(No Model.) 2 Sheets—Sheet 1.

# H. WAGNER.

## DEVICE FOR TEACHING ARITHMETIC.

No. 262,191. Patented Aug. 1, 1882.

Fig. 1.

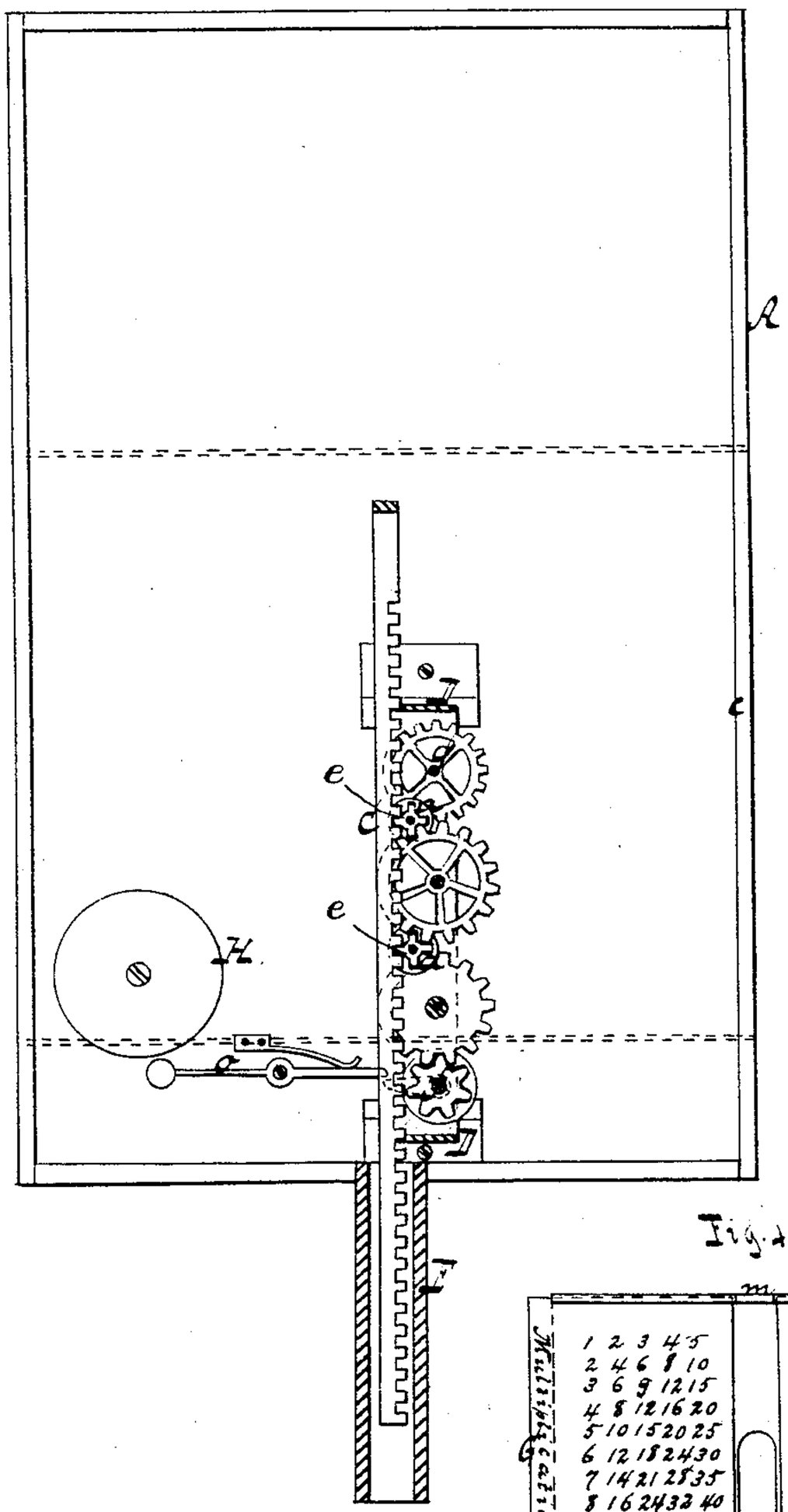


Fig. 2.

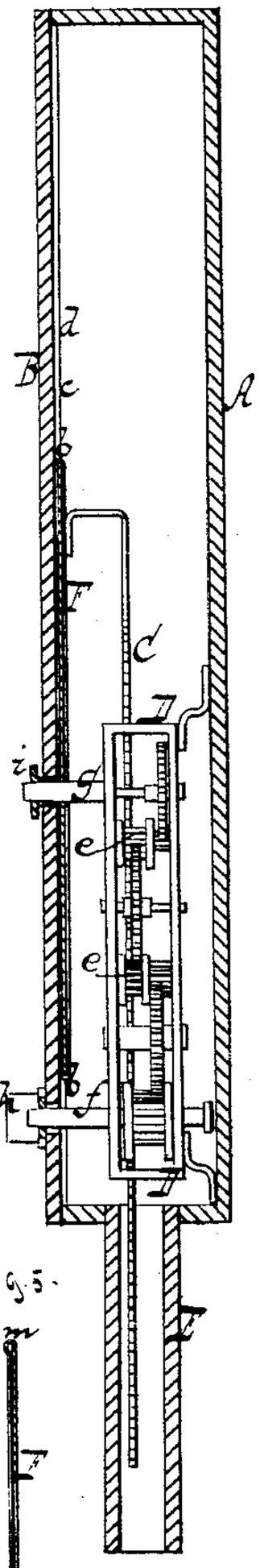


Fig. 4.

