

E. C. DILWORTH.  
 ADDING DEVICE.  
 APPLICATION FILED MAR. 19, 1908.

990,240.

Patented Apr. 25, 1911.

2 SHEETS—SHEET 1.

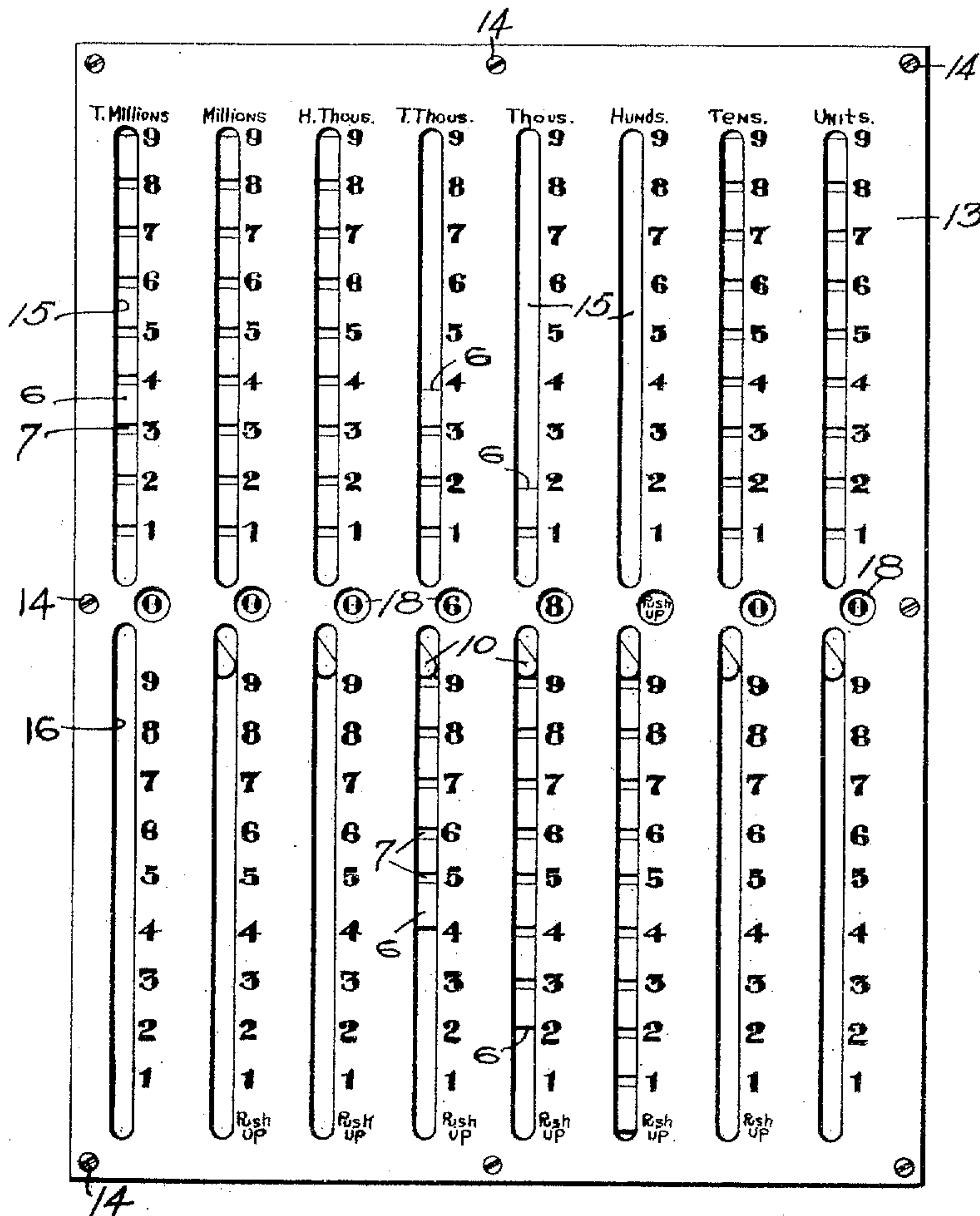


FIG. 1

WITNESSES.

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2 SHEETS—SHEET 2.

