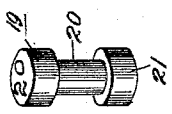
(No Model.)

W. W. OSBORNE.

MATHEMATICAL TOY.

No. 602,954. Patented Apr. 26, 1898.

Fig. 3.



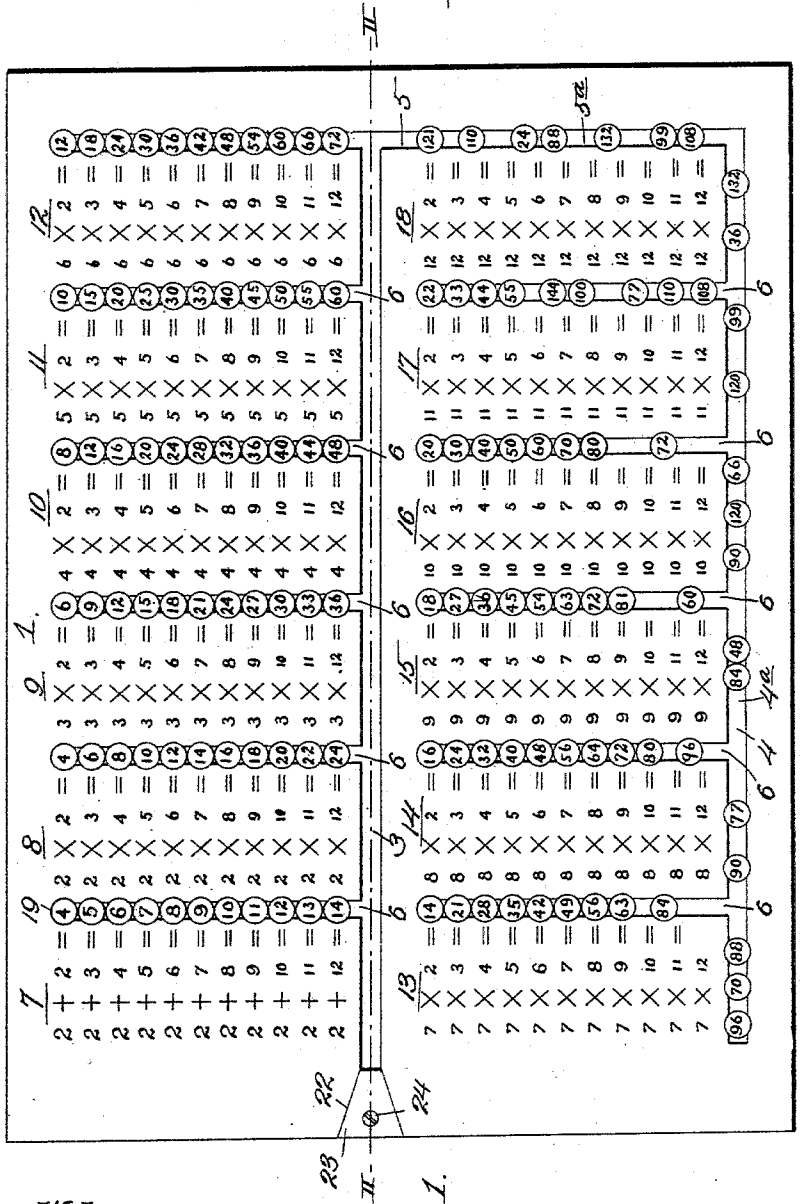


Fig. 1.

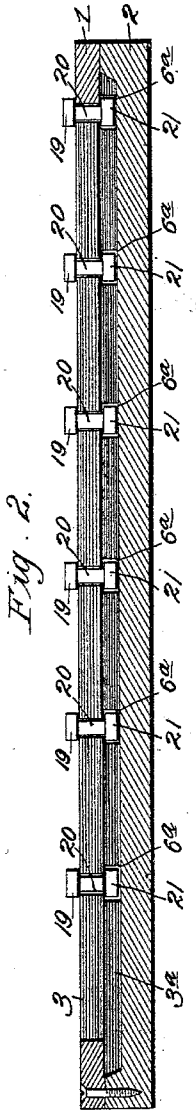


Fig. 2.

Witnesses:
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G. F. Lofgren

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By Higdon & Higdon
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM W. OSBORNE, OF KANSAS CITY, MISSOURI, ASSIGNOR OF TWO-THIRDS TO FRANK B. TURNER AND DAVID D. LOOPER, OF SAME PLACE.

MATHEMATICAL TOY.

SPECIFICATION forming part of Letters Patent No. 602,954, dated April 26, 1898.

Application filed May 24, 1897. Serial No. 637,988. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. OSBORNE, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Mathematical Toys, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to mathematical toys; and my object is to provide a device of this character which will be at once entertaining and instructive to children.

