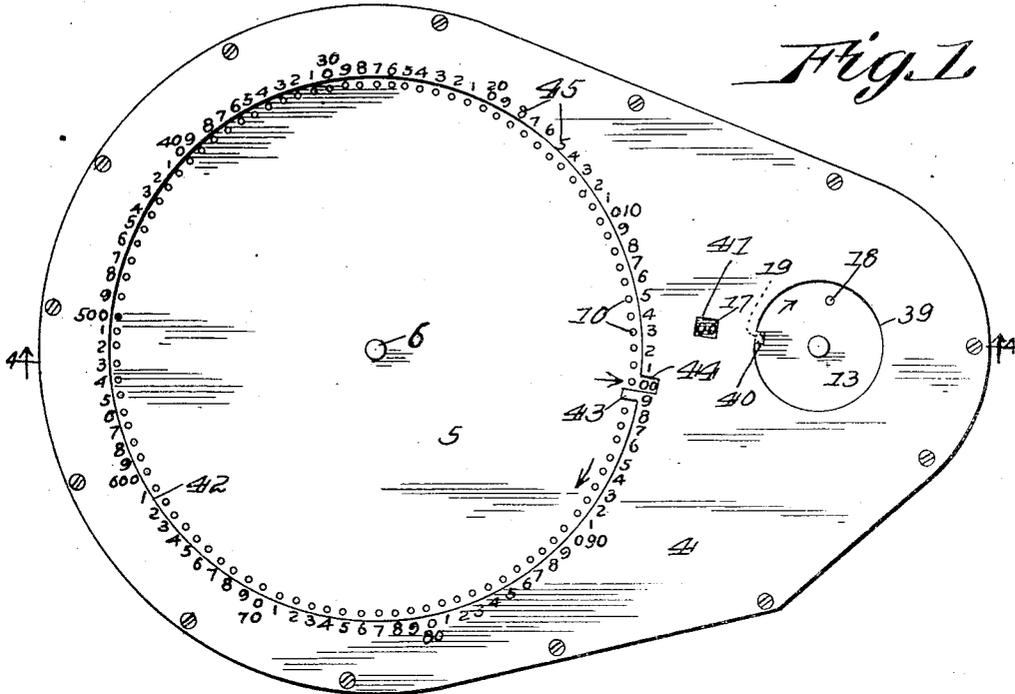
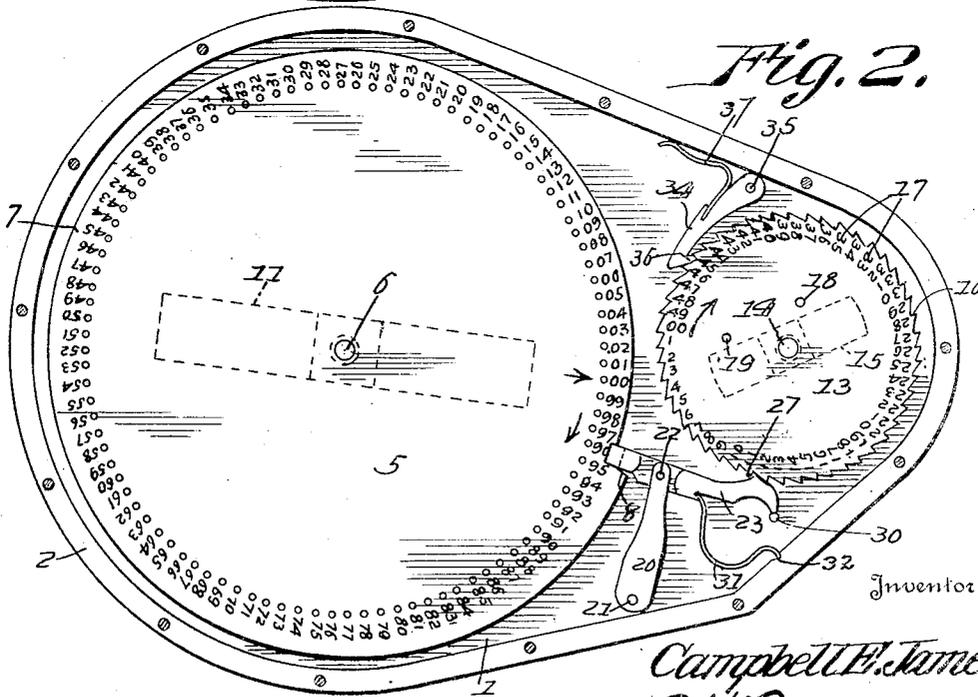


1,244,335.

