

The
**LOCKE
ADDER**

**Instruction
Booklet**



**"Use the Locke Adder
and know you're right"**

Instructions for Using THE LOCKE ADDER

Fastest, Simplest,
Handiest, Most
Practical and
Durable, Low-
Priced, Calculating
Machine. : : : :

**Manufactured by
C. E. Locke Mfg. Co.,
Kensett, Iowa, U. S. A.**

Cable Address: "Lockad, Kensett."

BEGIN HERE.

Herewith find instructions for the Locke Adder. We make strong claims for the machine. It fulfills every claim. Enthusiastic users everywhere endorse it. You want its help. Then do your part. Learn to use it properly.

It is amazingly simple. Mere children operate it. But don't ignore directions and experiment blindly. You MAY misunderstand it.

Read all instructions carefully and get every point. Accuracy first—speed will follow. Then a little practice, and—"The Locke Adder makes adding a pleasure, instead of an exhausting mental strain."

INSTRUCTIONS

For the Use of the Locke Adder.

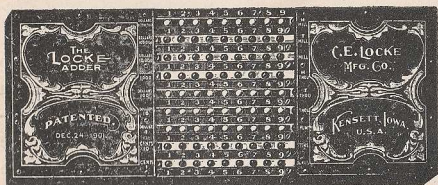
ADDITION.



The great volume (perhaps 95 per cent) of ordinary accounting work consists of addition—work which the Locke Adder performs with the utmost accuracy and dispatch.

Place yourself so as to get a good light on both the figures and the Adder. If the amounts are in columns, place the Adder upon the sheet and use it as a guide, moving it down item by item as the amounts are added. Either the top or the bottom edge may be used as the guide. If the amounts are in a book, in adding down the column use the top of the Adder as the guide until so near the bottom that the Adder projects over the edge of the book, then move it up and use the bottom as the guide in finishing the column. If adding up the column, reverse this order. Hold the machine with the thumb and fourth finger of each hand, so as to shift it easily and with no

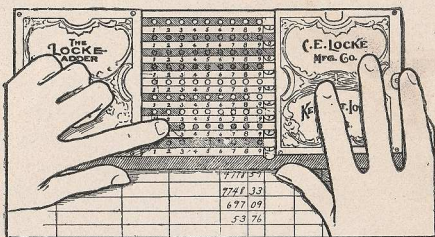
loss of time. Make a practice of thus using the Adder as a guide in footing columns, as it ensures accuracy in registering the correct figures, and also relieves the eyes from the strain of glancing back and forth by bringing Adder and amounts into the same line of vision. If the amounts are not already in columns, it is unnecessary to tabulate them, as checks and other scattered amounts are added with the same accuracy and ease as figures in columns.



The rows of numerals, 1 to 9, in the natural order on the stationary bars are for guides in registering numbers. The figures which appear in the U-shaped openings at the right of the operating section indicate the results, reading down, or toward the operator. The different sliding bars represent different orders in the decimal notation, the lowest or nearest slide being units, the next tens, the next hundreds, and so on, the top slide being hundreds of millions. The capacity of the Adder is 999,999,999, or one less than one billion. See that all the sliding bars are set to 0 before beginning.

This is accomplished instantaneously by merely passing the flat of the hand over the operating section from left to right.

To register any number, place the finger on the projection opposite that number on the guides, on the sliding bar representing the right order of notation, depress the slide and move it to the left or right, as will be explained later, until farther motion is stopped by the finger coming in contact with the edge of the metal plate.



Thus, to register 2, place the forefinger of the left hand on the projection of the first or units' slide which is opposite the numeral 2 on the guides, and move the slide to the left until the finger is stopped by the plate. The number 2 will now be found in the result opening corresponding to the units' slide. To add 2 to this, repeat the operation, and the sum, 4, will appear. To add 10 to this take the projection on the next or tens' slide, opposite 1 on the guides, and move to the left in a similar manner. The

5

Don't put the fingers directly on top of the knobs, but on the side opposite the direction in which the move is to be made

result, 14, will be found in the openings. To add to this amount, say 805, move to the left in like manner the projection on the third or hundreds' slide opposite 8 on the guides, leave the tens' slide untouched, as ciphers are never registered, and register 5 on the units' slide. The total, 819, will now be seen in the result openings. The partial result is shown at any stage of the work.

Make the movements of the slides straight in the direction of the grooves, and finish each move so that the finger-knobs are left exactly opposite the numerals on the guide-bars. A little experimenting will show you how to do this if it does not come naturally at the first attempt. Move until the finger is "cut off" from the knob by the edge of the plate and slides up the little incline. Get this point correctly at the start, and you will afterward do so unconsciously. Use the flesh of the end of the finger to move the knobs, instead of the nail, to prevent scratching the finish.

