J. T. CAMPBELL.

ADDING INSTRUMENT.

No. 24,990. Patented Aug. 9, 1859.

Fig. 1.

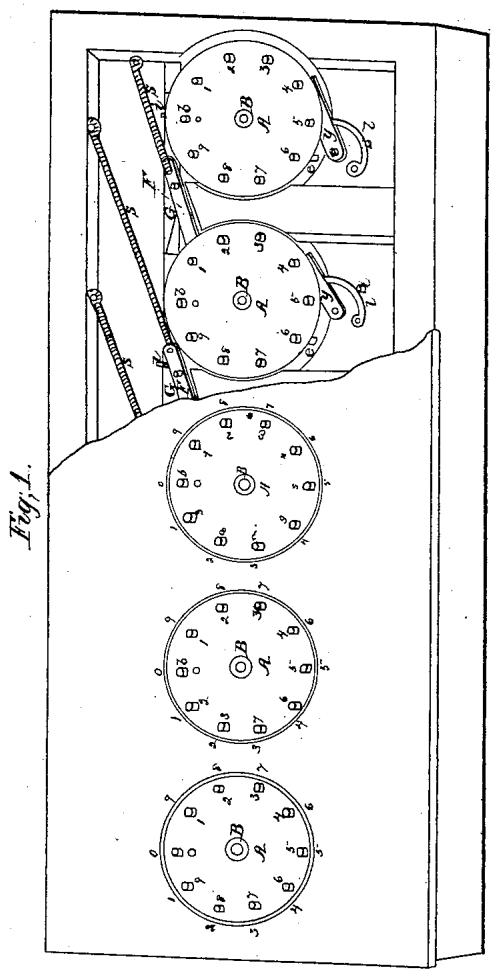


Fig. 2.

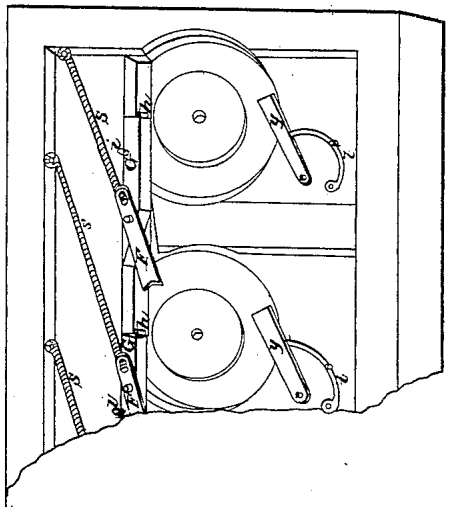
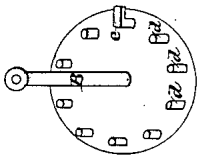


Fig. 3.



Witnesses;
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Inventor;
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UNITED STATES PATENT OFFICE.

JOHN T. CAMPBELL, OF ROCKVILLE, INDIANA.

ADDING-MACHINE.

Specification of Letters Patent No. 24,990, dated August 9, 1859.

To all whom it may concern:

Be it known that I, JOHN T. CAMPBELL, of Rockville, in the county of Parke and State of Indiana, have invented a new and useful Improved Machine for Adding Numbers, which I call and entitle an "Addition-Machine;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure (1) is a perspective view of the machine, partially open; Fig. (2) is a view of an open section of the machine with the wheels removed, so as to expose the springs, slides, stop-bars, oscillating arms, &c., by means of which the said machine is operated; Fig. (3) is a view of one of the wheels bottom side up, exposing the axle, cogs, and cam.

A^1, A^2, &c., represents a series of wheels, which for want of a better name I call numeric wheels, arranged in a line in a horizontal position, each one containing the numerals commencing with 0, 1, 2, 3, &c., to the numeral 9 inclusive, occupying spaces equi-distant, immediately inward of ten pins or knobs (*b*) which latter immediately proximate the rim of the wheels.

