G. S. VELEZ.

SLATE.

No. 188,083. Patented March 6, 1877.

Fig: 2.

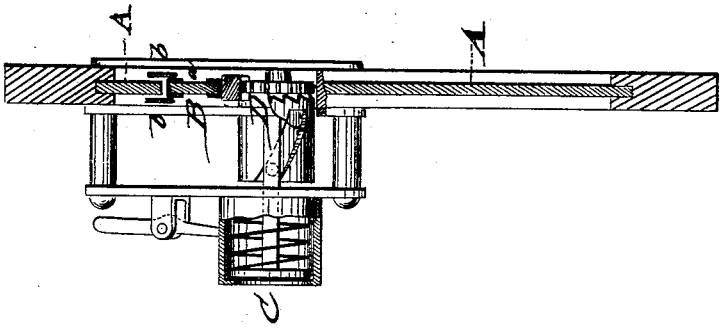
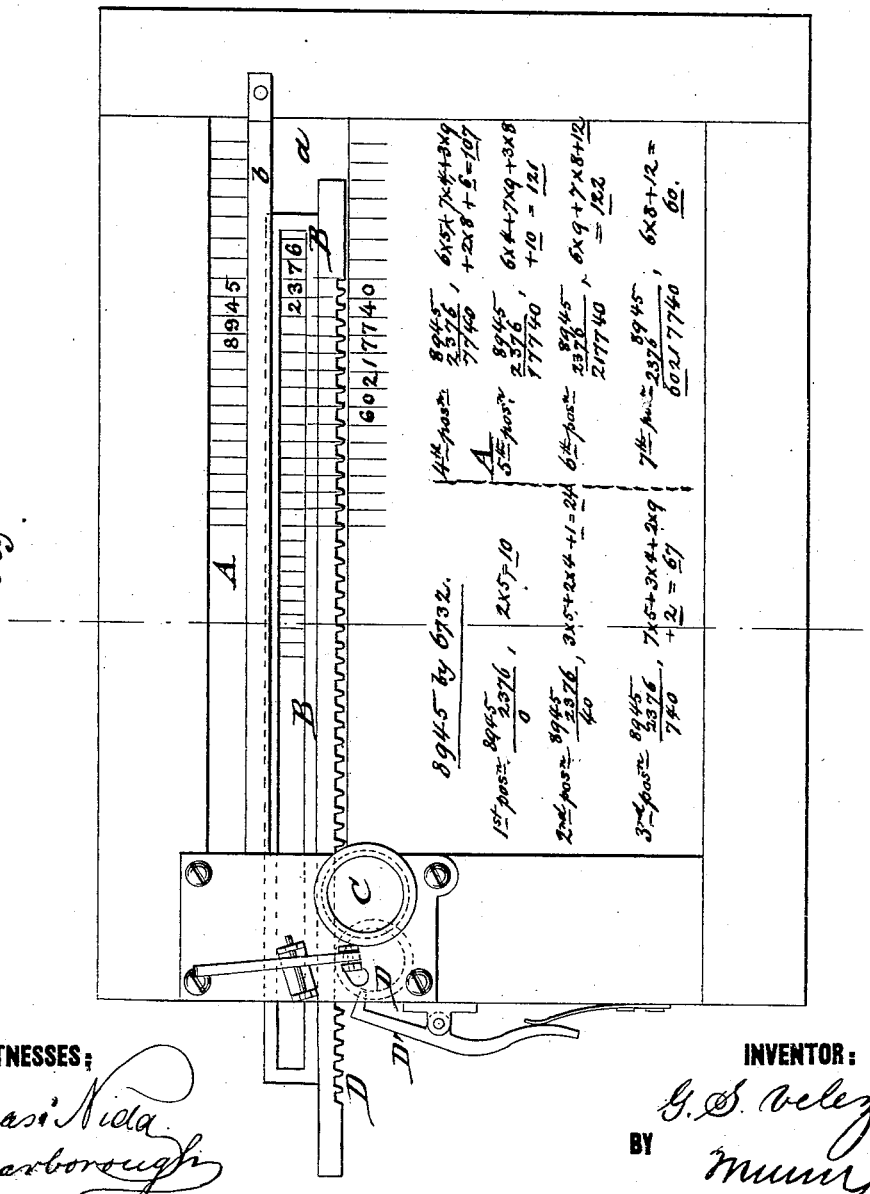


Fig: 1.