Patented Oct. 23, 1917.  
2 SHEETS--SHEET 1.



*Fig. 1.*



*Fig. 2.*

Inventor

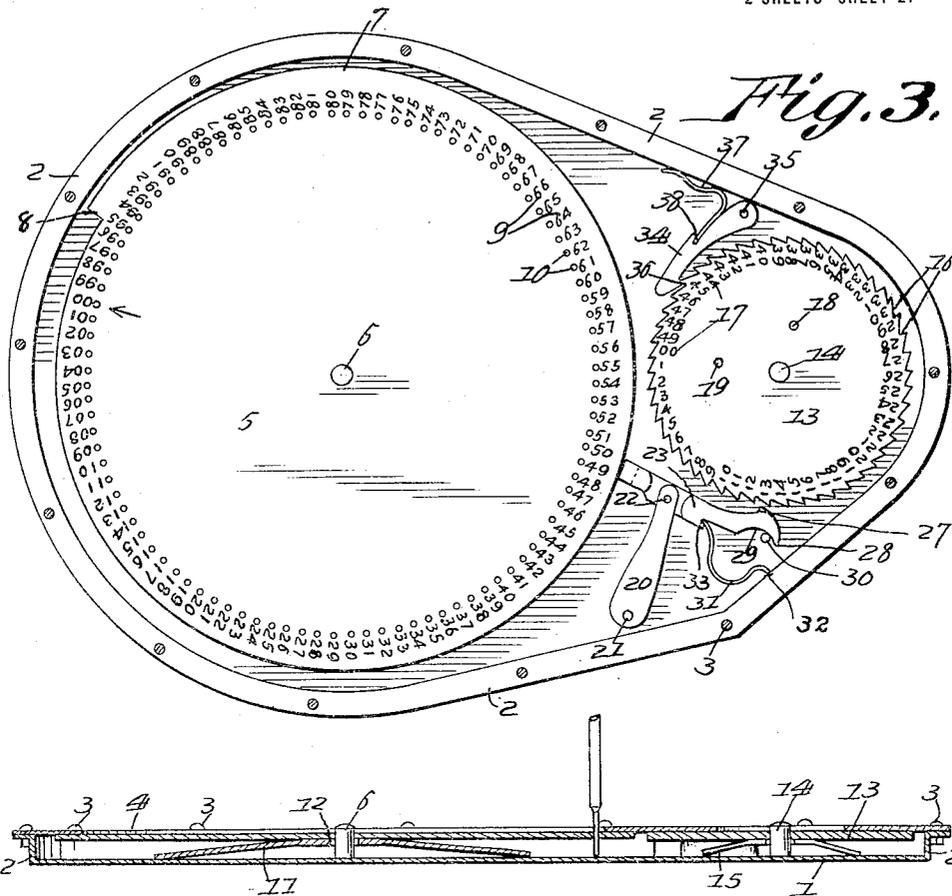
*Campbell E. James,*  
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Attorney

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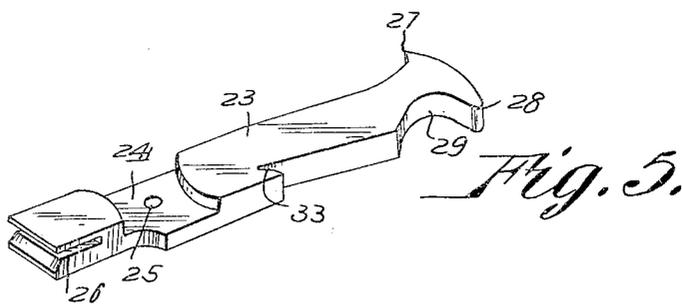
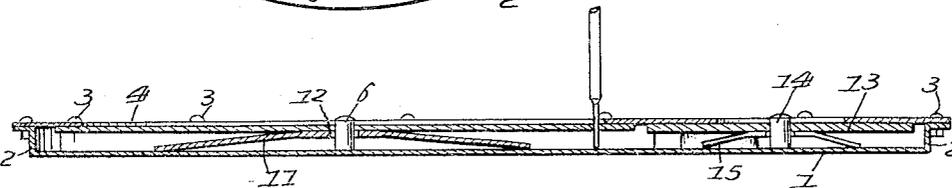
C. E. JAMES.  
 ADDING MACHINE.  
 APPLICATION FILED MAY 2, 1917.

