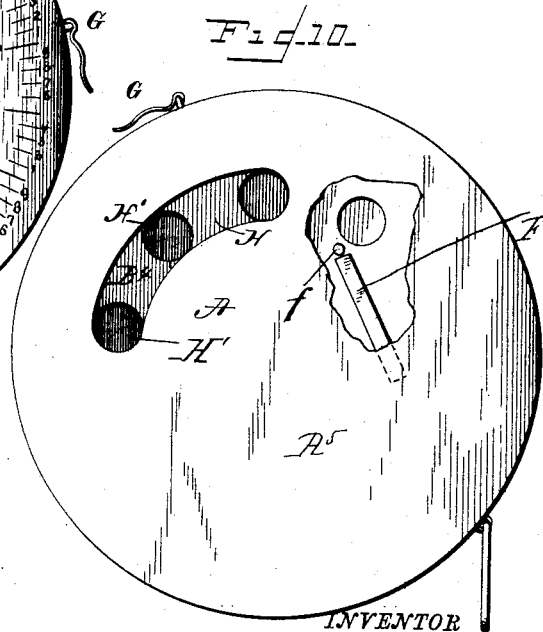
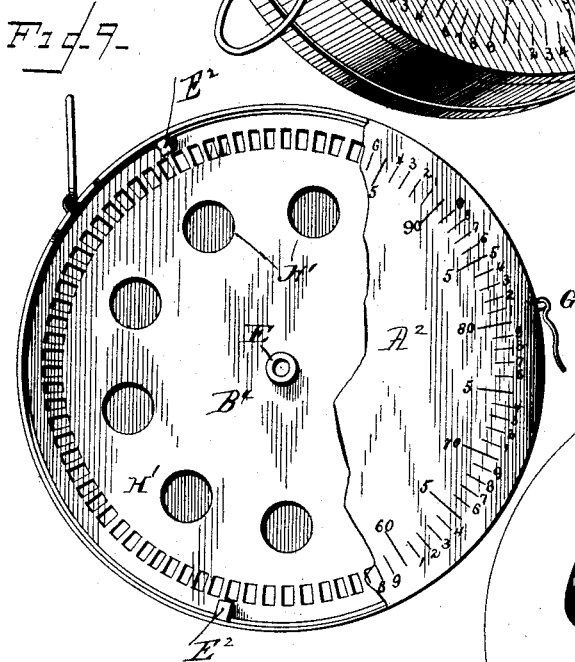
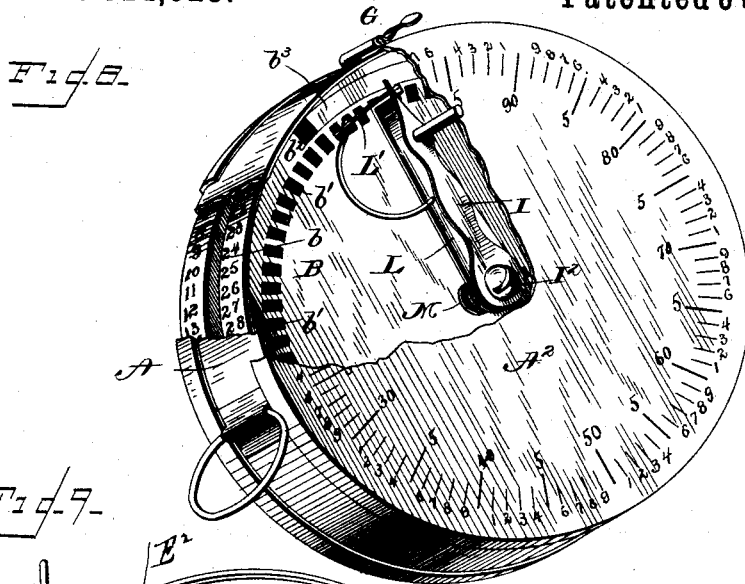


B. M. BARNES & C. E. SHAPLEY.
 ADDING MACHINE.

No. 344,025.

Patented June 22, 1886.



WITNESSES

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BROWN M. BARNES AND CHARLES E. SHAPLEY, OF DRYDEN, NEW YORK.

ADDING-MACHINE.

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Application filed June 8, 1885. Serial No. 168,003. (No model.)

