Improved Cursor with Metal Frame

First shown in the 1936 K&E Catalog

July 6, 1937.

A. W. KEUFFEL

RUNNER FOR SLIDE RULES

Filed Nov. 11, 1933

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.
United States Patent Office

2,086,502

Runner for Slide Rules

Adolf W. Kenfield, Montclair, N. J., assignor to
Kenfield & Esser Company, Hoboken, N. J., a
corporation of New Jersey

Application November 11, 1933, Serial No. 697,642

12 Claims. (Cl. 225—70)

This invention relates to slide rules and more particularly to runners thereof.

The primary object of the invention is the protection of the glass or other transparent panel bearing a hair-line against damage should the slide rule be dropped or otherwise struck.

The first slide rules were provided with runners comprising a frame in which there was set the glass or other transparent panel inscribed with the hair-line. Such frame enclosed the edges of the glass to support it in its proper position and had the disadvantage that it obstructed the view of numbering on the scale, often necessary to the reading whereby inconvenience and error was occasioned. In order with respect to each other and to the sides of the panel so that any displacement which may occur can only occur in a direction transverse of the rule and no angular shifting of the hair-line is possible.

Still another object of the invention is to prevent contact of the frame with the base of the rule which might scratch or mar the celluloid casing and obliterate the scale. Accordingly, the ends of the frame through which the securing screws pass into the end bars are offset downwardly so that the frame is, in effect, spaced from the upper surface of the end bars.

The invention also seeks a construction which has compactness, strength and rigidity. To this
that the view of the graduations of the scale should not be obstructed by the elements of the frame, it was then proposed that a transverse, transparent panel extend across the space between the end bars and constitute the sole connection holding them in position. Such a panel, however, was unprotected and sometimes became broken or chipped. Moreover, it was often broken in drilling the holes for the screws.

The present invention has for an object a frame which shall engage the edges of the transparent panel bearing the hair-line to protect the panel against damage and, at the same time, constitute a connection between the end bars to hold them in position and relieve the panel of strain, said frame, however, affording substantially no obstruction to the view of the graduations on the scale. To this end, a frame is provided wherein those portions extending transversely across the face of the slide rule are relatively thin and do not overlap the face of the panel. The invention also seeks means of securing the transparent panel in the frame. To this end, the ends of the panel are bevelled and the edges of the frame adapted to cooperate therewith are inclined inwardly to engage the panel and clamp the same against the guide devices. A further object of the invention is a frame which shall permit adjustment of the hair-line with respect to the guide devices. To this end, the holes in the frame through which the screws securing the frame to the guide devices are oversized and the screws of reduced diameter approximate the head so as to permit relative motion between the frame and the screws. Yet another object of the invention is to assure at all times that the hair-line of the panel shall be parallel to the indication of the scale.

To this end, the sides of the frame are parallel end, the corners of the glass are rounded as well as the frame, thereby not only affording strength and rigidity but also a space for the securing screws so that shorter end bars may be used.

These and other objects of the invention and the means for their attainment will be more apparent from the following detailed description taken in connection with the accompanying drawing illustrating one embodiment by which the invention may be realized, and in which:

Figure 1 is a view showing, in plan, the runner of this invention applied to a slide rule of the kind having scales upon both faces, a part of the frame being broken away to show the shape of the transparent panel; Figure 2 is a view showing the runner in end elevation; Figure 3 is a view showing the runner in side elevation, taken in the plane indicated by the line 3—3 of Figure 1 and looking in the direction of the arrows; Figure 4 is a transverse sectional view taken in the plane indicated by the line 4—4 of Figures 1 and 3 and showing the slide rule in longitudinal section; Figure 5 is a longitudinal sectional view of the runner taken in the plane indicated by the line 5—5 of Figures 1 and 2, looking in the direction of the arrows, the slide rule being in transverse section; Figure 6 is a fragmentary sectional view showing the manner in which the frame is secured to an end bar; and Figure 7 is a fragmentary sectional view showing the application of the invention to the Mannheim type rule.

While the invention has been illustrated as applied to a slide rule of the kind having scales upon both faces, it will be obvious that the invention is equally applicable to a slide rule of the Mannheim type, see Figure 7.
with end plate portions 15 extending outwardly 15
from the frame and to the side 15
to form ears or lugs 20. The frame is so formed 
that the side members 18 are relatively thin and 
have their greater dimension in a plane per- 
pendicular to the plane of the base portion 18. 
The ends 16 converge upwardly and inwardly, as 
shown specifically in Figure 5 and the corners are 
rounded, as at 22, where they merge from the 
bevelled portion 16 to the vertical sides 18, thus 
forming, in effect, a web which adds considerable 
strength to the construction at this point.