WITNESSES:

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GEORGE S. VELEZ, OF NEW YORK, N. Y.

IMPROVEMENT IN SLATES.

Specification forming part of Letters Patent No. **188,083**, dated March 6, 1877; application filed January 29, 1877.

To all whom it may concern:

Be it known that I, GEORGE S. VELEZ, of the city, county, and State of New York, have invented a new and Improved Multiplication-Slate, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a top view, and Fig. 2 a vertical transverse section on line *x x*, Fig. 1, of my improved multiplication-slate.

Similar letters of reference indicate corresponding parts.

The object of this invention is to provide an improved device for facilitating and expediting the multiplication of larger and smaller numbers by the assistance of mechanical means; and the invention consists of a slate with a sliding slate-rule, guided in a slot or recess of the slate, and worked in connection with the graduated or subdivided edges of the adjoining slate-sections.

In the drawing, A represents a slate, with a longitudinal recess, *a*, in which the sliding rule B is guided, by means of suitable rails *b* or otherwise.

The sliding rule B is worked by a spring-button, C, in connection with a pinion-and-rack mechanism, D, or by equivalent mechanism, so that each depression of the button C feeds the slide-rule forward the length of one tooth.

By releasing the check-pawl D′, or other check device, the rule B can be moved or sprung back into its original position, so as to close or fill the opening or slot *a* of the slate.

The sliding rule B is provided with a filling of slate or other material, on which may be written with a slate or other pencil, the slate-filling being divided by cross-lines into subdivisions or sections of such size that a figure may be readily and conveniently written into each subdivision.

The adjoining sections of the slate A are marked or graduated in the same manner, so that the dividing-lines of the sliding slate-rule register with those of the slate-section.

The guide-rail and rack may be similarly marked, so as to facilitate the registering of the different dividing-lines, and bring thereby the figures placed into the subdivisions of the sliding rule and adjoining slate-sections into corresponding columns.

The multiplication-slate is used as follows, the different operations being accomplished by mental process, without being specially written down: The figures of the multiplicand are placed into the divisions of the upper section of the slate, and those of the multiplier in the divisions or columns of the slate-rule, but in reversed order, the units of the multiplier being placed below the unit figure of the multiplicand, and the tens, hundreds, &c., to the right of the unit figure. The units are then multiplied, and the unit of the resulting number placed into the column of the lower adjoining slate-section. The button is now depressed, and the slate-rule moved forward so as to bring the units and tens of the multiplier below the tens and units of the multiplicand, after which the units and tens are multiplied and added to the figure obtained before by the multiplication of the units. The unit figure of the number so obtained is the ten figure, and is placed in the second column adjoining the unit figure of the result. The slate-rule is then moved again, and the same operation continued until all the figures of the multiplier have passed below the figures of the multiplicand, as shown clearly in Fig. 1 by the detailed multiplications accomplished mentally at each position of the slate-rule, and which exemplify instantly the method of using the slate.

The mental process necessary is easily learned and quickly accomplished, so that the result may be written off directly into the columns of the lower slate-section, facilitating especially the multiplication of larger numbers, so as to be useful for schools, business-houses, stores, &c., as a considerable saving of time is obtained, and the number of mistakes incidental to the present method considerably decreased.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A multiplication-slate composed of a slotted slate, with graduated or subdivided adjoining sections, and of an intermittently-sliding and subdivided slate-rule, substantially as and for the purpose set forth.

2. The combination of a slotted or recessed slate, having suitable guide-rails, with a sliding slate-rule, and suitable mechanism for moving the same forward and back, substantially as set forth.

GEO. S. VELEZ.

Witnesses:
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