

(No Model.)

2 Sheets—Sheet 1.

W. C. PORTER.  
COUNTING MACHINE.

No. 596,665.

Patented Jan. 4, 1898.

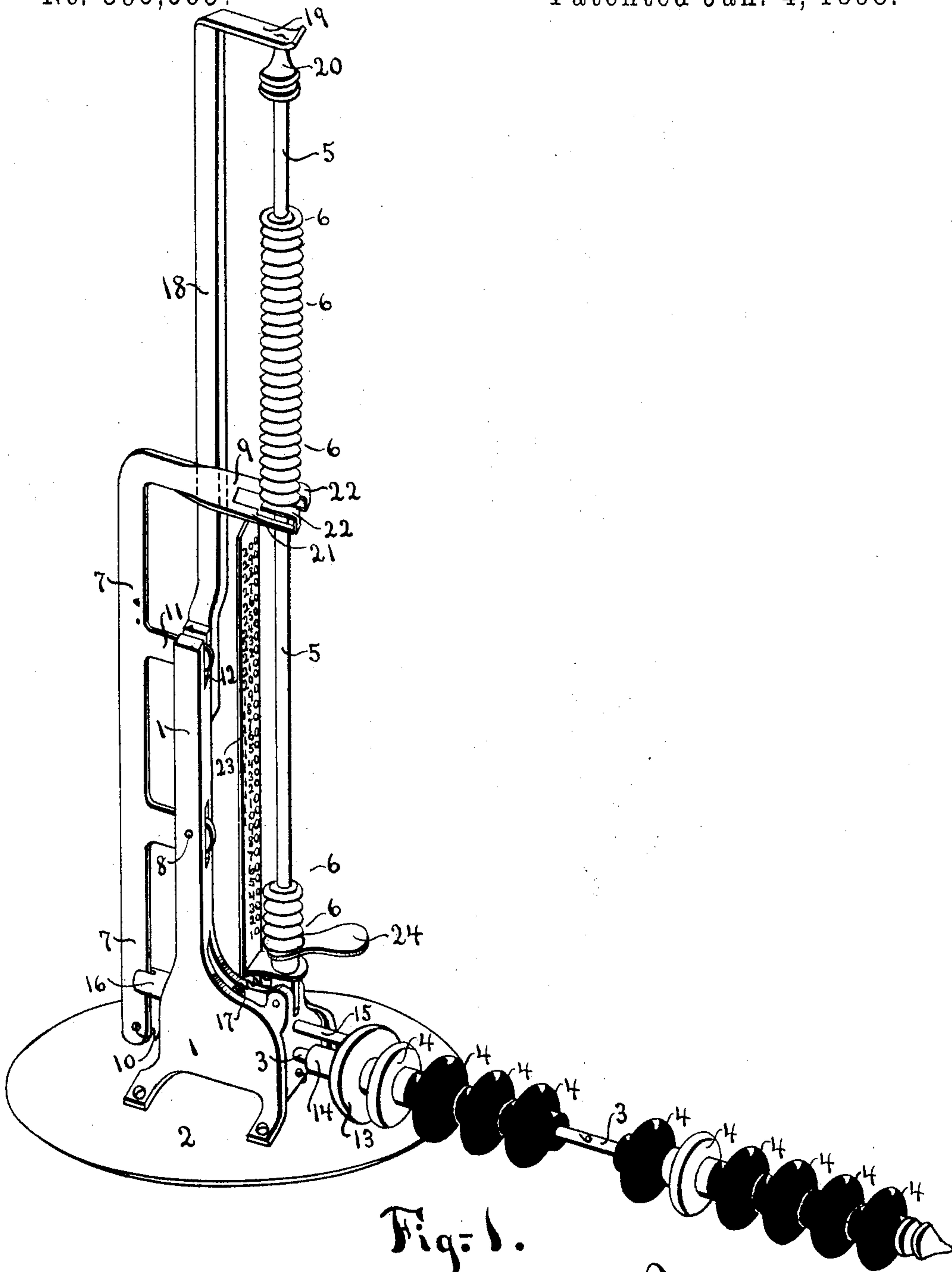


Fig. 1.