Suppose that we now wish to add to the amount, 819, which is already in the Adder, the additional amount, 97. If we attempt to proceed as before in registering the 9 on the tens' slide we find that we cannot do so, as the slide will not move far enough to allow the fingers to reach the plate. Note, therefore, that the slides are colored one-half dark and one-half light. In the former

examples all the projections used were on the dark portions of the slides, and were moved to the left, with the left hand. In this case the projection is on the light portion of the slide. Therefore instead of moving the projection corresponding to the 9 to the left as before, move it to the **right**, with the right hand, until the finger is stopped by the plate, **and at the same instant move the next slide higher one space to the left, with the left hand.** As the 7 also comes on the light part of the units' slide, it is also moved to the right, and one move to the left carried to the tens' slide. This gives the sum, 916.

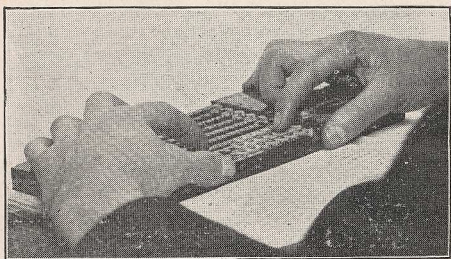
The principle involved in "move to the right and carry 1" is that moving to the right subtracts the difference between the number and 10, and carrying one move to the left to the next higher slide adds the 10. Thus the difference between 6 and 10 is 4; subtracting 4 and adding 10 is the same as adding 6.

We may now state the rule: **To register any number, take the projection opposite that number on the guides, on the slide representing the proper order of notation; if this comes on the dark half, move to the left; if on the light half, move "light to the right," and carry 1 to the next higher slide.***

This one simple rule covers all cases, and has no exceptions.

*Taking a number like 25 and adding it to itself several times, watching the results (50, 75, 100, etc.), is a good way to "catch the idea."

In operating the Adder, use **both hands**, employing the **left** hand for movements to the **left**, and the **right** hand for movements to the **right**, making the moves in both directions **simultaneously**. Observe this point carefully from the start, as it is of vital importance in giving speed and accuracy. After a little practice it becomes entirely automatic and is done unconsciously. Note in the cut the proper position of the hands when about to make the move to add 80 to 567.



Now, note carefully the following: The slides are arranged in groups with reference to the colors of the lithographing to facilitate the rapid and accurate placing of figures in their proper order of notation. As far the larger proportion of figures added represent money values, the first two slides, green, are designed to denote cents; the next three, red, denote dollars, tens of dollars and hundreds of dollars; the next

three, green, denote thousands, tens of thousands and hundreds of thousands of dollars; and the last slide, red, denotes millions of dollars. This gives a capacity far above all ordinary requirements. This grouping by colors corresponds to the grouping of figures in the ruled columns of account books. It is of the greatest value in acquiring rapid and accurate use of the Adder, and the operator should recognize and become familiar with it at once. "Place" the amounts to be registered according to the groups of colors, with no farther reference to the rows of numerals on the guides than is necessary to locate the projections corresponding to the figures to be registered. For example, if \$25.50 is to be registered, know at once that you must place the 2 on the second slide of the first group of three; if the amount is \$4,783.69, you should be able to begin instantly with the 4 on the first slide of the second group of three. The classification made by these different groups of colors does away with any necessity for counting the slides to find where to begin or for referring to the guides on the edges of the plates, making it easy to place the first figure at once, without any uncertainty or hesitation. Figures not representing dollars and cents should be grouped mentally to correspond with the grouping of slides.

In registering amounts, it is immaterial

so far as the result is concerned whether the lowest or the highest figure in order of notation is used as the starting point. It will be found far more convenient, however, to begin with the highest place and register the figures in their natural order as read, for the mind will easily retain them in this order, while beginning with units' place and working backward necessitates reversing the figures in the mind. Consider each amount as a whole, instead of a collection of separate figures, and fix it in mind at the first glance, in order to register it complete without referring to it a second time. When two or more simple amounts adjoin each other they may be combined mentally and greater speed attained by registering only the partial totals. Of course if desired addition may be performed a single column at a time, as is done in adding mentally, but this plan is not recommended, as a great advantage in the use of the Adder is that all columns are added simultaneously. This gives greater speed and accuracy, and especially prevents adding scattered figures in the wrong column—a common source of error in adding mentally. Tilt the bottom of the machine up a little to see the result figures more easily. The result may also be read directly from the top of the operating section, by noting the position of the dividing lines between the dark and light portions of the slides.

