

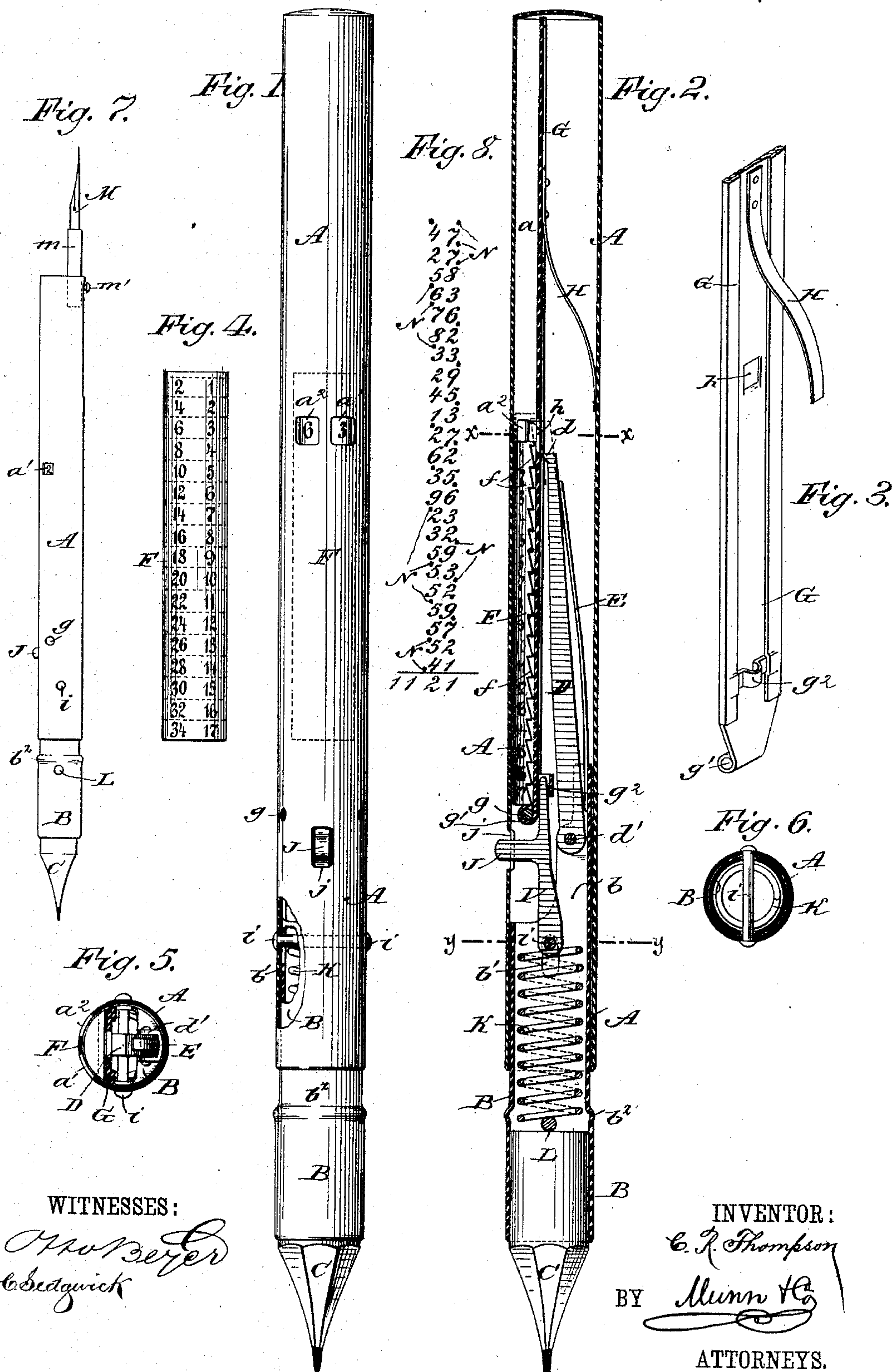
(No Model.)

C. R. THOMPSON.

ADDITION PENCIL.

No. 356,561.

Patented Jan. 25, 1887.





# UNITED STATES PATENT OFFICE.

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## ADDITION-PENCIL.

SPECIFICATION forming part of Letters Patent No. 356,561, dated January 25, 1887.

