

999,011.

Patented July 25, 1911.

Fig. 1.

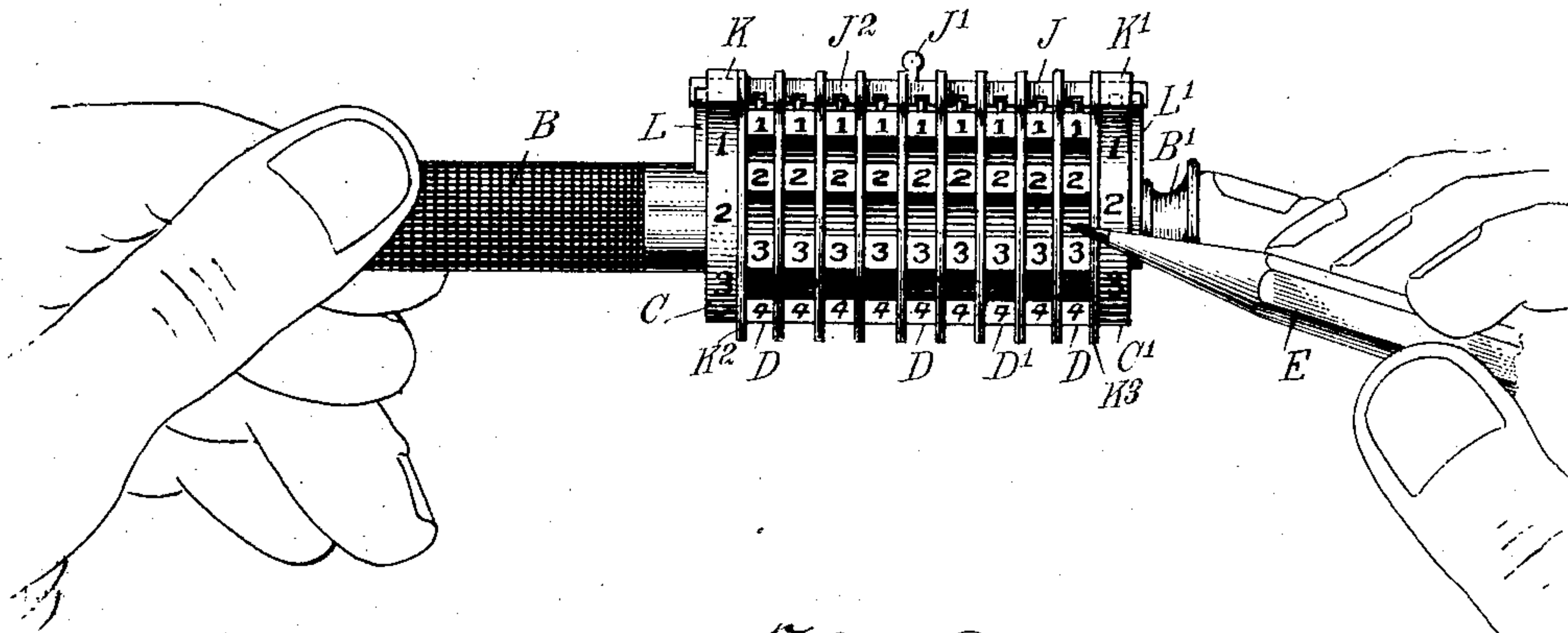


Fig. 2.

