

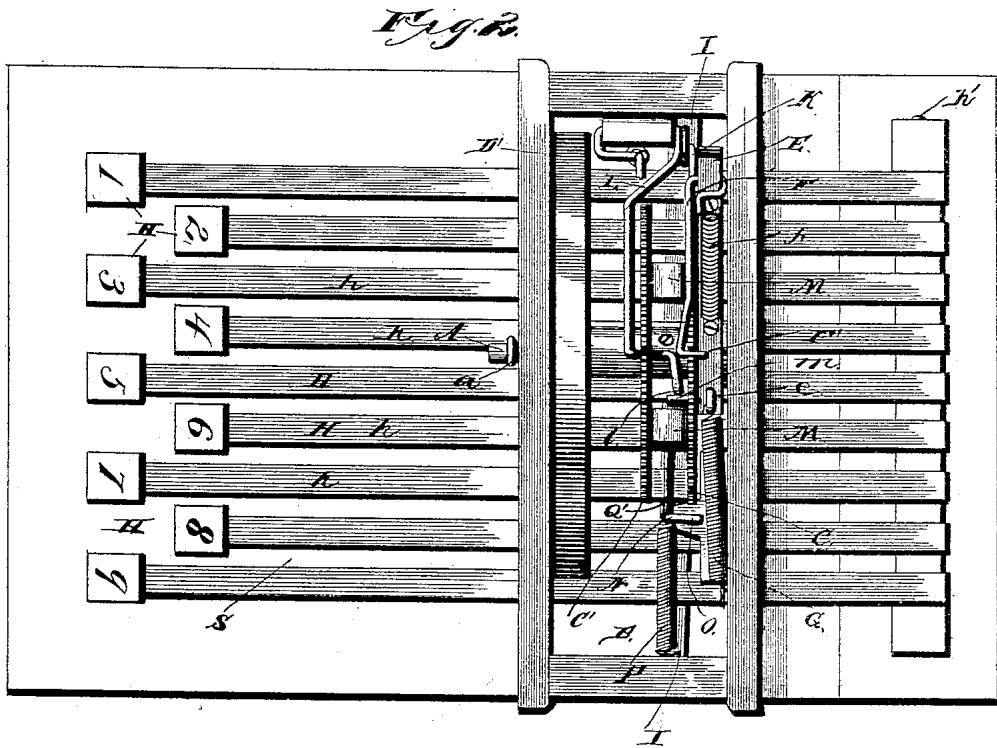
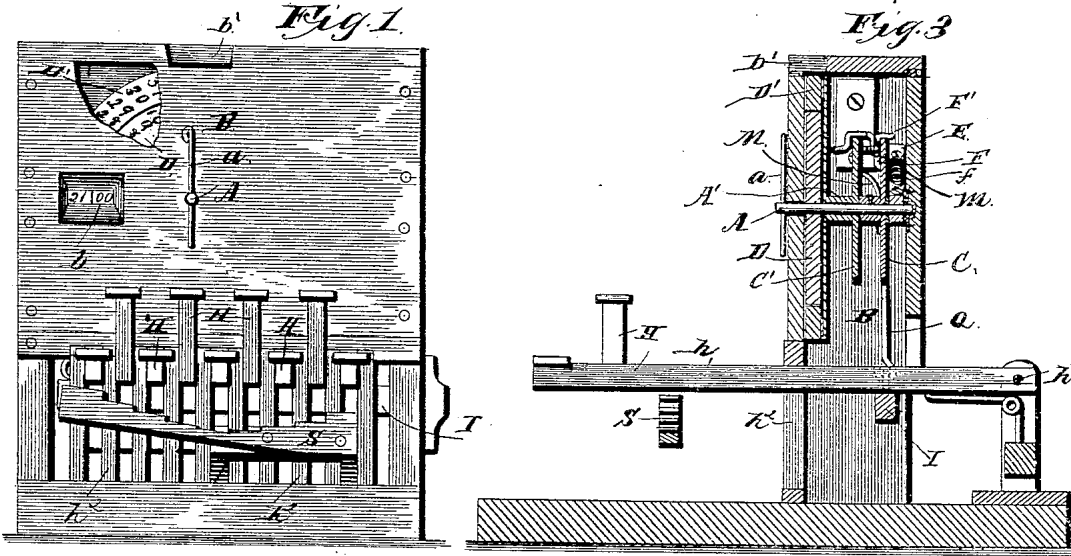
(No Model.)

