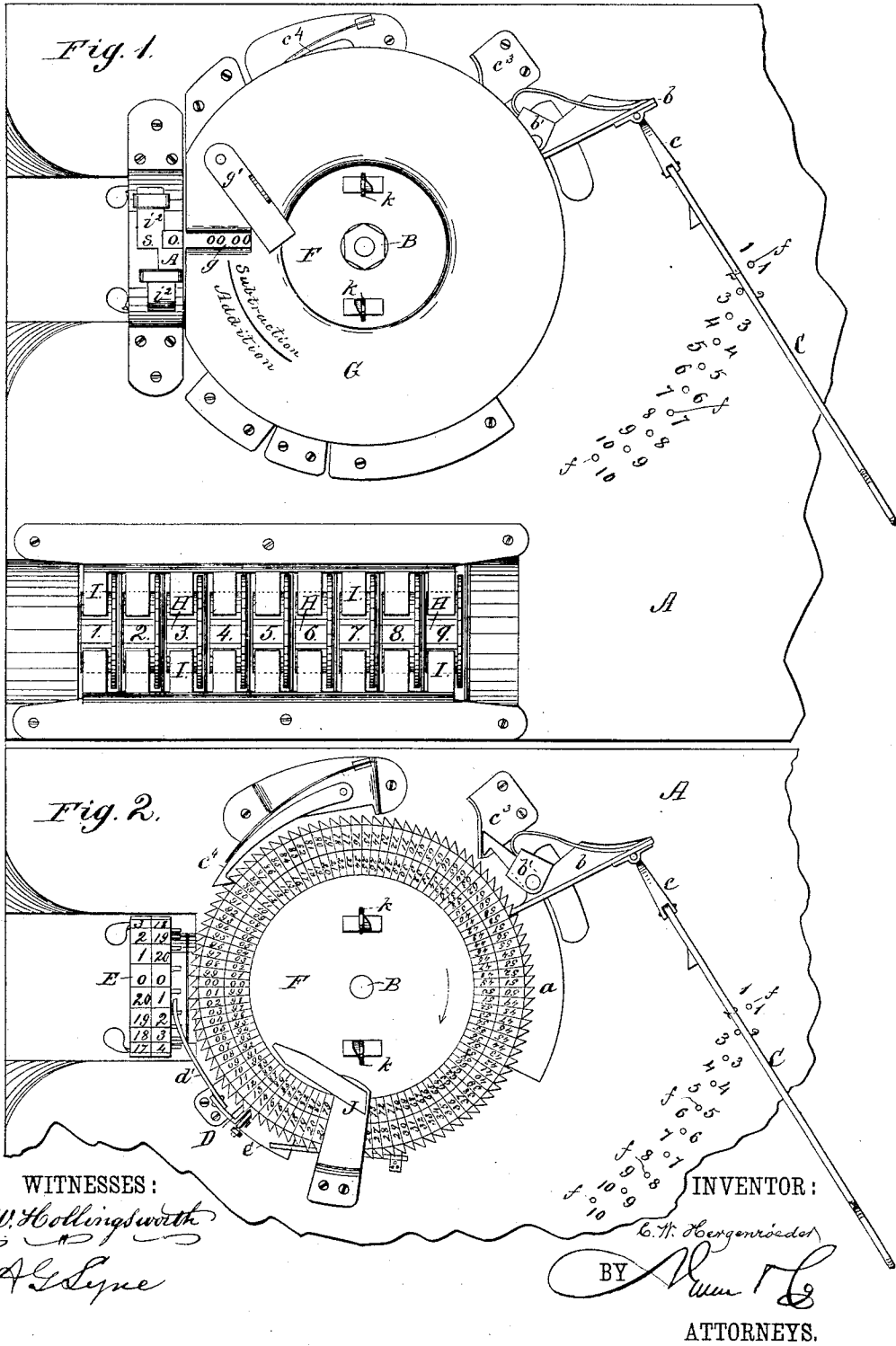


C. W. HERGENRÖEDER.

ADDING MACHINE.

No. 263,904.

Patented Sept. 5, 1882.



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Fig. 3.