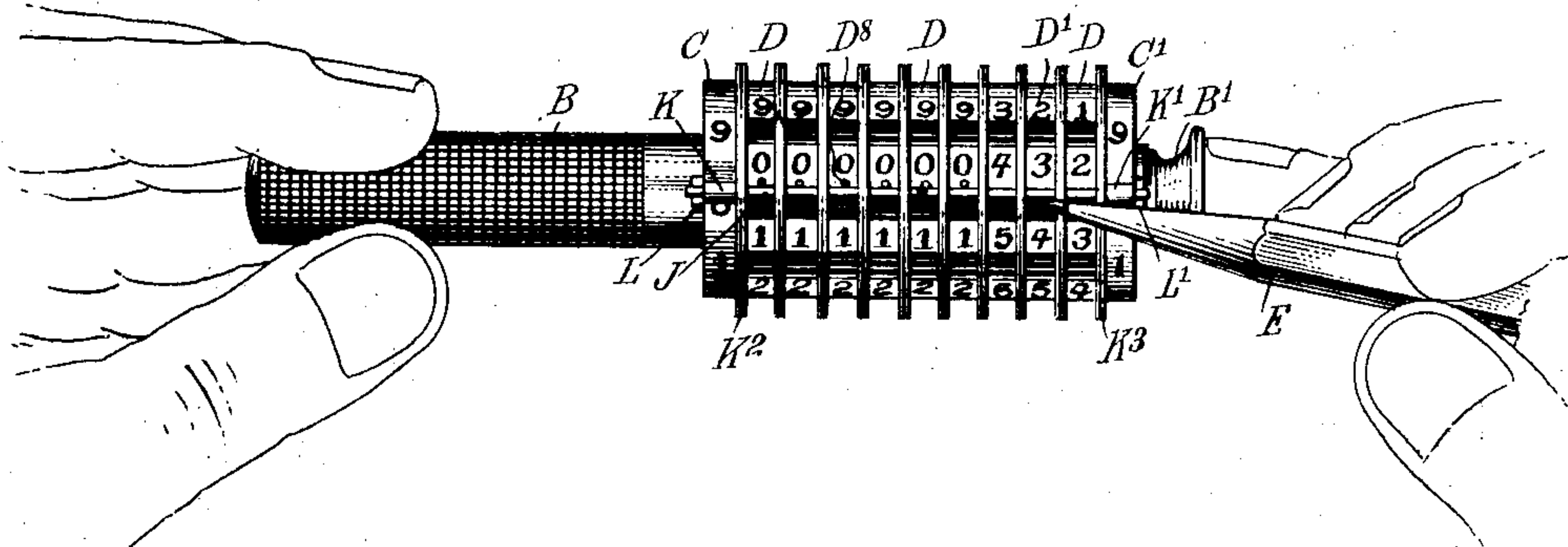


Fig. 4.

