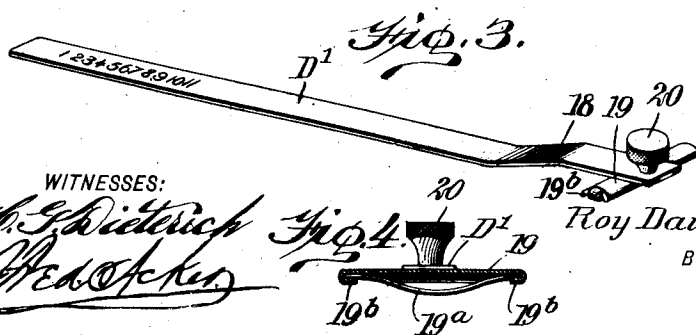
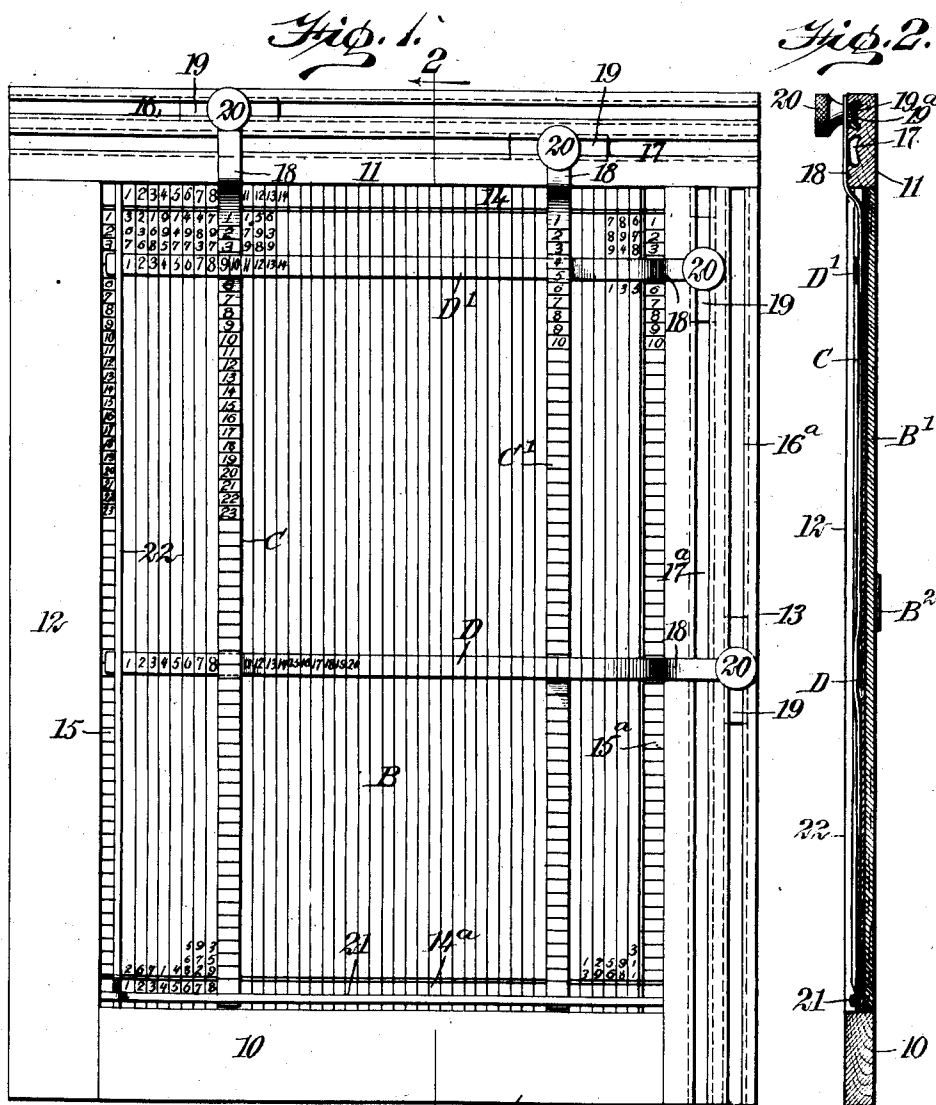


No. 832,871.

