

No. 666,499.

Patented Jan. 22, 1901.

J. H. DAVIS.
ADDING MACHINE.

(Application filed Apr. 28, 1900.)

(No Model.)

2 Sheets—Sheet 1.

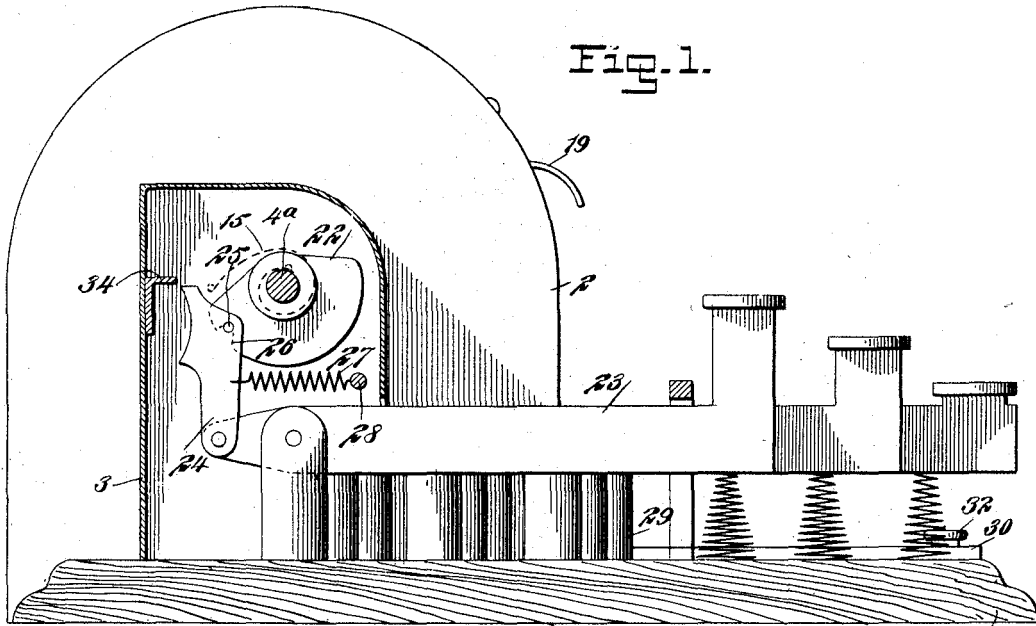


Fig. 1.

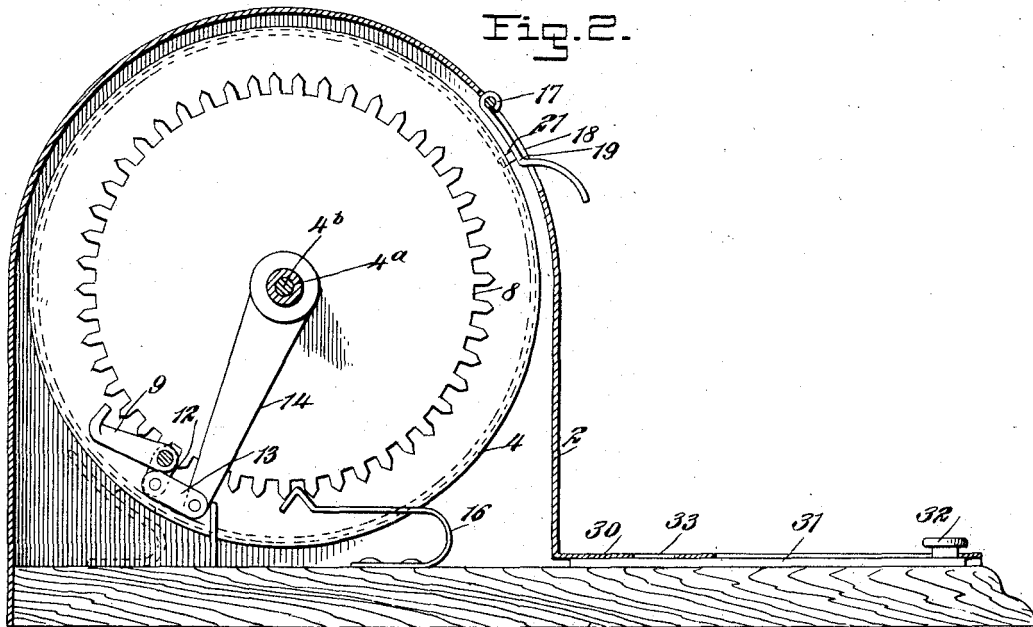


Fig. 2.

