



# UNITED STATES PATENT OFFICE

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CURSOR

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This invention relates to a slide rule cursor. One of the objects of this invention is to provide a slide rule cursor which is simple, practical and thoroughly durable. Another object of this invention is to provide a device of the above character which facilitates reading and setting and thereby enhances speed and accuracy of slide rule work. Another object of this invention is to provide a device of the above character, the use of which will reduce eye strain. Still another object of this invention is to provide a device of the above character, the usefulness of which is not affected by scratching and dirt. Still another object of this invention is to provide a device of the above character which is simple in construction and may be economically manufactured. A further object of this invention is to provide a device of the above character which facilitates certain calculations on the slide rule by eliminating the necessity of moving the slide for such an operation. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, all as will be illustratively described herein, and the scope of the application which will be indicated in the following claims.

Referring now to the accompanying drawing, in which are shown two of the various possible embodiments of this invention,

Figure 1 is a perspective view of the cursor mounted on a portion of a slide rule;

Figure 2 is a vertical section taken on the line 2-2 of Figure 1;

Figure 3 is a plan of a modification of the cursor shown in Figure 1 mounted on a portion of a slide rule; and

Figure 4 is a vertical section of the cursor taken on the line 4-4 of Figure 3.

Similar reference characters refer to similar parts throughout the several views of the drawing.

As conducive to a clearer understanding of certain features of this invention, it might here be pointed out that most slide rules are equipped with a cursor made wholly or in part of a transparent material. The portion of cursors now in use which is positioned above the stock and slide is usually a thin sheet or plate of transparent material which has a hair line engraved or otherwise provided on the surface which faces and practically contacts the graduated faces of the stock and slide.

It has been found that this conventional type of a cursor is not satisfactory in many respects.

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In the first place the production of a fine hair line is a delicate and rather costly manufacturing operation. Another difficulty lies in the fact that in use small particles of dust, dirt, lint and the like accumulate in the minute space between the lower surface of the hair line plate of the cursor and the graduated faces of stock and slide. These particles of foreign matter make it sometimes extremely hard to read the scale lines and numbers, and the little groove that makes the hair line picks up dirt and dust so that the hair line becomes soon blurred and unsuitable for precise readings. It is accordingly another object of this invention to overcome the above-mentioned difficulties.

Referring now to the drawing, in Figures 1 and 2 a simple slide rule, generally indicated at 9 with only one graduated face is shown. Slide rule 9 includes stock 10 and slide 11. The cursor, generally indicated at 12, covers only the graduated faces of stock 10 and slide 11. Cursor 12 is made of one integral piece of transparent material including a main plate 13 with flange portions 14 and 15 which guide the cursor 12 along the stock 10 by means of the outside grooves 16 and 17 is the stock with which the flange portions coact.

The plate 13 is provided with an opening or window 18 of rectangular shape. Window 18 has one edge 19 located approximately in the center of the cursor 12 which extends at right angles to the direction of movement of cursor 12 and slide 11 along stock 10. The margin 20 adjacent edge 19 is very thin and of substantial width. Margin 20 is flat so that there is no optical distortion of the graduation lines visible through margin 20. The plane of edge 19 is substantially perpendicular to the surface of the slide rule to eliminate distortion and thus permit edge 19 to be correctly set to a numerical value between two adjacent graduation lines of the scales of the slide rule. If edge 19 was not perpendicular, the distortion caused by viewing the scale through the edge 19 would cause the graduation line on the slide rule next to the index edge but underneath margin 20 to seem to be nearer to the edge than it really is.

Experiments have further shown that a cursor with a window and index edge is far superior to a hair-line cursor. Those portions of the scales that are visible through the window 18 are seen directly and therefore in complete clarity because no cloudiness or discoloration of the cursor material obstructs the view. No dust or foreign matter nor scratches can accumulate underneath the cursor plate where clear visibility is of greatest importance.

Margin 20 is provided with a slight fringe of

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color to make it appear a trifle darker or different from the color or shade of the face of the slide rule 9. This is of definite advantage to the user's eye, as it accents line 19, making it much easier to align edge 19 with respect to a certain value on one or more of the scales, or to read the value corresponding to an actual position of the index edge 19 with respect to those scales. In contrast to this, when the conventional hair line is used, the eye is confused by the many graduation lines on both sides of the hair line. In using the cursor disclosed, the eye has to contend only with the graduation lines to one side of the index edge 19, namely, the lines visible in the window 18.

