E. L. BILL.

Adding-Machine.

No. 209,644. Patented Nov. 5, 1878.

Fig. 1

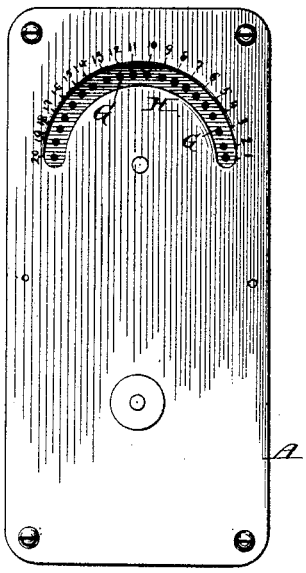

Fig. 2

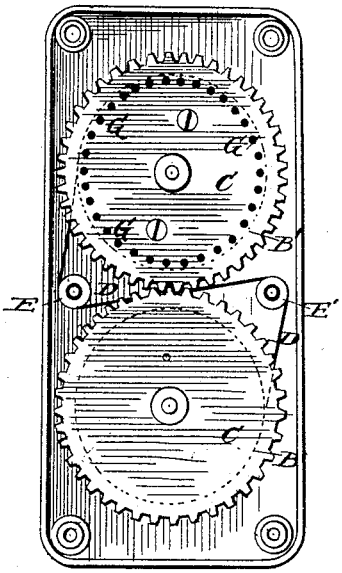

Fig. 3

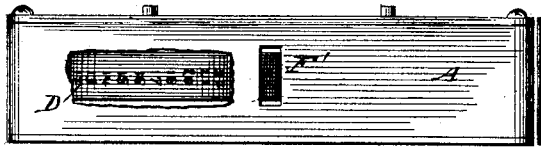

Fig. 4.

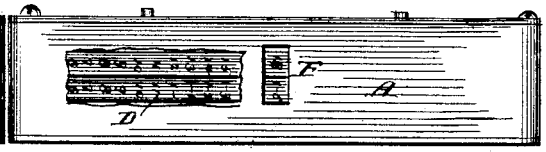

Fig. 5

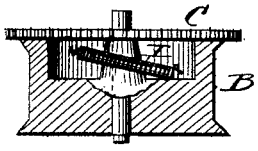

Fig. 6

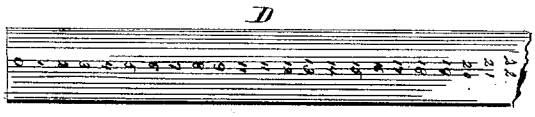

Fig. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

EDWARD L. BILL, OF WHEELING, WEST VIRGINIA.

IMPROVEMENT IN ADDING-MACHINES.

Specification forming part of Letters Patent No. **209,644**, dated November 5, 1878; application filed August 20, 1878.

To all whom it may concern:

Be it known that I, EDWARD L. BILL, of Wheeling, in the county of Ohio and State of West Virginia, have invented certain new and useful Improvements in Calculating or Adding-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan view of my improved calculating or adding machine. Fig. 2 is a similar view, with the face-plate removed. Fig. 3 is a side view, showing one of the viewing-apertures in the case, which is broken away. Fig. 4 is a similar view, showing the other viewing-aperture in the case, with case broken away. Fig. 5 is a detailed view of one of the tape-carrying drums and its spring; and Figs. 6 and 7 are views in detail of a portion of the registering-tape.

Corresponding parts in the several figures are denoted by like letters.

This invention appertains to certain improvements in calculating or adding machines; and it consists, primarily, in the particular arrangement and operation of two toothed drums, one having a tension-spring and a series of apertures or perforations, arranged with reference to a segmental opening in the inclosing-case, around which drums is passed a tape, upon which is impressed or printed columns of figures, viewed through apertures in the case; and, secondarily, in the employment, in connection with one of said drums, of a tension-spring, to take up slack in the tape between the drums, substantially as hereinafter more fully set forth.

In the drawing, A is a case, of any suitable construction and shape. B B′ refer to two drums, hung in the case A, to one side of each of which is affixed a toothed wheel or disk, C C, engaging with each other and imparting a reverse movement to the drums, to cause the winding up of the registering-tape by one during its unwinding from the other. D is the registering-tape, coiled around either one, or partially around both, of the drums B B′. The tape D passes over and under the intermediate rollers or cylinders E E′, respectively, and has printed or impressed upon each side a column or columns of figures, those on one side indicating dollars and cents, or they may have no value attached to them, while those on the other side may represent pounds, shillings and pence, (the English currency,) or other foreign denomination. In the sides or edges of the case A are viewing-apertures F F′, through which may be observed the column or columns of figures upon each side of the tape, so as to perform any addition or calculation desired, either in simple or abstract figures, in United States currency, or in English or other foreign currency, as may be desired, to be more fully understood from the following:

In the face of the disk B′ are a series of perforations or holes, G G, arranged at intervals apart to agree with the spaces between each figure, placed one above the other, or the spaces between each transverse row of figures, which series of perforations G G are reached through a segmental opening or slot, H, in the case A by a pointer or other suitable instrument that will enter the said perforations.

The slot H is preferably graduated or marked off on the face of the case A into twenty equal parts, indicating each a shilling.

By turning the disk or drum B′ with an instrument, as above indicated, equal to any one, two, or more of the spaces between the perforations G G, the corresponding number of figures on the tape D will be exposed through the viewing-apertures F F′, those seen through one aperture, say, F, representing abstract numbers or United States currency, and those seen through the other aperture, F′, representing English or other foreign currency. This operation or turning of the disk or drum B′, with its fellow B, can be repeated, and the addition or calculation proceeded with *ad infinitum*.

It will be observed that, in adding or calculating in English currency or table, by turning the disk B′ the whole length of the slot H of twenty shillings, indicating one pound, the registering of the pounds will agree with the numbers in the United States table seen through the opposite viewing-aperture, there-

by obviating the multiplying of columns or increasing the width of the tape and the enlarging of the case A.

To take up the slack tape between the drums B B′, the drum B is provided with a spring, I, thus keeping it (the tape) constantly under tension when partially coiled upon each drum.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

In a calculating or adding machine, the combination, with the toothed perforated drums B B′, with or without a tension-spring, of the registering-tape D and case A, having the viewing-apertures F F′ and segmental or other shaped slot H, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in the presence of two witnesses.

EDWARD L. BILL.

Witnesses:

JAMES E. WAUGH,

AUGUST PETERSON.