B, represents a revolving shaft, or axle, extending from beneath through the center of the wheels to a shoulder, and fastens above by the nut (*c*), thence extending downward, perpendicularly, through the block forming the bed of the machine, to a shoulder cut on the shaft and fitting against a metallic plate (countersunk on the under side of the block), the lower end of the shaft being confined by a nut on the under side of the plate, similar in all respects to nut (*c*).

d, *d*, *d*, &c., are ten cogs on the under side of the numeric wheels, forming ratchetwork, and occupying positions immediately under and opposite to the knobs on the upper face of the wheels.

e, *e*, *e*, &c., represent a cam attached to the end of the cog immediately beneath the knob representing the numeral 9 on the upper face of the wheels.

G, G, &c., represent slides that fit into a groove extending the full length of the machine, in a line immediately under the upper edge of the numeric wheels, each of which slides extends from a point opposite the center of the right hand wheel to a point opposite the nearest edge of the bed of the next left hand wheel, being confined to its place by the ordinary catch pins (*i*, *i*, &c.) and the stop pins (*h*, *h*, &c.)

F, F, &c., represent oscillating arms, attached by the pins or screws (*k*, *k*, &c.) to the top of the slide G, thus forming a joint, the left hand end of the arm extending immediately behind the cog first to the right hand of the top cog on the next left hand wheel, and the other end of the arm being attached to the elastic, or spiral springs, S, S, &c., or their substantial equivalent. The stop-bars Y, Y, &c., aided by the springs (*l*, *l*, *l*, &c.,) press against the cogs or ratchets as the wheels revolve to the left, and as each wheel advances a space they drop behind the last cog, thus steadying the wheels and preventing them from turning back to the right.

The operation of this machine is as follows: First, place the numeral 0 on all the wheels opposite the like numerals on the casing, (being the top of the wheels.) The right hand wheel represents units, the next wheel to the left of it, tens, the next hundreds, &c. Say the first number to be added is 545,—place the finger on the top knob of the hundreds wheel and turn to the left to the figure 5 on the casing, in like manner bring the top knob of the tens wheel to the figure 4 on the casing, and then the units wheel to the figure 5 on the casing; you have 545, reading from left to right on the top of the wheels; then add 455 to this sum; place your finger as before and bring down the top knob of the hundreds wheel to the 4th space, the tens wheel to the 5th space, and the units wheel to the 5th space, and the result is 1000. In adding the second sum to the first, when the hundreds wheel stops at the 4th space the figure 9 is on the top of the hundreds wheel, when the units wheel revolves to the 5th space the cam on the units wheel is brought in contact against the slide G, which shoves the tens and the hundreds wheel forward one space, which brings the cam of the hundreds wheel in contact with the slide G, at the same time and moves the thousands wheel one space, turning up the figure one, &c., all of said wheels operating substantially alike, and the revolutions of each wheel, by means of the cam, slides, arms, springs, and ratchet work aforesaid moving the next left hand wheel forward a single space the elastic or spiral springs returning said slides and arms

to their proper places. Thus, it is seen that ten revolutions of any given wheel is equal to a single revolution of the next immediate wheel to its left, carrying its one for every ten. And thus, number may be added on to number *ad infinitum*, the capacity of the machine in this regard being measured only by the number of its wheels, which may be increased at pleasure. The result of an operation is read by the figures occupying the top of the several wheels at its completion.

The machine will add aggregate numbers or single columns with equal correctness.

Having thus fully explained the operation and construction of my machine, what I claim as my invention and improvement in the above described adding machine is—

1. The arrangement of a series of wheels provided with ten cogs or teeth, and carrying the ten numeric figures on their outward faces, in combination with the stationary plate, containing like numeric figures arranged on the circles surrounding each of the wheels in the series, substantially as described.

2. And in combination with the parts above claimed, arranged as described, I claim the stop-bars Y, Y, and spring slides G, G, and oscillating arms or pawls F, F, with the cam *e*, *e*, the whole being constructed and arranged for joint operation substantially as set forth.

JOHN T. CAMPBELL.

Witnesses:
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