Witnesses:-

A. T. Fay,

Katharine Baer.

Inventor:-

William C. Porter.

By Chas. S. Cairns

his Attorney

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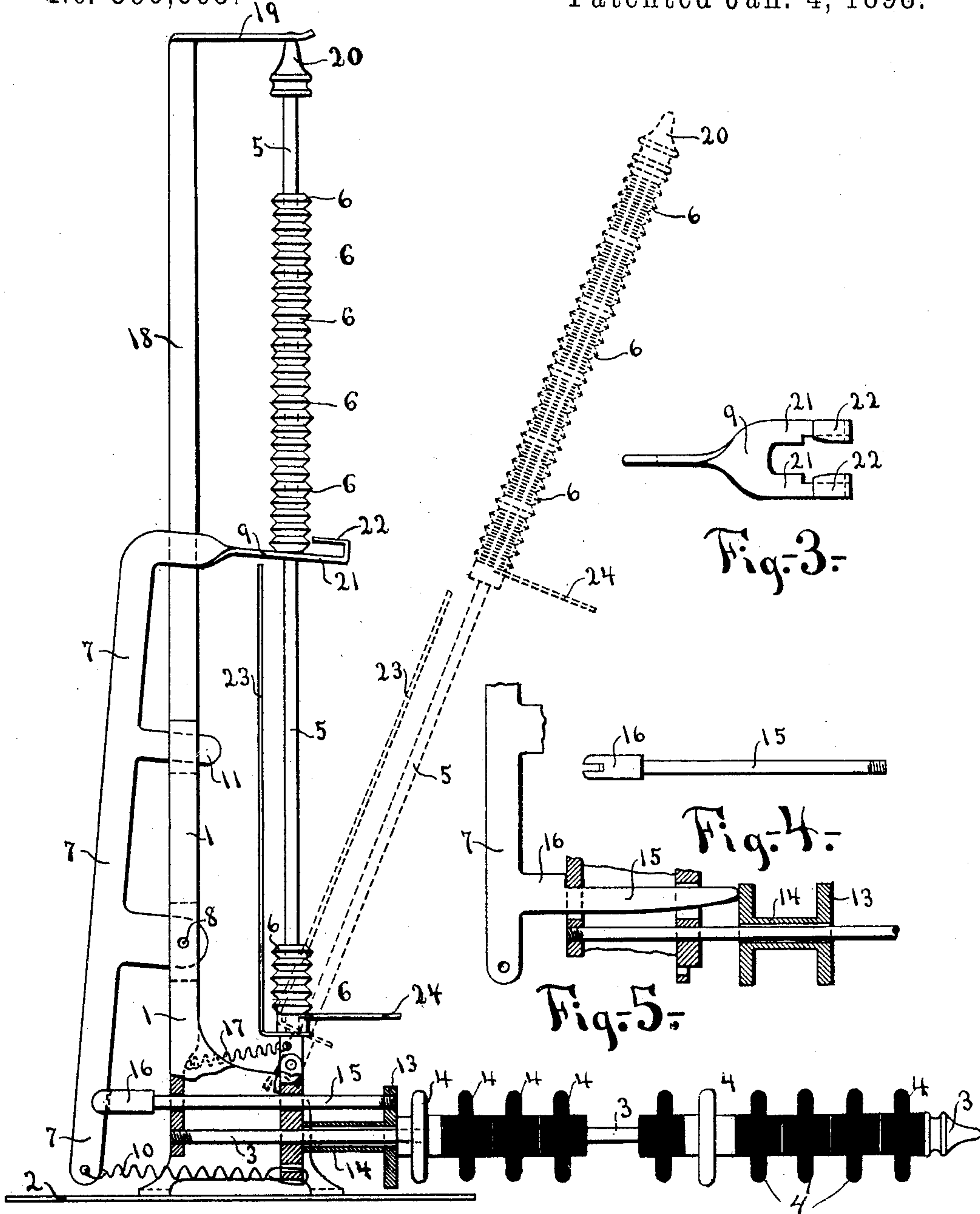


Fig. 2.