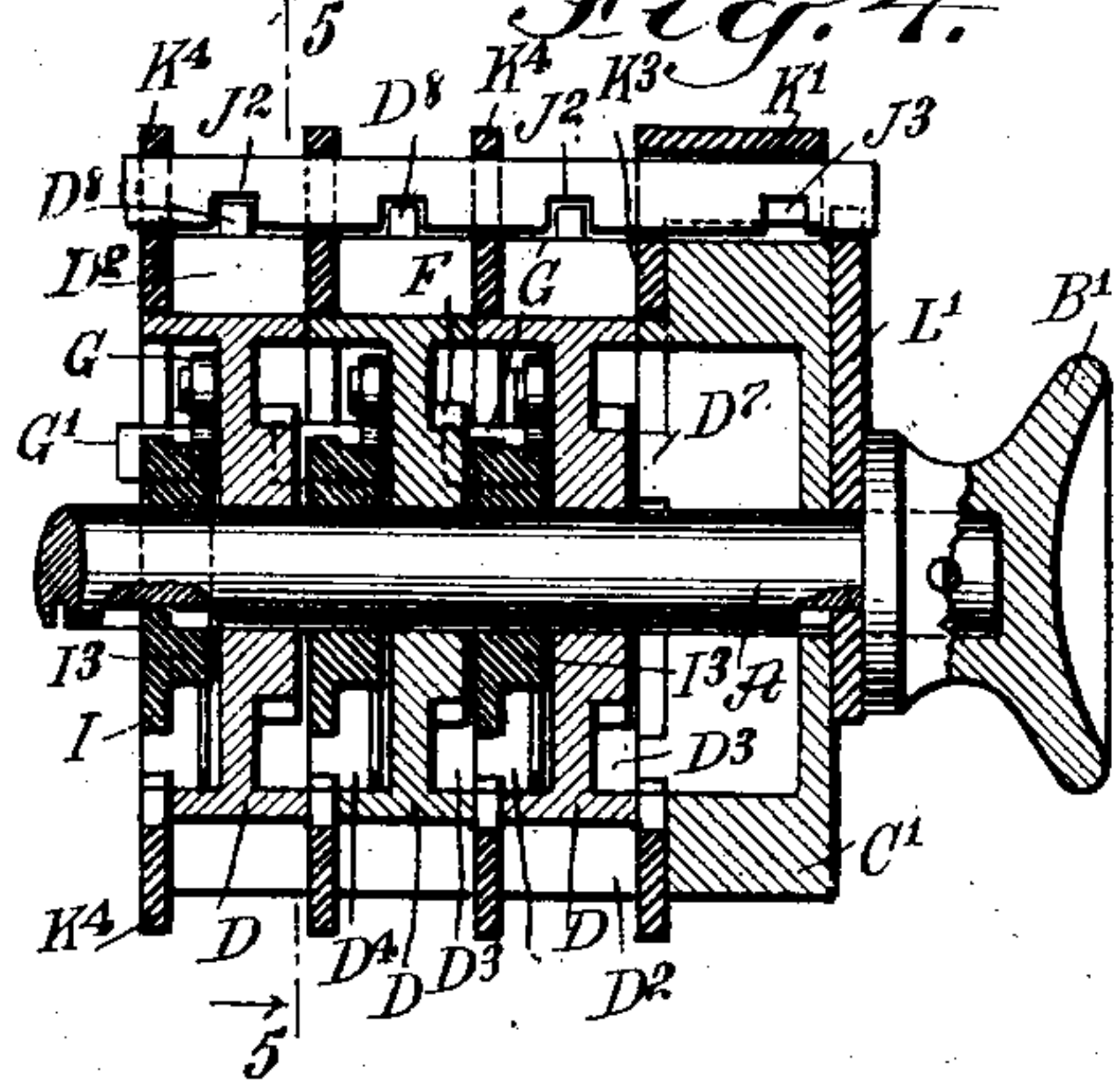


Fig. 5.

