(No Model.)

J. B. FINCH.

ARITHMETICAL CHART.

No. 275,475. Patented Apr. 10, 1883.

Fig. 6. *Fig. 7.*

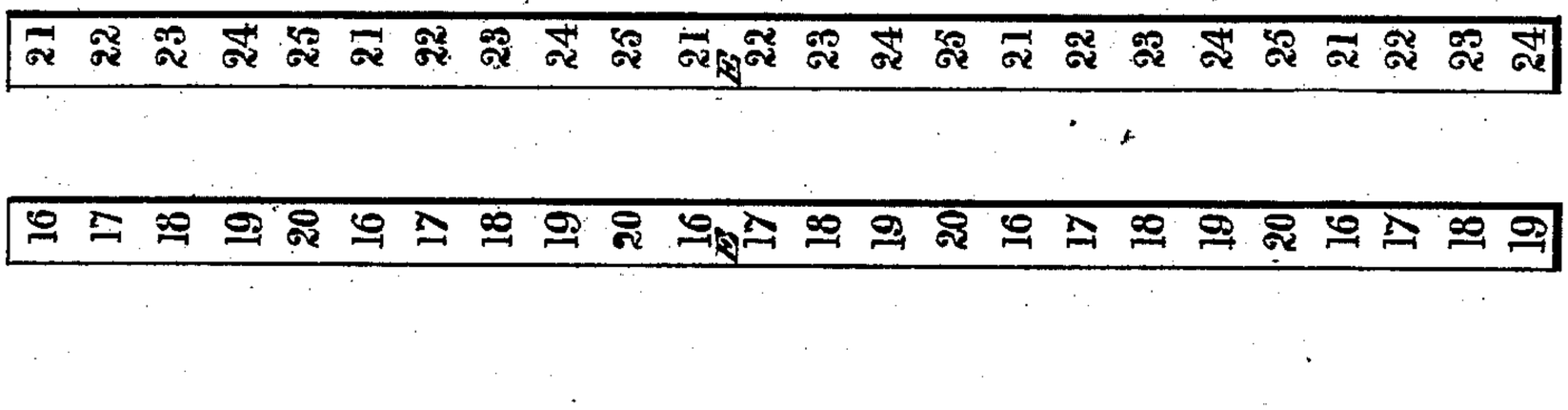