1,244,335.

Patented Oct. 23, 1917.  
 2 SHEETS—SHEET 2.



*Fig. 4.*



*Fig. 5.*  
 Inventor  
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 E. M. Bond  
 Attorney

By

# UNITED STATES PATENT OFFICE.

CAMPBELL E. JAMES, OF FRANKFORT, KENTUCKY.

## ADDING-MACHINE.

1,244,335.

Specification of Letters Patent.

Patented Oct. 23, 1917.

Application filed May 2, 1917. Serial No. 165,946.

*To all whom it may concern:*

Be it known that I, CAMPBELL E. JAMES, a citizen of the United States, residing at Frankfort, in the county of Franklin and State of Kentucky, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in adding or computing machines of that class embodying a disk bearing numerals and adapted to be rotated by hand, the present device being designed as a portable adding machine especially applicable for use in teaching young children how to count as well as add, being also applicable for use by bookkeepers and other accountants, the object being primarily to simplify and cheapen the construction whereby I provide not only an efficient, easily operated, absolutely accurate adding or computing machine, but one which will be durable and reliable in use, composed of few parts, those readily and easily assembled, and not liable to become broken or to get out of order in use.

I provide the unit wheel with a cam upon its outer periphery and arrange all of the actuating mechanism outside of the periphery of this unit disk or wheel, so that the surface beneath said unit disk is free and unobstructed, permitting me to provide openings extending entirely through the disk for the reception of a pin or stylus for rotating said disk and allowing the same to extend a material distance below the disk so as to, if desired, rest upon the bottom of the casing and slide thereupon.

The hundred dial or disk is arranged as usual to one side of the unit and ten disk or dial and all the operating mechanism is disposed between the two disks or dials, the same being composed of a minimum number of parts and, together with the cam on the periphery of the unit and ten disk constituting the motive power, being easily operated so as to make it practically a toy for the use of children without the aid of an older person.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a top plan of my improved adding or computing machine.

Fig. 2 is a similar view with the top plate removed.

Fig. 3 is a view similar to Fig. 2 with the parts shown in a different position.

Fig. 4 is a vertical section on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged perspective view of the power lever.

Like numerals of reference indicate like parts throughout the several views.

Referring to the drawings,

1 designates the casing of the machine having the upturned surrounding flange 2 to which is removably attached in any suitable manner, as by screws 3, a top plate 4. These parts may be stamped up from sheet material or formed in any well-known or convenient manner. The flange 2 is of sufficient height to provide the requisite space for the operating parts between the top and bottom of the casing.

5 is the unit and ten disk or dial mounted for free revolution about a central stud or pin 6 suitably fixed to the bottom of the casing and extending upward therefrom and at its outer periphery said disk is formed with a cam surface 7 in horizontal alinement with the disk or dial, the cam terminating so as to constitute a shoulder 8 for a purpose which will be hereinafter made clear. Around the periphery of the disk 5 are stamped, printed or otherwise affixed, the unit and ten numerals, as seen at 9, the same extending, of course, from 0 to 99, and around the periphery of said disk conforming to each of these characters or numbers is a hole 10, the same being drilled or punched entirely through the disk or dial and adapted to receive a stylus, pin or other

implement by means of which the disk or dial can be easily rotated upon its central stud.

Beneath the dial 5 is a spring 11, seen clearly in Fig. 4 and indicated by dotted lines in Fig. 2, the same being arched and having an opening 12 loosely receiving the stud 6, the said spring tending to at all times keep the disk pressed upward to the requisite extent.

Any indicating mark, such as an arrow seen in Fig. 2, may be placed upon the upper face of the dial 5 to enable one to readily distinguish the hole corresponding to the 0 on the dial.

13 is the hundred disk or dial. It is mounted for free revolution upon a stud or pin 14 suitably affixed to the bottom of the casing 1, as seen, for instance, in Fig. 4, and beneath this disk is a spring 15 similar to the spring 11 hereinbefore described, and serving a similar function. The periphery of this disk is toothed, as at 16, and each tooth is numbered from 0 to 49, as seen at 17 in Figs. 2 and 3. It is evident, however, that the hundred disk 13 may be provided with a greater or less number of teeth and numerals as may be desired. The disk 13 is provided preferably with two holes 18 and 19, the one being farther removed from the center than the other, for a purpose which will hereinafter appear.