Application filed July 13, 1886. Serial No. 207,898. (No model.)

*To all whom it may concern:*

Be it known that I, CHESTER RUSSELL THOMPSON, of Elberon, in the county of Tama and State of Iowa, have invented a new and Improved Addition-Pencil, of which the following is a full, clear, and exact description.

My invention relates to a pencil for use by book-keepers, tradesmen, and others in adding columns of figures, whereby the work may be performed rapidly and accurately and without the mental strain incident to such labor as ordinarily performed; and the invention has for its object to provide a simple, inexpensive, and efficient pencil of this character.

The invention consists in certain novel features of construction and combinations of parts of the pencil, all as hereinafter fully described and claimed.

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

Figure 1 is a side view of the addition-pencil, partly broken away and in section, and drawn about twice the actual size. Fig. 2 is a longitudinal sectional elevation of the pencil. Fig. 3 is a perspective view of the stop-plate with its upper portion broken away. Fig. 4 is a front view of the indicator. Fig. 5 is a cross-section of the pencil taken on the line *x x*, Fig. 2. Fig. 6 is a like view taken on the line *y y*, Fig. 2. Fig. 7 is a side view of the pencil, shown at right angles to Fig. 1 and in actual size, and with a pen arranged at its end opposite the lead-pencil; and Fig. 8 shows a series of numerals by the aid of which the operation of the pencil is hereinafter explained.

The cylinder or case A of the pencil is made in suitable size, of metal or hard rubber, and in its lower open end there is fitted snugly, but so as to slide, a telescoping tube, B, in which a lead-pencil, C, is placed.

The pencil-tube B is cut away at one side at the top, thereby providing a lip or projection, *b*, to which is pivoted at *d'* the lower end of a pawl, D, which ranges upward in the pencil-case A, and is normally held toward the front face or side of the case by a spring, E, fixed at its lower end to the pencil-tube.

A tooth, *d*, at the upper end of the pawl D is adapted to engage a toothed rack, *f*, formed

at the inner flat face of an indicator-plate, F, the outer face of which is convexed to conform to the wall of the case A, between which and a stop-plate, G, the indicator is adapted to slide. This stop-plate G is pivoted on a pin, *g*, passed through an eye, *g'*, at its lower end, and through the case A, and the eye or hinge-joint of the plate stands at the outer side of the plate to form a stop to limit the downward movement of the indicator, which, however, may be done by any suitable lug or projection on the stop-plate above its hinge.

The stop-plate has a hole, *h*, through which the tooth *d* of pawl D passes to engage the indicator-rack *f*, and at its upper end the stop-plate G carries a spring, H, which acts normally to hold the upper free end of the plate outward and against the inner face of the indicator, to form a guide to secure true and smooth upward movement of the indicator in a space, *a*, between the case-wall and the stop-plate, and also holds the indicator while the pawl moves downward prior to engaging a next lower tooth of the indicator-rack, as hereinafter more fully explained.

The indicator has two rows of numerals, one row ranging downward in consecutive numbers from 1 to any desired higher number, 17 being the highest number on the indicator shown, and the other row ranging downward in ratio of 2 to 34, inclusive, as seen in Fig. 4 of the drawings. The first row of numbers, from 1 to 17, indicates "tens" simply, and will alone be used by persons of ordinary skill, and the second row indicates tens in ratio of two or "twenties" for each upward movement of the indicator, and may be used by more expert operators instead of the first or tens row of multiples. The pencil case A has two apertures, *a'* *a''*, through which the multiples on the indicator will be read off, as presently explained.

On a pin, *i*, passing through the case A, and through slots *b'* in the opposite side walls of the telescoping pencil-tube B, there is pivoted the lower end of a trip-lever, I, the upper end of which enters a loop or eye, *g''*, formed on or fixed to the back of the stop-plate G above its hinge or fulcrum *g*. A lug, J, on the trip-lever I extends outward through a slot, *j*, in the case A, and when this lug is pressed in by the



operator the stop-plate G will be swung backward or inward on its pivot *g*, to allow the indicator to drop to its initial position prior to footing up a new column of figures. The slots  
 5 *b'* in the pencil-tube B allow telescoping movement of the tube B in the case A, for slipping the case down on the tube by pressure on the pencil C, to cause the pawl D to raise the indicator to bring the next lower numerals or  
 10 multiples thereon to view at the openings *a'* *a''* of the case.