To all whom it may concern:

Be it known that we, BROWN M. BARNES and CHARLES E. SHAPLEY, of Dryden, county of Tompkins, State of New York, have invented certain new and useful Improvements in Adding-Machines, of which the following is a full and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of the device complete. Fig. 2 is a face view, partly in section, showing the means for transmitting motion from the units and tens disk to the hundreds and thousands disk. Fig. 3 is a perspective view of the cover, taken from the inner side. Fig. 4 is a partial sectional view showing the spring for holding the hundreds and thousands disk in engagement with its operating-pinion, and also the device for throwing the same out of engagement therewith, in full and dotted lines. Fig. 5 is a perspective view of the device for throwing the hundreds and thousands disk out of engagement with its operating-pinion, and Fig. 6 is a section of the units and tens disk, taken from the under side, showing the notch or opening therein which engages the pinion which communicates motion to the hundreds and thousands disk, and also the pin or projection thereon for actuating the spring or dog which holds or locks the pinion. Fig. 7 is a view of a portion of the bottom of the case, showing the slot or opening through which access is obtained to move the hundreds and thousands disk by hand. Fig. 8 is a perspective view of the device, with a portion broken away to show the pawl for operating the units and tens disk. Fig. 9 is a face view of the same, also partly broken away. Fig. 10 is a rear view, showing the slot therein and the perforations in the hundreds and thousands disk by which the same is set.

Our invention relates to that class of instruments, known as "adding-machines," employing two or more peripherally-numbered disks, the first denoting units and tens and the second hundreds and thousands, and in which a complete revolution of the first disk, through suitable mechanism, is made to move the second disk one point to denote the hundreds; and our invention consists in a novel construction of disks; in a novel means for communicating motion from the units and tens disk to the hundreds and thousands disk; in a novel

device for locking and releasing the hundreds and thousands disk at each complete revolution of the units and tens disk; in a novel means for holding the hundreds and thousands disk in engagement with its operating-pinion, and the combination therewith of means for throwing said disk out of engagement with its operating-pinion; in a novel means for setting the disks, and to certain details in the construction and arrangement of parts, all as hereinafter explained.

The case A, in which the disks and their operating mechanism are mounted, is preferably made in cylindrical form, and may be formed by having the rim or flange A' connected to the head or bottom A⁵, as shown, or by having said rim or flange stamped or formed in a single piece with said head, and is provided with a suitable cap or cover, A², having inscribed upon its face, near its outer edge, a series of lines radiating from the center, and with suitable figures opposite said lines from 0 to 99, as hereinafter referred to.

The units and tens disk B is provided with a rim or flange, b, formed thereon by being either stamped up in forming the disk or by being spun thereon, and upon the periphery of which flange is suitably inscribed or marked the figures from 00 to 99. This disk is also provided near its outer edge adjacent to the rim with squared or elongated perforations b', arranged opposite and corresponding to the figures upon the periphery of the rim or flange, and which perforations extend entirely around the circle of the disk, their side faces being preferably cut on lines radiating from the center of the disk, the dividing-walls between said perforations forming teeth with which the actuating-pawl, hereinafter referred to, engages for moving or revolving said disk. This units and tens disk is further provided with a single perforation, b², outside of and between the circle of perforations b' and the rim, and at such a point as to engage the actuating-pinion C of the hundreds and thousands disk at each complete revolution of the units and tens disk. The disk is cut from points near the upper and lower edges of this perforation b² in such manner as to form a spring or yielding tongue, b³, at one side of said perforation, to permit the tooth of the pinion C, after being engaged by the perforation, to actuate the same to escape therefrom.

The hundreds and thousands disk B⁴ is con-

structed in a similar manner to the units and tens disk, having a series of perforations, but which perforations are formed on a circle corresponding to the distance from the center that the single perforation b^2 is cut in the units and tens disk, and with which perforations the pinion C engages.