20 is an arm pivotally mounted near one end, as at 21, within the casing and its other end pivotally connected, as at 22, with the actuating lever 23, the said lever being provided with a depression, as at 24, having the opening 25 for the reception of the pivot 22 and to receive the adjacent end of the arm 20 for an obvious purpose. The end of the lever 23 adjacent the periphery of the disk 5 is provided with a horizontal slot 26 forming a bifurcation in which the peripheral edge of the disk 5 is received, thus serving to prevent upward displacement of the disk 5 as well as engaging with the said peripheral edge of the disk so as to be moved by the action of the cam as the disk is rotated.

The other end of the lever 23 is formed upon one edge with a tooth or pawl 27 adapted for coöperation with the teeth 16 of the disk or dial 13, as seen clearly in Fig. 2, and upon the opposite edge is formed with a nose 28 and a side depression or cavity or the like 29 forming a cam surface, the object of which will soon be made clear.

30 is a stud or pin rising from the base 1 for coöperation with the nose and depression of the lever, as will soon be made apparent, while 31 is a spring having one end suitably retained as within a notch or the like 32 in the flange 2 of the base and its other end

held in a notch or the like 33 in the adjacent face of the lever 23.

34 is a pawl pivotally mounted at 35 at the opposite side of the disk or dial 13, the tooth or pawl 36 thereof being adapted to engage the teeth 16 of the disk 13 and prevent retrograde movement thereof, a spring 37 being provided, as seen clearly in Fig. 3, having one end secured in a notch or the like 38 in the body of the pawl and the other end bearing against the flange 2 of the base, the free end of the spring being free to slide on the vertical face of said flange.

The cover plate 4 is provided with an aperture 39 of sufficient diameter to disclose the holes 18 and 19 in the hundred disk 13, as seen clearly in Fig. 1, with a stop, projection or the like 40 extending slightly within the opening thus formed to form a stop for the pin or stylus employed in turning the disk back to zero. In alinement with this projection, the top plate is provided with an opening 41 through which the numerals on the hundred disk 13 are visible, as the said disk is rotated, it being understood, of course, that only one of such numerals is visible at a time.

The top plate 4 is likewise cut-away to provide a circular opening 42 of sufficient diameter to cover the numerals on the unit and hundred disks, but exposing the holes 10 therein, as seen clearly in Fig. 1. Projecting inward from the wall of this opening is a stop lug or projection 43, as seen clearly in Fig. 1, and adjacent the same the top plate is provided with an opening 44, as seen also in said Fig. 1, this projection and opening being so disposed that when the disk 5 is turned in the direction of the arrow to a point where the pin or stylus engages the projection 43, the 0 on the disk will be disclosed through said opening 44, as seen in Fig. 1.

With the parts constructed and arranged substantially as hereinbefore disclosed, the operation, briefly stated, is as follows: With the parts in the position in which they are shown in Fig. 1, the machine is set at zero, the zeros showing through the openings 41 and 44, it being understood, of course, that the numerals 45 on the top plate corresponding to the holes 10 in the disk 5 correspond with the numerals 9 on the periphery of the said disk 5. In operation, a stylus or pin or other implement is inserted through the requisite hole 10 in the disk 5 and the latter turned in the direction of the arrows. For instance, if the pin is placed in the hole 10 corresponding to the numeral 40 on the top plate, and, consequently, corresponding to the same numeral 40 on the disk 5 and the disk 5 then revolved to the right until the pin or stylus contacts with the projections

