

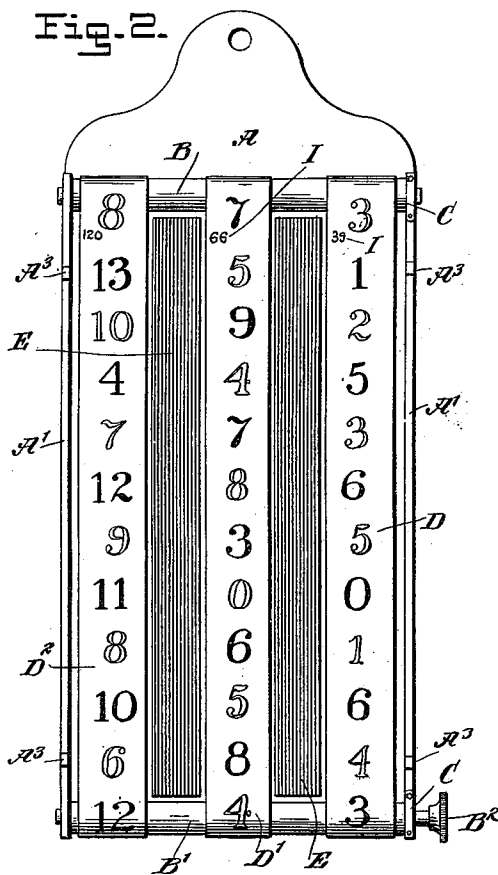
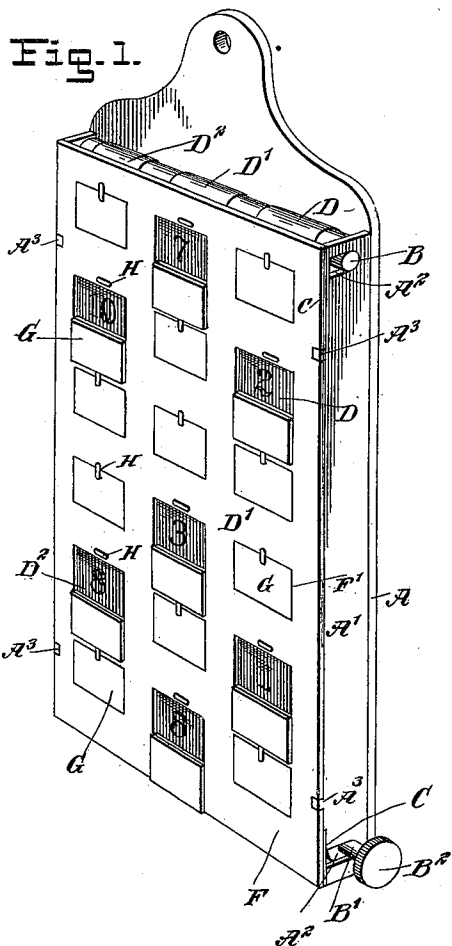
No. 666,999.

Patented Jan. 29, 1901.

T. E. BORDEN & A. A. WALLACE.  
DEVICE FOR TEACHING ARITHMETIC.

(Application filed May 10, 1900.)

(No Model.)



WITNESSES:

James F. Duhamel  
John L. Lott

INVENTORS.

Thomas E. Borden.  
Alfred A. Wallace.

BY

Mumford

ATTORNEYS

# UNITED STATES PATENT OFFICE.

THOMAS EUGENE BORDEN AND ALFRED ALEXANDER WALLACE, OF  
MINTURN, CALIFORNIA.

## DEVICE FOR TEACHING ARITHMETIC.

SPECIFICATION forming part of Letters Patent No. 666,999, dated January 29, 1901.

Application filed May 10, 1900. Serial No. 16,187. (No model.)

*To all whom it may concern:*

Be it known that we, THOMAS EUGENE BORDEN and ALFRED ALEXANDER WALLACE, citizens of the United States, and residents of Minturn, in the county of Madera and State of California, have invented certain new and useful Improvements in Devices for Teaching Arithmetic, of which the following is a full, clear, and exact description.

Our invention relates to educational appliances; and has for its object to provide a simple device by means of which a large variety of examples may be formed readily and expeditiously.

To this end our invention consists in certain features of construction and combinations of the same, as will be fully described hereinafter and particularly 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 both figures.

Figure 1 is a perspective view of our improved educational appliance, and Fig. 2 is a front elevation thereof with the cover removed.