The pinion C, for actuating the hundreds and thousands disk, is mounted in suitable bearings, C'. (Shown in this instance as connected or suspended from the flange of the casing.) This pinion is provided with any desired number of teeth, and is revolved by being engaged by the perforation formed in the units and tens disk at each revolution thereof. A spring locking-dog, D, is connected to the frame of the bearings C' in such manner as to engage the teeth of the pinion to hold the same from turning, said dog being actuated or moved out of engagement with the pinion at each complete revolution of the units and tens disk by means of a pin or stud, D', projecting from the inner face of said unit and tens disk, and arranged in such position thereon as to throw said dog out of engagement just as the pinion is engaged by the perforation b^2 .

The bearing for the pinion, as before stated, is shown as suspended from the rim of the case, as this construction has been found the most desirable in practice; but, if desired, however, the bearings may be connected to the center shaft, or arranged in any preferred way, the actuating tooth or perforation b^2 , as also the perforations in the hundreds and thousands disk, being cut in the disks to correspond thereto.

The hundreds and thousands disk is mounted in the case upon a short shaft, E, secured to the bottom of the casing, with its projecting rim toward the bottom of the case, being held from outward displacement by means of guide pins or lugs E^2 , secured to the rim of the case in any preferred way, and being held closely engaged therewith by means of a flat spring, F, secured to the bottom of the case, and arranged thereon at a point near to the operating-pinion to hold the disk in engagement therewith. These pins also serve as a support for the units and tens disk, and also hold the two disks apart, or in proper relation to each other. A pin or projection, f , is secured to the inner face of the hundreds and thousands disk, at such a point thereon as to engage the spring F in the revolving movement of the disk, and which pin, in connection with the spring, serves the double purpose of giving an alarm, when the hundreds and thousands disk has made a complete revolution, by the dropping of the spring from off the pin, and as a means for setting said disk when the same is moved backward by hand, by the pin coming in contact with the free end of the spring, at which point the 0 0 on the rim of the disk are exactly opposite the aperture in the rim of the casing, and in position to be started in the forward direction. A shipping-latch, G, is pivoted to the case at a point slightly in

advance of the operating-pinion C, and projects into the case through an opening formed in the rim thereof, said projecting end being curved in such manner that when the thumb end of the latch is raised the inner end will engage the face of the disk B^4 and force the same backward, overcoming the tension of the spring F, and throw the disk out of engagement with its operating-pinion, permitting said disk to be turned by hand. To permit this resetting of the disk by hand, the head or bottom of the case A^3 is slotted, or provided with an opening, H, and the disk B^4 is provided with a series of openings, H', arranged in a circle at such distance from the center as to come opposite the opening H, by which arrangement it will be readily seen that when the disk is disengaged from its operating-pinion by means of the latch, by inserting the finger, a pencil, or other suitable device through the opening H into any one of the openings H' the disk can be turned so as to bring the 0 0 opposite the opening in the case, as before stated.

The units and tens disk is placed in the case with the rim thereon projecting outward, so that the flat surfaces of the disks shall be adjacent to each other, which permits the device to be brought into more compact shape.

The hand or pointer I is secured by means of a screw, I^2 , to a short shaft, I', which projects through the case. This shaft has also rigidly secured to it upon the inner side adjacent to the cover an arm, L, which carries upon its outer end a spring-pawl, L', which engages the perforations b' in the units and tens disk to revolve the same.

As the pointer and arm which carries the pawl are both rigidly secured to the shaft, it will be readily seen that when the pointer is moved from the starting-point on the face of the cap or cover any number of points the units and tens disk will be carried by the spring-pawl forward an equal distance or number of points and register a corresponding number through the opening in the rim of the case. The shaft I' also serves as the bearing or pivot on which the units and tens disk revolves. A spiral spring, M, is mounted on the shaft I', and serves to hold the units and tens disk in proper position and against the operating-pinion of the hundreds and thousands disk with a yielding pressure. A spring-stop, N, is secured to the inner side of the cap or cover, which is provided with a thumb-piece, n , which projects out through an opening in said cap. A pin, N', is secured to the rim of the units and tens disk B at a suitable distance from the starting-point, said stop and pin being used in setting the units and tens disk, which is accomplished by pressing the stop inward by means of the thumb-piece and turning the pointer from right to left until the pin N' engages with the stop N, which will bring the cipher on the disk opposite the aperture in the casing, when, by returning the pointer to the stop on the face, or opposite the

cipher thereon, the machine will be ready for operation.