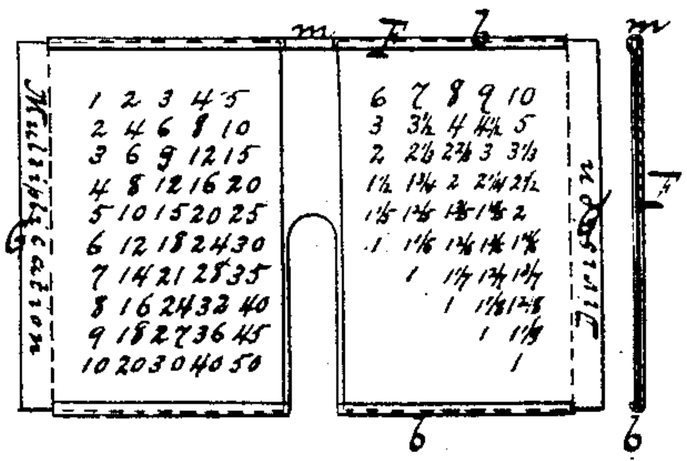


Fig. 5.




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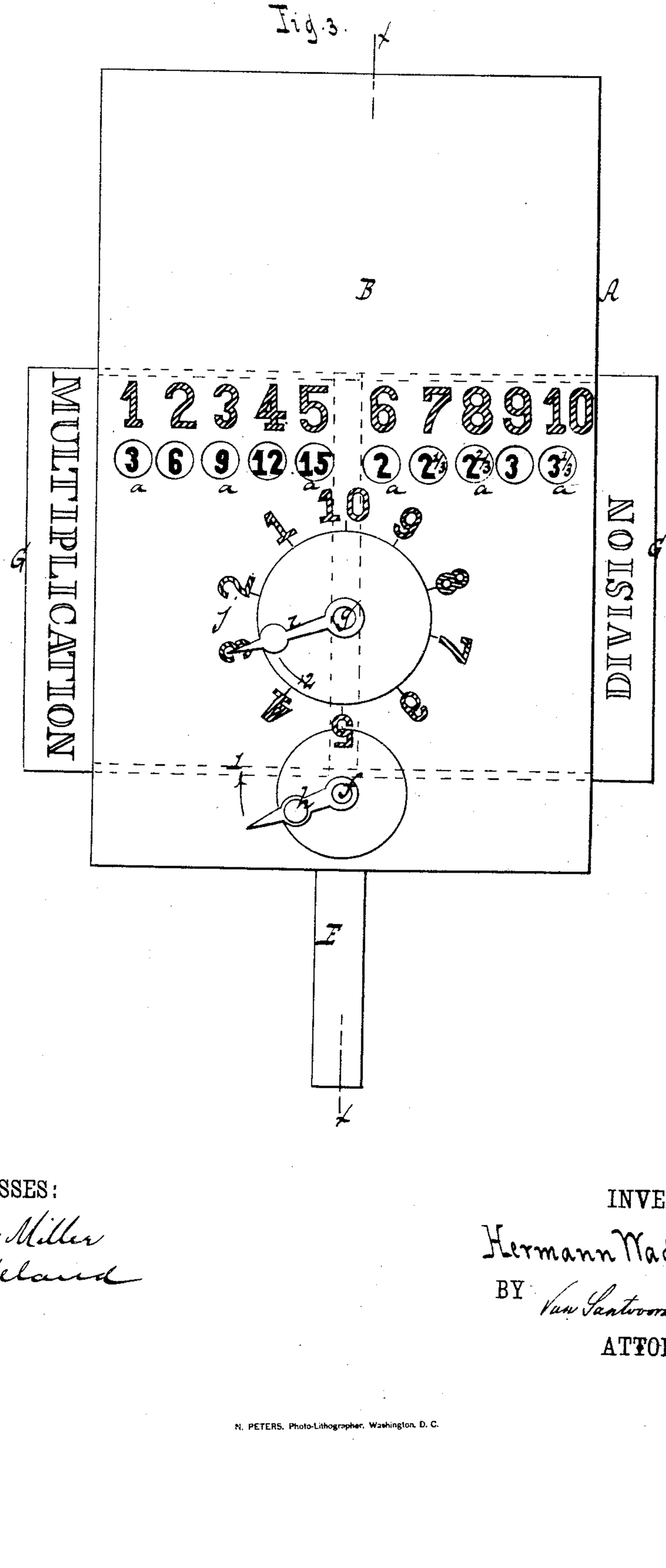
Fig. 3.

