(No Model.) 3 Sheets—Sheet 1.

C. B. F. LINCOLN.

ADDING MACHINE.

No. 390,788. Patented Oct. 9, 1888.

Fig. 1.

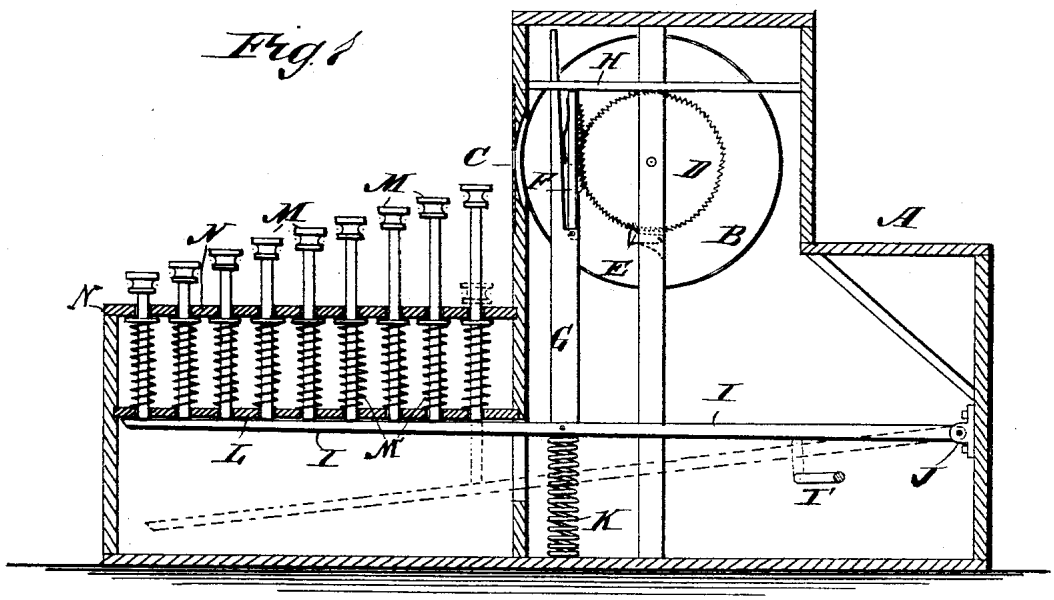
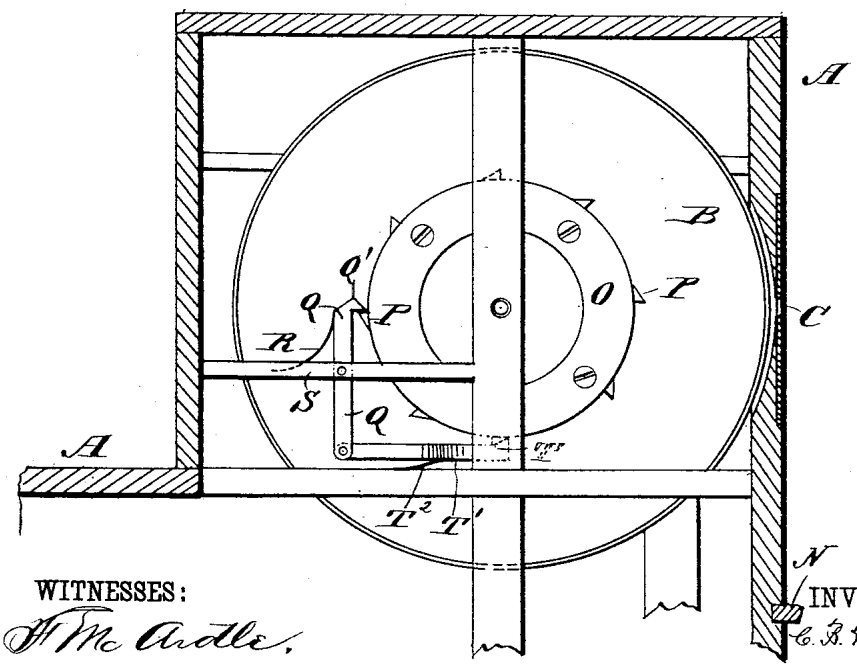


Fig. 2.



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C. Sedgwick.

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(No Model.) 3 Sheets—Sheet 2.