Now practice on the following examples, first (1) and then (2), until you can add them with speed and certainty:

(1)			(2)		
		25		3	84
	1	30		28	40
	5	02		19	56
	60	00		787	97
		50	125	125	10
	15	12			03
	311	67	30	303	30
1	225	59	6	992	55
17	577	48		1	70
500	000	00	6	782	388
519	196	93	6	945	651
					35

Two or more adjoining slides which move in the same direction should be shifted with one motion by dropping the fingers upon the proper projections and moving them simultaneously. This can always be done in starting an addition, and frequently thereafter. Look ahead in finishing each move, so as to lose no time in starting the next. Bending the wrists a little in toward the body as the hands are held above the Adder, and moving the elbows slightly out, so that the position of the fingers is nearly parallel to the direction of the slides, will be found an advantage, as the slides may then be shifted by the movement of the fingers alone, holding the wrists and arms nearly stationary.

In some instances when a slide is moved to the right, and 1 is to be carried to the

next higher, this higher slide will be found as far to the left as it will go, making it impossible to move it one space more to the left. In such cases apply the rule again, and move the same projection (corresponding to the numeral 1 of the guides) to the right, as it will be found "on the light," and carry one move to the left to the next slide still higher. Should 1 also come on the light on this slide (which may occasionally happen), carry again until you reach a slide where the 1 comes on the dark and can be moved to the left. Thus if we have 999 registered, to add 1, move the projection corresponding to 1 on the units' slide to the right; do the same with the tens' slide, also with the hundreds' slide, as 1 comes on the light in each instance; this brings us to the fourth slide, where 1 comes on the dark and can be moved to the left giving the result, 1000.

This is the "long way," given for explanation. In actual use of the Adder you can see at once from the appearance of the operating section when two or more successive slides must be moved to the right, as when 1 is to be added to 99, the tops of these slides showing all light. **Shift both slides in one movement**, using two fingers for the two slides, at the same instant carrying the 1 move to the left on the 3rd slide. If 3 slides must be shifted (which seldom happens) use three fingers for the three slides,

carrying the 1 move to the left on the 4th slide at the same instant. Or the "flat" of the finger may be used if preferred, to move several slides at one time. Shifting the bars in one movement saves time and prevents danger of confusion with the beginner.

If the amount registered is 996, for example, to which we wish to add 7, move slides 2 and 3 to the right with the second and third fingers, and pick up the 7 on slide 1 with the first finger as you go by, at the same moment making the carrying move on slide 4 with the left hand.

It is not necessary to move the bars in regular order, but the knobs may be picked up by the fingers in any order which is most convenient.

After using the machine awhile you can save most of the carrying moves by looking ahead and adding or deducting 1 in the right place. For example, to add 1880 to 365, move 2 to the left on slide 4 (adding 1 for the carry from slide 3), move 9 to the right on slide 3 (deducting 1 for the carry on slide 2), and 8 to the right on slide 2, giving the result, 2245, in one move to the left and two to the right, saving two carrying moves. Learn this method as soon as possible, as it will be found of great advantage.

Remember that the Adder can make no mistakes. If you ever get an incorrect result it will be because you have failed to operate it properly. Should you make a

mis-move, the error may be instantly corrected by merely returning the slide to its original position, as there is no complicated mechanism to be deranged thereby.

If you are interrupted before an addition is complete make a mark at the side of the column between the last amount added and the next one to be added, and you can return and take up the process where you left off, without losing any of the work already done.

A nice proof of addition is to subtract from the total the various amounts which have been added, which will bring the register back to zero.

Master addition first, and then don't hesitate to take hold of Subtraction, Multiplication and Division. They are nearly as simple as addition after getting started. You will be surprised to find how easy they are.

SUBTRACTION.

Subtraction is performed by registering the minuend and then deducting the subtrahend from it by taking for each figure of the subtrahend the difference between itself and 10, and registering with movements the reverse of those employed in addition.

Thus to subtract 147 from 459, register 459 in the usual way; then to subtract begin with the 1. The difference between 10 and 1 is 9; take the projection on the hundreds' slide opposite 9, and move to the **right**; the difference between 10 and 4 is 6, which take on

the tens' slide, and move to the right; the difference between 10 and 7 is 3, which take on the units' slide, and move to the right. The remainder, 312, will now be found in the openings.

In case a figure comes "on the dark," move it to the left, and carry one move to the **right** to the next higher slide, as all moves are the reverse of those used in addition. This may seem a little complicated at first sight, but is perfectly simple after a little practice.

Instead of taking for each number to be registered the difference between itself and 10 the same result may be attained by counting from the right on each slide the number of projections corresponding to the number to be subtracted on that slide, and moving as already described. After a little practice it will be unnecessary to count, as the right number can be measured with a glance.

