

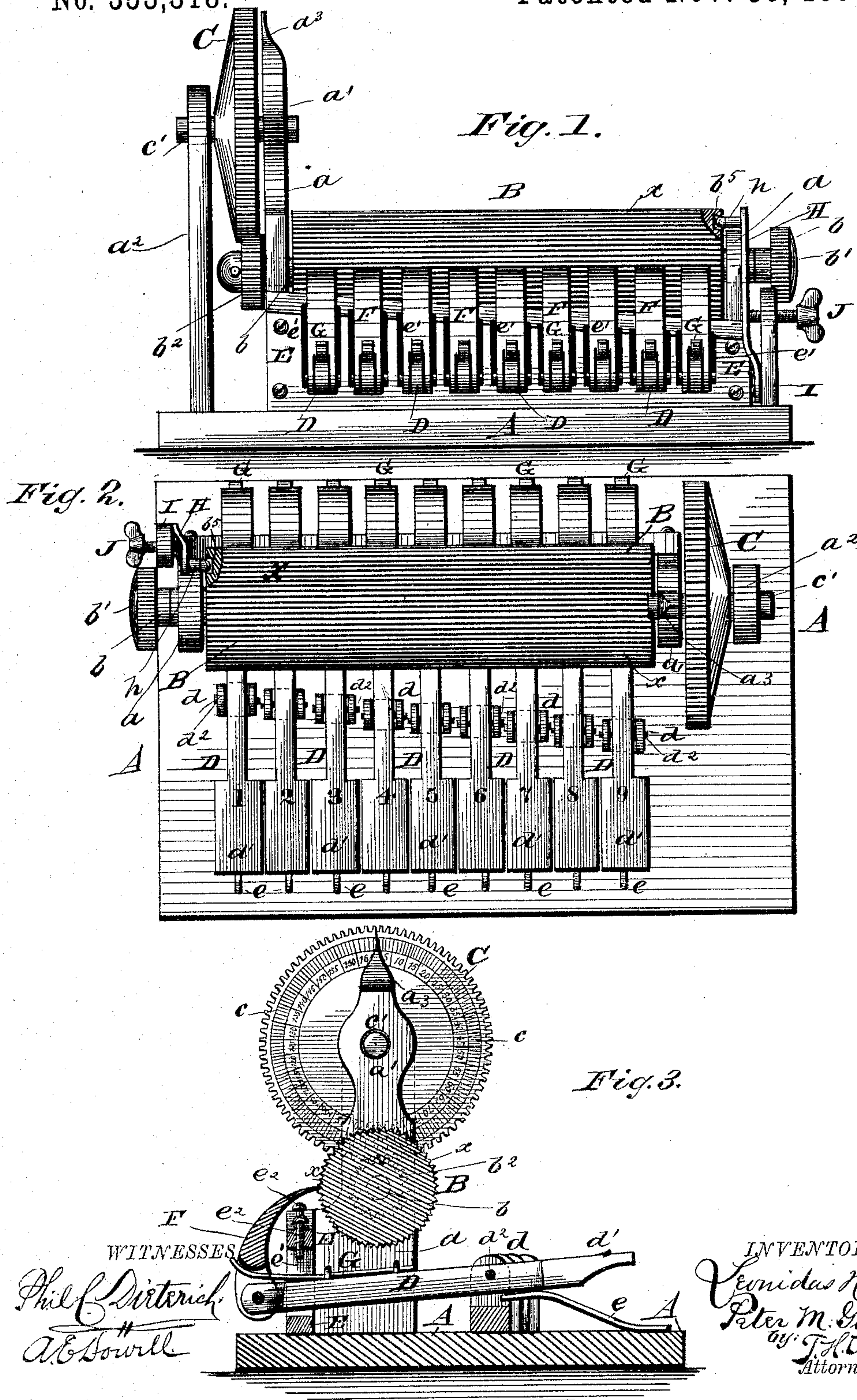
(No Model.)

L. H. LEWIS & P. M. GUERRANT.

ADDING MACHINE.

No. 353,318.

Patented Nov. 30, 1886.



UNITED STATES PATENT OFFICE.

LEONIDAS H. LEWIS AND PETER M. GUERRANT, OF DANVILLE, VIRGINIA.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 353,318, dated November 30, 1886.

Application filed April 23, 1886. Serial No. 200,451. (No model.)

To all whom it may concern:

Be it known that we, LEONIDAS H. LEWIS and PETER M. GUERRANT, of Danville, in the county of Pittsylvania and State of Virginia, have invented certain new and useful Improvements in Adding-Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a rear view of our improved calculating-machine. Fig. 2 is a plan view of the same. Fig. 3 is a transverse vertical section.

Our invention relates to machines for indicating arithmetical calculations; and the object of our invention is to produce a machine which shall correctly indicate the added amount of one or more columns of figures in consequence of impulses imparted through a series of numerically-designated levers.

To the above purposes our invention consists in certain peculiar and novel features of construction and arrangement, embracing a toothed or serrated roll, a toothed indicating-disk, a series of numerically-designated actuating-levers, and a series of spring-actuated teeth or pawls operating conjunctively, as hereinafter described and claimed.

In order that our invention may be fully understood we will proceed to describe it with reference to the accompanying drawings.

A designates the bed or base of the machine; a , two parallel vertical standards resting upon the bed or base near one of its ends.