A further object of the invention is to provide a device of this character which is of simple, durable, and inexpensive construction.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents a plan view of my mathematical toy. Fig. 2 represents a section of the same, taken on the line II II of Fig. 1. Fig. 3 represents a perspective view of one of the movable buttons forming part of the device.

In the said drawings, 1 designates a board of the configuration shown or of any other suitable or preferred configuration, and 2 represents a similar board secured to the first at the under side of the latter.

3 designates a central longitudinal slot in the top board, and 4 a parallel slot at one side of the same. Intersecting slot 3 and connecting it with slot 4 is a transverse slot 5, and parallel with said slot and communicating with slots 3 4 are ten equidistant slots 6. By this arrangement it will be obvious that all of said slots are in communication with each other, directly or indirectly, so that an object in one slot may be manipulated without removing it from the board, so as to dispose it at any point in any of the other slots desired.

Registering with the slots 3, 4, 5, and 6 are similar slots 3^a, 4^a, 5^a, and 6^a, formed in the lower board. The latter slots, however, are of greater width than the former for a purpose which will hereinafter appear.

To the left of the first branch slot 6, communicating with the slot 3, is painted upon the board in a vertical column "2+2=," "2+3=," and so on up to and including "2+12=." Between said slot and the next slot 6 appears in a vertical column the multiplication-table by twos from "2×2=" up to and including "2×12=." Between the slot 6 to the right of the multiplication-table by two and the next or third slot 6 appears the multiplication-table by threes from "2" to "12," inclusive, and so on, this arrangement being continued until the multiplication series by sixes and twelves occurs to the left of the slot 5. These various series, comprising a single addition and the eleven multiplication series, are numbered 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18, respectively.

19 designates a series of movable or slide buttons which rest upon the surface of the top board and are provided with stems or necks 20, depending vertically through the grooves of the top board and with heads or enlargements 21, which occupy the wider grooves of the bottom board, and therefore prevent any accidental displacement of said buttons. They are introduced at one end, where the slot is widened, as at 22, and then said widened portion of the slot is closed by the removable block 23, said block being secured by a screw 24, as shown, or in any other suitable or preferred manner. There are one hundred and thirty-two of these movable buttons, each carrying a number painted upon its upper end or face, which numbers are adapted to represent the results obtained by the addition or multiplication series. These buttons in practice are mixed up or displaced to a greater or less degree, so that in manipulation a child must, after ascertaining the sum of two numbers or the result obtained by multiplying two numbers, manipulate said buttons sometimes in considerable degree before the button bearing the sum of said numbers or the result of the said multiplied numbers can be disposed opposite the "equality" symbol and in the adjacent slot. In the drawings the upper series are arranged in the position in which it is desirable that the child should place them, while a portion of the lower series of buttons are displaced to illustrate the manipulation required to place them in their proper positions. For in-

stance, "12×2=24," referring to the last multiplication-table. The button 24 in the drawings is not opposite said figures, and to place it there all of the buttons in the slot 5 must be shoved downwardly and back into slot 4 and the branch slots 6 until the buttons 110 and 121 can be moved past the button 24. The latter is then moved along the slot 4 until it reaches the slot 5, along which it is shoved until it reaches its proper point opposite the numbers "12×2;" or this result may be obtained by displacing, say, a couple of buttons 66 and 72 from the slot 5 just above slot 3 and moving them along the slot 3 a short distance. The buttons 121 and 110 may then be moved upwardly into slot 5 into the positions formerly occupied by the buttons 66 and 72, and then button 24 can be moved up and back into slot 3. The buttons 110 and 121 can then be moved downwardly and be followed by the button 24 until the latter is opposite the numbers "12×2." The buttons 66 and 72 can then be moved back to their original and proper positions. Thus it will be seen that it will require a great deal of manipulation to properly dispose these buttons in position and that even after they are so disposed they are liable to be disturbed temporarily to accommodate the movement of others before they can be placed in their proper positions, as explained above with reference to the buttons 66 and 72.

From the foregoing description it will be apparent that I have produced a mathematical toy which embodies the features of a puzzle, as well as the exercise of the mind, for determining the result of two numbers added or multiplied together. It is obvious of course that this arrangement may be carried out indefinitely and that the symbol of subtraction or division may be utilized with equal facility in the same manner.

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

In a mathematical toy, the combination of a board provided with a series of slots extending at right angles to each other, and all connected either directly or indirectly, and a double series of numbers to the left of each of the branch slots, separated by a mathematical sign and followed by the symbol of equality, and a series of numbered movable buttons occupying said slots, and provided with enlargements, whereby they cannot be accidentally displaced; the numbers of said buttons being adapted to correspond with the results obtained by the processes indicated by said mathematical signs, substantially as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM W. OSBORNE.

Witnesses:

G. Y. THORPE,

F. G. FISCHER.