PATENTED OCT. 9, 1906.

R. D. MITCHELL.
EDUCATIONAL DEVICE.
APPLICATION FILED DEC. 2, 1905.



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EDUCATIONAL DEVICE.

No. 832,871.

Specification of Letters Patent.

Patented Oct. 9, 1906.

Application filed December 2, 1905. Serial No. 289,954.

To all whom it may concern:

Be it known that I, ROY DAVID MITCHELL, a citizen of the United States, and a resident of Sandusky, in the county of Erie and State of Ohio, have invented a new and Improved Educational Device, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a simple device to assist a teacher in instructing a class in mathematics, particularly in addition, which device will save the time of a teacher in dictating problems and the time of the students in writing them, it being possible for the teacher to quickly and accurately designate the boundaries of figures on a chart in columns, the figures within which columns are to be added, and for the students to locate and rule off the boundaries without injury to the chart.

A further purpose of the invention is to provide a device of the character described which will be very simple, easily understood, and readily handled, and which can be conveniently held in the lap or placed flat upon a desk.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improved device. Fig. 2 is a longitudinal section taken practically on the line 2 2 of Fig. 1. Fig. 3 is a perspective view of one of the adjustable defining-arms employed, and Fig. 4 is a longitudinal section through one of the slides.

A represents a frame comprising a bottom member 10, a top member 11, and side members 12 and 13; and within this frame a chart B is located, held in place by a suitable back B', secured by clamps B² or their equivalents, as shown in Fig. 2. This chart B is ruled in a series of columns, and each column contains a series of single figures arranged one below the other, the figures on the chart being in alinement both vertically and transversely.

The figures in the columns of the body portion of the chart are promiscuously arranged; but at the upper edge of the chart adjacent to the inner edge of the upper member 11 of the frame a horizontal defining-

column 14 is produced divided into vertical columns corresponding to the body-columns on the chart and reading therewith. In each space thus made in the defining-column 14 a figure is produced, and these figures read consecutively from "1" to any given figure, and the said defining-column 14 is duplicated at the bottom of the chart, the lower column being designated at 14^a. At the left-hand side edge of the chart a vertical designating-column 15 is produced and at the right-hand edge of the chart a corresponding designating-column 15^a is located. These columns are divided into spaces having figures reading from the top downward consecutively from "1" to any desired number.

Parallel undercut grooves 16 and 17 are produced in the front face of the upper frame member 11, extending from end to end of said member, and parallel longitudinal undercut grooves 16^a and 17^a are produced in the outer face of the right-hand side member of the frame, and these latter grooves extend from the upper member 11 out through the bottom end of the said side member, as is illustrated in Fig. 1. These grooves 16 and 17, 16^a and 17^a are of like cross-sectional shape, and they may be T-shaped in cross-section; but usually they are given a crescent shape. (Shown in Fig. 2.) In connection with the said frame two defining arms or rulers C and C' extend from the upper portion of the frame to the lower portion thereof, and these defining-arms are preferably made of thin flat metal—for example, steel—and the side edges of the arms are parallel and straight. The body portions of these arms are brought as close as convenient to the outer face of the chart and the upper ends of said arms are curved upwardly and then carried over the outer face of the upper frame member 11, as shown at 18 in the drawings. Each of the said arms or rulers C and C' is provided with a slide 19, secured to its under face at its upper end, the said slides having the same cross-sectional shape as the grooves 16 and 17 and 16^a and 17^a, and said slides for the rulers C and C' are made to enter and are adjustable one in the groove 16 and the other in the groove 17. For convenience in moving said arms each arm is provided with a button 20 or its equivalent at its upper end. In connection with the arms C and C' and crossing the said arms two transverse defining-arms D and D' are employed of the same construc-

tion as the arms C and C'; but the slides of the arms D and D' have movement in the undercut grooves 16^a and 17^a of the frame.

