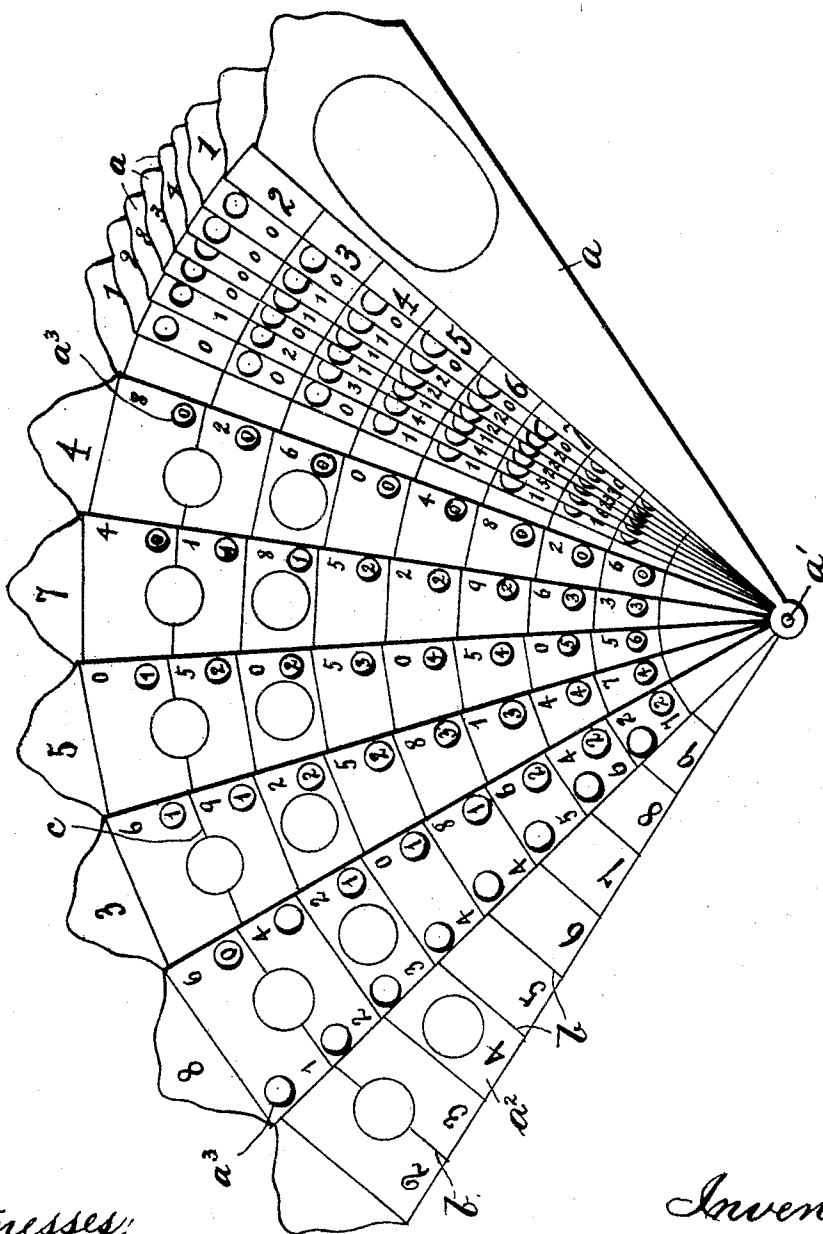


(No Model.)

M. O. ALZUA.
MULTIPLYING DEVICE.

No. 581,256.

Patented Apr. 27, 1897.



Witnesses:

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UNITED STATES PATENT OFFICE.

MANUEL OVIEDO ALZUA, OF MEXICO, MEXICO.

MULTIPLYING DEVICE.

SPECIFICATION forming part of Letters Patent No. 581,256, dated April 27, 1897.

Application filed January 14, 1897. Serial No. 619,220. (No model.)

To all whom it may concern:

Be it known that I, MANUEL OVIEDO ALZUA, a citizen of the Republic of Mexico, residing at Mexico, in the Republic of Mexico, have invented certain new and useful Improvements in Multiplying Devices; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to calculating devices; and it relates more particularly to that class of calculating devices adapted to indicate the result or product obtained by multiplying one number by another, and among the objects in view is to provide an extremely simple and inexpensive device, which is adapted to be readily manipulated by a person to indicate quickly the product of multiplying any number by another.

With the above object in view the invention consists in the novel construction, arrangement, and combination of parts constituting the improved device, all as hereinafter fully described, illustrated in the drawing, and pointed out in the appended claims.

The accompanying drawing represents by a plan view my improved device.