Witnesses:-

A. T. Fay,

Katharine Baer.

Inventor:-

William C. Porter.

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# UNITED STATES PATENT OFFICE.

WILLIAM C. PORTER, OF ARLINGTON, MINNESOTA, ASSIGNOR OF ONE-HALF  
TO AUGUST G. OBERNOLTE, OF SAME PLACE.

## COUNTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 596,665, dated January 4, 1898.

Application filed January 25, 1897. Serial No. 620,659. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. PORTER, a citizen of the United States, residing at Arlington, in the county of Sibley and State of Minnesota, have invented certain new and useful Improvements in Counting-Machines, of which the following is a specification.

My invention relates to counting-machines in which each of one series of buttons represents a unit and each button of another series represents ten; and the objects of my invention are to provide and so arrange said series of buttons, with appropriate mechanism to manipulate the same, that the result of the addition of a column of figures may be clearly shown by the machine. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the entire machine. Fig. 2 is a side elevation of the same with a portion of the frame broken away. Fig. 3 is a detail showing a plan view of the button cut-off. Fig. 4 is a detail showing the push-rod which operates between the mechanism which holds the units-buttons and the mechanism which manipulates the tens-buttons. Fig. 5 is a detail of the same, showing a variation of construction by which the push-rod is made integral with the rocking bar.

Similar numerals refer to similar parts throughout the several views.

The frame 1 is secured to a base or table 2. To the frame 1 the horizontal rod 3 is rigidly secured at one end. Upon the rod 3 a series of buttons 4 are placed so that they will each slide freely upon the rod. A second or vertical rod 5 is loosely secured at one end to the frame 1, upon which rod is placed a series of buttons 6, which will also slide freely upon the rod. A rocking bar 7 is pivoted to the frame 1 at 8 and is provided at its upper end with a cut-off 9, hereinafter described. At the lower end of the bar 7 a helical spring 10 is secured, the other end of which spring is attached to the frame 1, Fig. 2, in such manner that it tends to draw the lower end of the rocking bar inward toward the frame and the upper end of said bar away from the frame. A projection 11 may extend from the bar 7 inward into a slot 12 in the frame 1 for the purpose of preventing lateral play of the bar 7.

Upon the rod 3 is loosely secured a head 13

with its sleeve 14, to which sleeve the head is rigidly secured. A push-rod 15 is rigidly secured at one end to the head 13 and is provided at the other end with a transversely-grooved head 16. The rocking bar 7 fits into the groove of the head 16, as shown in Figs. 1 and 2. The rod 15 passes through apertures in the walls of the frame 1, as shown in Fig. 2, in which it fits loosely. The action of spring 10 has the effect of moving the push-rod 15 horizontally in the direction of the head 13, carrying with it the head 13 and sleeve 14, until the head 16 has come in contact with the wall of the frame 1, when further motion is arrested and the parts are in the position shown in Fig. 1.

To reduce the number of pieces in the mechanism, the push-rod 15 may be formed as a part of the rocking bar 7, as shown in Fig. 5. The inner end of the push-rod will then play against the head 13 instead of being rigidly secured to it. The vertical rod 5 is so pivoted to the frame 1 that it may be turned forward on said pivot, as shown in dotted lines in Fig. 2. A helical spring 17, operating between the rod 5 and frame 1, tends to bring the rod 5 back to a horizontal position. To render the rod 5 steady and hold it more securely in its horizontal position, I prefer to provide a brace 18, projecting from the frame 1 or made integral therewith, having at its upper end a flat spring 19, into a slight indentation on the under surface of which spring 19 fits the upper end or cap 20 of the rod 5. The cut-off 9 is provided with fingers 21, the free ends of which fingers are bent twice at right angles and have an inward extension 22 over and parallel with the main body of the fingers, with a space between said body and inward extension 22 equal to the thickness of one of the buttons 6, as shown in Figs. 1, 2, and 3. The space laterally between said two inward finger extensions 22 is less than the width of the buttons 6, as is also the space laterally between the bases of said fingers, so that the buttons 6 will be held above and upon said inward extensions 22, as shown in Fig. 1, and upon said finger-bases, as shown in Fig. 2, as the case may be, without dropping below the cut-off; but the space laterally between that part of said fingers 21 which lies beneath the inward extensions 22