Fig. 2. *Fig. 3.* *Fig. 4.* *Fig. 5.*

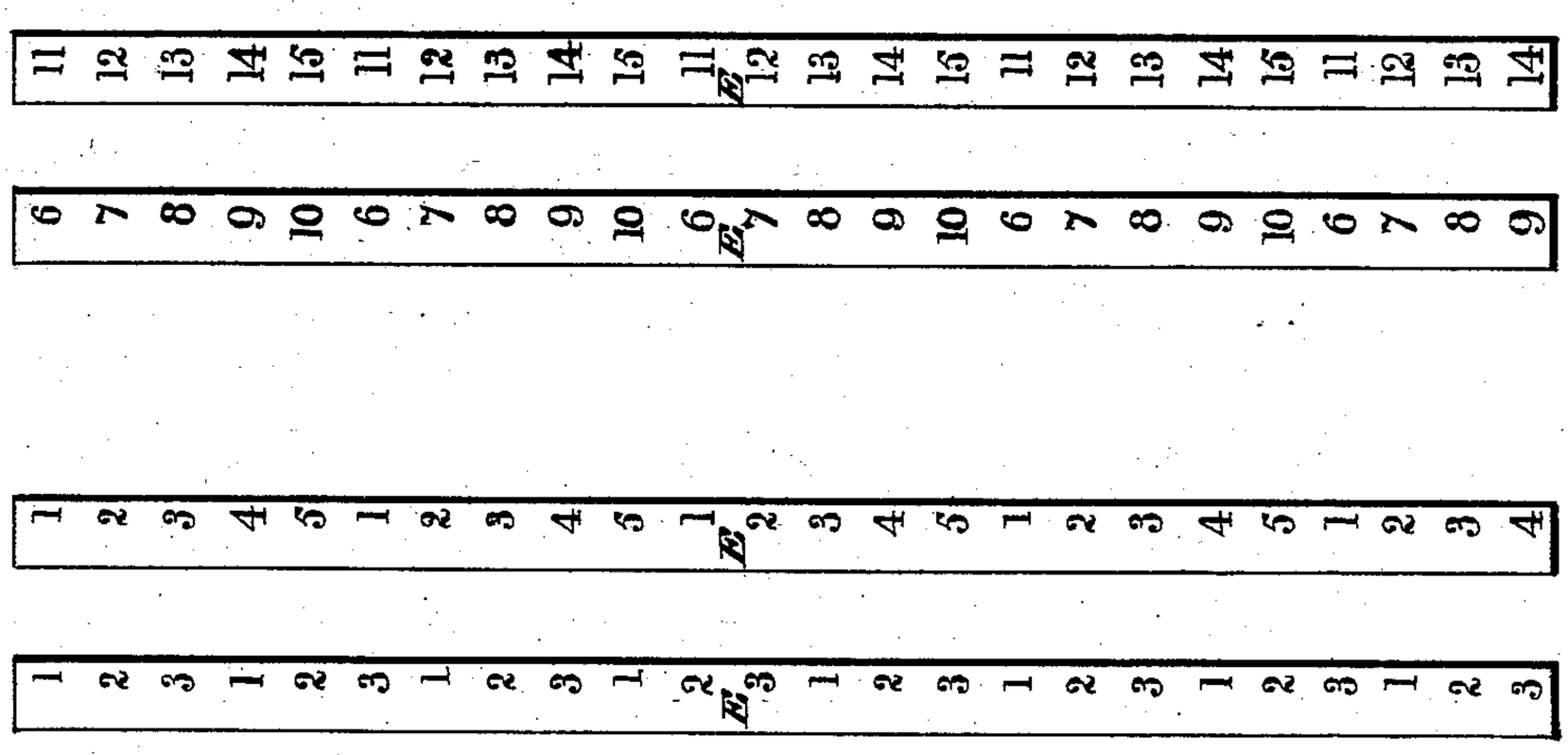
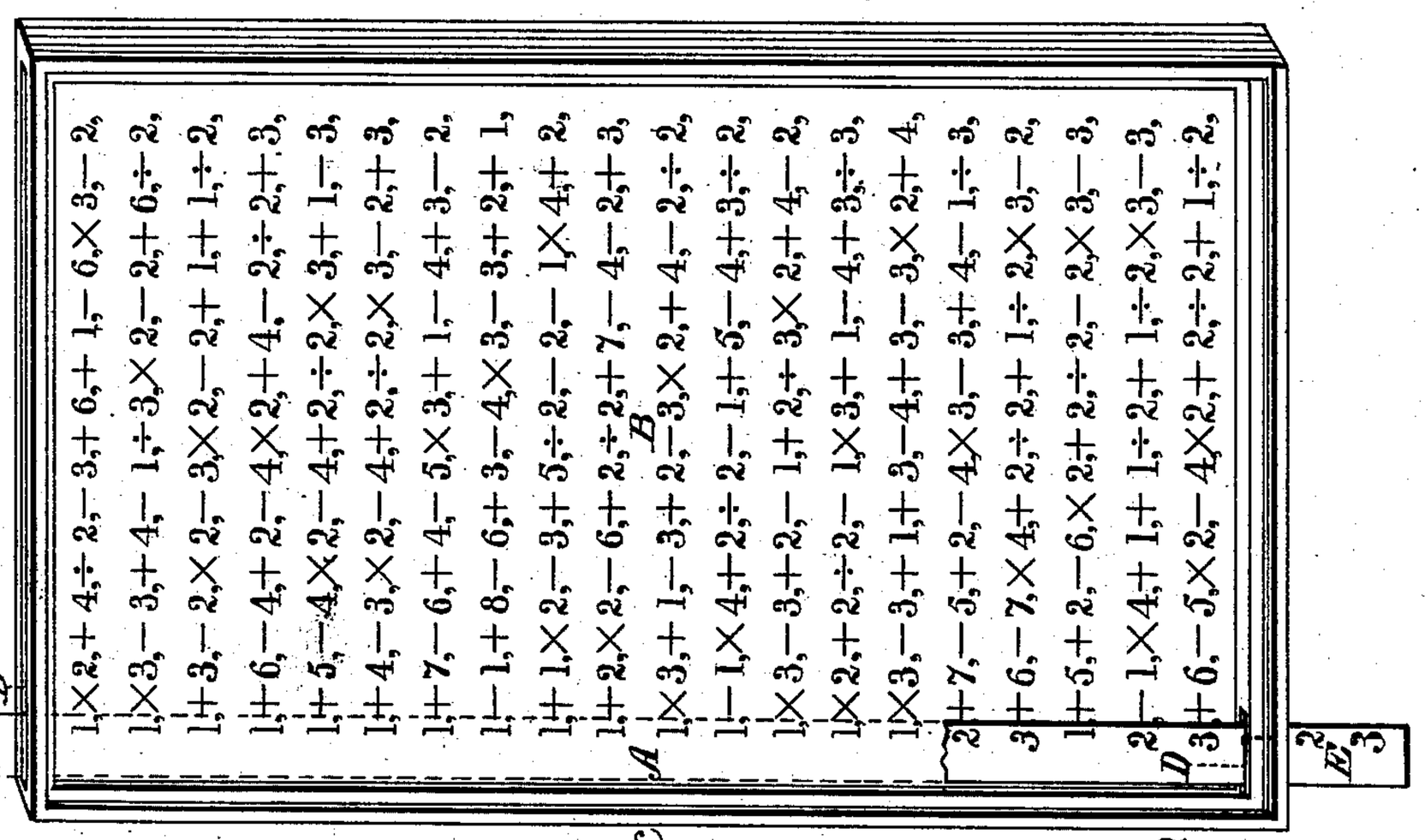