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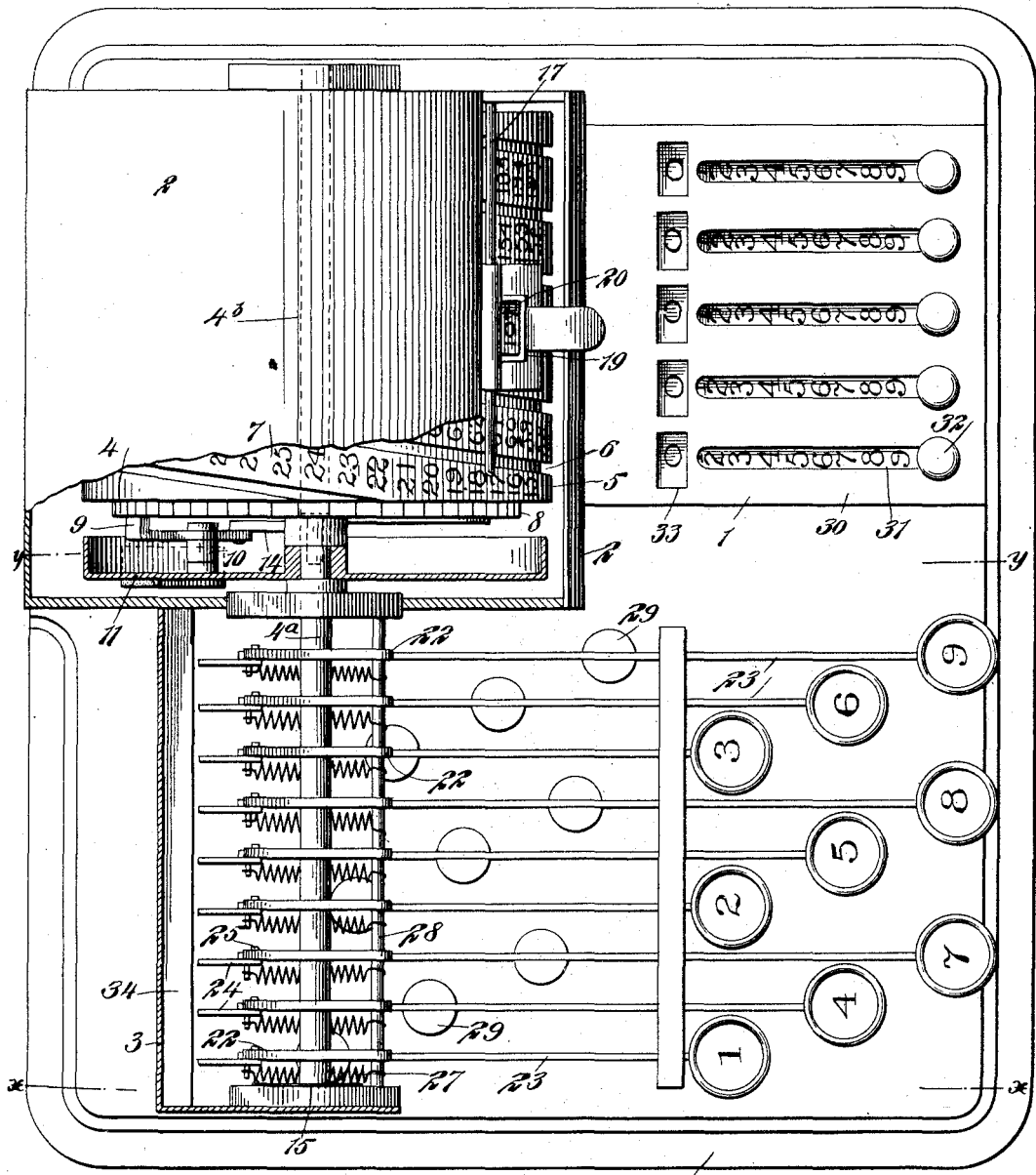
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Fig. 3.