2 Sheets—Sheet 1.

W. SNIDER.  
ADDING MACHINE.

No. 394,219.

Patented Dec. 11, 1888.



Witnesses,  
*Geo. J. [Signature]*  
*A. E. [Signature]*

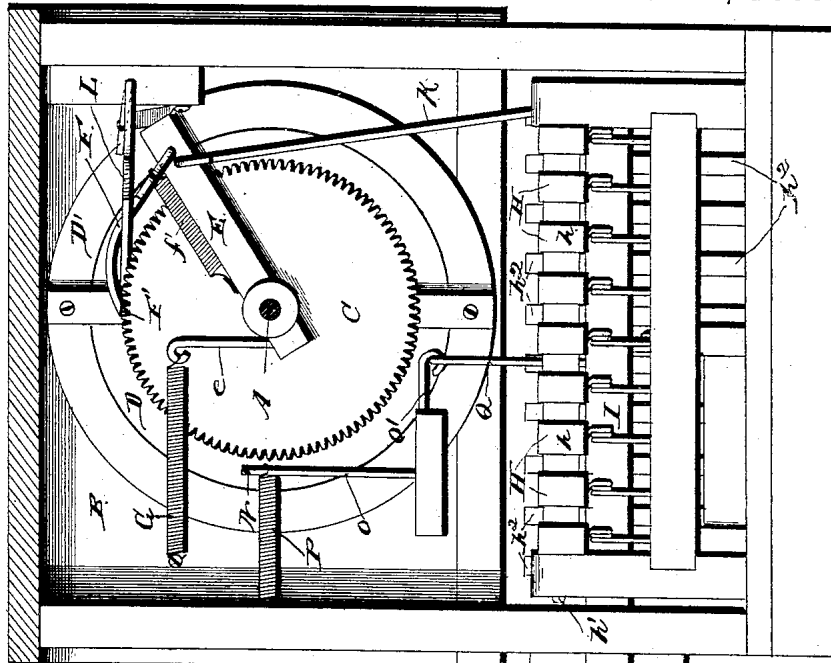
Inventor,  
*Wilson Snider.*  
 By his Attorneys  
*C. H. [Signature]*

W. SNIDER.  
ADDING MACHINE.

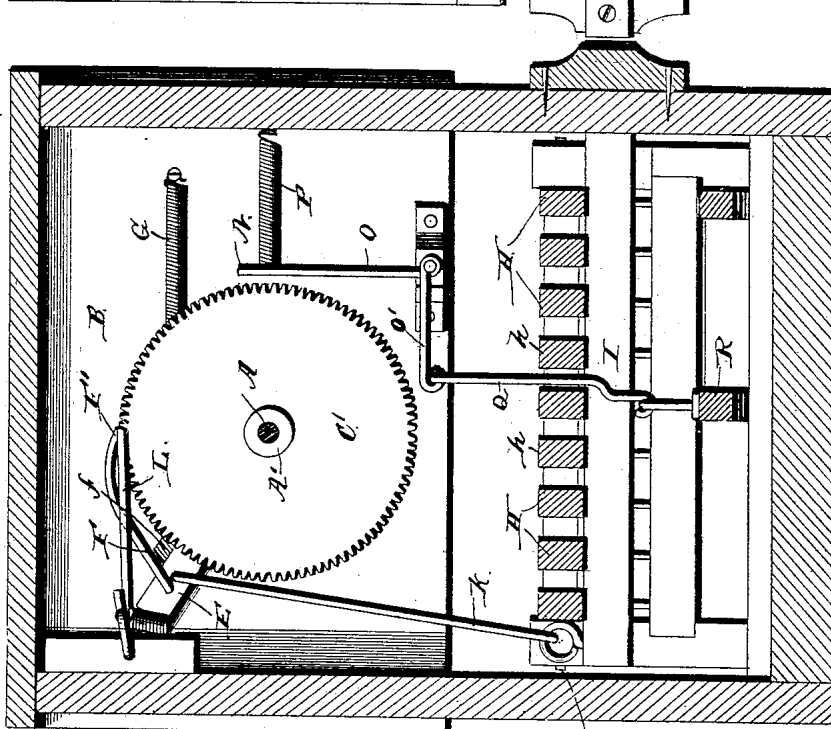
No. 394,219.