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# UNITED STATES PATENT OFFICE.

HERMANN WAGNER, OF ELIZABETH, NEW JERSEY.

## DEVICE FOR TEACHING ARITHMETIC.

SPECIFICATION forming part of Letters Patent No. 262,191, dated August 1, 1882.

Application filed April 22, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HERMANN WAGNER, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented new and useful Improvements in Apparatus for Teaching Arithmetic, of which the following is a specification.

This invention relates to a device which, while it serves as a toy, assists in teaching arithmetic.

The peculiar construction of my toy, which forms the subject-matter of my invention, is fully pointed out in the following specification.

In the accompanying drawings, Figure 1 represents a front view of the interior mechanism, the face-plate having been removed. Fig. 2 is a transverse vertical section of the entire device in the plane *x x*, Fig. 3. Fig. 3 is a face view of the same. Fig. 4 is a face view of the carrier on a smaller scale than the previous figures. Fig. 5 is a transverse section of the same.

Similar letters indicate corresponding parts.

In the drawings, the letter A designates a box made of wood or any other suitable material, the face-plate or cover B of which is provided with a series of openings, *a*, over which are placed a series of figures, as shown in Fig. 3. In this figure I have shown ten openings *a*, and the figures placed over them run from 1 to 10; but the number of the openings and the figures placed over them can be changed. For instance, instead of placing the figures from 1 to 10 over the openings *a*, the figures from 10 to 20, or any other figures, can be selected, and for this purpose I propose to provide transverse slides on which the different series of figures are marked, so that by changing these slides different quantities can be multiplied or divided, as will be hereinafter explained.

In the interior of the box A is situated a rack-bar, C, which is guided in a metallic frame, D, and extends down into the hollow handle E of the box A. To this rack-bar is firmly secured a carrier, F, which is made of a flat plate of sheet metal or any other suitable material, provided at its edges with lips *b b*, (see Figs. 4 and 5,) between which the tables G are placed. The sides of the carrier rest upon the sides *c c* of the box, the cover or face-plate B being elevated above these sides, so as to leave slots *d*, Fig. 2, in which the carrier moves, and through which the tables G can be introduced.

The rack-bar C is moved up or down by means of pinions *e e*, Fig. 1, which are geared together with the driving-shaft *f*, and also with an arbor, *g*. The driving-shaft extends through the face-plate B, and on its outer end is mounted a crank, *h*, by means of which said shaft can be turned in either direction. The arbor *g* also extends through the face-plate, and on its outer end is mounted an index, *i*, which travels over a dial, *j*, marked on the face-plate. When the crank *h* is turned in the direction of arrow 1, Fig. 3, the carrier F is raised and the index *i* turns in the direction of arrow 2.

The tables G, which are placed on the carrier F, are marked with different figures, according to the quantity to be multiplied. One of the tables—for multiplication, for instance—is marked with ten rows of figures, as indicated in Fig. 1, the figures in each row being in such positions that they will show through the openings *a* in the face-plate of the box A as the table containing them is moved up by the carrier F. If the carrier is clear down, the index *i* points to the figure 10 (or zero) on the dial *j*, Fig. 3. If the crank *h* is turned in the direction of arrow 1, the carrier is elevated, and when the index *i* points to the figure 1 on dial *j* the first row of figures on the table G shows through the openings *a a*, and so on. When the carrier is raised to the position shown in Fig. 3 the third row of figures on the table G show through the openings *a a*, and the index *i* points to the figure 3, which, in this instance, is the multiplier, while the figures 1 2 3 4 5 marked on the face-plate are the multiplicants, and the products show through the openings *a a*.

With the driving-shaft *f* is combined an alarm, H, which is sounded whenever said shaft has completed one revolution, and the shaft *f* is geared together with the shaft *g* in such a manner that the index *i* travels from one figure on the dial *j* to the next for each revolution of the shaft *f*. By the alarm, therefore, the position of the carrier is indicated.

The carrier is divided by a stop, *m*, Fig. 4, so that one table G can be inserted from one side and another table from the other side;

and in Figs. 3 and 4 I have shown a multiplication-table on one and a division-table on the other side. In Fig. 3 the index *i* points to the divisor 3, and the figures exhibited through the opening *a* show 6 divided by 3 equal to 2, 7 divided by 3 equal to $2\frac{1}{3}$, and so on. From these examples it will be obvious that by the aid of the proper tables addition, multiplication, division, and other mathematical operations can be performed, and if the figures 1 to 10 which are marked on the face-plate B are placed on a slide instead of marking them directly upon the face-plate, and different slides with different figures are provided, the capacity of my machine can be increased to any desired degree, as already stated.

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

1. The combination of the case A, having its face-plate provided with openings *a*, the carrier F, the shaft *f* for raising the carrier, the index *i*, and the dial *j*, substantially as and for the purposes described.

2. The combination of the case A, having its face-plate provided with openings *a*, the carrier F, the shaft *f* for raising the carrier, the index *i*, the disk *j*, and the alarm, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

HERMANN WAGNER. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.