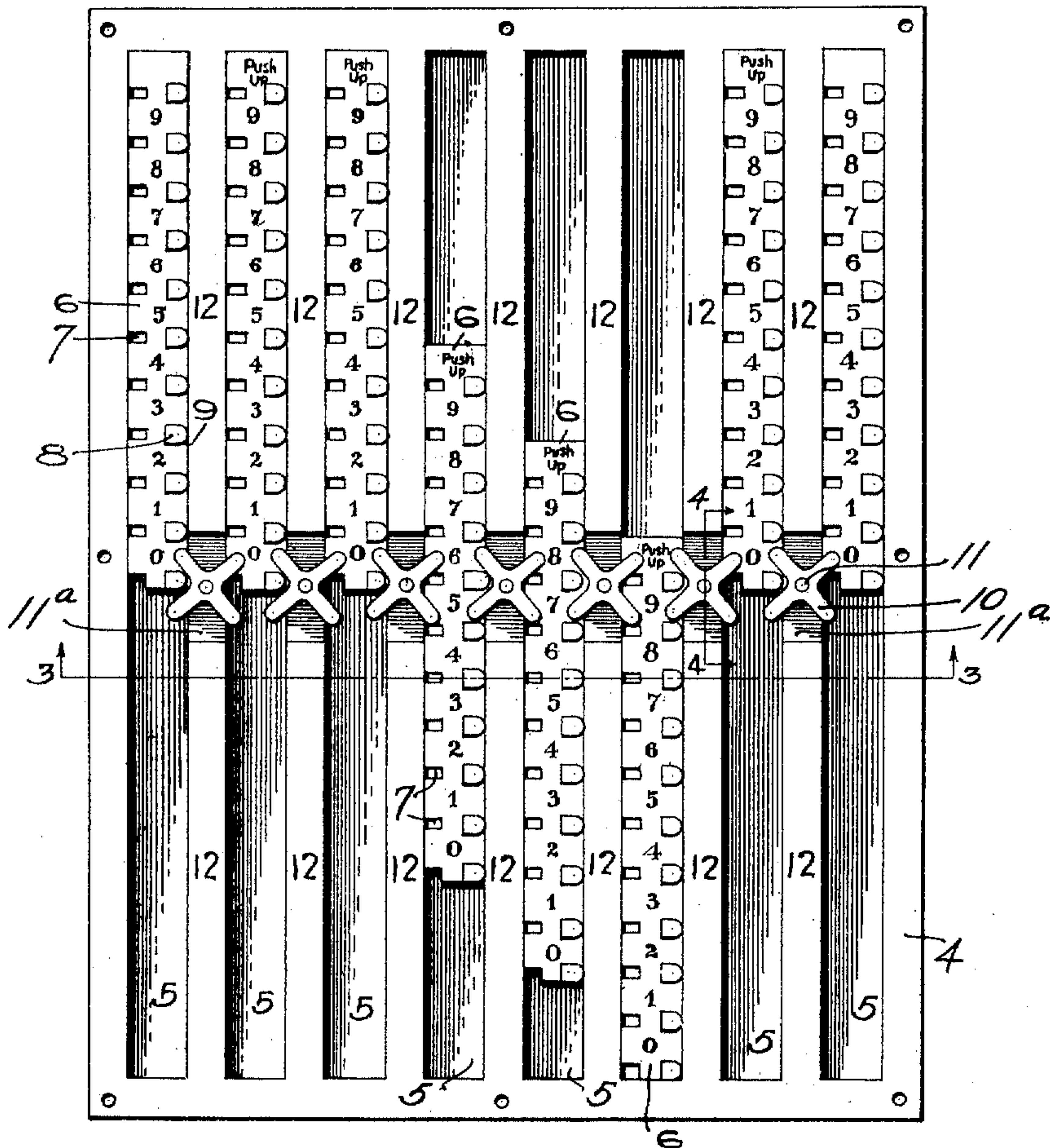


FIG. 2

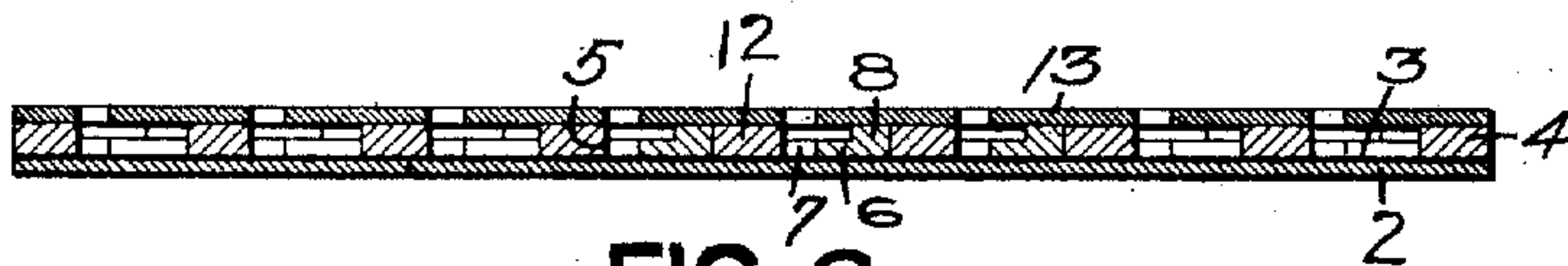


FIG. 3

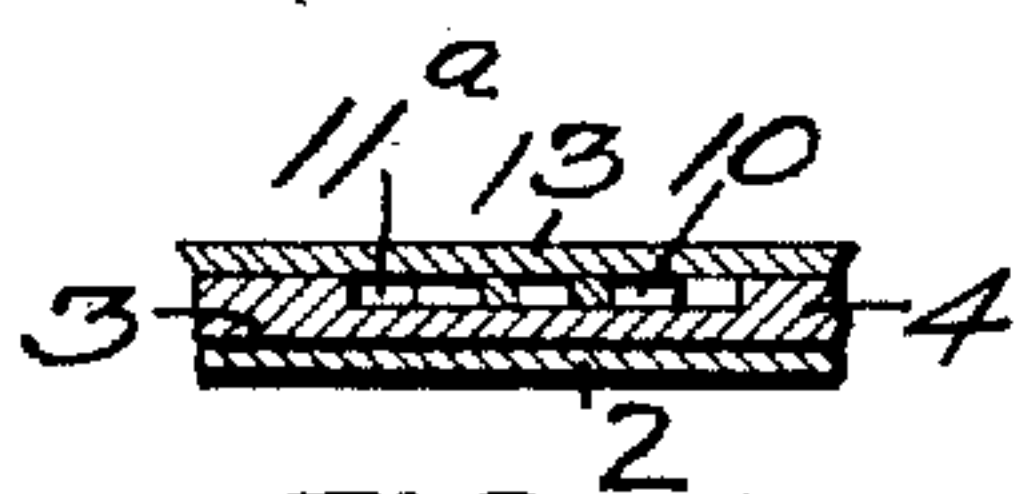


FIG. 4

WITNESSES.

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# UNITED STATES PATENT OFFICE.

EDWARD C. DILWORTH, OF PITTSBURG, PENNSYLVANIA.

## ADDING DEVICE.

990,240.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed March 19, 1908. Serial No. 422,113.

*To all whom it may concern:*

Be it known that I, EDWARD C. DILWORTH, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Adding Devices; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an adding device, and more especially to that style of adder illustrated and described in Letters Patent of the United States No. 811,205, granted to me on the 30th day of January, 1906. The adder illustrated and described in the said Letters Patent comprises a face plate having a series of longitudinal slots with numbers arranged parallel with said slots, and a series of slides bearing numbers and adapted to be moved up and down in guide-ways, said slides carrying numbers which are exposed at openings formed in said face plate and extending across the same at intervals. In adding with the device of my former patent it is necessary, where one of the slides is operated from one of the lower rows of slots and pushed upward, to draw down one of the adjacent slides of the upper row of slots. Furthermore, it is necessary when the numeral 9 appears at one of the apertures arranged crosswise of the adder, to push up that particular slide until the zero appears at the aperture, while at the same time it is necessary to draw down the adjacent slide of one of the upper slots.

The object of my invention is to provide for this downward movement of the proper slide in the upper slot when the slide is moved upward in the lower slot, thereby saving the time heretofore required to transfer the pusher after the lower slide has been raised to the upper slide in order to lower it.

A further object of my invention is to provide a signal to indicate when the slide has been lowered to its full extent and when it must be raised in order to bring it back to zero.

To these ends my invention comprises, generally stated, a plurality of slides, a set of upper slots and a set of lower slots with apertures extending crosswise of the outer plate between said sets of slots, and means in the path of the pencil or pusher by which the slides are moved, whereby when the pencil is moved in the lower slot to raise the slide said pencil will come in contact with said

means and through it lower the slide in the adjoining slot, the proper distance.

In the drawings Figure 1 is a face view of my improved adder; Fig. 2 is a view of the same with the face removed; Fig. 3 is a section on the line 3—3, Fig. 2; and Fig. 4 is a section on the line 4—4, Fig. 2.