The improved appliance comprises a support or back plate A, provided with side plates A'. In these side plates are journaled at the top and at the bottom horizontal rollers B B', and preferably the rollers are removable by providing slots A<sup>2</sup>, leading to the bearings in one of the side plates, which slots are normally closed by pivoted arms or latches C. The lower roller B' has a projecting end, with an operating head or handle B<sup>2</sup>. Upon the two rollers B B' are supported endless bands or tapes D D' D<sup>2</sup>, each of which bears a series of numerals which preferably alternate in shade or color—that is, the "1's" may, for instance, be black and the others red. The value of the numbers varies with the tapes. For instance, the tape D will contain only the numbers from "1" to "6," the tape D' those from "4" to "9," and the tape D<sup>2</sup> still higher numbers. Between the tapes bars E are secured to the back plate A, and the said bars have their front surfaces about flush with the

exposed surfaces of the tapes and blackened, so that they may be readily written upon with chalk.

In connection with the construction described so far we sometimes employ a cover having means for exposing or covering at will sundry of the numbers on the tapes D D' D<sup>2</sup>. This cover is detachably secured, for instance, by hanging it upon pins A<sup>3</sup>, projecting from the side plates A', and the cover consists of a plate F, having apertures F', adapted to register with the numbers on the tapes and capable of being closed by movable doors or covers G, which may, for instance, be hinged to the plate F at their lower edges, adjacent to the apertures F', so that when the doors are released from the catches H, which normally hold them up in the closed position, they will drop to expose the apertures F'.

We prefer to add adjacent to each of the numbers of the tapes D D' D<sup>2</sup> a number "1" in small figures, which indicates the total of all the numbers exposed on the respective tape when said number "1" is adjacent to the top. While we have shown such numbers "1" at the top only in Fig. 2 for the sake of clearness, it will be understood that the numbers "1" will be placed adjacent to all of the numbers shown, so that when the tapes are shifted the total of the exposed numbers will be found at the top.

The device is intended for use in schools principally and is adapted for simultaneous instruction in several grades. For instance, the scholars in one grade may add the numbers on the tape D, those of the next higher grade the numbers on the tape D', and still more advanced scholars will add the numbers on the tape D<sup>2</sup>. By changing the numbers by rotating the handle B<sup>2</sup> the examples may be varied, and the number "1" at the top will each time give the result to the teacher; but said number being smaller than the others will not be distinctly visible to the pupils. The black bars or strips E enable us to obtain a still greater variety of examples by writing various arithmetical signs on said strips to connect numbers on different

tapes. The device may also be used for operations involving fractions, the red numbers being used as numerators and the black ones as denominators, or vice versa. Improper fractions may be formed by shifting one tape relatively to its neighbor, so that the figures on one tape will stand between those on the other.

The plate F is used for what is termed "sight drill," the teacher dropping sundry of the covers G to expose some numbers, as in Fig. 1, and calling upon the scholars to add, multiply, &c., these numbers as quickly as they can.

It will be understood that the number of the tapes D D' D<sup>2</sup> may be increased or decreased, and the machine may be single, as shown—that is, with the rollers B B' extending entirely across and supporting all the tapes—or the arrangement may be duplicated between the side plates A' to form a double machine, in which case there would be two independent axially-aligning top rollers B and two bottom rollers B' similarly arranged. Each half of the machine would then have its separate cover F, so that either half, or both, could be used for sight drill.

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

1. A device for teaching arithmetic, comprising a support or frame, rollers journaled therein, and a series of tapes carried by said rollers, the said tapes bearing numbers, the range of which varies progressively from one tape to another toward one end of the frame, so that the different tapes will afford a means

of forming arithmetical problems of increasing difficulty.

2. A device for teaching arithmetic, comprising a support or frame, and tapes movably carried by said frame, the said tapes bearing numbers, the range of which varies progressively from one tape to another toward one end of the frame, so that the different tapes will afford a means of forming arithmetical problems of increasing difficulty.

3. A device for teaching arithmetic, comprising a support or frame, and tapes movably carried by said frame, the said tapes being endless and bearing a series of numbers, and being further provided adjacent to each of said numbers, with a less-readily visible figure indicating the total of the exposed numbers of the tape when said figure is adjacent to the last-exposed number.

4. A device for teaching arithmetic, comprising a support or frame, and tapes movably carried by said frame, the said tapes having exposed and invisible portions, and bearing a series of numbers, and being further provided, adjacent to each of said numbers, with a less-readily visible figure indicating the total of the exposed numbers of the tape, when said figure is adjacent to the last-exposed number.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THOMAS EUGENE BORDEN.

ALFRED ALEXANDER WALLACE.

Witnesses:

FRANK HOMER WEBSTER,

GEORGE THOMAS LEE.