is greater than the width of the buttons 6, so that when a button is brought beneath the extensions 22 it will drop beneath the cut-off and to the lower end of rod 5. An index-plate 23 may be secured to rod 5, so as to stand parallel with and to the rear of said rod, upon which plate will be placed numerals which indicate the number represented by the several buttons 6 as they are dropped below the cut-off, as shown in Fig. 1. When it is desired to lift all the buttons 6 above the cut-off 9, the cap 20 will be released from beneath the spring 19 and the rod 5 swung outward, as shown in dotted lines in Fig. 2. The buttons 6 will then be lifted to the upper end of rod 5 by means of the handle 24, which moves freely on rod 5. The rod 5 will then be returned to its horizontal position, with the cap 20 beneath the spring 19. The operator will release handle 24, which will drop to the lower end of rod 5, the base of handle 24 where it encircles rod 5 being narrower horizontally than the space between the two inward extensions 22, so that said handle is free to drop below the cut-off 9 when released. Before beginning an addition the buttons 6 should all be lifted above the cut-off and buttons 4 pushed toward the inner end of rod 3.

The operation of the machine is as follows: Supposing that the operator has a column of figures to add consisting of the following numbers: "6, 7, 9, 8, 8, 2, 5, 7, 9, 5." He first draws to the outer end of rod 3 six buttons, as shown in Fig. 1, thus registering six units. The next number, "7," calls for the remaining four buttons on rod 3 (making ten) and three more, which latter must be obtained by returning to the outer end of rod 3 and pushing inward all buttons 4 except the first three. Each time that there is a return to the outer end of rod 3 ten has been reached in addition, so that the operator pushes inward on the fourth button 4, (counting from the outer end,) so as to operate the rocking bar 7 (through the push-rod 15) and with it the cut-off 9, throwing them in the position shown in Fig. 2. He then releases his pressure, the cut-off and rocking bar return to the position shown in Fig. 1, and one of the buttons 6 has been brought beneath the extensions 22 and dropped to the lower end of rod 5, thus registering "10," while "3" is registered on the rod 3, making in all thirteen, the sum of the addition of "6" and "7." Next, "9" is added, which exhausts the remaining or inner buttons on rod 3 and uses two more at the outer end. Again, the cut-off is operated as before, thus registering two tens or "20" on rod 5 and two units on rod 3, making twenty-two, the sum of the first three numerals. Next, "8" is added, which just requires the inner buttons remaining on rod 3, in which case all buttons may be pushed inward on rod 3 and the cut-off operated as before, thus registering three tens or "30" on rod 5 and nothing on rod 3 as the sum of the first four num-

bers. In like manner the "2," "5," "7," "9," and "5" are added, when six tens or "60" will be registered on rod 5 and six units on rod 3, making the total sum of the numbers named sixty-six, as appears on Fig. 1.