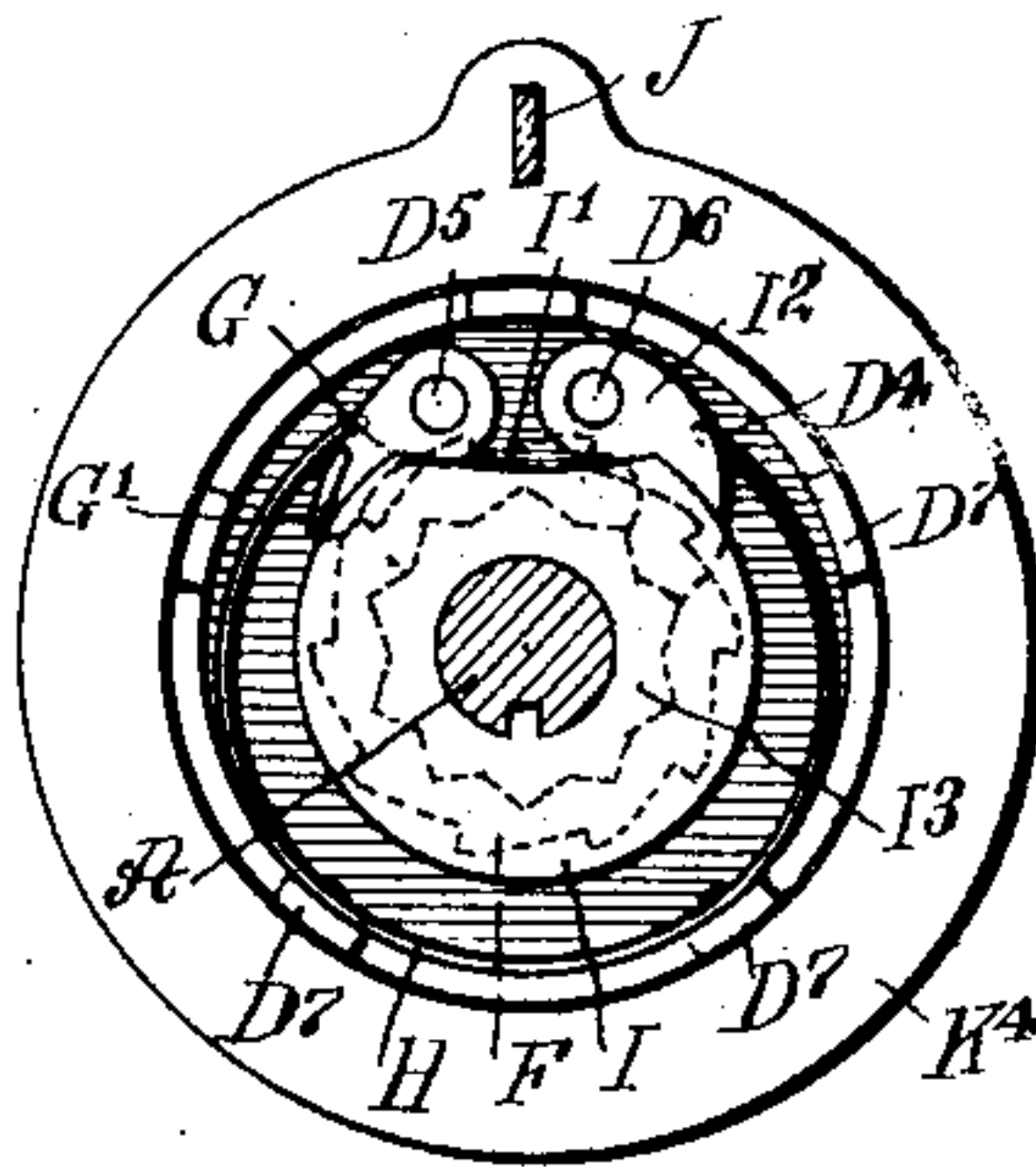


Fig. 6.