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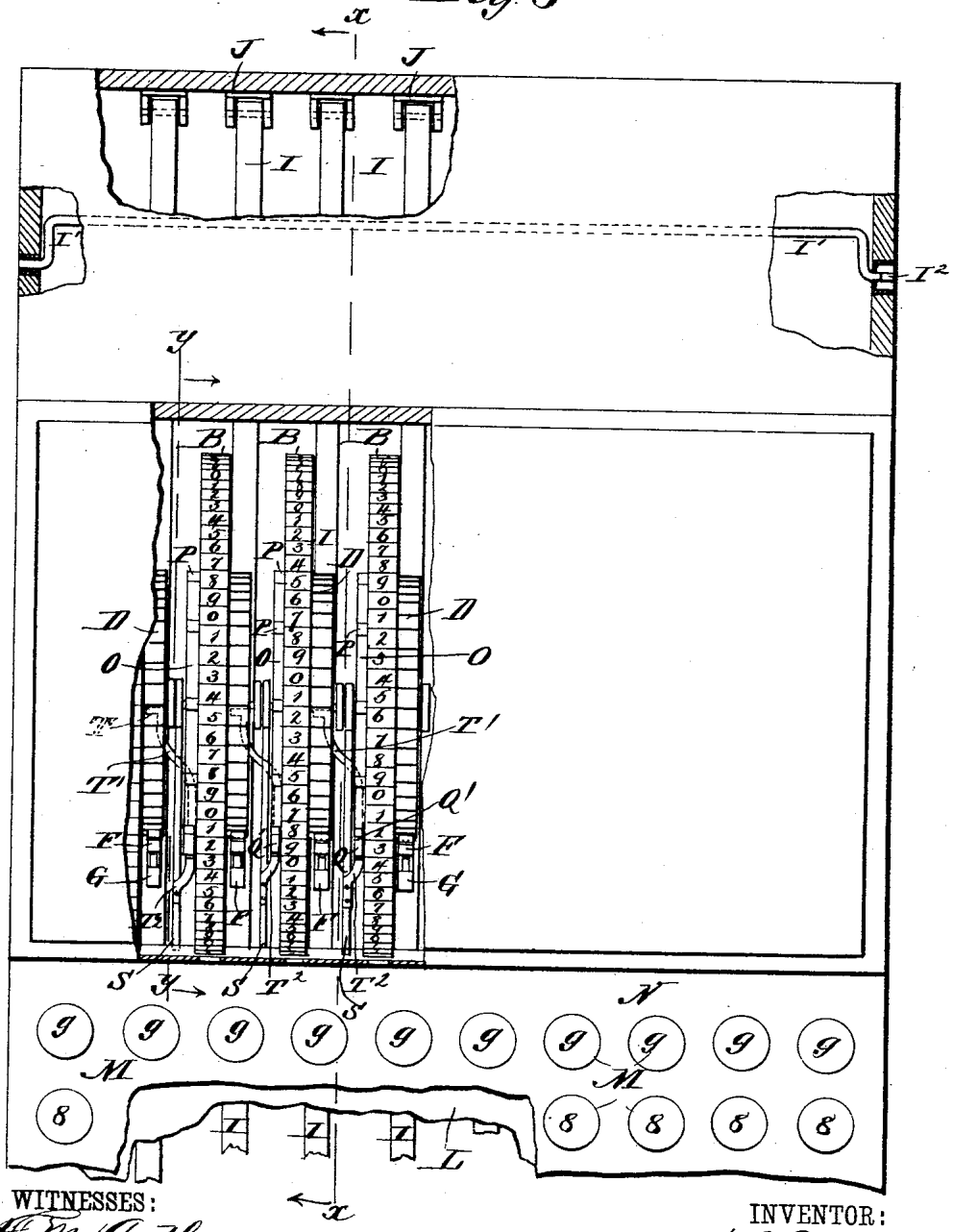
Fig. 3



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(No Model.) 3 Sheets—Sheet 3.

C. B. F. LINCOLN.

ADDING MACHINE.

No. 390,788. Patented Oct. 9, 1888.