The method just described will be varied for the purpose of greater speed. For instance, suppose the operator has registered six units on rod 3 and the next number he wishes to add is either six, seven, eight, or nine. In either case the operator must return to the outer end of rod 3 and operate the cut-off to register a ten. This is more conveniently done by simply dropping back toward the outer end of rod 3 instead of counting forward. For instance, nine would be added by dropping back one button—that is, by pushing the sixth button inward—at the same time operating the cut-off to register a ten. Eight would be added by dropping back two buttons, seven by dropping back three buttons, and six by dropping back four, in each case operating the cut-off to register a ten. Again, the operator will group the numbers to be added into tens, making the operation of the machine consist simply in working the cut-off to register the tens until the last number is to be added. For instance, if the numbers to be added are "4, 5, 9, 2, 4, 6, 9, 8, 2, 3," the operator sees at a glance that the four and five and one borrowed from the nine makes a ten, which he registers by pushing inward the outer button 4 to operate the cut-off. Next, the remainder of the nine and the two make another ten, which he registers as before; then the four and six make a ten; the nine and one borrowed from the eight make a ten; the remainder of the eight, the two, and one borrowed from the three make a ten, each of which is registered, making five tens in all, and the operator has two units to register on rod 3, making the sum fifty-two, all of which can be done without looking at the machine until the end. The operator may obtain his groups of ten by bringing together numbers which are not adjacent to each other in the column to be added, or in any manner that he may desire. Again, since the numbers from eight to twelve are easily registered on the machine without looking, (to register twelve simply requiring to move forward or inward on rod 3 two buttons, at the same time operating the cut-off,) none of these numbers requiring a change inward or outward on rod 3 of more than two buttons, it is therefore often convenient to group the numbers to be added into such groups of from eight to twelve as they most conveniently fall into as the eye passes up or down the column, taking now a group of twelve and next a group of eight, nine, ten, or eleven, as the case requires. In the operation of the machine by grouping into tens or into eight to twelve the eye of the operator does not need to leave the column of numbers to be added until the end is reached.

Since the inner button 4 (shown on rod 3



in Figs. 1 and 2) is to register ten units, which can be always done on rod 5, said button may be omitted. There are thirty buttons 6 on rod 5 shown. No particular number of these 5 buttons is essential, but I find the number shown convenient and sufficient for all ordinary work. The rod 5 may be placed at an angle, but I prefer to have it stand vertical, or substantially so, when the machine is 10 in operation.

The machine described is simple in construction, easy of operation, makes possible rapid addition with but little mental labor and no mental strain, and is withal a most 15 practical device.

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

1. In a counting-machine, the combination of a series of buttons adapted to represent 20 units, so movably confined that they may be readily grouped by hand to register the result of addition in units, a second series of buttons adapted to represent tens also movably confined in the machine and mechanism adapted to be operated by hand and to 25 assemble said last-named buttons singly into a group to register tens in the result of addition, substantially as specified.

2. In a counting-machine, the combination 30 of a series of buttons loosely confined upon a horizontal rod, a second series of buttons loosely confined upon an upright rod, means for holding said last-named buttons at the upper end of their rod, and for releasing them 35 singly, substantially as specified.

3. In a counting-machine, the combination of a series of buttons loosely confined upon a horizontal rod, a second series of buttons loosely confined upon an upright rod, a cut- 40 off adapted to hold said last-named buttons at the upper end of their rod, and adapted to be moved back and forth and thereby to drop said last-named buttons one at a time below said cut-off and mechanism adapted so to move

said cut-off by pressure applied to and re- 45 moved from any one of said first series of buttons, substantially as shown and described.

4. In a counting-machine, the combination of a series of buttons loosely confined upon a horizontal rod, a second series of buttons 50 loosely confined upon an upright rod, a rocking bar pivoted to the frame and bearing a cut-off which is adapted to hold said last-named buttons at the upper end of their rod, said cut-off being further adapted to drop one 55 of said last-named buttons below it upon the rod each time said rocking bar is rocked back and forth, and mechanism operating between said first series of buttons and said rocking bar adapted to rock said bar by pressure upon 60 any one of said last-named buttons, substantially as set forth.

5. In a counting-machine, the combination of a series of buttons loosely confined upon a horizontal rod, a second series of buttons 65 loosely confined upon an upright rod, the rocking bar 7, the cut-off 9, the head 13, the sleeve 14, the push-rod 15 and the spring 10 substantially as herein set forth.

6. In a counting-machine, the combination 70 of the rod 5, the series of buttons 6, the cut-off 9 and mechanism adapted to operate said cut-off, substantially as shown and described.

7. In a counting-machine, the combination of the rod 5, the series of buttons 6, means 75 for engaging and holding said rod firmly at its upper end, the cut-off 9 and mechanism adapted to operate said cut-off, substantially as shown and described.

8. In a counting-machine, the combination 80 of the rod 5, the series of buttons 6, the handle 24, the index-plate 23, the cut-off 9 and mechanism adapted to operate said cut-off, substantially as shown and described.

W. C. PORTER.

Witnesses:

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