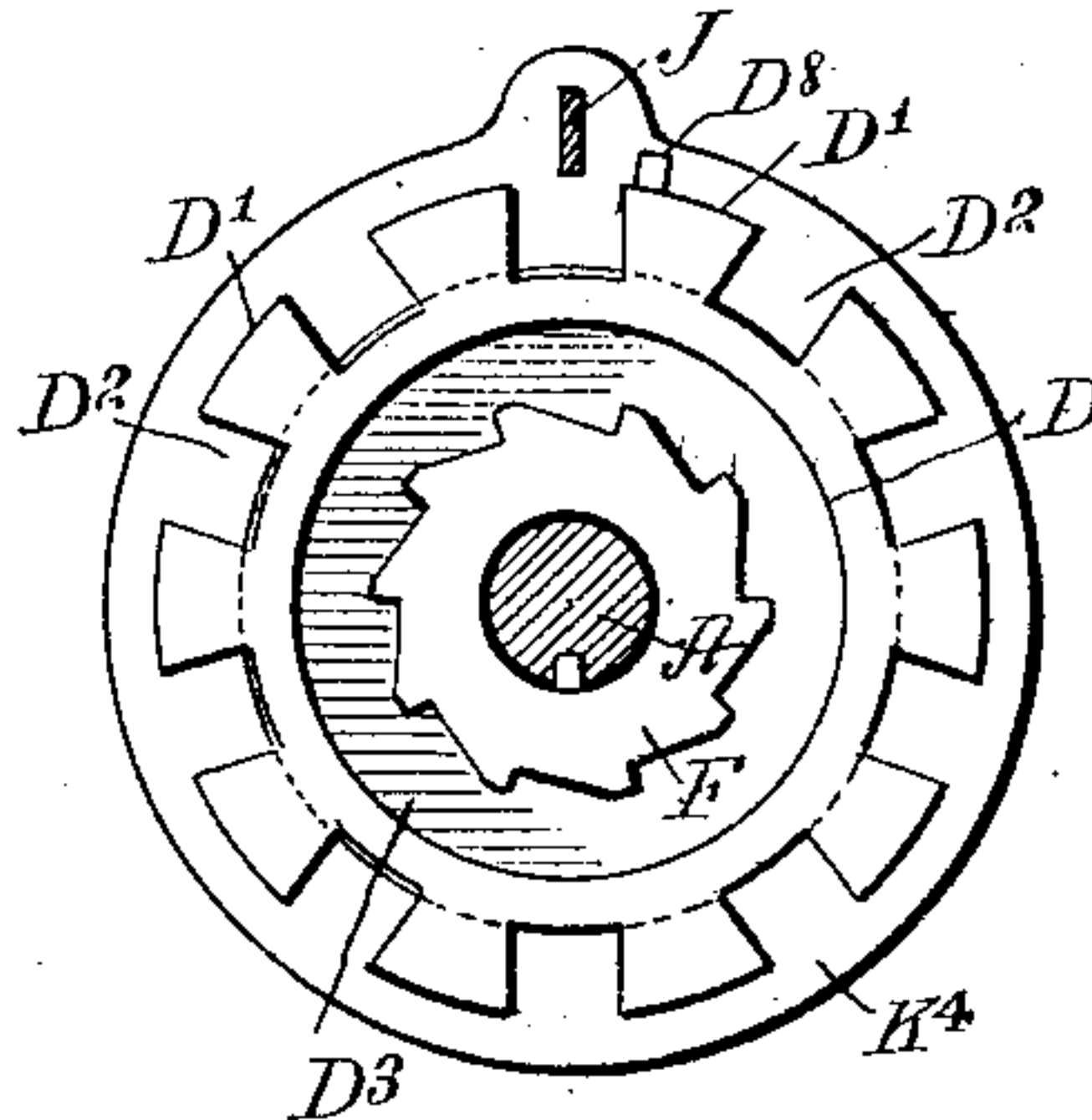
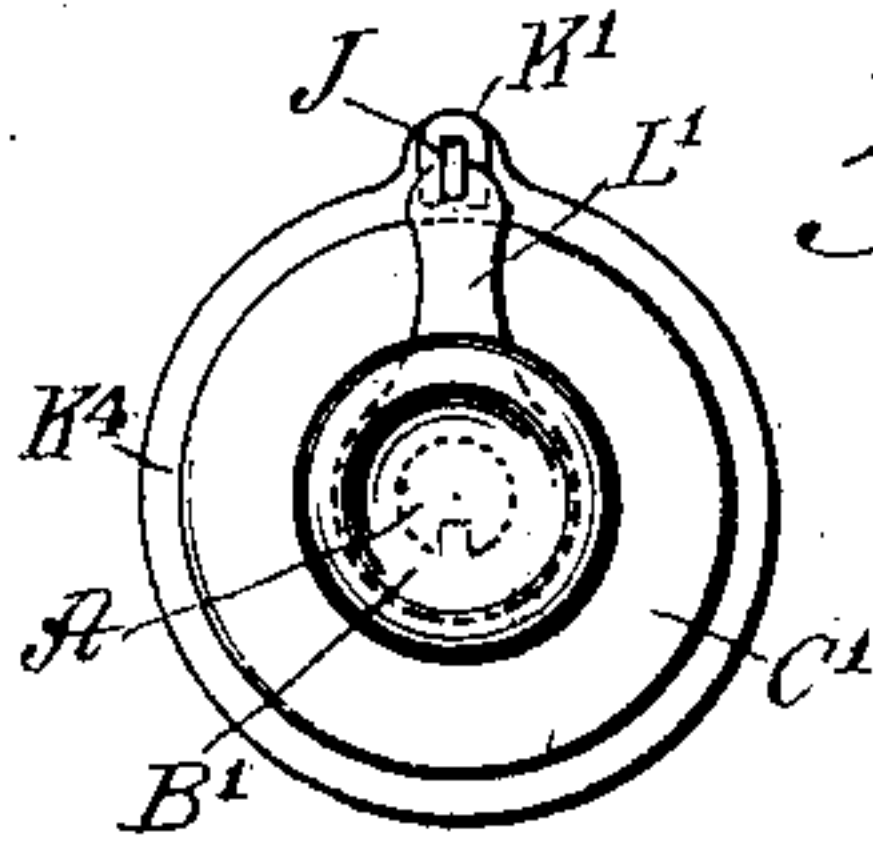


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## ADDING-MACHINE.

