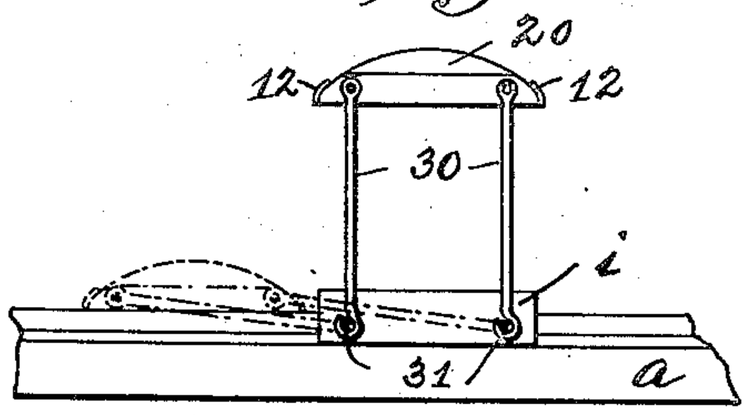


Fig. 6.

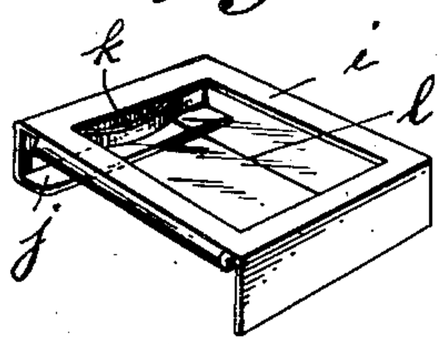


Fig. 7.

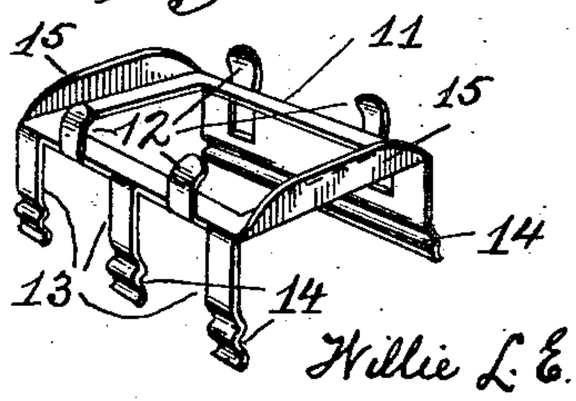
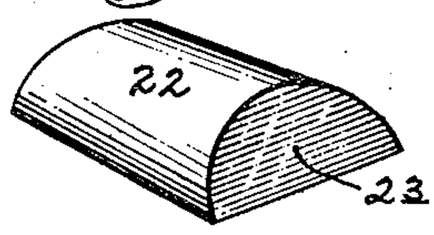


Fig. 8.



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UNITED STATES PATENT OFFICE.

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MAGNIFIER FOR SLIDE-RULES.

996,039. Specification of Letters Patent. Patented June 20, 1911.

Application filed June 16, 1908. Serial No. 438,726.

To all whom it may concern:

Be it known that I, WILLIE L. E. KEUFFEL, a citizen of the United States, and resident of Hoboken, Hudson county, New Jersey, have invented certain new and useful Improvements in Magnifiers for Slide-Rules, of which the following is a specification.

My invention relates to magnifiers for slide rules and similar devices and its novelty consists in the construction and adaptation of the parts.

Slide rules are being increasingly used. When the graduations are fine, as they sometimes necessarily are, it is at times difficult to read them. When a separate lens is used for that purpose it is not always at hand when wanted. A circular lens, moreover, is only accurate in the middle of the field, and as this is the common form, it became desirable to devise means whereby the readings could readily be magnified without aberration and the lens would be at hand when wanted. Another object sought to be obtained was not to interfere with the usual form of runner employed in connection with such rules.

My invention which has been made with a view to supplying the needs above expressed comprises a lens of peculiar shape especially well adapted for its particular purpose and one which can be used with the ordinary runner.

In the drawings, Figure 1 is a plan of a slide rule equipped with one embodiment of my invention, the graduations being omitted for the sake of clearness; Fig. 2 is an enlarged plan of a portion of the same rule provided with the magnifier; Fig. 3 is a longitudinal section on the plane of the line 3—3 in Fig. 2; Fig. 4 is a partial transverse section of the slide rule on the plane of the line 4—4 in Fig. 2 and a side elevation of the magnifier; Fig. 5 is a front elevation of a modified form of the invention; Fig. 6 is a perspective of the runner; Fig. 7 is a perspective of the magnifier frame and Fig. 8 is a perspective of the lens.