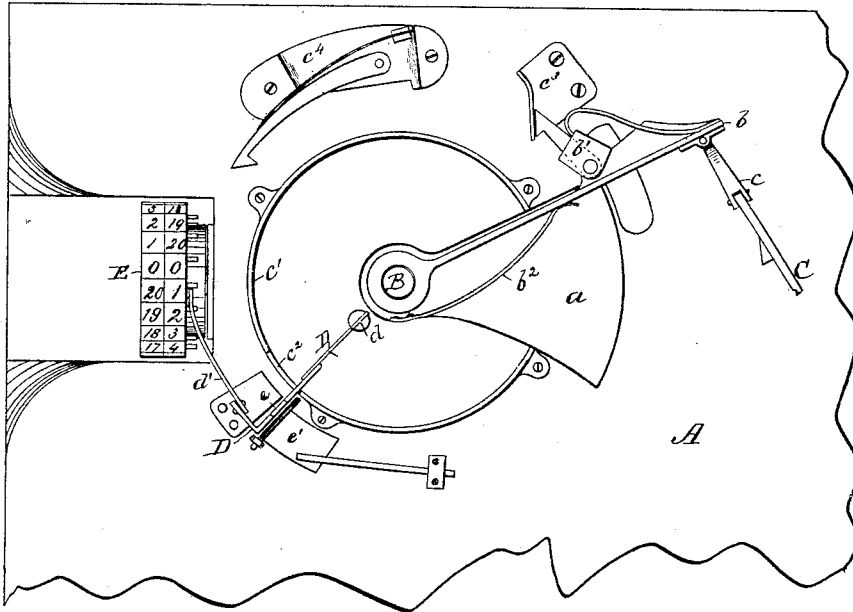


Fig. 4.

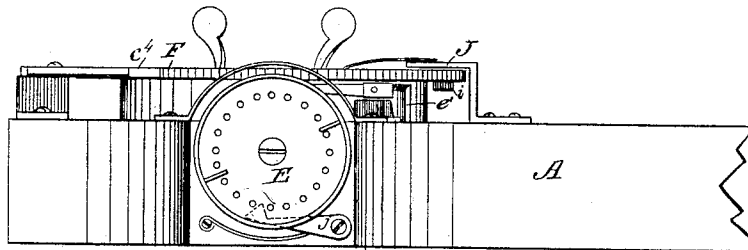
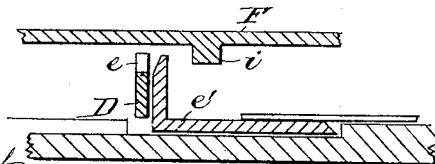


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHRISTIAN W. HERGENROEDER, OF BALTIMORE, MARYLAND.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,904, dated September 5, 1882.

Application filed May 4, 1882. (Model.)

To all whom it may concern:

Be it known that I, CHRISTIAN W. HERGENROEDER, of Baltimore, in the State of Maryland, have invented a new and useful Improvement in Counting-Machines, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, forming part of this specification.

This invention relates to counting-machines in which a ratchet-disk having numerals thereon is rotated by means of a pawl and lever to bring the numerals successively to view through an opening in the case.

The invention consists of certain improved features of construction in a counting-machine of the above general description, as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my invention, showing all the parts in position. Fig. 2 is a similar view with the case removed. Fig. 3 is a plan view with the case and ratchet-disk removed. Fig. 4 is a side elevation with the case removed, and Fig. 5 is a detail sectional view.

A represents a base having a fan-shaped recess, *a*, in its upper surface.

B is a vertical screw or pivot, on which is journaled a lever, *b*, carrying a spring-actuated pawl, *b'*, which lever is adapted to be oscillated against a retaining-spring, *b²*, located in the said recess, by means of the arm C, which is pivoted to a projection, *c*, on the end of the lever. This projection is adapted to have a horizontal movement independent of the lever, and the arm C is so pivoted to the projection that it shall have vertical movement independent thereof. The spring *b²* bears against a portion of the lever which is adapted to fit within the fan-shaped recess, and tends normally to hold the lever to one side of the recess. Around the pivot B is a nearly annular plate or support, *c'*, the ends of which terminate at opposite sides of the recess, and having an opening, *c²*, at a point nearly opposite the said recess, through which opening a spring, D, which is rigidly secured at *d*, is made to extend in such manner that a pawl, *d'*, pivoted thereto shall be adapted to engage with the pegs of the wheel E for counting hundreds. The outer end of the spring is recessed at *e* and rests

against a spring-actuated plate, *e'*. This plate is of angular form, and is hinged at its angle in a recess in the base, and is beveled at the upper edge on the side adjacent to the spring D.