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UNITED STATES PATENT OFFICE.

JONATHAN H. DAVIS, OF GREENFIELD, MISSOURI.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,499, dated January 22, 1901.

Application filed April 23, 1900. Serial No. 14,702. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN H. DAVIS, a citizen of the United States, and a resident of Greenfield, in the county of Dade and State of Missouri, have invented a new and Improved Adding-Machine, of which the following is a full, clear, and exact description.

This invention relates to improvements in devices for mechanically adding figures; and the object is to provide a machine of this character that shall be simple in construction, having no parts liable to get out of order, that may be sold for a comparatively small price, and by means of which a column of figures may be quickly and accurately added without mental exertion on the part of the operator.

I will describe an adding-machine embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a partial elevation and partial section on the line *xx* of Fig. 3 of an adding-machine embodying my invention. Fig. 2 is a section on the line *yy* of Fig. 3; and Fig. 3 is a plan view, parts being broken away and in section.

Referring to the drawings, 1 designates the base of the machine, upon which are mounted a casing 2 and a casing 3. Extended through the casing 3 is an operating-shaft 4^a, and extended through the casing 2 is a shaft 4^b, and mounted on the shaft 4^b, within the casing 2, so as to rotate therewith, is the adding-cylinder 4. The outer surface of this adding-cylinder has a continuous raised spiral 5, the turns of which are separated by a spiral channel 6, the purpose of which will be hereinafter described. On the spiral surface 5 figures "7" are arranged, the said figures being in consecutive order from naught to any desired limit.

Attached to one end of the cylinder 4 is a ratchet-wheel 8, adapted to be engaged by a pawl 9, mounted on a stud 10, arranged in a boxing 11, mounted to rotate freely on the shaft 4^a. An arm 12, extended at substantially right angles to the body portion of the pawl, has a link connection 13 with an arm

14, attached to the shaft 4^a, and a return-spring 15 is attached at one end to said shaft, while the opposite end engages with the casing 3, as clearly indicated in Figs. 1 and 3. A stop-spring 16 is attached to the base 1 and is designed to engage with the teeth of the ratchet-wheel 8 to prevent an accidental overthrow of the cylinder or backward motion thereof.

Arranged to slide on a rod 17, extended lengthwise of an opening 18 in the casing 2, is an indicating-plate 19, having an opening 20, through which the numbers on the cylinder are disclosed. On the inner side of this indicating-plate is a lug 21, which engages in the spiral channel 6. Connected to the shaft 4^a, within the casing portion 3, is a series of plates 22, which are cam-shaped or rounded on their under sides, and coating with each plate 22 is a finger-lever 23. On the inner end of each finger-lever is pivoted a push-plate 24, which extends upward and has a pin 25, adapted to engage in a notch 26 in its plate 22, and these push-plates 24 are held yieldingly toward the plates 22 by means of springs 27, connecting at one end with said plates 24 and at the other end with a fixed bar 28. The finger-levers are here shown as nine in number, and the number of each lever is indicated on the finger-pieces, as plainly shown in Fig. 3.

It is designed that a different degree of rotation of the cylinder 4 shall take place upon a movement of the different keys—that is, when the lever bearing the numeral "1" is operated it will rotate the cylinder from one figure of the cylinder to the next figure in order on the cylinder. Should the lever having the numeral "4" be operated, it will move the cylinder through the space of four figures, and this is continued throughout the whole series. It is to be understood, however, that while I have shown nine finger-levers a greater number may be employed, if desired. To provide for this different throwing of the several levers, they are variously fulcrumed on posts 29, as shown in Fig. 3.

A boxing 30 is mounted on the base 1 forward of the casing 2, and in this boxing 30 is mounted to slide a number of plates 31, on each one of which numbers are printed extending from "0" to "9." Knobs or finger-pieces 32 extend from the plates 31 through

slots in the top of the boxing 30, and at the inner ends of these slots are sight-openings 33, through which the numbers on the plates 31 may be observed, as will be hereinafter described. It will be noted that the plates 31 are equal in number to the convolutions on the cylinder 4. These plates 31 are designed to record the last figure of the total addition of a line in a column.