The free ends of the longitudinal slides C and C' extend nearly to the inner margin of the lower member 10 of the frame, and the inner ends of the transverse arms D and D' extend practically to the inner edge of the left-hand side member 12 of the frame. These arms C and C', D and D' may be plain; but preferably the arms C and C' have a vertically-reading scale of figures in the vertical defining-columns 15 and 15^a, while the transverse arms D and D' have transversely-reading scales of figures thereon reading the same as the figures in the upper and lower defining-columns 14 and 14^a.

Each slide 19, as is illustrated in Fig. 4, is provided with a downwardly-bowed spring 19^a at its under surface, usually held in position by clips 19^b, carried down from the ends of the slides. By means of the said springs 19^a the arms carried by the slides are kept at right angles to the frame in which they work and are not easily moved or jarred from place when adjusted.

In the operation of this device, each pupil being provided with one of said devices and the teacher also with one, the teacher will set the longitudinal arms at predetermined figures in the upper and in the lower defining-columns and the transverse arms to certain figures in the longitudinal defining-columns 15 and 15^a, calling out these figures to the class. The students of the class will then make a corresponding adjustment of the said arms upon their charts, and the figures to be added are thus contained within the field bounded by the said arms. Thus an unlimited number of examples can be given out and indicated on the chart without mutilating the same and saving the time of dictating the figures and the time of writing down the figures. In order that the free ends of the defining arms or rules shall not be in the way of the user of the device, a guide-rod 21 is secured to the frame and is arched over the ends of the longitudinal arms C and C', and a similar rod 22 is arched over the free ends of the transverse arms D and D'.

I desire it to be understood that I do not confine myself to the location of the grooves in the frame, as they may be differently placed without departing from the spirit of the invention.

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

1. In an educational device, a chart containing columns of figures, and defining-arms which extend over the chart and are mounted for independent sliding movement, sundry of them longitudinally and others transversely relatively to the said columns of figures.

2. In an educational device, a chart con-

taining columns of figures, and defining-arms mounted to slide over the chart, transversely and longitudinally relatively to the columns of figures, said arms being in pairs but each arm being capable of independent movement, the arms of one pair crossing the arms of the other pair.

3. In an educational device, a frame, a chart within the said frame, containing columns of figures, and longitudinal and transverse defining-arms adjustably mounted in the said frame, the said arms extending over the said chart, the longitudinal arms from top to bottom and the transverse arms from side to side.

4. In an educational device, a frame the upper member whereof is provided with undercut grooves in its outer face and the side member with corresponding grooves, and transverse and longitudinal defining-arms, each arm being provided with a spring-controlled slide at one end and a knob at the same end, the slides of the longitudinal arms being adapted to enter the undercut grooves in the top member of the frame and the slides in the transverse arm to enter the undercut grooves in the side member of the frame.

5. In an educational device, a frame having undercut grooves in one of its transverse members and corresponding grooves in one of its side members, a chart held in the said frame, having upper and lower defining-columns reading in consecutive figures commencing with "1," and longitudinal marginal defining-columns likewise reading in consecutive figures commencing with "1," the body portion of the chart being provided with columns in which figures are promiscuously produced, longitudinal and transverse defining-arms, each defining-arm being provided with a slide at one end and a knob at the same end, the slides corresponding in cross-section to the cross-section of the said grooves, the slides of the longitudinal arms being adjustable in the transverse grooves and the slides of the transverse arms in the longitudinal grooves, the transverse arms extending from side to side of the chart and the longitudinal arms from top to bottom thereof, the transverse arms having a scale of figures produced thereon corresponding to the reading of figures in the upper and lower marginal columns and the longitudinal arms having a scale of figures produced thereon corresponding to the figures in the said marginal columns of the chart, and guards for the free ends of the said arms.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROY DAVID MITCHELL.

Witnesses:

T. W. BOOKMYER,

FRANK F. LANGWELL.