In carrying out my invention I provide any desired number of leaves or sections a , which are preferably made of a tapering or wedge shape, which sections are pivotally connected together at the point a' to adapt the sections to be manipulated to occupy different relative positions, the manner of pivoting the sections being similar to that adopted in the well-known fans, which are adapted to be opened out or folded compactly together. The sections are provided at their upper ends with the various digits beginning with "0" and ending with "9," and these numbers form the "multiplicand." The lowermost section a^2 is provided along its left-hand edge with numbers running from "2" to "9," arranged vertically on the said section, and these numbers form the "multiplier." Each of the sections, with the exception of the multiplier-section, is provided along opposite edges with perforations a^3 , as shown. The perforations are arranged to register with each other when the sections are folded together or lie one directly over the other.

Each of the sections, with the exception of the multiplier-section, is also provided with different numbers arranged intermediate or alternating with the perforations, so that the perforations along the left edge of any section are adapted to lie directly or to be arranged over the different numbers along the right edge of any section arranged beneath it, or vice versa, so as to expose to view through the perforations the said numbers on the right or left edges of the under section.

To find the product of multiplying any number of the multiplicand-section by any number of the multiplier-section, I provide each multiplicand-section with numbers indicating such product. To avoid possible mistake and render it easy to ascertain the proper product, I provide division-lines, as b , on the multiplier-section; and corresponding division-lines, as c , on each of the remaining sections, thus dividing the latter sections into divisions or spaces, each containing numbers indicating the products. For instance, the product of multiplying 5 by 2 is 10. Consequently the section containing the multiplicand "5" is provided in the uppermost space with number "1" on the left-hand edge and the "0" on the right-hand edge, thus indicating at once to the person that the product is "10." The product of multiplying 5 by 3 is 15. Consequently the section containing multiplicand "5" is provided in the next lower space (corresponding with space containing multiplier "3") with number "1" on the left-hand edge and "5" on the right-hand edge, thus indicating at once that the product is "15." This manner of arranging the numbers on multiplicand-section "5" is carried out for all of the remaining spaces left on said section, and a similar arrangement is carried out with each of the other multiplicand-sections.

Should it be desired to ascertain the product of multiplying a number containing more than one digit—as, for instance, the number "83,574"—by a multiplier number—as, for instance, "5"—it is only necessary to arrange the multiplicand-sections in the manner seen in the drawing, so that the perforations on the right edge of the multiplicand-section 7 expose the numbers on the left edge of section 4, the perforations on the right edge of sec-

tion 5 expose the numbers on left edge of section 7, the perforations on right edge of section 3 expose the numbers on left edge of section 5, and the perforations on the right edge of section 8 expose the numbers on left edge of section 3. Thus the perforation in right edge of the fourth space of section 7 exposes the number "2" in fourth space on left edge of section 4, the perforation in fourth space on right edge of section 7, the perforation in fourth space on left edge of section 3 exposes number "2" in the fourth space on left edge of section 5, and the perforation in fourth space on right edge of section 8 exposes the "1" in fourth space on left edge of section 3.

In ascertaining the product we read from the left toward the right as follows: The number "4" in the fourth space of section 8 on the left edge, number "1" in fourth space of section 3 on the left edge, number "7" (being the sum of the exposed "2" of section 5 and the number "5,") in the fourth space of section 3 on the right edge, number "8" (being the sum of the exposed number "3" of section 7 and the number "5,") in the fourth space of section 5 on the right edge, number "7" (being the sum of exposed number "2" of section 4 and the number "5") in fourth space of section 7 on the right edge, and the "0" on the right edge of the fourth space of section 4. Thus the product is "417,870." In this way any product can be ascertained.

Should the sum of any exposed number and the number below the perforation exceed ten, then add the "1" to the preceding product number.

Should the multiplier number exceed ten,

the partial product must be found separately and the two added together by placing one product one column to the left of the other, as will be no doubt understood.

The device can be made of any suitable material, as pasteboard, metal, celluloid, wood, &c., and can be made in various sizes.

What I claim, and desire to secure by Letters Patent, is—

1. The herein-described calculating device consisting essentially of pivotally-connected sections adapted to be moved relatively to each other, as described, one of said sections being provided with digits arranged vertically, and each of the remaining sections being provided toward the upper or free end with digits, and along opposite edges with numbers, and with perforations adapted to register with and expose certain of the numbers on other sections.

2. The herein-described calculating device consisting of pivotally-connected sections adapted to be moved relatively to each other as described, each of the sections having a tapered or wedge shape and being pivoted together at the point or sharper angle, one of the sections being provided with digits arranged vertically, and each of the remaining sections being provided toward the upper or free end with digits, and along opposite edges with numbers, and with perforations adapted to register with and expose certain of the numbers on other sections.

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

MANL. OVIEDO ALZUA.

Witnesses:

ROMAN DOBLADO,
MIGUEL M. SOTO.