999,011.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed February 2, 1910. Serial No. 541,595.

*To all whom it may concern:*

Be it known that I, CLIFTON B. CORELL, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Adding-Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved adding machine, arranged for convenient manipulation to accurately add up the desired amounts, such as money values, in dollars and cents, and to display the total sum.

For the purpose mentioned use is made of connected number wheels, a spindle and a stop bar ranging across the number wheels, the said number wheels and spindle being mounted to turn loosely one on the other, each number wheel having its periphery provided with consecutive numerals alternating with recesses for engagement by a pencil or like tool in the hand of the operator, to govern the relative movement of the adjacent number wheel and spindle, the said stop bar turning with the spindle and forming a stop for the said tool.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the machine in use; Fig. 2 is a like view of the same and showing the parts in a different position; Fig. 3 is a view of the right-hand end of the machine; Fig. 4 is an enlarged sectional side elevation of part of the machine; Fig. 5 is a cross section of the same on the line 5—5 of Fig. 4 and looking in the direction of the arrow *y*; and Fig. 6 is a similar view of the same on the line 5—5 of Fig. 4 and looking in the direction of the arrow *z*.

The spindle A of the adding machine is provided at one end with a handle B and at the other end with a finger piece B', and on the said spindle A are secured spaced collars C and C', provided on their peripheral faces with consecutive numerals from 0 to 9. On the spindle A are mounted to turn loosely the number wheels D, located between the collars C and C'. The number wheels D are alike in construction and are provided on their peripheral faces with the consecutive numerals D' from 0 to 9, and alternat-

ing with spaces D<sup>2</sup>, adapted to be engaged by a pencil or a like tool E, as indicated in Figs. 1 and 2, and as hereinafter more fully described. The number wheels D, counting from right to the left, represent unit cents, tens of cents, unit dollars, tens of dollars, hundreds of dollars, thousands, tens of thousands, hundreds of thousands and a million dollars. Each number wheel D is provided on opposite sides with recesses D<sup>3</sup>, D<sup>4</sup>, and in the recess D<sup>3</sup> extends a ratchet wheel F, preferably integral with the number wheel and adapted to be engaged by the tooth G' of a pawl G fulcrumed on a pin D<sup>5</sup>, preferably integral with the preceding number wheel and projecting in the recess D<sup>4</sup>. The pawl G is pressed on by a spring H attached to the corresponding number wheel, and the tooth G' is also in engagement with the peripheral face of a cam wheel I integral with or secured to the spindle A, so as to turn with the same. The cam wheel I is provided with a cut out portion I' to allow the tooth G' to drop into engagement with a tooth of the ratchet wheel F of the next following number wheel, so that one number wheel is turned from a preceding one the distance of the length of one tooth of the ratchet wheel F during one revolution of the preceding ratchet wheel, after which the tooth G' is lifted out of engagement with the ratchet wheel F to disconnect the adjacent number wheels for the time being. The spring H also presses a dog I<sup>2</sup> extending in the recess D<sup>4</sup> and fulcrumed on a pin D<sup>6</sup>, preferably integral with the corresponding number wheel D, and the said pawl I<sup>2</sup> is provided with a V-shaped terminal, engaging a star wheel I<sup>3</sup>, preferably integral with the cam I. By this arrangement the turning of a number wheel D from a preceding one is facilitated, and at the same time the number wheel D is held against accidental turning or being turned too far. It is understood that the spring-pressed dog I<sup>2</sup> and the star wheel I<sup>3</sup> form a retaining means to cause the number wheel to rotate with the spindle unless the number wheel is held against rotation by the tool E.