A bead or shoulder, *b''*, on the pencil-tube B strikes the lower end of the case A, to limit the movement of the tube into the case, and a  
 15 spring, K, placed within the tube B between the trip-lever pivot *i* and a pin, L, fixed in and across the pencil-tube, acts normally to force the tube from the case until the back or upper end walls of the tube-slots *b'* strike the pivot-pin *i*,  
 20 at which time the pawl D will have been carried downward or outward to withdraw its tooth *d* from the rack *f* of the indicator F, the tooth *d* then resting on the back of the stop-plate G, just below the aperture *h* of said plate,  
 25 as shown in full lines in Fig. 2 of the drawings.

Fig. 7 shows how a nib or writing-pen, M, may be fitted in a holder, *m*, adapted to be slid within the case by a finger-pin, *m'*, passing  
 30 through a slot in the side of the case.

I will next describe the operation of the pencil with reference to the example shown in Fig. 8 of the drawings, and using only the tens multiples on the indicator opposite the  
 35 case-aperture *a'*, as follows: In beginning the addition of a column of figures the indicator F will always be set in its lowermost position, or on the hinge-eye *g'*, or a lug on the stop-plate, as in Fig. 2 of the drawings, and so that  
 40 the upper numeral, 1, on the indicator will be just below the case-aperture *a'* and invisible. In adding, the operator will reckon 1, 2, and 7 make 10, and he will press on the paper with the pencil C between the number 7 and the  
 45 next number above it, and this pressure will lift the pawl D, or rather lower the case A on the pencil-tube B, and cause the tooth *d* of the pawl to pass through the stop-plate aperture *h* and engage the first or upper tooth, *f*, of the  
 50 indicator F and lift the indicator, as shown by dotted lines in Fig. 2 of the drawings, to display the numeral "1" on the indicator at the case-aperture *a'*, and when the pencil is lifted from the paper the spring K will force the tube  
 55 B and its pencil C downward again, and carry the pawl-tooth *d* downward behind the plate G, or clear of the indicator, as in full lines in Fig. 2. The column is thus "pointed off" by the pencil, as at N, and the indicator shows  
 60 that one "ten" is counted, and there is no remainder to carry in mind. The operator now will reckon 9 and 2 make 11, and he will again point off over the numeral 2, and 1 will be carried forward into the next ten counted, and  
 65 the indicator will now show "2" or two tens at the case-aperture *a'*. The next step will be to add, carrying figure 1 to 3 and 9, making

13, and again point off and carry 3, and the indicator will show "3" or three tens at the aperture *a'*, as in Fig. 1 of the drawings. Next  
 70 add, carrying figure 3 to 2, 3, and 6, making 14; then point off and carry 4 and add it to 5 and 2, making 11; then point off and carry 1 and add it to 7 and 3, making 11; then point  
 75 off and carry 1 and add it to 5 and 9, making 15; then point off and carry 5 and add it to 3 and 2, making 10; then point off; then add 6 and 3 and 8 and carry 7 and add it to 7, making 14; then point off over 7 and carry 4, which,  
 80 added to the top or last figure, 7, makes 11, and then point off over the last figure and write "1" under the first column as the unit of the sum total of said column. The indicator now shows the number "11" at the case-aperture  
 85 *a'*, which number indicates eleven tens to be carried from the units-column to the next or tens column. The operator will keep this indicator-number 11 in mind, and will then touch the lug J of lever I to throw back the stop-plate G and allow the indicator F to drop to  
 90 its initial position onto the hinge of the stop-plate.

In adding the eleven tens to the column the operator will first point off, as at N, at the bottom of the column, which will move the indicator  
 95 upward to show the numeral 1 at the case-aperture *a'* and leave one ten to carry, and which, added to 4 and 5, makes 10, and then point off over 5; then add 5 and 5, making 10, and again point off; then add 5 and 5, again  
 100 making 10, and point off; then add 5 and 3 and 2, making 10, and point off; then add 9 and 3, making 12, and point off, and carry 2, which, added to 6 and 2, makes 10; again  
 105 point off, and then add 1, 4, 2, and 3, making 10, and point off; then add 8 and 7, making 15; then point off and carry 5, which, added to 6, makes 11; then point off and carry 1, which, added to 5; 2, and 4, makes 12, and by pointing  
 110 off above the last figure, 4, ten of these twelve tens will be registered on the indicator, leaving 2, which will be placed under the tens-column, and a glance at the indicator shows the number "11," which means eleven tens or eleven hundreds, and will be written in front  
 115 of "2," giving the sum total, or 1121, as shown in Fig. 8 of the drawings.