In the drawings, *a* is a rule of usual form provided with a base *b* and two upper sections *c* and *d*, each longitudinally grooved to receive the corresponding longitudinal flanges *e* of the slide *f*. The slide and rule are each provided with the logarithmic graduations *g*, *h*, usual to the art and useful in performing the calculations for which the device is employed. A runner *i* of usual form is adapted to embrace the rule and it is provided with the usual sliding tongue *j*, spring *k* and hair line *l*.

The magnifier in the form shown in Figs. 1, 2, 3 and 4 comprises an elastic frame 10 adapted to be detachably secured to the runner of the slide rule and a lens 20 of peculiar form adapted to be supported detachably in the frame. The frame is perferably made of light elastic metal and consists of the lens support proper 11 of rectangular form and provided with upwardly extending inturned clasps 12 which may be sprung back to admit of the reception of the lens 20 and which when released yieldingly embrace it by their own elasticity. It is also provided with a series of depending oppositely disposed flanges 13 corrugated or ground at 14, 14, snap over and embrace the edges of the runner *i* by their own elasticity. It also is provided with opposed upturned longitudinal end flanges 15, 15, which serve to stiffen the frame and serve as finger holds when the magnifier is moved so that the hand of the operator is not brought into direct contact with the glass of the lens.

The lens 20 has a flat base 21 which rests upon the support 11. It is rounded at 22 and truncated obliquely at 23, 23. By this construction the magnifying action is the same from whatever angle the observer is apt to look.

The convenience of the device is very great, the magnifier is quickly and readily placed upon and removed from the runner. It is firmly and securely held in position and yet can be at once dispensed with. It is always in alinement. At the same time the lens can be readily removed and another one of different power substituted, and this may be done many times because the framework does not wear out.

In Fig. 5 I show a modified form of the invention in which the elastic flanges 13 are dispensed with and their place taken by parallel supporting rods 30 having hooks at their lower ends adapted to pivotally embrace pins 31 with which the runner *i* is provided for that purpose. In this form the lens can be brought between the eye and the graduations to be read, or it can be swung out of the way as indicated in dotted outline in Fig. 5, and it can readily be detached from the runner.

What I claim as new is:—

1. In a device of the character described, a rule, a reciprocatory runner slidably mounted thereon, a supporting frame, a lens carried by the frame, and a plurality of depending fingers carried by each of opposite portions of the frame and having their free ends detachably interlocking with opposite portions of the runner to support the frame above the same, said ends of the fingers disengaging the runner on their outward or separating movement.

2. An attachment for a slide rule and the like, comprising a runner, a magnifier, consisting of a lens and a supporting frame therefor, and means for detachably securing the magnifier to the runner, consisting of flanges adapted to yieldingly embrace the runner by their own elasticity.

3. A frame for a slide rule magnifier, consisting of a support provided with upturned flanges adapted to embrace a lens and downturned flanges adapted to embrace a runner.

4. A frame for a slide rule magnifier, consisting of a support provided with upturned means adapted detachably to support a lens and downturned flanges adapted detachably to grip a runner.

5. In a device of the character described, a rule, a runner slidably mounted thereon, a frame detachably mounted on the runner, said frame consisting of a rectangular body having an opening, spring clasps extending upwardly from the sides of the body, longitudinal flanges extending upwardly from the body at each end thereof, and a lens mounted on the body above the opening and between the spring clasps and the end flanges thereof, said lens having its ends respectively truncated obliquely to form a space between the same and the said end flanges of the body.

6. In a device of the character described, a rule, a runner slidably mounted thereon, a frame detachably mounted on the runner, said frame consisting of a rectangular body having an opening, spring clasps extending upwardly from the sides of the body, longitudinal flanges extending upwardly from the body at each end thereof, a plurality of spring fingers respectively depending from the sides of the body for detachably engaging the sides of the runner, and a lens mounted on the body above the opening and between the spring clasps and the end flange thereof.

Witness my hand this 13th day of June, 1908, at Hoboken, N. J.

WILLIE L. E. KEUFFEL.

Witnesses:
BOWDEWINE B. VAN SICKLE,
EMIL P. HALL.