The inner plate 2 may be formed of a flat piece of sheet metal of suitable thickness, said plate being covered on its inner face with cloth 3 or other suitable material which will give the necessary friction to the slides, so as to prevent their moving too freely. This frictional material may be glued or otherwise secured to said plate. Resting on the plate 2 is the frame 4, which may be stamped out of suitable metal, said frame having the slots 5 formed therein and located within said slots are the slides 6 which may be formed of metal or other suitable material. These slides 6 are provided with the numerals as indicated, running from 0 up to 9 from the bottom to the top of said slides, and at the extreme upper ends of said slides are the words "Push up". Said slides are further provided with the pockets or recesses 7 arranged at suitable intervals, said pockets corresponding to the numerals on the slides. Arranged opposite the pockets 7 are the lugs 8 with the curved outer faces 9.

Arranged about mid-way of the frame 4 are the pinions 10, said pinions being mounted on pins 11 in recesses 11<sup>a</sup> on the vertical strips 12 of the frame. The teeth of the pinions are in the path of the lugs 8 and said lugs are adapted to be engaged by said teeth to move said slides in the manner hereinafter set forth.

The outer plate 14 is secured to the frame 4 and bottom plate 3 by means of the screws 14 which unite the parts of the adder securely together. This outer plate 13 is provided with the upper row of slots 15 and the lower row of slots 16, and at the sides of said slots are the numerals as indicated. The pockets 7 of the slides appear in the slots 15 and 16. Extending across the face plate at suitable intervals are the apertures 18 at which the numerals on the slides appear as said slides are moved up and down.

As stated above, in the operation of my adder it is necessary where the pencil or other pointed instrument is inserted in one of the pockets 7 of the slides in one of the lower slots 16, and the slide moved up, to



draw down the adjoining slide. Accordingly it will be seen that by inserting the pencil or pointed instrument into one of the pockets 7 and moving the slide upward in one of the lower slots, that the pencil will come in contact with one of the teeth of the pinion 10 and will act to rotate said pinion, whereupon the other teeth of said pinion will engage with the lug 9 of the adjoining slide, and will act to lower said slide sufficiently to present another number at the aperture 18 corresponding to said slide. As a consequence it is not necessary for the operator to make two movements, that is, after he has raised the slide in the lower slot 10 to then insert his pencil in one of the slots 15 in order to lower the slide in that slot. This greatly reduces the time required in making the addition and simplifies the operation of adding, as the operator does not have to keep in mind the fact that the slide must be lowered when one is raised. Furthermore, in connection with the operation of my adder it is necessary, when the numeral 9 on any one of the slides appears at one of the apertures 18, to raise the slide until zero appears at said aperture in continuing the addition. In order to give a signal to the operator that the slide must be raised I have provided the signal consisting of the words "Push up" which will appear at one of the openings 18 when the slide has been lowered to the full extent and must be brought back to zero, while the adjoining slide must be lowered at the same time. In the same manner as above the operator with his pointer in one of the pockets 7 will come in contact with one of the pinions 10 in bringing the slide back to zero, and this movement of the pinion 10 will also act to lower the adjoining slide one point.

What I claim is:

1. In an adding device, a frame having a series of upper and lower parallel slots and apertures between said upper and lower slots, slides, and means for moving one slide by the movement of another slide in an opposite direction. 45

2. In an adding device, a frame having a series of upper and lower parallel slots and apertures between said upper and lower slots, slides, and mechanism adapted to be moved by an instrument for moving said slides, whereby when one slide is moved up an adjacent slide is lowered. 55

3. In an adding device, a frame having a series of upper and lower parallel slots and apertures between said upper and lower slots, slides, and rotary pinions adapted to engage said slides and an instrument adapted to move said slides. 60

4. In an adding device, a frame having a series of upper and lower parallel slots and apertures between said upper and lower slots, slides, lugs on said slides, and rotary pinions adapted to engage said lugs and an instrument adapted to move said slides. 65

5. In an adding device, a frame having a series of upper and lower parallel slots and apertures between said upper and lower slots, slides, said slides having pockets or recesses therein for the insertion of an instrument to move said slides, lugs on said slides, and rotary pinions in the path of such instrument and adapted to engage said lugs. 70

In testimony whereof, I, the said EDWARD C. DILWORTH, have hereunto set my hand.

EDWARD C. DILWORTH.

Witnesses:

ROBERT C. TOTTEN,  
J. R. KELLER.