10 The operation of the machine is as follows: First set the indicating-plate 19 at zero appearing on the first convolution of the spiral raised portion. This may be done by lifting or rather swinging it or clear the lug 21 from the spiral channel and then moving the plate 15 along the rod 17. The cylinder may be rotated to bring zero or naught into the sight-opening of the plate. Now the right-hand line of a column of figures is to be added by 20 touching the keys corresponding to figures as they appear in the line. When all of the figures of the line have been added, the total result will be indicated on the cylinder. Then record the last figure of the total sum by the 25 first sliding plate 41. Next set the index at the number on the cylinder that is to be carried or added to the next column. This is easily done by lifting the index-plate, moving it to the left, and revolving the cylinder 30 back or forward until the number appears in the opening of the plate. After thus setting the machine the operator is ready to add the next column. When this column is added, record the last figure thereof by moving the 35 second slide to bring the proper number in the sight-opening 33, and this operation is carried out through the several lines of a column of figures. The total result may be read from the cylinder through the sight-opening 20 and also from the numbers on the slides 31 showing through the sight-openings 33. I have shown five sight-openings 33, this being sufficient for six lines of figures in a column. If more lines are to be added, 45 first add five lines, then enter the figures shown on the slides in a ledger or book containing the column of figures, pull the slides 31 back, and proceed to add the additional columns, as before described.

50 In certain instances it is not necessary to touch all the keys in adding small figures. For example, three and five may be added by touching the key 8. Two, three, and four may be added by touching the key 9. It may be here mentioned that the number of teeth 55 on the ratchet-wheel 8 should be equal to the number of figures on one spiral of the cylinder 4.

60 Upon operating one of the finger-levers motion will be imparted to the shaft 4^a, as before described, by means of the plates 22 and 24 and the pin 25, engaging in the notch 26. The other levers, however, will remain idle, because the plates 22 of said other levers will move 65 from the notches out of engagement with the pins 25, and these pins 25 will engage against the cam edges of said plates 22, forcing the

upper ends of the plates 22 underneath a stop-plate 34, attached to the back plate of the casing 3, thus preventing any possible upward 70 movement of the inner ends of said other levers. Upon releasing the operated key the shaft 4^a will be returned to its normal position and of course bring all the plates 22 to their normal position. 75

It will be seen that a machine embodying my invention is very simple in its construction, takes up very little room on a desk or table, and is easily operated. Furthermore, 80 there is no possible chance of making an error in the addition, provided the proper number is carried forward to the next line of a column.

Having thus described my invention, I claim as new and desire to secure by Letters 85 Patent—

1. An adding-machine, comprising a shaft, a cylinder mounted to rotate relatively to said shaft, means for causing the cylinder to rotate with the shaft, said cylinder having on 90 its outer side a spiral raised portion provided with figures arranged in consecutive order, a sliding indicating-plate having a sight-opening, a part carried by said plate and adapted to engage in the spiral channel of the cylinder, a series of plates mounted on the shaft, 95 and finger-levers for engaging with the plates to rotate said cylinder to different degrees of rotation, substantially as specified.

2. An adding-machine, comprising a shaft, 100 a cylinder mounted to rotate and having a spirally-disposed row of figures on its outer surface, an indicating-plate movable along said cylinder, a series of plates attached to the shaft, an arm mounted on the shaft, a 105 pawl operated by the arm, a ratchet-wheel on said cylinder and adapted to be engaged by said pawl, and a finger-lever for coacting with each of said plates on the shaft, substantially as specified. 110

3. An adding-machine, comprising a shaft, a cylinder mounted to rotate and having a spirally-disposed row of figures on its outer surface, an indicator movable lengthwise of 115 said cylinder, a ratchet-wheel on one end of the cylinder, an arm having spring yielding connection with the shaft, a pawl operated by said arm for engaging with the ratchet-wheel, a series of notched plates mounted on 120 said shaft, each plate having its lower edge curved or cam-shaped, finger-levers fulcrumed at different distances from the shaft, push-plates mounted on said finger-levers, and pins on said push-plates adapted to engage in the notches of the plates on the shaft, 125 substantially as specified.

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

JONATHAN H. DAVIS.

Witnesses:

JNO. M. RITTER,
C. R. FERGUSON.