Nov. 29, 1949 H. S. LIEBERMAN 2,489,790

SLIDE RULE

Filed May 14, 1947

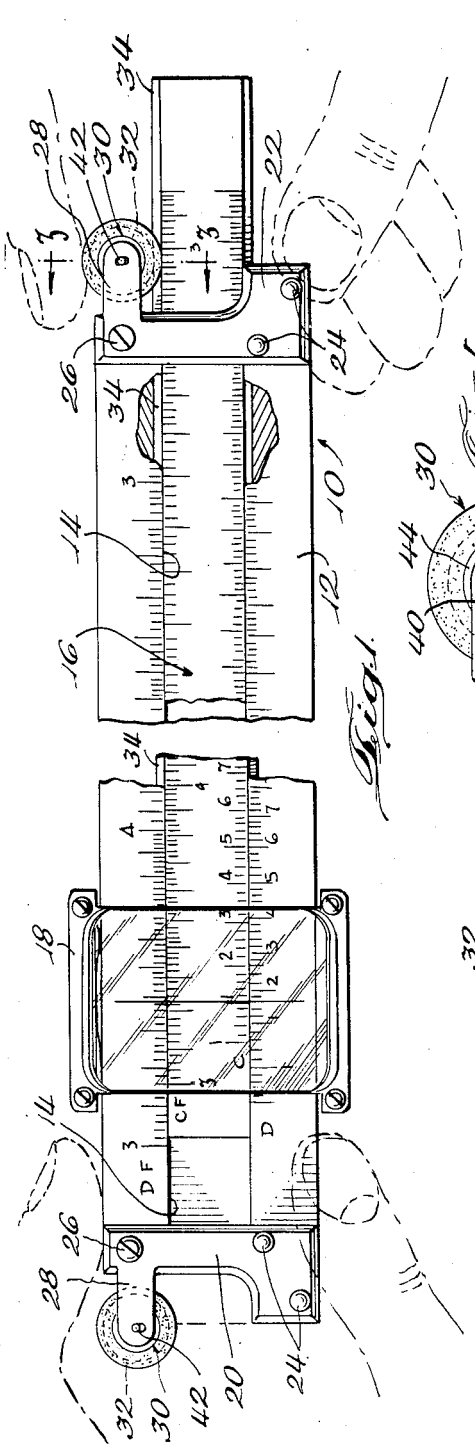

Fig. 1.

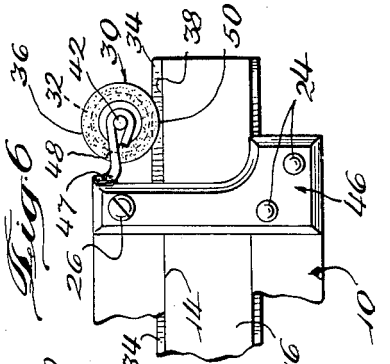

Fig. 6.

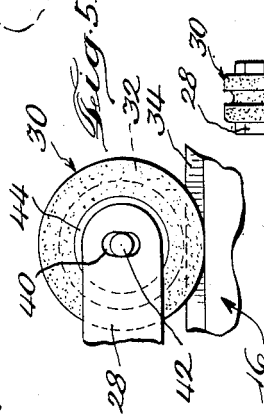

Fig. 5.

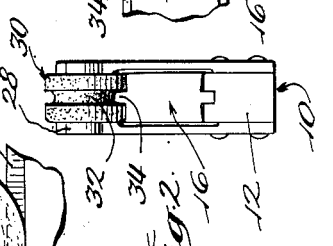

Fig. 2.

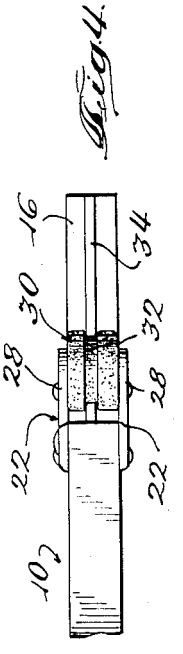

Fig. 4.

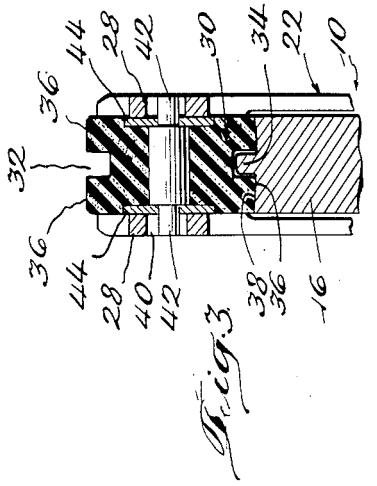

Fig. 3.

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SLIDE RULE

Harry Stanley Lieberman, Evansville, Ind.

Application May 14, 1947, Serial No. 748,018

1 Claim. (Cl. 235—70)

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My invention relates to improvements in slide-rules, such as those used by engineers, architects and draftsmen. Various calculations may be made mechanically with greater ease and rapidity than by ordinary arithmetical methods, and usually with sufficient accuracy for all practical purposes.

