

J. S. WHITEHURST.
 ADDING MACHINE.
 APPLICATION FILED OCT. 25, 1910.

997,528.

Patented July 11, 1911.

Fig. 1.

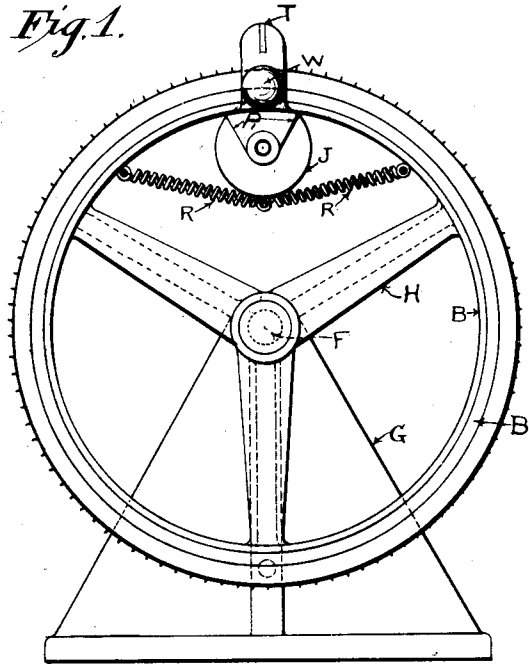


Fig. 2.

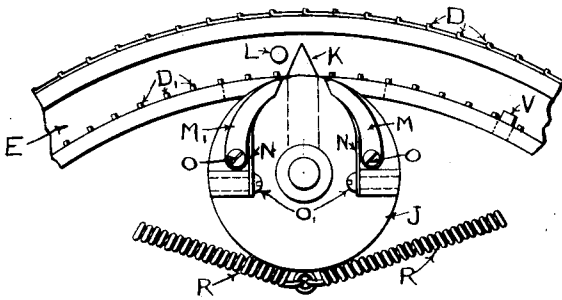
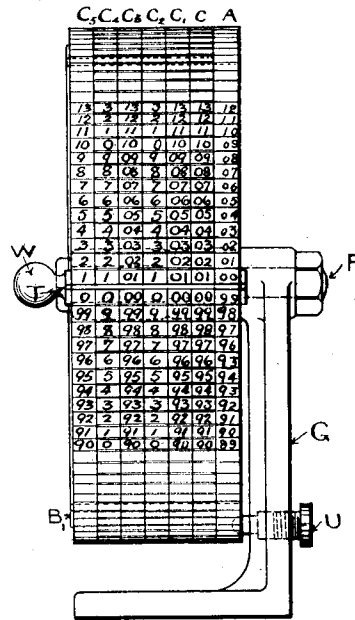


Fig. 3.

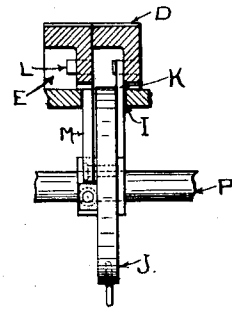


Fig. 4.

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ADDING-MACHINE.

997,528.

Specification of Letters Patent. Patented July 11, 1911.

Application filed October 25, 1910. Serial No. 589,033.

To all whom it may concern:

Be it known that I, JOEL S. WHITEHURST, a citizen of the United States, residing at San Jose, in the county of Santa Clara and State of California, have invented a new and useful Adding-Machine, of which the following is a specification.

My invention relates to improvements in adding machines, and the object of my invention is so to construct an adding machine which will not only be simple in construction but equally simple in operation. These objects are attained by the use of an index wheel or disk and a plurality of counting disks with numerals on their outer circumference, revoluble on or with a drum, and each disk of lower denomination being provided with a carrying device constructed to carry to the disk of higher denomination.

In the accompanying drawings Figure 1 is a detail side view looking at the same from side carrying the disk of highest denomination. Fig. 2 is a perspective view. Figs. 3 and 4 are sectional views showing the carrying device.