Patented Dec. 11, 1888.

*Fig. 5.*



*Fig. 6.*



Witnesses.  
*Geo. J. Hooper*  
*C. Doyle*

Inventor,  
*Wilson Snider.*

By his Attorneys  
*C. A. Howler*

# UNITED STATES PATENT OFFICE.

WILSON SNIDER, OF MARBLE HILL, MISSOURI, ASSIGNOR OF ONE-HALF TO  
J. M. SNIDER, OF SAME PLACE.

## ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 394,219, dated December 11, 1883.

Application filed July 6, 1883. Serial No. 279,181. (No model.)

### *To all whom it may concern:*

Be it known that I, WILSON SNIDER, a citizen of the United States, residing at Marble Hill, in the county of Bollinger and State of Missouri, have invented a new and useful Improvement in Adding-Machines, of which the following is a specification.

The invention relates to improvements in adding-machines; and it consists in a certain novel construction and combination of devices, that will be more fully described and claimed hereinafter in connection with the accompanying drawings, wherein—

Figure 1 is a front view of an adding-machine embodying my improvements, with a portion of the front of the case broken away. Fig. 2 is a top plan view with the cover removed. Fig. 3 is a longitudinal central sectional view. Fig. 4 is a transverse sectional view taken in the rear of the dials and looking rearward. Fig. 5 is a rear view of the machine, with the rear side of the case broken away.

Referring by letter to the drawings, A designates a shaft which is mounted in suitable bearings in the front and rear sides of the case B, and on this shaft, near its rear end, is rigidly secured the toothed wheel C, which is provided with one hundred teeth, and A' designates a tubular shaft which is mounted on the shaft A between the wheel C and the front of the case, and on the rear end of this tubular shaft is secured the toothed wheel C', also provided with one hundred teeth.

D represents a circular dial provided with numbers from one to one hundred, arranged concentrically, which is rigidly secured to the front end of the shaft A close to the front side of the case, and D' represents a rim-dial which is arranged concentrically with the dial D, and is rigidly connected to the front end of the tubular shaft A'. This rim-dial is provided with a series of numbers from one to one hundred, which series is arranged adjacent to the series of numbers on the inner or circular dial, and through a slit or opening, b, in the front side of the case two adjacent numbers on the said dials may be viewed simultaneously. The shaft A is extended a short distance beyond the front side of the

case, and is provided with a cross-head or handle, a, to enable the inner dial to be turned to bring the desired number into view before the operation of adding commences, and an opening, b', is formed in the top of the case to enable the outer or rim dial to be similarly adjusted.

A swinging arm, E, is mounted at one end on the rear end of the shaft A, and on its free end is mounted the pawl F, to which the coiled contractile spring f is connected. This pawl is provided at its free end with the detent F', which engages the teeth of the wheel C, whereby when the free end of the swinging arm is depressed the said wheel is turned, and when the swinging arm is raised the pawl slips idly over the teeth. The swinging arm is provided at its inner end with a vertical extension or stud, e, to which is connected the inner end of the contractile spring G, the outer end of which is attached to the case, the object of the spring being to raise the swinging arm after it has been depressed and normally hold it in this position.