It might here be pointed out that the description hereinabove is illustrative only, and that the invention is not limited to the features of the example illustrated and described above. It should also be pointed out that some cursors have more than one hair line, and accordingly the cursor described above may have more than one window or one or more windows with more than one index or index edge. As an example of such construction, referring to Figures 3 and 4, the width of the window 18 may be made so as to equal the logarithmic value of  $\pi/4$  on the A/B scale, and both lateral edges 21, 21a of the window designed as index edges. Then, by setting the right-hand index edge 21 to X on the D scale, the area of a circle with diameter X may be read at the left index edge 21a on the A scale.

Thus, a thoroughly efficient and practical cursor has been disclosed which is efficient in use and economical to manufacture. It will thus be seen that the difficulties mentioned hereinabove have been successfully overcome and the objects successfully accomplished.

As many possible embodiments may be made of the mechanical features of this invention, and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinabove set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a cursor for a slide rule or similar instrument, in combination, a plate member, means mounting said member on said instrument for movement longitudinally thereof, and means forming an opening in said member, said opening including at least one straight edge extending transversely across the graduated surface of said instrument, the portion of said member adjacent said last-mentioned edge being transparent, relatively thin, and of a color different from that of the graduated surface of said instrument.

2. In a cursor for a slide rule or similar instrument, in combination, a plate member, means slidably mounting said member on said instrument for movement longitudinally thereof, the lower surface of said plate member being positioned a minute distance from the graduated surface of said instrument, and means forming an opening in said plate member, said opening having a pair of parallel edges positioned parallel with respect to the graduation lines on said instrument and serving as index edges with respect thereto, the portions adjacent said parallel edges being of substantially transparent material, said index edges being spaced from each other a distance which represents a predetermined numerical value at the logarithmic scale existing in at least one of the graduations of the slide rule.

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3. In a cursor for a slide rule or similar instrument, in combination, a plate member, means slidably mounting said member on said instrument for movement longitudinally thereof, the lower surface of said plate member being positioned a minute distance from the graduated surface of said instrument, and means forming an opening in said plate member, said opening having a pair of parallel edges positioned parallel with respect to the graduation lines on said instrument and serving as index edges with respect thereto, said index edges being spaced from each other a distance which represents a predetermined numerical value at the logarithmic scale existing in at least one of the graduations of the slide rule, the portions of said plate member adjacent said index edges being transparent and of substantially less thickness than said plate, and the faces of said edges lying in planes extending substantially at right angles to the graduated surface of said instrument.

4. In a cursor for a slide rule or similar instrument, in combination, a plate member, means slidably mounting said member on said instrument for movement longitudinally thereof, the lower surface of said plate member being positioned a minute distance from the graduated surface of said instrument, and means forming an opening in said plate member, said opening having a pair of parallel edges positioned parallel with respect to the graduation lines on said instrument and serving as index edges with respect thereto, said index edges being spaced from each other a distance which represents a predetermined numerical value at the logarithmic scale existing in at least one of the graduations of the slide rule, the portions of said plate member adjacent said index edges being relatively thin, transparent, and of a shade or color different from that of the graduated surface of said instrument.

5. In a slide rule construction of the type wherein there is a stock which carries a central slide and which has a flange-receiving guideway at each edge, said stock and slide having faces in a common plane which carry graduation lines which extend transversely of the stock, a unitary cursor slideably mounted on said stock and including a plate portion positioned on said faces of the stock and slide and a pair of mounting portions extending along the respective edges of the stock and having flanges which ride in said guideways, said plate portion having an opening therein which extends transversely of the said faces and which has a straight edge along one side which is parallel to the said graduation lines on the stock and slide, said plate member having the portion forming said straight edge formed of substantially transparent material which is relatively thin and has parallel faces, said straight edge having its face in a plane extending substantially at right angles to the graduated surfaces of the stock.

6. In a slide rule construction of the type wherein there is a stock which carries a central slide and which has a flange-receiving guideway at each edge, said stock and slide having faces in a common plane which carry graduation lines which extend transversely of the stock, a unitary cursor slideably mounted on said stock and including a plate portion positioned on said faces of the stock and slide and a pair of mounting portions extending along the respective edges of the stock and having flanges which ride in said guideways, said plate portion having an opening therein which extends transversely of the said faces and which has parallel straight edges along the sides

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which are parallel to the said graduation lines on the stock and slide, said plate member having the portions forming said straight edges formed of substantially transparent material which portions are relatively thin and have parallel faces, said straight edges having their faces in planes extending substantially at right angles to the graduated surfaces of the stock, said straight edges being spaced from each other a distance which represents a predetermined numerical value in the logarithmic scale existing in at least one of said graduations.

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