The ends of the transparent panels 17 within 
the frame are bevelled, as at 21, Figure 1, and 
rounded and bevelled to substantially conform to 
the curvature of the corners 22 of the frame, as 
shown at 24 in Figure 5. The liberal rounding 
of the edges of the panel not only affords suf- 
cient room for the heads of the screws without 
making the end bars unduly long or wide but 
also permits a reinforcement to be given the 
frame in the form of a substantial web 22. 
Moreover, the rounding of the edges of the glass 
greatly reduces the danger of breakage as would 
be the case had the glass square corners.

It is comparatively easy to make the two long 
edges of the glass straight, parallel and an ex- 
act distance from one another. Therefore, a 
positive fit is assured in the fitting of the glass 
against the long edges of the frame. It is more 
difficult to make the glasses with exact angles and 
with an exact distance from the base of one 
bevelled angle to the base of the other bevelled 
angle. However, a considerable amount of play 
is permissible in the longer axis. Even though 
the glass can be slightly shifted back and forth 
transversely of the rule, it will in no way affect 
the accuracy of the readings by the hair-line 
because the hair-line of the glass runs in a 
transverse direction to the rule and, therefore, is 
controlled by the exact fit of the two parallel long 
edges.

The base portions 18 are offset downwardly 
from the plane of the frame 16, 18 so that the 
base portion 18 alone rests on the surface of 
the end bars 14 and the frame is spaced from 
the surface of the rule and cannot scratch the scales. 
Moreover, the heads 29 of the screws 18 are thus 
dispaced below the upper surface of the panel, 
thereby affording a more compact runner con- 
struction and permitting the use of a smaller case 
to contain the slide rule. This permits, in as- 
sembly, the panel 12 to rest upon the surface of 
the end bars 14 and the frame is placed there- 
above and secured in position by the screws. 
Thus the frame and particularly the ends 16 and 
corners 22 thereof serve to clamp the ends of 
the panel to the respective end bars.

Each ear 20 is perforated with a hole, Figure 6, 
to permit a screw 28 to pass therethrough. Con- 
veniently, these screws 28 are provided with a 
portion 30 of reduced diameter immediately be- 
the prior art by beveling one edges or the trans- 
parent panel that constituted the sole connection 
between the end bars. Since the sides of the 
panel are parallel to one another and to the hair-
line and since the sides 18 are similarly parallel 
even though the panel should become slightly 
loose in the frame, the panel can only move in the 
longitudinal direction of the hair-line and it can-
not become displaced out of parallel relationship 
with the subdivisions of the scale. Thus the 
reading is always exact. The frame of this in-
vvention permits a narrower end bar to be used.

In the Mannheim type rule, as shown in Fig-
ure 7, the frame extending between the end bars 
and the web reinforcement at the rounded cor-
ners 22 adds strength to the construction and 
relieves the glass of strain.

Various modifications will occur to those skilled 
in the art in the composition, configuration and 
disposition of the component elements going to 
make up the invention as a whole and no limita-
tion is intended by the phraseology of the fore-
going specifications or illustrations in the ac-
companying drawing.

What is claimed is:

1. A slide rule runner comprising the combina-
tion with spaced end bars for slidably engaging 
the opposite edges of a rule, of a transparent panel 
having parallel sides and bevelled ends and round-
ed corners, a metallic frame extending between 
the end bars having thin sides engaging only 
the side edges of the panel and upwardly and in-
wardly directed end members adapted to overlie 
the ends of the transparent panel and rounded 
corners, said frame being formed with an ap-
erture downwardly offset ear outwardly of each 
rounded corner and screws formed with a portion 
of reduced diameter immediately beneath the 
head and respectively passing through the ap-
ertures into the end bars said portions of reduced 
diameter being aligned with the offset ears 
whereby looseness the screws while still en-
aged in the end bars will permit a shifting of the 
frame relative to the end bars after which the 
screws may be tightened to secure the frame in 
its adjusted position.

2. A slide rule runner comprising spaced end 
bars, a transparent panel extending therebe-
tween, a frame within which said panel is dis-
posed, whereof the side frame members are thin 
strips and engage only the side edges of the 
panel, said end frame members having portions 
extending upwardly and inwardly to overlie the 
respective ends of the panel and means to secure 
the frame to the end bars.

