(No Model.)

# L. W. SWEM.

## ADDING MACHINE.

No. 343,506. Patented June 8, 1886.

Fig. 1.

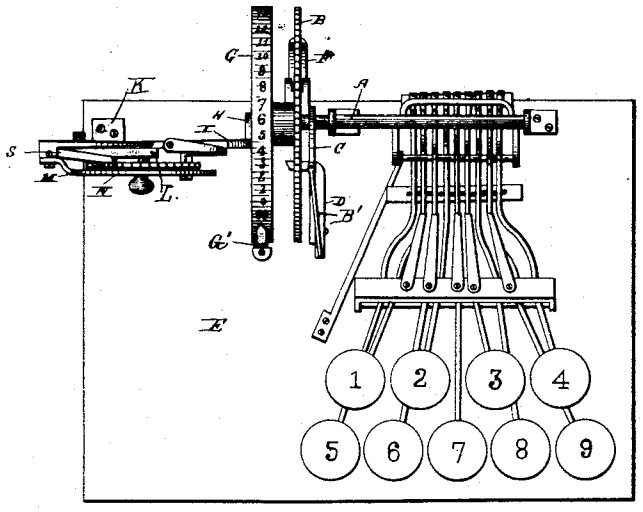



Fig. 2.

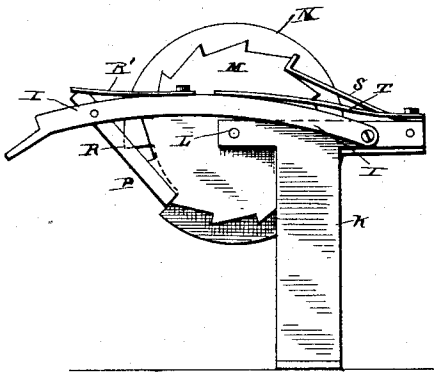


Fig. 3.

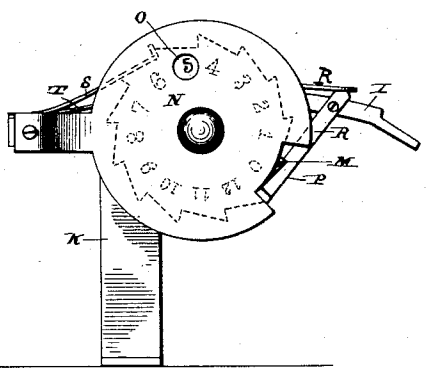
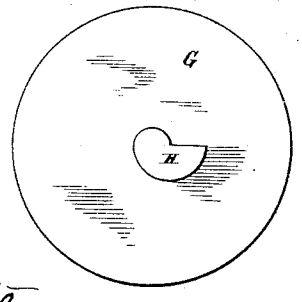


Fig. 4.



Witnesses
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# UNITED STATES PATENT OFFICE.

LAWRENCE W. SWEM, OF WEST LIBERTY, IOWA.

## ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,506, dated June 8, 1886.

Application filed November 23, 1885. Serial No. 183,740. (No model.)

*To all whom it may concern:*

Be it known that I, LAWRENCE W. SWEM, a citizen of the United States, residing at West Liberty, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in adding-machines, and is designed as an improvement over the device for which Letters Patent were granted to me on October 6, 1885, and numbered 327,970.

The object of the present improvement is to provide a means whereby all amounts less than, say, one hundred, are indicated by one device in the machine, and specified groups (say hundreds) are indicated by another device, the first being operated by keys, as is usual in machines of this character, and the latter being operated by the first, somewhat on the general plan of multiple indicators.

In the drawings, Figure 1 represents a plan view of the device comprising the entire machine; Figs. 2 and 3, detail elevations of the indicator for the higher amounts, as viewed from opposite sides; and Fig. 4, a detail view of the indicator for the lower amounts, showing the cam for operating the device shown in Figs. 2 and 3.

There being no improvement in the keys and their connection, no specific description will be given, as they have only a general relation to the improved parts.

The rock-shaft A, which is operated to move more or less by the keys, has on it, near one end, a ratchet-wheel, B, turning freely or loosely thereon, and provided with a specific number of teeth, ordinarily one hundred. On the said shaft is secured a radial arm, C, which has pivoted to its outer end a pawl-arm, D, retained in normal engagement with the teeth of the ratchet-wheel B by a spring, B′, on the arm C. On the base E is also secured a spring-actuated retaining-pawl, F, which prevents any reverse movement of said ratchet-wheel. Secured to the ratchet-wheel, so as to turn with it, is a disk, G, having a series of numbers (one to ninety-nine) on its periphery. As the ratchet-wheel B is turned a distance equal to from one to nine teeth, the disk G will be carried a corresponding distance, and by means of a suitable indicator, G′, the amount can be readily ascertained. The ratchet and disk being mounted on the rock-shaft, additional bearings are dispensed with, thus producing a somewhat simpler construction than shown in the patent above referred to.

On one side of the disk G is secured a cam, H, on which rests one end of an arm, I, the other being pivotally supported on a post, K, erected on the base E. The post K has on top an extension, L, which supports a ratchet-wheel, M, with a specified number of teeth, say twelve, and a plate, N, with an orifice, O, through which may successively be seen numbers on the said ratchet-wheel M, corresponding in position to the teeth thereon. The plate N has a portion of the side cut away, as shown at P, so as to expose the teeth on the wheel M. From the arm I depends pawl R, the end of which travels in the recess P and engages with the teeth on the wheel M. The pawl R is kept in engagement with the teeth by a spring, R′, secured to the arm I and engaging with said pawl. A spring-catch, S, prevents backward movement of the wheel M, and a spring, T, keeps the free end of the arm I in engagement with the cam H. When the disk G has revolved once, the cam H has raised the arm I till it has reached the apex of said cam and traveled sufficiently to carry the pawl R from one tooth of the wheel M to another. The cam being radially straight on one side, the said arm drops, aided by the springs, and carries the wheel M with it, thus causing whatever number that was presented at the orifice O to be replaced by the next succeeding. Thus it is evident that if there be ninety-nine numbers on the disk G and fourteen on the wheel M, any amount from one to fifteen hundred may be indicated, and addition of amounts till the said sum is reached easily and rapidly accomplished without mental labor.

The present improvements obviate the use of the cylinder in the former patent, and also give a wider range.

I claim—

Combined with a ratchet-wheel, a suitable operating key system, a disk provided with numbers thereon and secured to the said wheel,

a cam secured to said disk, a ratchet or toothed wheel carrying numbers, a plate covering said numbers and having an orifice and side opening, and a spring-retained pawl-carrying arm operating said toothed wheel and engaging with the cam, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

LAWRENCE W. SWEM.

Witnesses:
CHAS. D. DAVIS,
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