

United States Patent Office.

FRANK T. LEILICH, OF FREDERICK, MARYLAND, ASSIGNOR TO HIMSELF
AND MICHAL LEILICH, OF SAME PLACE.

Letters Patent No. 106,701, dated August 23, 1870.

IMPROVEMENT IN ADDING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, FRANK T. LEILICH, of Frederick, in the county of Frederick and State of Maryland, have invented certain Improvements in Adding-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawing making part of this specification, in which—

Figure 1 is a plan view of my improved machine complete.

Figure 2 is a plan view with the numbered rims and dial-plate removed to show the carrying mechanism.

Figure 3 is a plan view, the dial-plate being removed to show the construction and arrangement of the numbered rims.

Figure 4 is a central vertical section.

The same letters are used in all the figures to indicate identical parts.

This invention relates to a machine for adding up one, two, three, four, or more columns of figures; and

My improvements consist in the construction, combination, and arrangement of various parts thereof, as will be more specifically set forth in the following specification and claims.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the annexed drawing—

A represents the base-plate, upon which the various parts of the machine are arranged, it being made of any suitable material. When wood is used, as shown in the present instance, a metallic plate, *a*, is secured in its upper surface across the center, in which to form a suitable support for the center-pin *A*.

The units and tens wheel B is arranged upon the center-pin in such a manner that it may require the application of some little force to turn it thereon. It is a circular plate with the numbers 00 to 99 engraved or stamped upon it near its edge, increasing from left to right, and arranged at regular distances apart.

Opposite to each number a pin-hole, *b*, is bored in the disk, as shown. Directly under the figures 99 a short stud, *B*, is secured in the under surface of this disk, which, during every entire revolution thereof, comes once in contact with a projection on the lever *E*, and carries the latter forward far enough to cause its pawl to move the hundreds and thousands rim forward one number.

C is an annular rim or ring arranged upon the base-plate around the disk or wheel B, and may be held in position by three or more pins set around its inner periphery, or an annular ridge on the base-plate, or both, as shown. It is, near its inner periphery, numbered and provided with pin-holes, *c*, like the disk B, and has a projection, *C*, upon its under side for acting, by means of an intermediate lever and pawl, upon the ten thou-

sands and hundred thousands rim. Its outer periphery has one hundred ratchet-teeth pointing from right to left, one being opposite each number and pin-hole.

The pawl *C*, arranged upon a metallic plate in the recess in the base-plate, engages with every ratchet-tooth in succession as the rim is revolved from left to right, and prevents it from turning in the opposite direction, a spring, *C*, being employed in the usual manner to hold the pawl to its work.

D is the ten thousands and hundred thousands rim, arranged upon the base-plate around and in the same manner as the rim C, to which it is in all respects similar, except that it is larger, and that, it being the outermost rim in this instance, the stud upon its under side is omitted, and instead of the number 00 the number 100 is stamped upon it. A pawl, *D*, with actuating spring *D*, serves to hold this rim in position.

E is a bar or lever pivoted at its inner end at *e* upon the metallic plate which covers the recess in the base-plate, shown in fig. 2. It is arranged to lie under the disk and ring, and extends from its pivotal point outward some distance beyond the ratchet periphery of the rim C. Near its outer end a pawl, *E*, is pivoted upon it, said pawl being thrown into the recesses between the ratchet-teeth of the rim C by a spring, *E*.

Another and stronger spring, *E*, acts upon the lever itself, causing it to abut against a stop, *e*, when not acted upon by the stud of disk B.

A projection, *E*, is formed upon the upper surface of the lever, which is so constructed and arranged with reference to the stud *B* that, on the latter coming in contact with the former in revolving the disk B, it shall oscillate the lever sufficiently to cause its pawl *E* to move the rim C forward one number, and then release the projection upon which the spring *E* will return the lever to its original position. Another stop, *e*, may be used to control the movement of the lever, so that on its projection being struck, the force of the concussion may not turn it too far.

A similar lever, *F*, with pawl *F*, springs *F* and *F*, projection *F*, and stops is used for operating through the stud *C* upon the rim D.

It will be observed that the independent pawls *C* and *D* are necessary in order that the pawls *E* and *F* may not carry the rims back with them when the levers to which they are attached are returned.

G represents the dial-plate, which is an annular rim of sufficient width to cover the rim D and a portion of the rim C, as shown, upon which it is superimposed, and then screwed to the bed-plate. It is numbered from 00 to 99, from right to left. Opposite the number 50 square openings *G* and *G* are cut in it large enough to expose each, respectively, one number on the underlying rims D and C, and a sectoral slot, *G*, running from its number 00 to 25, or farther, exposes a number of the pin-holes in the rim D.

H is a bar, pivoted upon the center-pin, and extending across the disk B. One end of it terminates near the pin-holes in such disk, and has a square opening, H', cut in it to expose a number thereon. Its other end extends to just beyond the pin-holes in rim C, and serves as a stop. A short stop, h, secured in the bed-plate, holds it in position at this end, which position is such that every time it stops the movement of the pin by which the disk and rim may be revolved, such pin is directly opposite the number 00 on the dial-plate. It will be seen that this arrangement also brings its opening H' in the same radial line with the openings G¹ and G² in the dial-plate.

To add up a column of figures the disks are first set so that the numbers exposed in the openings G¹, G² and H' correspond with the first or upper row of figures. The next row is added by putting a pin in the plate B opposite the number on the dial-plate, which corresponds with the units and tens of the row, and turning the disk until the pin comes in contact with the bar H. It is then withdrawn and inserted in the rim C opposite the number on the dial-plate which corresponds with the hundreds and thousands of the row to be added, and said rim is turned like disk B. The ten thousands and hundred thousands of the row are added by using the pin for turning the rim D in the same manner as rim C. If the sectoral slot in the dial-plate does not extend to as high a figure as is to be added, the rim is moved twice, or oftener, until it has been forward the required number of divisions.

The result, after all the succeeding rows of figures have been added in the same manner, can then be read off in the openings G¹, G², and H'. Every time each inner wheel or rim counts up one hundred, it moves its next outer rim one number forward, and thus carries.

This particular machine enables the operator to count up six columns of figures, but by multiplying the rims its capacity may be increased indefinitely.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The combination of the stationary bar H, disk and ratchet-rims B C D, revolving independently of each other and stationary dial-plate G, all arranged and operating substantially in the manner set forth.

2. The combination of the stud B¹, lever E with projection E¹, pawl E², and spring E³, substantially as and for the purpose set forth.

3. The arrangement of the stationary bar H H' upon the disk B, with reference to the openings G¹ and G² in the dial-plate, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK T. LEILICH.

Witnesses:

JAMES J. ENGLISH,
JOHN T. DRONEBURG.