The usual slide-rule, in its most common form, consists of three main parts. There is a main body or rule, a slide, and a runner or "cursor." The accuracy of the results depends on the care with which the user sets the slide. The slides ordinarily do not move too easily and are so constructed that there is considerable friction between the main body and the slide. Although this friction is necessary and is advantageous in maintaining the parts in proper relationship after they are set, it renders a final perfect adjustment difficult to attain. A rough setting presents no problem, but hair-line accuracy adjustment is a tedious task.

The primary object of my invention is to provide a means on a slide-rule to facilitate a quick and accurate setting of the slide in precise alignment with the main body of the rule.

Another object of my invention is to provide a simple device for securing a fine adjustment on a slide-rule for persons who lack the muscular coordination required to make a setting in the usual way.

A further object of my invention is to provide a simple means for slide adjustment which eliminates the need for gears, racks or other complicated mechanisms.

Yet another object of this invention is to provide an adjustment means for a slide-rule of simple and economical construction which will not require any structural changes of the slide-rule itself.

Other objects and advantages of the invention will become apparent from the ensuing description in the course of which reference is had to the accompanying drawings, in which:

Fig. 1 is an elevational view of a standard slide-rule showing the adjustment means for the slide;

Fig. 2 is an end elevational view of the slide-rule and the slide adjustment;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a plan view of an end fragment of my improved slide-rule;

Fig. 5 is an enlarged fragmentary elevational view showing the construction of the adjustment means; and

Fig. 6 is a modified type of structure.

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Referring to Figs. 1 to 5, inclusive, of the single sheet of drawing, the slide-rule is indicated in general by the reference numeral 10.

The main body 12 has a longitudinal space 14 for receiving the slide 16. Slide-rule 10 has the usual runner or "cursor" 18. At the ends of slide-rule 10 are braces 20 and 22. The widest ends of the braces 20 and 22 are fixedly mounted to the main body 12 by rivets 24. The opposite or narrow ends of braces 20 and 22 have an adjustment screw 26, which, under extreme conditions, where shrinkage or swelling becomes so marked as to interfere with the smoothness or operation of the slide, an adjustment can be made.

Mounted and being integral with the upper portions of the braces 20 and 22 are horizontal projecting arms 28, which act as guides or carriers for resilient frictional rollers 30. Rollers 30 have an annular groove 32 for spanning of the tongue 34 on the slide 16. Said annular groove 32 is of sufficient depth and width that it does not interfere or bind with the tongue 34. Rollers 30 have two flat annular faces 36 for frictional contact on both flat surfaces 38 of the slide 16 and for engagement of the user's fingers.

The horizontal projecting arms 28 contain vertical elongated slots 40 for receiving a pin 42 which acts as an axle or trunnion for the rollers 30. Mounted on the pin 42 are a pair of washers 44 for eliminating any undue wear between the rollers 30 and the arms 28. Said elongated slots 40 permit vertical motion when pressure is applied to the rollers 30 by the user's finger, thereby giving a firm, positive contact pressure between the flat faces 36 on the rollers and the flat surfaces 38 of the slide. It can be seen that when securing a rough setting of the slide in the usual manner prior to using rollers 30, there can be no interference or noticeable friction between the rollers 30 and slide 16.

When a fine adjustment is desired, it is apparent that when pressure is applied to the roller 30 by the user's finger, the pressure is then transmitted through the roller to the flat surfaces 38 of the slide 16 and the minutest movement of the finger will then be translated into a fine hair-line adjustment of the slide 16. There being an adjustment roller 30 on each end of the slide-rule 10, it is readily apparent that no matter in which direction the slide is moved, one of the roller adjustments may be put in operation.

In the modification illustrated in Fig. 6, at the upper ends of the braces 46, are welded or brazed at 47 a pair of resilient arms 48. Arms 48 carry

the rollers 30 by pins 42. When the roller 30 is not being urged downwardly, there will be a slight clearance at 50 between the faces 36 of the roller 30 and the flat surfaces 38 of the slide 16. Thus, it can be seen that a slight pressure of the user's finger will bend the resilient arms 48, thereby causing immediate contact between the roller 30 and the slide 16.

In conclusion, although my invention has been disclosed in connection with the specific details of preferred embodiments thereof, it must be understood that such details are not intended to be limitative of the invention except so far as set forth in the accompanying claim.

I claim:

In a slide-rule of the character described and having a slide-rule frame, a tongued slide movable therein, a pair of supporting braces at each end of said frame, the herein improvement which comprises narrow extensions on said braces, a vertical slot near the outer end of each of said extensions opposite said braces, axial pins, a resilient rotatable member mounted between each pair of extensions on said axial pins transversing said vertical slots, said resilient rotatable member having an annular groove on its peripheral edge, whereby said resilient rotatable member is manually adjustable fingerwise with said tongued slide in bridged frictional relationship thereto, for moving said slide relative to said frame.

HARRY STANLEY LIEBERMAN.

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