Fig. 1.



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JAMES B. FINCH, OF SAN JOSÉ, CALIFORNIA.

ARITHMETICAL CHART.

SPECIFICATION forming part of Letters Patent No. 275,475, dated April 10, 1883.

Application filed August 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. FINCH, of San José, county of Santa Clara, State of California, have invented an Improved Graded-Number Chart; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an arithmetical or number chart for purposes of instruction; and it consists of a sheet having certain figures written in lines across it, with intervening signs for multiplication, division, addition, or subtraction, and, in combination with this sheet, of slips having numbers printed in a single vertical line upon each. The large sheet is fixed in a frame having slots at one side, into which the slips are placed, and they may be moved up or down, so as to produce, with the figures upon the large sheet, new combinations or examples.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a view showing the permanent sheet and one of the movable slips in position for use. Figs. 2, 3, 4, 5, 6, and 7 are front and rear views of different slips.

My invention is intended to provide a simple arrangement of numbers, with the proper intervening signs, to give a number of different examples, and with these series of examples are employed slips having numbers arranged vertically, so that by moving a slip up or down the examples may be changed.

A is a sheet having rows of figures B extending across it and filling the sheet from top to bottom. This sheet may have different examples printed upon each side, and it is fitted into a frame, C, so as to be easily removed and reversed whenever desired. Upon the left side of this frame, at top and bottom, are made slots D, to receive the stiff strips E, so that they may be introduced above the sheet A, and may be made to slide up or down over it. The strips E are printed with a single row of figures corresponding with those of the main sheet, so that either figure in the row may be made to form a new combination with any other row upon the sheet A by being brought opposite it. This is done by simply sliding the strip up or down in the slots, so as to bring it in the proper place. In this manner, with only three figures repeated in rotation from top to bottom of the strip, and with a sheet, A, having twenty horizontal lines, sixty lessons may be given; and when these are properly learned the strips may be removed, so as to expose a new series of figures upon the opposite side, and the operation repeated. Two, three, or more of these strips may be used, the lessons gradually increasing in difficulty as the numbers upon the strips become larger.

In order to prevent fractions arising from the operations of division, which might occur in the combination of so many different numbers upon the slips with those upon the sheet A, the number employed as a divisor must always be the same as a previous multiplier or some factor of the same, and the result of other operations between the multiplication and division must be either zero or some multiple of the divisor. This rule being constant, no fractions can possibly occur as the result of any change in the figures upon the slips.

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

1. An arithmetical chart consisting of a series of numbers in horizontal rows, with intervening signs, as shown, in combination with the independent strips moving in guides at the left side, and adjustable so as to bring the different numbers upon the strip into line with those upon the main sheet, substantially as herein described.

2. A mathemetical chart having moving parts provided with lines of figures and signs wherein any given division is the same as the next previous multiplier or a factor thereof, and the result of the intermediate subtractions or additions either zero or some multiple of the divisor, substantially as set forth.

In witness whereof I hereunto set my hand.

JAMES B. FINCH.

Witnesses:

L. H. NOURSE,

G. W. EMERSON.