B designates a cylinder or roll, which extends horizontally between the standards a , in the upper ends of which are journaled the reduced ends b of said roll. Upon one of these reduced ends b is secured a milled wheel, b' , by which the roll may be turned when setting the machine, as hereinafter described, and upon the opposite end b of the roll is mounted rigidly a gear-pinion, b^2 , the teeth of which mesh with similar teeth upon a revoluble dial or indicating-disk, C. This disk C is journaled at c' in vertical position between the extended upper end, a' , of the contiguous standard a and an auxiliary standard, a^2 , which rests upon bed A just beyond the said contiguous

standard a . The inner face of disk C carries a circular scale, c , consisting of a continuous series of marks, each indicating a unit of value, every fifth unit-mark being preferably elongated, or made otherwise distinguishable from the interposed unit-marks and designated by its proper number, and the upper extremity of the extension a' is formed into or provided with an index, a^3 . It will thus be seen that if the roll B be turned in its bearings it will cause the indicating-disk C to revolve, and that the distance through which the roll is revolved at each impulse will cause one of the unit-marks in scale c to be moved beneath the index or pointer a^3 , so that if the rotation of roll B be made with successive impulses of greater or less extent a greater or less number of unit-marks will be successively moved along beneath the pointer, and consequently at the end of the final impulse to the roll the total numerical value of the unit-marks moved past the pointer will be inevitably indicated.

The means for imparting the required rotation to the roll so that each impulse shall correspond in extent to the relative unit-mark on scale c is as follows: Upon a series of short supports, d , extending vertically upward from the bed-plate or base A, are pivoted a series of levers or bars, D, the front ends of which are broadened or enlarged, as at d' , or in any other suitable manner formed to act as keys to be struck by the operator's fingers, and said keys are numerically designated, as shown, from 1 to 9, inclusive. These levers or bars extend parallel with each other longitudinally over bed A and beneath roll B. The front ends of these levers or bars are held normally raised by spring-rods e , each of which is secured at one end to the bed or base A, and presses upward at its opposite end against the under side of the contiguous lever D just in front of its pivot d^2 . The rear extremities of the levers D extend through a series of slots, e' , in a frame, E, which is secured to the rear edges of standards a , so as to extend in a horizontal plane transversely of the machine.

It will be observed that the slots e' are of successively-increasing height, beginning at the left-hand side of the machine, and it will thus be seen that the lever in the first slot cannot be thrown upward as far as the lever in the second slot. The same thing is true of the le-

ver in the second slot, as compared with that in the third slot, and so on.

In order that the length of upward movement of each lever may be more accurately defined, a series of adjusting-screws, e^2 , pass downwardly through the top of the frame, and each of said screws impinges at its lower end against the upper side of its respective lever D when the latter is thrown upward.

Upon the rear ends of the levers D are pivoted a series of teeth or pawls, F, which extend upwardly from said levers, and in such manner that when the levers are thrown upward to a certain extent, this initial movement being of equal length in all the levers, the upper ends of the teeth or pawls shall strike the surface of roll B.

The surface of the roll is toothed, ribbed, or serrated longitudinally throughout its length, as shown at x , these ribs or elongated teeth x being spaced to accord with the length of travel of the lever D in the shortest slot. Hence the lever in the shortest slot when raised at its rear end throughout the entire permitted limit of its movement will turn the roll a distance equal to the space between any two of the ribs x , or one notch. The second lever will turn the lever roll a distance equal to three ribs or two notches, and so on. The lever in the shortest slot is numbered 1, and that in the longest is numbered 9, and hence, the dial C being turned first to zero and the first lever being pressed, the roll will move one notch, and the dial will thereby be moved to the first unit-mark. If, for instance, lever 9 in the longest slot be now pressed, the roll will be moved nine notches, carrying the dial through nine unit-marks, and bringing the tenth unit-mark beneath the pointer. Thus by using the levers in succession, as the figures to be added occur, the roll will be revolved by longer or shorter impulses, and the dial will correctly indicate the amount of the entire column.

In order to hold the teeth or pawls F in operative position each lever D carries a spring-strip, G, secured at one end to the upper edge of the lever, and at the opposite end lying between the bifurcated lower ends of the pawl

and passing upward thereon. In order also to prevent any irregularity of movement in the roll it is preferably provided with a tension device—as, for instance, of the form shown in the drawings. In this instance a spring-arm, H, is secured at its lower end to a short standard, I, which projects vertically upward from the base-plate A. The upper end, h , of bar H projects laterally toward the contiguous end of the roll B, and lies in frictional contact with a circular groove, b^5 , therein. Thus the movement of the roll B is rendered even and regular, a pressure-screw, J, being inserted through the upper end of the standard to impinge against the bar H, and thus regulate the pressure of the end of said bar against the end of the roll.

The entire machine is not only of the utmost simplicity and durability of construction, but is absolutely accurate and extremely rapid in its action.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the base A, carrying the standards a , supports d , springs e , and frame E, having slots e' , and means for adjusting the lengths of the slots, of the continuous serrated roll B, journaled between the standards a , the levers D, carrying pawls F at their outer ends, the scale-disk C, and suitable gearing between the disk and roll, substantially as described.

2. The combination, with the base A, having standards a and pivotal supports d , of the roll B, having ribs x , wheel b' , and pinion b^2 , the toothed dial disk C, the levers D, having springs e and G, the frame E, with its varying slots e' , and adjusting-screws e^2 , and the pawls F, pivoted upon levers D and held by said springs G, substantially as described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

LEONIDAS H. LEWIS.
PETER M. GUERRANT.

Witnesses:

J. M. JOHNSTON,
J. W. LAW.