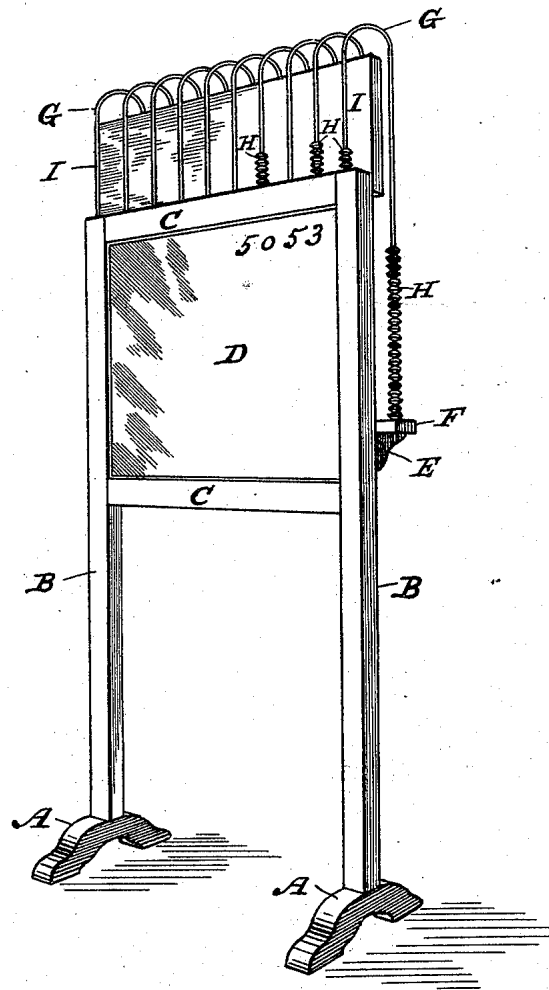


(No Model.)

J. HEGEWALD & H. RÖDELSPERGER.  
APPARATUS FOR OBJECT LESSONS IN ARITHMETIC.

No. 541,787.

Patented June 25, 1895.



Witnesses

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# UNITED STATES PATENT OFFICE.

JULIUS HEGEWALD AND HERMAN RÖDELSPERGER, OF MANCHESTER, NEW HAMPSHIRE.

## APPARATUS FOR OBJECT LESSONS IN ARITHMETIC.

SPECIFICATION forming part of Letters Patent No. 541,787, dated June 25, 1895.

Application filed April 17, 1895. Serial No. 546,014. (No model.)

*To all whom it may concern:*

Be it known that we, JULIUS HEGEWALD and HERMAN RÖDELSPERGER, citizens of the United States, residing at Manchester, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Apparatus for Object Lessons in Arithmetic, of which the following is a specification.

10 This invention relates to devices designed to aid teachers in the instruction of elementary arithmetic, and applies more directly to such devices as imply or comprise object lessons.

15 The greatest difficulty which is at present experienced in teaching the rudiments of arithmetic is that, when objects have been employed, such for instance as buttons, beads, or blocks, or rings strung upon wires, the entire number of such objects are usually in plain sight, and while the teacher may move out a few for the purpose of illustrating a problem, the child is more apt to be attracted by the larger number of objects, or at all events these will detract attention more or less from the smaller number which really requires the undivided attention of a pupil. Then again, the black-board upon which the pupil must read the figures is not sufficiently near to the rings or other objects which may be used in the course of the lesson, to keep the whole attention of a child, which is necessary to insure the best results.

25 The objects of our invention are to overcome the foregoing difficulties in the production of a simple apparatus which combines a black-board with the objects to be used in the lesson; and to this end, our invention consists in the novel construction and arrangement of the objects relative to the black-board, whereby the figures may be written directly underneath the objects as they are brought into use, and in the construction and arrangement whereby the buttons, beads, rings, or other objects which may be employed in such an apparatus, are normally concealed from view,—those only which are required for a given illustration being exposed to the sight of the pupil.