The ratchet-disk F is journaled on the screw B and rests upon the annular plate *c'*, with the spring-actuated pawl *c⁴* in engagement with the ratchet, as shown. The pawl *b'* is normally held out of engagement with the ratchet by means of the guide-plate *c³*.

The arm C, by means of the projection *c*, is adapted to be placed in contact with any one of the ten pins *f* which are secured to the base A. These pins are numbered, as shown, and are arranged along a curved line in such manner that the pins having the higher number shall be successively remoter from the end of lever *b*, and the movement of the lever by arm C shall be limited by a lug on the arm coming in contact with the pin. These parts are all to be carefully measured and arranged in the construction of the device, so that every movement of the arm shall cause the disk to rotate a given distance for every pin that arrests the lever, and as the disk is to have just one hundred teeth the number of teeth representing the distance of any movement of the disk shall correspond to the number of the pin which arrests the lever in a given movement. The pawl *c⁴* serves to prevent the disk from being rotated backward. The disk is provided with two series of numerals, from one to a hundred, arranged in reverse order from each other, so that the numbers of one series shall increase and those of the other decrease when the rotating disk is viewed through a slot, *g*, in the top of the case G. The series of increasing numbers is to be used in addition and the other in subtraction, the series not used being concealed by a pivoted slide, *g'*. On the under surface of the disk is a lug, *i*, which once in every revolution of the disk comes in contact with the plate *e'* and tilts it against the spring D, and thus moves the spring-actuated pawl *d'*, which pawl is adapted to push against a peg on the wheel E, and thus rotate the wheel to a corresponding extent, there being likewise two series of numbers on the wheel, arranged in reverse order, which are successively brought into view through an opening in the case covering the wheel. A slide, *i²*, is adapted to ex-

pose the numbers of one series at a time, as may be desired. The lug *i* is allowed to slip through the opening *e* of the spring D when the latter has been moved sufficiently far to rotate the wheel one peg, and a pawl, *j*, arranged underneath the wheel, is adapted to engage with the pegs to prevent the wheel from being turned backward. A spring, J, is adapted to press upon the upper surface of the disk, above the spring D, to hold the disk steady and insure the proper action of the lug thereon.

The machine is operated in the following manner: The disk is to be set by turning the same forward by means of the projections *k*, extending through the case until the numeral 0 is brought to view. Then, supposing the numbers eight, seven, and nine are to be added, the arm C is to be placed in contact with the pin numbered 8 on the right side thereof, and drawn toward the operator until the movement is arrested by the lug on the arm coming in contact with the pin. This movement will bring the number 8 to view by the corresponding movement of the disk. Then the arm is to be placed on the right side of the pin numbered 7 and drawn toward the operator in the manner already described, which will cause the disk to rotate until the number 15 appears to view, and in the same manner, when the arm is drawn in contact with pin number 9, the disk will be rotated nine teeth, bringing the number 24, the sum of the three numbers, into view. The operation of subtraction is performed in the same manner, the decreasing series of numbers being observed instead of the increasing series. When the sum of the numbers to be added exceeds one hundred the complete revolution of the disk which rep-

resents one hundred will be recorded on the hundreds-wheel by the mechanism above described in that connection. The wheel is to be set so that the first movement thereof will bring the number 1 to view, which number will represent one hundred, and any excess of that number less than a hundred will be read on the disk, the wheel and the disk thus giving the sum total.

For convenience in keeping the numbers to be added or subtracted before the operator, I provide a series of rollers having numbers thereon, which rollers H are arranged in a recess in the base, as shown in the drawings, and partially concealed by overlapping flanges I.

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

1. In a counting-machine, the combination, with the ratchet-disk, of the spring-retained lever carrying a pawl, the guide-plate for the pawl, the oscillatory arm having a lug thereon and connected to the lever, and the series of pins numbered and arranged substantially as shown and described.

2. In a counting-machine, the combination, with the ratchet-disk having a lug, *i*, on its under surface, of the pegged wheel E and spring-actuated pawl in engagement therewith, and the spring-actuated plate in contact with the spring of the said pawl, substantially as shown and described, and for the purpose set forth.

CHRISTIAN W. HERGENROEDER.

Witnesses:

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