A stop bar J extends across the number wheels D and is mounted to slide at its ends in bearings K, K' formed on flanges K<sup>2</sup> and K<sup>3</sup> secured to the collars C and C', and on the said stop bar J are held spacing rings K<sup>4</sup> extending between adjacent number



wheels, as plainly indicated in Fig. 3. The inner edges of the spacing rings  $K^4$  engage bearing lugs  $D^7$  formed on an adjacent number wheel D, as plainly indicated in Figs. 4 and 5, it being understood that by the arrangement described the rings  $K^4$  move with the stop bar J whenever the spindle A is turned, as hereinafter more fully described. By having the spacing rings  $K^4$ , the operator can conveniently insert the tool E in the desired recess  $D^2$  of a number wheel, without danger of striking the wrong number wheel or accidentally turning the same.

The stop bar J is provided with a handle  $J^1$  and with notches  $J^2$  for the passage of pins  $D^8$  rising from the number wheels D at the zero terminal. The terminals of the stop bar J project into notches of arms L,  $L'$ , of which the arm L is secured to the handle B and the arm  $L'$  is keyed or otherwise secured to the spindle A between the collar  $C'$  and the finger piece  $B'$ . Thus the stop bar J, the spindle A and the handle B are normally connected with each other. The stop bar J is provided adjacent the right-hand terminal with a notch  $J^3$  adapted to move in register with the arm  $L'$  at the time the stop bar J is shifted to move the notches  $J^2$  out of register with the pins  $D^8$ , whenever it is desired to reset the number wheels to zero position, as hereinafter more fully explained.

In using the machine, with the parts in the position shown in the drawings, the operator takes hold with the left hand of the handle B and inserts the tip of one of the fingers of the right hand in the recess in the finger piece  $B'$ , the right hand holding the pencil or like tool E, as indicated in Fig. 1. It is presumed that the number wheels D are set to zero, that is, with the numerals 1 of the number wheels at the front of the bar J and the numerals 0 at the rear of the bar J, as indicated on the six left-hand number wheels in Fig. 2. Now when it is desired to add, first, say two cents, the operator places the tool E into the recess of the right-hand number wheel D opposite the numeral 2 on the collar  $C'$ , and then with the left hand he turns the handle B and with it the bar J, until the bar abuts against the tool E, the right-hand wheel D thus being held stationary while the other number wheels turn with the handle B. Now it will be noticed that the numeral 2 of the unit cents number wheel D is at the rear of the stop bar J, while the remaining number wheels still disclose the numeral 0 at the rear of the stop bar. Now when nine cents are to be added to the two cents displayed, then the operator inserts the tool E into the notch of the cents number wheel D opposite the numeral 9 of the collar  $C'$ , and then again turns the handle B until the stop bar J abuts against the tool E, the same as previously explained.

Now the cents number wheel D is again held stationary by the tool E, and when the handle B has made a complete revolution and with it the remaining number wheels, it is evident that the tens of cents number wheel is turned by the action of the pawl G, carried by the unit cents number wheel D engaging the ratchet wheel F on the second or the tens cents number wheel D, so that the amount of eleven cents is displayed in the rear of the bar J.

Although the above described operation is the preferred one, it is evident that instead of turning the handle B and the number wheels D not engaged by the tool E, the operator may hold the handle B stationary and turn the desired number wheel with the tool E until the tool comes to a stop on the now stationary stop bar J.

It is expressly understood that the tool E is inserted in the notch opposite the corresponding numeral on the collar C or  $C'$ .

When the adding operation is completed and it is desired to reset the number wheels D to zero position, then the operator shifts the stop bar J from the left to the right, to move the notches  $J^2$  out of register with the pins  $D^8$ , to disengage the left-hand end of the stop bar J from the arm L and to move the notch  $J^3$  into register with the arm  $L'$ , so that the stop bar J is free of the arms L,  $L'$  and hence of the spindle A, handle B and the finger piece  $B'$ . The operator now holds the bar J stationary and turns the handle B and with it the number wheels D, so that all the pins  $D^8$  finally abut against the back of the bar J, thus resetting the number wheels to zero position. The bar J is now shifted to the left, back to the position shown in the drawings, to allow adding up another series of figures in the manner above explained.