The keys H, bearing the figures from 1 to 9, are arranged on the front ends of the arms h h, which are mounted at their rear ends on a horizontal spindle, h', (arranged in a suitable frame,) and are guided at intermediate points between the parallel vertical bars h<sup>2</sup>, and under these arms h and extending across the machine is the operating-lever I, pivoted at one end to the case and connected at its free end to the free end of the swinging arm E by the rod K.

The operating-lever I is so arranged that when the key-arms are depressed at their free ends they will bear on the lever and depress it, thereby operating the swinging arm E and causing the toothed wheel C to turn, and it will be seen as the key-arms bear on the lever at varying distances from its pivot those arms near the pivot will cause a much greater movement of the lever than those near its free end. Therefore the key-arms which are arranged adjacent to the pivoted end of the lever are provided with the high figures, so that when they are depressed the swinging arm will be moved a greater distance and the toothed wheel C and the inner dial will be

rotated a greater distance than when a key bearing a small number and arranged nearer the free end of the lever is depressed.

L represents a spring-actuated pawl, which engages the teeth of the wheel C' and prevents it from turning, and friction-springs M M are attached to the front side of the wheel C, which bear at their free ends against the rear side of the wheel C', whereby, when the pawl L is disengaged from the last-named wheel, the said springs cause the wheels C and C' to turn simultaneously. The wheel C is further provided on its front side with a stud, m, which engages a detent or extension, l, on the free end of the pawl L, and raises the latter, thereby allowing the wheel C' to turn the distance of one notch or tooth for each revolution of the wheel C. Therefore, after having registered one hundred units on the inner dial the stud m engages the detent on the end of the pawl L and allows the rim-dial to register one, and when the inner dial has again registered one hundred units the rim-dial will be moved to indicate two, and so on.

The upward movement of the free end of the swinging arm is limited by the upper side of the operating-lever coming in contact with the under sides of the key-arms, and to limit the downward movement of the said arms to prevent the inner dial from being moved a greater distance than is sufficient to register the number of the key which is depressed the following means are provided:

A limiting-pawl, N, angular in shape, is mounted in the case in such a position that the detent on the upper end of its vertical arm O may be engaged with the teeth of the wheel C, and a spring, P, is also connected to the said arm to normally hold the detent out of engagement with the teeth. The horizontal arm O' of this pawl is connected by the rod Q to an intermediate point of the lever R, which is arranged below the key-arms and is provided at its front end with a transverse notched bar, S. This bar is adapted to be engaged by either of the said key-arms, and the notches therein, which are arranged, respectively, under the key-arms, are of different depths, so that the key-arms must be depressed varying distances in order to engage and depress the lever R. When the lever R is depressed, the vertical arm of the pawl N swings toward the wheel C, and the detent O thereon engages the teeth of the wheel and stops its rotation. The notches in the bar S are made of such relative depths that when the keys are depressed the rotation of the wheel C will be stopped when the number of notches which have passed under the detent of the limiting-pawl corresponds with the number on the key which is depressed. Thus, when the key bearing the number 8 is depressed, the key-arm attached thereto will strike the bar S and cause the pawl N to engage the wheel C after eight teeth have passed the said pawl, thereby preventing further depression of the key-arm and indicating at the

opening b a number which is the sum of the number before indicated and the eight units which have been added.

The operation of this adding-machine will now be readily understood without further description thereof herein, and its advantages are that it is simple, the action of the parts is direct, and therefore not liable to be disarranged, and, being provided with no complicated mechanism, it may be cheaply manufactured and readily repaired when out of order.

Having thus described the invention, I claim—

1. In an adding-machine, the combination of the concentric shafts A A', the concentric dials D D', attached to the front ends of the shafts, the toothed wheels C C', affixed to the rear ends of the said shafts, one of the said wheels being provided with friction-springs to bear against the other wheel to cause them to rotate simultaneously, the swinging arm E, mounted on the shaft A, and provided with a spring-actuated pawl engaging the wheel C, the operating-lever connected at its free end to the free end of the swinging arm, the pawl L, engaging the wheel C', and provided with a detent, l, adapted to be engaged at intervals by a stud on the wheel C, and the key-levers arranged over the operating-lever and adapted when depressed to operate the same, substantially as specified.