Referring to the drawings A is the index disk, rigidly attached to and movable with drum or wheel B. Its outer circumference is divided into one hundred spaces separated by nibs, and these spaces are numbered from 0 to 99 inclusive, *i. e.* 0—1—2—3, etc., as shown at Fig. 2. The counting disks, C—C¹—C²—C³—C⁴—C⁵, are revoluble on or with drum B as the occasion required, either collectively or separately. They are mounted sufficiently loose on the drum to permit being turned thereon, and they are fitted on the drum sufficiently close to rotate with the drum without turning thereon. This style of mounting is adopted for the reason that a part of the numerals on index disk A are always beyond the vision of the operator while the machine is in use; when such a number is desired to be added the operator turns the drum, with the counting disks thereon, on shaft F by means of the search lever W, to a point where the number desired is brought into view, without disturbing the sum total on the face of the counting disks, as shown at the counting board. C is the disk placed to the left of the index disk, and is properly the decimal or cents column or disk. It is spaced and divided by nibs protruding from its surface into one hundred spaces, and these spaces are numbered from 00 to 99 inclusive, *i. e.*—

00—01—02—03, etc. C¹ is the units and tens disk, placed to the left and next to disk C. It is divided, nibbed and numbered the same as disk C. C² is the hundreds disk, and is next to C¹. It is divided and nibbed the same as disk C, but numbered from 0 to 9 inclusive, ten times around its outer circumference, as shown at Fig. 2. C³ is the disk next in rotation and is the thousands disk. It is divided, nibbed and numbered in like manner as disk C. Disk C⁴ is to the left of disk C³; it is the tens of thousands disk and is divided, nibbed and numbered the same as disk C². C⁵ is the millions disk, and is placed next to C⁴. It is divided and nibbed the same as disk C, but numbered from 0 to 99 inclusive, *i. e.*—0—1—2—3, etc. These counting disks have grooves or detents, shown at D¹ Fig. 3, cut across the inner circumference directly opposite the nibs on the outer circumference, that is to say, there are 100 such grooves or detents in the inner circumference of each disk. The counting disks, with the exception of disk C⁵, have a groove cut in the side next to the inner circumference the entire distance around the disk, on the left side thereof, as shown at E Figs. 3 and 4, for the purpose of making a passage way for the operation of the carrying lever K.

A pin, shown at L Figs. 3 and 4, is set in the groove E on a center line dividing the space where the 0 and 00 appear on the outer circumference of each disk:—that is to say there is one such pin in the groove of disks C, C¹ and C², and ten such pins in the groove of disks C³ and C⁴. Three bearing pins, V Fig. 3, running through the rim of drum B, are set at equal distance from each other between each disk to overcome the friction of said disks. These pins fit in groove E and are sufficiently large to slightly touch the disk on either side, and sufficiently short to avoid coming in contact with pin L.

Drum B is a cylinder to which disk or wheel A is attached, and on which, or with which the counting disks revolve. Drum B is connected to shaft F by spokes or arms shown at H Fig. 1, and drum B with the index disk A and the counting disks are revoluble on this shaft. There is a guard on drum B which runs up slightly along the side of disk C⁵ for the purpose of holding the disks in place. This guard is shown at B¹. Drum B has a circular groove cut from the inner circumference at the point where

the carrying mechanism is attached, as shown at Fig. 3, and slots cut through the surface of the drum at these points, as shown at I, Fig. 4, to allow lever K to enter groove E, and dogs M and M¹ to engage the grooves D¹.