50 The invention will be fully set forth in the following specification and claims, and clearly

illustrated in the drawing accompanying and forming a part of the same.

A—A, represent supports into or upon which are mounted standards B—B, which are provided with cross-bars C—C inclosing a black-board D. At any desired point back of the black-board D, brackets E, are attached, one to each of the standards B, and upon these brackets is secured a shelf or bar F, into the upper edge of which we firmly place one end of a series of wires G, which rise considerably above the black-board frame where they are bent forward and downward, and firmly secured to or into the upper cross-bar C of the frame. These wires G, may be supplied in any desired number, but ten (the number shown in the drawing) will be found to serve a very good purpose. Upon these wires are placed twenty-five buttons or beads H, which may be formed of any material desired, and for the convenience of the teacher, every fifth button or bead may be made a different color than are the others, thus making it easier to count them.

In practice, one or more buttons H, are brought up to the top of the cross-bar or top of the black-board frame, and in order that they may be more readily seen, we find it desirable to provide a back-board I, against which the buttons will stand out in plain sight. The color of either the buttons H or the board I, is not material, but we find that white and red buttons against a black board, show to good advantage.

By the drawing, as well as the foregoing description, and the following examples it is obvious that our improved apparatus is adapted for all operations accomplished by the various devices now in use in the schools in teaching the rudiments of arithmetic, is much more convenient, with the decided advantage that, the children can see none but such buttons or beads as are intended to illustrate a problem, and, the figures may be written in plain sight directly on the black-board underneath the buttons or beads.

Notation and numeration is readily taught by our improved apparatus. The first of the wires G, on the right, represents units, the second, tenths, the third, hundredths, &c. To set up the number five thousand and fifty

three, buttons or beads are brought over upon the top of black-board frame as follows: Three beads on the first wire to the right, five beads on the next or second wire from the right, and five beads on fourth wire from the right, as shown in the drawing.

The decimals are also readily taught by means of our apparatus. So also are addition, subtraction, multiplication, and division. For example, to subtract seven hundred and ninety-six from one thousand and three: Three beads on the first wire from the right and one bead on the fourth wire represents the number one thousand and three. To subtract seven hundred and ninety-six from this, the bead on the thousands wire is removed and ten beads brought upon the third wire, representing ten hundredths. From the third wire one bead is now removed and placed upon the second wire thus changing it to ten tenths leaving nine on the hundreds wire. From the tens or second wire one bead is now removed and placed on the first wire changing it to ten units leaving nine beads on the tens or second wire, and bringing ten plus three equal thirteen beads on the first one. Now the subtraction can be done,—thirteen units minus six equal seven, nine tenths minus nine equal naught, nine hundredths minus seven equal two, the result being two hundred and nine.

Having thus described our invention, what we claim is—

1. In an apparatus for giving object lessons

in arithmetic, a suitable frame inclosing a black-board, suitable brackets secured to the back of said frame supporting a cross-bar or shelf, a series of wires bent substantially in the form shown and having one end secured to the upper edge of said shelf and the opposite end secured to the top of said frame, and buttons or beads loosely mounted upon said wires and adapted to rest either upon said shelf or upon the top of the said frame, substantially for the purpose set forth.

2. In an apparatus for giving object lessons in arithmetic, a black-board set in a suitable frame, a cross-bar or shelf attached to the back of said frame, a series of wires bent in the form substantially as shown and arranged vertically having one end attached to said shelf and the other to the top of said frame, buttons or beads loosely mounted upon said wires and so arranged as to be concealed from view below the top of the black-board or to rest upon the top of said frame as desired, and a board secured to the back of said black-board and rising above the same and within the loops of said wires, substantially for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JULIUS HEGEWALD.  
HERMAN RÖDELSPERGER.

Witnesses:

J. B. THURSTON,  
C. W. MCDANIEL.