2. In an adding-machine, the combination of the concentric shafts A A', the concentric dials D D', affixed thereto, the toothed wheels C C', arranged on the said shafts and adapted when released to rotate simultaneously the spring-actuated pawl L, normally engaging the wheel C', and adapted to be raised at intervals by a stud on the wheel C, the swinging arm E, mounted on the shaft A, and provided with an extension or stud, e, having a contractile spring, G, connected thereto, the spring-actuated pawl F, mounted on the free end of the swinging arm and normally engaging the teeth of the wheel C, the key-arms pivoted at their rear ends and provided with figures, and the operating-lever arranged transversely under the key-arms and connected at its free end to the free end of the swinging arm by the rod K, substantially as and for the purpose specified.

3. In an adding-machine, the combination with the shafts A A', provided with the dials D D' and the toothed wheels C C', respectively, the pawl L, normally engaging the wheel C', and adapted to be disengaged at intervals by a stud on the wheel C, the swinging arm E, provided with a pawl engaging the teeth of the wheel C, and the key-arms connected, substantially as described, with the said swinging arm, of the pawl N, adapted to engage the wheel C and normally held out of engagement therewith, and the lever R, arranged under the key-arms and connected to the pawl N, whereby when a key-arm is depressed the said lever is operated and the

pawl is engaged with the wheel C, all constructed, arranged, and operated substantially as and for the purpose specified.

4. In an adding-machine, the shafts A A',  
 5 the dials D D', the toothed wheels C C', the  
 key-arms, and suitable means for connecting  
 the said arms to the toothed wheels, whereby  
 when the arms are depressed the wheels are  
 rotated, in combination with the limiting-  
 10 pawl N, normally held out of engagement  
 with the wheel C, the lever R, connected to  
 the pawl, and the notched bar S, affixed to  
 the free end of the lever and arranged trans-  
 versely under the key-arms, whereby when  
 15 the latter are depressed the lever R is de-  
 pressed and the pawl N is operated to engage  
 the wheel C, all arranged substantially as  
 specified.

5. In an adding-machine, the combination,  
 20 with the case provided with a slit or opening,  
*b*, and an opening, *b'*, of the shaft A, having  
 the inner dial, D, affixed thereto and pro-  
 vided outside the case with a suitable han-  
 dle, *a*, the tubular shaft A', mounted on the  
 25 shaft A, and having the rim-dial D' affixed  
 thereto, the toothed wheels C C', attached, re-  
 spectively, to the rear ends of the shafts A  
 and A', and having the friction-springs M M

arranged between their adjacent sides to en-  
 able them when released to rotate simultane- 30  
 ously, the pawl L, normally engaging the  
 wheel C', and adapted to be disengaged by a  
 suitable stud on the adjacent side of the  
 wheel C, the lever I, connected, substantially  
 as described, to the wheel C, and the key- 35  
 arms arranged above the said lever, substan-  
 tially as specified.

6. In an adding-machine, the numbered dial  
 adapted to have one of its numbers exposed  
 at a time and connected to a toothed wheel, 40  
 the swinging arm provided with a pawl en-  
 gaging the toothed wheels, and the key-arms  
 connected, substantially as described, to the  
 swinging arm, in combination with the check-  
 pawl N, engaging the toothed wheel, the le- 45  
 ver R, connected to the pawl, and the notched  
 bar S, arranged transversely under the key-  
 arms and affixed to the free end of the lever,  
 substantially as specified.

In testimony that I claim the foregoing as 50  
 my own I have hereto affixed my signature in  
 presence of two witnesses.

WILSON SNIDER.

Witnesses:

F. M. WELLS,  
 J. F. SANDER.