The carrying mechanism consists of a circular piece of suitable material, shown at J Figs. 3 and 4, with a lever shown at K protruding from its rim through slot I. There are two curved dogs, bearing inward, attached to this circular piece, as shown at M and M¹ Fig. 3, by screws, shown at O, and attached along the inner curve of the dogs, by screws shown at O¹, are springs, shown at N, to hold the dogs in place. At a point directly opposite lever K on circular J, spiral springs, shown at R, are attached to the rim and run in opposite directions, the other ends of the springs are attached to the inner circumference of drum B as shown at Fig. 1. These springs are for the purpose of returning and holding the carrying mechanism in place while the machine is in use. There is a separate carrying device on the left side of each disk, with the exception of disk C⁵, and they are operated on a shaft shown at P Fig. 4. Shaft P is secured by shaft hangings, shown at P¹, Fig. 1, passing around the shaft and attached thereto at both ends thereof. The ends of the shaft hangings run in opposite directions at an angle and are attached to the inner circumference of drum B by screws. The dogs M and M¹ are raised from the surface of circular piece J a sufficient distance to engage a groove D¹ in the disk of higher denomination when the pin L, in the groove E of the disk of lower denomination comes in contact with lever K. G is the standard, or frame, to which shaft F is attached with bearings at one end only, as shown at Fig. 2.

T is the counting board, fitted in slots cut in ears attached one at one end to index wheel A, and one at the other end to guard B¹. It is a rod or narrow plate running across the face of index wheel A and the counting disks, with a space between sufficient to prevent interference with the turning of the disks. The sum total should appear immediately over the counting board.

Before commencing to add with this machine the 0 and 00 on each disk should be placed immediately over the counting board. The index disk A, being attached to drum B, the 0 thereon always appears immediately over the counting board.

U is a spring pin running through standard G and into index disk A. It is to lock the machine and to prevent drum B from revolving with the counting disks while the machine is in operation.

W is the search lever, used to turn all the disks with the drum B collectively when the number desired to be added is beyond the

point of observation, on index disk A, from the front of the machine. This lever is attached to the side of the ear, which extends from guard B¹, and holds one end of the counting board.

My adding machine is operated in the following manner:—The number desired to be added is first located on index disk A, the finger-nail, or a small pick if preferred, is placed on the nib D, under the numeral, on the disk of proper denomination on which the number desired to be added is located, immediately opposite the number located on index disk A; the nib is then brought down to the counting board and the proper amount will appear over the counting board. If the number desired to be added covers more than one disk or column of figures, then the amounts on the disks so covered must be brought down.

Example: Add 510. The number on disk C¹ opposite 10 on index A is brought down, and the number on disk C² opposite 5 on index A is brought down. If the number desired is on the opposite side of index disk A the operator turns disk A, together with the drum and counting disks, by pulling the search lever W forward until the number sought is in view. This disengages spring pin U and allows the drum and disk to revolve on shaft F. The finger, or pick, is then placed on the proper nib D, opposite the number sought on the index disk A; the disks come back to their proper place as the number is brought to the counting board, and when the disks are back in place the spring pin U again locks the machine. When the 00 on disks C¹ and C³ and the 0 on disk C² and disk C⁴ are brought to the counting board, the pin L in groove E of such disk comes in contact with lever K, the circular piece J is pushed forward and turns on shaft P, the dog M¹ enters a groove D¹ in the disk of higher denomination and moves such disk one space and carries one on said disk, as will immediately appear at the counting board T. Pin L then passes lever K and springs R return the carrying device to its proper position.

It is obvious that this machine can be used to subtract by operating the disks in the opposite direction, in which case dog M is active and dog M¹ is idle.

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

1. In an adding machine, the combination of the revoluble drum, the shaft thereof the index disk rigidly attached to said drum and revoluble therewith, a plurality of counting disks, all of said disks having numerals marked on their outer circumference, all as shown and described.

2. In an adding machine, the combination with the counting disks and the revoluble

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index disk; of a counting board at a point where the amount appears on the counting disks, a search lever for revolving the index disk and the spring pin for locking the index disk, as shown and described.

5 3. In an adding machine, the combination of counting disks, the groove cut around each disk of lower denomination next to the inner circumference thereof, the carry-
10 ing pins set in said groove, the grooves cut across the inner circumference of the disks, the drum, the circular grooves and slots cut

therein, the circular piece J, the carrying lever protruding from its rim, the springs attached to the rim of said circular piece, the dogs, the springs attached to the side of said dogs and the shaft on which the carrying mechanism is operated, all as shown and described.

JOEL S. WHITEHURST.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."