43, the numeral 40 on the disk 5 will be disclosed through the opening 44. Then, again, if the pin be placed in the hole 10 corresponding to the numeral 50 on the top plate and the disk revolved to the right until the pin again engages the stop 43, the numeral 90 will be disclosed through the opening 44. Now, if we place the pin or stylus in the hole 10 corresponding to the numeral 10 on the top plate and move the disk 5 to the right, we disclose the zero at the opening 44 and at the same time the hundred disk 13 is rotated one notch and the numeral 1 designating 100 disclosed through the opening 41 in the top plate. But, supposing that instead of inserting the pin in the hole 10 corresponding to the numeral 10, we had placed the pin in the hole 10 corresponding to the numeral 40 on the top plate and rotated the disk to the right until the pin engaged the projection 43, we would have disclosed at the opening 44 the numeral 30 and through the opening 41 the numeral 1 on the disk 13, thus giving us the total of 130. During the rotation of the disk 5, the cam surface 7 thereof acting upon the adjacent end of the lever 23 gradually moves the same to the right, causing its tooth 27 to gradually ride up the inclined face of the corresponding tooth on the hundred disk 13 until, just as the disk 5 arrives at a point where the shoulder 8 slides out from the bifurcation of the end of the lever, the tooth of the lever is moved out of engagement with the inclined face of the tooth of the disk 13, when the spring 31 forces the tooth of the lever into the next tooth of the disk 13 and, consequently, rotates the disk 13 one tooth or notch in the direction of the arrow shown on said disk in Fig. 2. The pawl 34 in the meantime is caused to ride upon a tooth of the disk 13, allowing such advance movement of the latter, but, at all times, preventing retrograde movement thereof.

The spring actuated lever 23 being forced at all times toward the periphery of the disk 5 by its spring 31, serves as a brake to prevent accidental movement of the disk and insure steady movement thereof.

The disk 13 is set to any desired position by means of the pin or stylus placed in one of the openings 18 or 19 of said disk. When the disk 13 is set to zero, the opening 19 is disposed beneath the projection 40, said projection serving as a stop for the movement of the disk by reason of the contact of the pin or stylus therewith, and when the disk is in this position the hole 18 serves for the reception of the pin or stylus to move the disk, as may be desired.

The shoulder 8 of the cam is so located with reference to the zero on the disk 5

that when the latter is coincident with the opening 44 in the top plate, the shoulder 65 forms a stop against which the adjacent end of the lever 23 engages, so that movement of the disk 5 to the left is prevented, leaving it free, however, to be moved to the right.

The lever 23 is so disposed with reference 70 to the other parts that the disk 13 is locked against movement in either direction until the disk 5 has been moved to the right such a distance, say to the numeral 50 or beyond, at which time the lever 23 has been moved 75 such a distance to the right that the depression 29 thereof has its deepest part opposite the pin 30, as indicated in Fig. 3, so that the disk 13 may be moved in a forward direction, there being then sufficient movement 80 for the play of the outer end of the lever 23, but until the disk 5 is moved at least half way, the nose of the pawl-end of the lever contacts with the pin 30 so as to prevent rotary movement of the disk 13. 85

Modifications in details may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What is claimed as new is:— 90

1. In an adding machine, a rotatably mounted unit and ten disk having a peripheral cam and having openings extended through said disk, a rotative ratchet disk, and motive mechanism disposed entirely between said cam and the ratchet disk leaving the space beneath the unit and ten disk unobstructed for the passage of a stylus through said openings. 95

2. In an adding machine, a rotatably 100 mounted disk with peripheral cam, a rotatably mounted ratchet disk, a movably mounted lever intermediate said cam and ratchet disk serving as a lock for the ratchet disk, and means preventing movement of the ratchet disk until the first-named disk is partially rotated from the lowest point of the cam. 105

3. In an adding machine, a rotatably 110 mounted disk with peripheral cam, a rotatably mounted ratchet disk, a movably mounted lever intermediate said cam and ratchet disk serving as a lock for the ratchet disk, means preventing movement of the ratchet disk until the first-named disk is partially 115 rotated from the lowest point of the cam, and a spring acting on said lever to normally hold one end thereof in engagement with the ratchet disk.

4. In an adding machine, a rotatably 120 mounted disk with peripheral cam, a rotatably mounted ratchet disk, a movably mounted lever arranged for actuation by said cam, said lever having at one end a tooth for engagement with the ratchet disk and an 125 opposed cam surface, and means cooperating

with said cam surface to hold or to release said ratchet disk.

5 In an adding machine, a rotatably mounted disk with peripheral cam, a rotatably mounted ratchet disk, a movably mounted lever arranged for actuation by said cam, said lever having at one end a tooth for engagement with the ratchet disk and an opposed cam surface, means cooperating with

said cam surface to hold or to release said 10 ratchet disk, and a spring acting on said lever to force the pawl-end thereof into engagement with the ratchet disk.

In testimony whereof I affix my signature in the presence of a witness.

CAMPBELL E. JAMES.

Witness:

W. R. BAUM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."