By the use of the dogs  $I^2$  and the star wheels  $I^3$ , the number wheels D turn with the spindle A unless held against movement by the tool E, as previously explained.

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

1. An adding machine, comprising a spindle, number wheels, spacing rings extending between the wheels and a stop bar ranging across the said number wheels and extending through the spacing rings, the spindle and number wheels being mounted to turn one relatively to the other, the said stop bar being normally held on the spindle and each number wheel being adapted to be engaged by a tool adapted to abut against the said stop bar.

2. An adding machine, comprising a spindle, number wheels, spacing rings extending between the wheels and a stop bar ranging across the said number wheels and carrying the spacing rings, the spindle and number



wheels being mounted to turn one relatively to the other, the said stop bar being mounted to normally turn with the spindle and each number wheel being adapted to be engaged by a tool adapted to abut against the said stop bar, and means connecting adjacent number wheels with each other.

3. An adding machine, comprising a spindle, spaced annular flanges connected with the said spindle, number wheels loose on the said spindle and arranged between the said flanges, a stop bar ranging across the said number wheels, means for connecting and disconnecting the bar with the said spindle, and means connecting adjacent number wheels with each other.

4. An adding machine, comprising a spindle provided with spaced annular flanges and with a handle at one end and a finger piece at the other end, number wheels loose on the said spindle and extending between the said flanges, a stop bar adjustably held on the said flanges and normally connected with the spindle, and means connecting the number wheels one with the other.

5. An adding machine, comprising a spindle provided with spaced annular flanges and with a handle at one end and a finger piece at the other end, number wheels loose on the said spindle and extending between the said flanges, each number wheel having on its periphery consecutive numerals alternating with recesses, a stop bar ranging across the said number wheels and adjustably held on the said flanges, means whereby the bar can be engaged with or disengaged from the said wheels, and means connecting the number wheels one with the other.

6. An adding machine, comprising a spindle having a handle at one end and a finger piece at the other end, spaced collars secured on the said spindle and provided on their peripheries with consecutive numerals, number wheels loose on the said spindle between the said collars, each number wheel having on its periphery consecutive numerals alternating with recesses and each number wheel being recessed on both sides, one side having an integral ratchet wheel and the other side an integral pivot pin and bearing lugs, a spring-pressed pawl fulcrumed on the said pin of one number wheel and engaging the ratchet wheel of the adjacent number wheel,

cam disks secured on the said spindle between adjacent number wheels to engage the said pawls, to allow the latter to move in and out of engagement with their respective ratchet wheels, a stop bar ranging across the said number wheels and slidably mounted in the said collars, means whereby the bar can be engaged with or disengaged from the said wheels, and spacing rings engaging the said bearing lugs and held on the said stop bar.

7. An adding machine, comprising a spindle, number wheels loose on the said spindle, means for turning a number wheel from a preceding one, and a movable stop bar having notches, means, whereby the bar may be connected with or disconnected from the spindle, and pins on the said number wheels adapted to abut against the said stop bar or pass through the said notches on shifting the stop bar correspondingly.

8. An adding machine, comprising a spindle, number wheels loose on the said spindle, means for turning a number wheel from a preceding one, a movable stop bar having notches, and pins on the said number wheels adapted to abut against the said stop bar or pass through the said notches on shifting the stop bar correspondingly, and arms fixed on the said spindle and adapted to be engaged and disengaged by the said stop bar.

9. An adding machine, comprising a spindle having a handle at one end and a finger piece at the other end, collars on the spindle, number wheels loosely mounted on the spindle between the collars, each wheel having consecutive numerals alternating with recesses and provided with pins, means for turning a number wheel from a preceding one, a stop bar mounted to slide in the collars across the wheels, said bar being provided with a plurality of notches, spacing rings held on the stop bar, and arms secured to the spindle and handle and provided with notches adapted to receive the ends of the stop bar.

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

CLIFTON BURT CORELL.

Witnesses:

GEORGE P. GREINER,  
A. T. PARKER.