The operation is as follows: After the machine is set with the ciphers on both disks 5 opposite the apertures in the rim of the casing and the pointer against the stop on the cap or dial plate, by moving said pointer forward to any figure on the dial a corresponding number will be exhibited through the apertures in the case. When the units and tens disk has nearly completed one revolution, or registered between 90 and 95 points, the pin or stud D' on said disk will commence to engage the spring locking-dog D and to force the same 15 out of engagement with the operating-pinion, and in the continued forward movement of said disk, and just as the number 99 is registered, the locking-dog will be thrown entirely out of engagement, at which point the perforation b' 20 will engage the pinion, which having been released momentarily is carried or turned by the continued forward movement of the units and tens disk sufficiently to move the hundreds and thousands disk one point, at which time 25 the pin or stud D' is disengaged from the locking-dog, which immediately re-engages the pinion and locks it and the hundreds and thousands disk until the units and tens disk has made another complete revolution, when 30 the operation is repeated.

From the foregoing description it will be seen that the hundreds and thousands disk is operated positively through the units and tens disk once at each revolution thereof, and is 35 locked securely in place during the other portion of the movement.

We do not wish to limit ourselves to the particular construction and arrangement of parts shown and described, as it will be readily seen 40 that various modifications may be made therein without departing from the spirit or intent of our invention.

Having now described our invention, we claim—

45 1. The combination of the peripherally-numbered revolving disk, having the circle of openings cut therein corresponding to the numbers on the rim or flange, a cover for the case in which the disk is mounted, having the 50 radial lines and numbers marked thereon corresponding to the numbers on the disk, a pointer or index-finger to move over the outer face of the cover, and a spring-pawl having a fixed relation to the pointer, arranged within 55 the case to engage the circle of openings as the pointer is moved in one direction, and to ride over the same when moved in the opposite direction, substantially as and for the purpose set forth.

60 2. A disk provided with a circle of openings, and a single opening outside of the circle of openings, the pointer provided with an actuating-pawl to engage said circle of openings and to operate the disk, in combination 65 with a second disk provided with a circle or series of openings, and a pinion in engagement with the second disk, and adapted to

engage the single opening in the first disk at each revolution of the same, substantially as and for the purpose set forth. 70

3. The combination of a disk having a single opening formed therein, and a circle of openings through which the same is revolved, a second disk having a circle or series of openings, a pinion interposed between said disks 75 for communicating motion from one to the other, a spring locking-dog for engaging the pinion, and mechanism for throwing said dog out of engagement with the pinion at each complete revolution of the first disk, substantially as and for the purpose set forth. 80

4. The combination of a case, a disk mounted therein, a pinion for actuating the disk, and a spring secured to the case and having its free end engage the disk, for holding the 85 same engaged with the actuating-pinion, substantially as and for the purpose set forth.

5. The combination of a case, a disk mounted therein, a pinion for operating the disk, a spring for holding the disk engaged with the 90 pinion, and a pivoted latch secured to the case, and adapted to engage the disk to throw the same out of engagement with the pinion, substantially as and for the purpose set forth.

6. The combination of a case having the 95 slotted openings in the lock thereof, a disk provided with a circle of circular openings, a pinion for operating the disk, a spring for holding the disk engaged with the pinion, and a pivoted latch secured to the case and 100 adapted to be engaged with the disk to throw the same out of engagement with the pinion, substantially as and for the purpose set forth.

7. The case or cover having the stationary 105 short shaft connected thereto and carrying one disk, in combination with the moving pointer or index-finger provided with a similar short shaft, said shaft carrying the second disk, whereby the pointer and shaft carried 110 by said pointer may be revolved independently of the stationary shaft and the disk mounted thereon, as set forth.

8. The combination of a disk having a circle of openings and a single opening formed 115 therein, a yielding tongue formed at the edge of the single opening, a pinion, and a second disk operated by said pinion through the single opening in the disk, substantially as and for the purpose described. 120

9. The combination, with the case or cover, of the disks mounted therein, the lugs or pins projecting from the case for holding the inner disk in place and as a support for the outer disk, the spring secured to the case for holding 125 the outer disk in contact with the pins, and its operating mechanism, substantially as described, for operating the disks, as set forth.

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Witnesses:

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