Fig 4

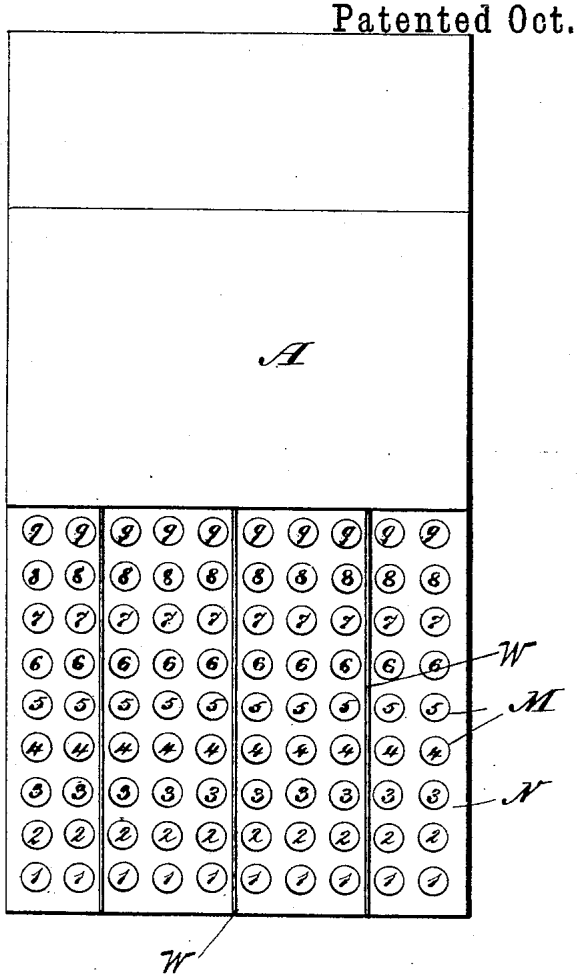
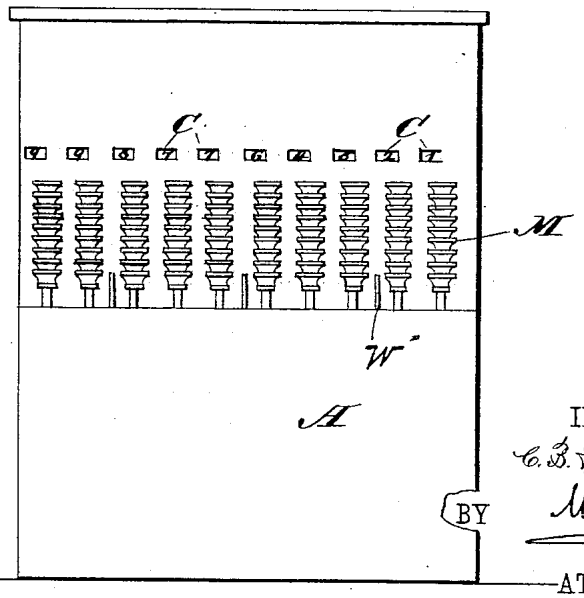


Fig 5



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UNITED STATES PATENT OFFICE.

CHARLES B. F. LINCOLN, OF SAN FRANCISCO, CALIFORNIA.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 390,788, dated October 9, 1888.

Application filed October 12, 1887. Serial No. 252,128. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. F. LINCOLN, of San Francisco, in the county of San Francisco and State of California, have invented a certain new and useful Improvement in Adding-Machines, of which the following is a specification.

The object of my improvement is to provide an adding-machine whereby greater simplicity, convenience in use, and rapidity in operation are obtainable than usual.

I will first describe in detail an adding-machine embodying my improvement and then point out the various features of the said improvement in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section of an adding-machine embodying my improvement on the line *x x*, Fig. 3. Fig. 2 is an enlarged vertical section of the upper portion of the said adding-machine on the line *y y*, Fig. 3. Fig. 3 is a plan view of the said machine, parts being broken out to reveal the internal structure. Fig. 4 is a plan view of the same complete. Fig. 5 is a front view of the same.

In a case, A, are mounted to turn independently of each other a series of (ten here shown) number-wheels, B, having a common axis extending transversely of the case. Each number-wheel B has on its periphery the ten numerals from 0 to 9, repeated (in this case eight times) in succession, and adapted to register singly with one of a transverse row of transparent openings, C, in the front of the case. Each wheel B has attached thereto on its right-hand side a ratchet-wheel, D, having teeth exactly corresponding in number and position with the numerals on the periphery of the wheel, of which there are in this case eighty. Each ratchet-wheel D is dogged by a spring-pawl, E, and is engaged by a spring-actuated ratchet-bar, F, pivoted to an upright lever, G, which is guided at its upper end in a fixed bearing, H, and is pivoted at its lower end to a key-lever, I. This ratchet-bar F has its teeth pitched to pass the teeth of the ratchet-wheel D when forced downward, and is thrown into engagement with said ratchet-wheel by means of a spring bearing on its rear side.