By again pressing on the lug J of lever I the stop-plate G will be moved back to allow the indicator F to again fall to initial position,  
 120 ready for operation in adding the next column of figures.

Expert operators may refer in adding to the left-hand row of numerals or multiples on the indicator, and showing at the case-aperture *a'*,  
 125 as before stated. The operation of pointing off the twenties and carrying remainders will be understood from the operation of adding by tens, as above described.

The operator, when interrupted in adding,  
 130 may stop at any place along the column where an even ten or twenty is reached or pointed off, or the carrying-figure may be marked anywhere at the side of the column of figures, so



that the adding may be stopped and begun again at any time required, and without mistake.

In adding, the operator only keeps the units in mind, as the pencil-indicator carries the tens; hence the mind is relieved of the labor of carrying large numbers, and liability of miscalculation is greatly lessened.

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

1. The combination, in an addition-pencil, of a case, A, apertured at  $a'$ , a telescoping pencil-tube, B, fitted to the case, an indicator, F, carrying numerical multiples and a rack,  $f$ , and fitted loosely in the case, and a pawl, D, connected to the pencil-tube B and adapted to engage the indicator-rack, substantially as described, for the purposes set forth.

2. The combination, in an addition-pencil, of a case, A, having aperture  $a'$ , a telescoping pencil-tube, B, fitted to the case, an indicator, F, carrying numerical multiples and a rack,  $f$ , and fitted loosely in the case, a pawl, D, connected to the tube B and adapted to engage the indicator, and a spring, as at K, forcing the tube B and pawl D outward after each movement thereof into the case, substantially as described, for the purposes set forth.

3. The combination, in an addition-pencil, of a case, A, apertured at  $a'$ , a stop-plate, G, hinged to the case at  $g'$ , a spring, H, forcing the plate outward, an indicator, F, carrying numerical multiples and a rack,  $f$ , and fitted loosely in the case between the plate G and the apertured side of the case, and a device operative at the side of the pencil to throw back the plate G to allow the indicator to resume its initial position, substantially as described, for the purposes set forth.

4. The combination, in an addition-pencil, of a case, A, apertured at  $a'$ , a telescoping pen-

cil-tube, B, fitted to the case, an indicator, F, carrying numerical multiples and a rack,  $f$ , and fitted loosely in the case, a stop-plate, G, hinged at  $g$  to the case and apertured at  $h$ , a spring, H, forcing the upper end of the stop-plate outward, and a spring-pressed pawl, D, hinged to the pencil-tube B, and having a tooth,  $d$ , adapted to pass through the stop-plate aperture  $h$  and engage the indicator-rack, substantially as described, for the purposes set forth.

5. The combination, in an addition-pencil, of a case, A, apertured at  $a'$ , a telescoping tube, B, fitted to the case, an indicator, F, carrying numerical multiples and a rack,  $f$ , and fitted loosely in the case, a stop-plate, G, hinged to the case at  $g$  and apertured at  $h$ , a spring, H, forcing the upper end of the stop-plate outward, a spring-pressed pawl, D, hinged to the pencil-tube B, and having a tooth,  $d$ , adapted to pass through the stop-plate aperture  $h$  and engage the indicator-rack, and a trip-lever, I, connected to the pencil-case and to the stop-plate, and having a push pin or lug, J, projecting through the pencil-case, substantially as described, for the purposes set forth.

6. The combination, in an addition-pencil, of a case, A, a pencil-tube fitted thereto and slotted at  $b'$ , an indicator, F, stop-plate G, a pawl, D, hinged to the tube B, a spring, as at K, forcing the pencil-tube forward, and a trip-lever, I, pivoted to the case A on a pin,  $i$ , passed through the pencil-tube slots  $b'$  and engaging the stop-plate G, and said trip-lever having a push pin or lug, J, projecting through the pencil-case, substantially as described, for the purposes set forth.

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Witnesses:

CHAS. SKRABLE,  
M. ULCH.