3. A slide rule runner comprising spaced end 
bars, a transparent panel extending therebe-
tween whereof the ends are bevelled, a frame 
within which said panel is disposed, whereof 
the side frame members are thin strips and en-
gage only the side edges of the panel, said end 
frame members having portions extending up-
wardly and inwardly to overlie the respective bevelled ends of the panel and means to secure the frame to the end bars.

4. A slide rule runner comprising spaced end bars, a transparent panel extending therebetween having rounded corners, a frame within which said panel is disposed, whereof the side frame members are thin strips and engage only the side edges of the panel, said end frame members having portions extending upwardly and inwardly to overlie the respective ends of the panel, the corners of the frame being rounded and means outwardly of the rounded corners to secure the frame to the end bars.

5. A slide rule runner comprising spaced end bars, a transparent panel extending therebetween having rounded corners, a frame within which said panel is disposed, whereof the side frame members are thin strips and engage only the side edges of the panel, said end frame members having portions extending upwardly and inwardly to overlie the respective ends of the panel, the corners of the frame being rounded and means outwardly of the rounded corners to secure the frame to the end bars.

6. A slide rule runner comprising spaced end bars, a transparent panel extending therebetween whereof the ends of the panel are bevelled and rest on the side bars, respectively, a frame within which said panel is disposed, the side frame members being thin strips engaging only the side edges of the panel, said end frame members having portions extending upwardly and inwardly to overlie the respective ends of the panel and means to secure the frame to the end bars to clamp the panel to the end bars.

7. A slide rule runner comprising spaced end bars, a transparent panel extending therebetween formed with bevelled ends, a frame within which said panel is disposed whereof the side frame members are thin strips and engage only the side edges of the panel, the end frame members having portions to engage the end bars respectively, and angularly disposed portions extending upwardly and inwardly to overlie the respective bevelled ends of the panel, the dimension of the longer face of the panel being less than the distance between the end bar engaging portions of the frame and means to secure the frame to the end bars.

8. A slide rule runner comprising the combination with spaced end bars for slidably engaging opposite edges of a rule, of a flat trans-rounded corners of the panel, the portion of said opposite edges overlapping the end bars projecting beyond the other two edges to form ears, and screws passing through the ears and into the end bars exteriorly of the panel.

9. A slide rule runner comprising a substantially rectangular metal frame of greater length than width outlined by a continuous, integral, narrow strip having its opposite shorter sides inclined inwardly and upwardly at an angle to form opposing bevel seats and having its opposite longer sides extending substantially perpendicular to the general plane of the frame, a flat transparent panel contained in the opening of the frame and inserted into the same through its wider underside, said panel having opposite end edges bevelled and fitting between the bevel seats and end bars engaging the underside of the frame opposite its bevel edges to secure the panel in place.

10. A runner for a slide rule comprising a rectangular frame for the reception of a rectangular transparent panel bevelled at its ends, one end of the frame forming a strip angle-shaped in cross section to engage the bevelled ends of the panel and including a flat attaching flange and an upstanding bevel flange, said bevel flange having a substantially straight central portion and rounding at opposite ends of the straight portion, said rounded ends forming webbing to reinforce the said end of the frame, the flat attaching flange projecting slightly beyond the rounded web forming ends of the bevel flange and apertured to form screw receiving ears for securing the frame in place.

11. A slide rule runner including a pair of spaced apart end bars having their upper surfaces disposed in the same plane, a quadrilateral frame provided with a sight opening, a transparent panel substantially fitting in said frame, the corners of the frame forming four ears disposed in a plane offset downwardly from the balance of the frame and acting to position the portion of the frame containing the panel slightly above the plane of the upper surfaces of the end bars, and screws passed through said ears for securing the same to the end bars.

12. A slide rule runner comprising spaced end bars, a transparent panel extending therebetween, a frame within which said panel is disposed and whereof the side frame members are thin strips and engage only the side edges of the panel, and the end frame members secured with the end bars have means to prevent displacement of the panel.
parent panel of substantially rectangular form having a pair of opposite thin side edges parallel and perpendicular to the plane of the panel and having its other pair of opposite edges bevelled and having rounded corners, a metallic frame of substantially rectangular form having a pair of its opposite edges overlapping the end bars and having a sight opening in which the panel is contained, said sight opening outlined at the ends overlapping the end bars with a pair of inwardly and upwardly angularly directed end members overlying the bevelled ends and the

with respect to the frame.

13. A slide rule runner comprising spaced end bars, a transparent panel extending therebetween, a frame within which said panel is disposed whereof the side frame members are thin strips and engage only the side edges of the panel, said end frame members having portions extending inwardly to overlie the respective ends of the panel and means to secure the frame to the end bars.

ADOLF W. KEUFFEL.