Each key-lever I is pivoted at its rear end to swing vertically onto a fixed support, J, and is normally pressed upward by a spring, K, against a lower key-board, L, beneath which its forward end extends.

Directly over each of the (in the present case ten) key-levers I is arranged a longitudinal row of headed keys, M, mounted to slide vertically in guide-holes in the lower key-board, L, and corresponding guide-holes in a similar upper key-board, N, and their lower ends bearing upon the said key-lever.

The keys M of each longitudinal row are numbered from 1 to 9, consecutively, beginning at the front key, and the length and position of each key is so adjusted that the key-lever being in its normal position when said key is depressed by the finger until its head comes in contact with the upper key-board it will have, through the connections described, drawn the yielding ratchet-bar F downward over a number of teeth on the ratchet-wheel D corresponding to the number on said key. Then when the key is released the spring K, acting on the corresponding key-lever, will force the ratchet-bar F upward to its normal position and thereby revolve the ratchet-wheel through the distance of a like number of teeth. The number on the key depressed will thus be brought to the aperture C, the corresponding number-wheel B, and a key on the first, second, third, &c., longitudinal row from the right being depressed according as such number denotes units, tens, hundreds, &c., and the proper signification of the number will be given by the distance of the opening C at which it is presented from the right of the row of openings. Springs M′, acting on the keys between the key-boards L and N, hold them in their normal position independently of the key-lever.

To the left-hand side of each number-wheel B is fixed a carrying-wheel, O, having a number of peripheral cam-teeth, P, one for and corresponding with each numeral 10 on the number-wheel. The inclined backs of the cam-teeth P on each number-wheel are arranged to engage in succession a correspondingly-beveled head, Q′, formed on the upper end of a cam-lever, Q, which is pressed by a spring, R, against the carrying-wheel, and is pivoted at or near its center to a fixed support, S. The lower end of the cam-lever Q is piv-

oted to the shank of a longitudinally-movable pawl, T, which shank has a lateral offset, T′, and is pressed upward by a spring, T^2, to bring and hold the head of the pawl in engagement with the ratchet-wheel D on the next adjacent number-wheel B of higher denomination. Each cam-tooth P of the carrying-wheel, when it comes into action with the cam lever Q, is arranged to swing said cam-lever so as to throw the pawl T, and thus the adjacent ratchet-wheel D with which it engages, forward the distance of one tooth. Thus as 0, indicating ten, is brought to an aperture C by each number-wheel one is carried to the number-wheel of next higher denomination, and the numeral 1 is visible on the first-mentioned wheel, and so on until the highest number, 9, on the extreme left-hand wheel is reached.

Longitudinal partitions W may be provided, if desired, to separate the keys M, corresponding to hundreds, thousands, &c.

It will generally be found desirable to journal a long crank, I′, transversely in the case below the series of key-levers I, said crank having a squared end, I^2, (see Fig. 3,) projecting through one side of the case for reception of a key, by which the crank may be turned, as indicated in dotted lines in Fig. 1, to lock all the key-levers, and hence the adding mechanism, against accidental or intentional displacement.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, with the casing A, having a key-board and sight-apertures C, the series of number-wheels B, registering with said apertures and each having series of numerals 0 to 9 on its periphery, a projection or tooth, P, on one side in line with the 0 of each series, and a ratchet-wheel, D, having teeth corresponding in number and position with the numerals on the periphery thereof, of the spring-pressed levers I, pivoted below the wheels B and extending under the key-board, the rack-bars carried by said levers and engaging the ratchet-wheels D, substantially as described, the series of nine keys M for each lever I, and each series numbered from 1 to 9, beginning with the outer key, these numbers indicating the number of teeth that the number-wheels will be turned when the keys are depressed to actuate the levers I, and the pivoted spring-pressed cam-levers Q, having beveled heads Q′ at their upper ends acted upon by the projections or teeth P of one wheel, B, and pawls T, pivoted to the lower ends of the levers Q, provided with a spring, T^2, and engaging the ratchet-wheel D of the next wheel B to the left.

CHARLES B. F. LINCOLN.

Witnesses:
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WILLIAM T. BRYAN.