The Adder can be used to great advantage where some amounts are to be added and some subtracted, making listing and footing unnecessary, and giving only the difference. In balancing accounts the larger side may be footed, and from this the items of smaller side subtracted, giving the balance.

MULTIPLICATION.

For Multiplication the Adder is used to register the partial products and do the carrying and footing, taking care that the

amounts are registered in the proper places. An example will make the process plain. To multiply 312 by 23, begin with the units' figure of the multiplier, and register the first partial product, 3 times 2 (6), on the units' slide then move up one place and register 3 times 1 (3), move up another place and register 3 times 3 (9). This gives the product of 312 by 3, and to this must be added the product of 312 by 20. Start with the tens' slide, and register successively, moving up one place for each amount, the products 2 times 2 (4), 2 times 1 (2), and 2 times 3 (6). The product, 7176, will now be found in the opening.

To simplify the illustration the numbers in this example are taken so that none of the partial products consist of more than one figure. When they contain more than one figure it is only necessary to note that the last figure of each one is registered one place higher than the last figure of the one just preceding.

An improvement on this method is to carry the tens of the partial products mentally, which reduces materially the number of movements of the slides. For example, to multiply 385 by 37, say 7 times 5 are 35 (register the 5), 7 times 8 are 56 and 3 to carry is 59 (register the 9), 7 times 3 are 21 and 5 to carry is 26 (register the 26). Then return to the tens' slide and say, 3 times 5 are 15 (register the 5), 3 times 8 are 24 and 1 to

carry is 25 (register the 5), 3 times 3 are 9 and 2 to carry is 11 (register the 11). This gives the product 14,245. You can multiply by as many figures as you please, starting one slide higher each time, as long as the product does not reach 1,000,000,000.

If the sum of a series of products is wanted the multiplications can be made successively into the machine, instead of finding the products separately and adding them.

Continuous operations including addition, subtraction, multiplication, and a final division, can be performed with perfect success.

In multiplication and division the beginner should keep a finger on the last slide moved, as he registers the steps of the operation, to prevent losing the place.

Multiplication may also be performed by successive additions, and division by successive subtractions if desired.

DIVISION

The Adder is used for division by registering the dividend and subtracting out the successive products of the divisor by the quotient figures.

For example, divide 148424 by 34. The divisor is contained in the first partial dividend, 148, 4 times. Note 4 with pencil as the first figure of the quotient. Subtract from the partial dividend, 148, the product of the divisor by the first quotient figure

(4 times 34) multiplying in the usual manner but registering the figures for subtraction instead of addition. This leaves a remainder of 12424. The next partial dividend is 124, which contains the divisor 3 times, which note as the next figure of the quotient. Subtract the product of the divisor by this quotient figure (3 times 34) from the partial dividend, leaving a remainder of 2224. The next partial dividend is 222, containing the divisor 6 times, and giving 6 as the next figure of the quotient. Subtract the product of the divisor and this figure (6 times 34), leaving a remainder of 184. This contains the divisor 5 times, giving 5 as the last figure of the quotient, and subtracting out the product (5 times 34) leaves 14. The result, then, is 4365, with a remainder of 14.

Another method is as follows: Begin as before, but instead of subtracting as a whole the products of the divisor by the quotient figures, subtract separately the product of EACH FIGURE of the divisor by the quotient figure. For example, divide 19281 by 546. The first figure of the quotient is 3. Subtract the product of this and the **highest** figure of the divisor from the proper figures of the dividend; that is, from 19 take 3 times 5 (15). Drop down one bar, and subtract 3 times 4 (12). Drop down another bar and subtract 3 times 6 (18). This completes the subtraction of the product of the divisor by 3,

leaving a remainder of 2901, which contains the divisor 5 times. Subtract as before, dropping down one bar each time, 5 times 5 (25), 5 times 4 (20), and 5 times 6 (30). This leaves a remainder of 171, which will not contain the divisor, and we have the result, 35, with a remainder of 171.

Division may be easily proved if desired by leaving the remainder in the register and multiplying back the quotient by the divisor, which will give the dividend.

FRACTIONS, ETC.

Fractions are computed by reducing to a common denominator. Whole numbers and fractions are handled at the same time by reserving two or three of the slides for fractions and using the rest for the whole numbers. Denominate numbers are treated in the same way. Use for percentage, interest and discount, exchange, powers and roots, logarithms, etc., readily follow by the application of ordinary rules and formulas. For example:

If cost price is \$2.75, and profit is to be $33\frac{1}{3}$ per cent, what will be the selling price?

Register cost \$2.75

" $\frac{1}{3}$.92

Answer, \$3.67

What is the second power of 59?

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$a^2 = 2500$$

$$2ab = 900$$

$$b^2 = 81$$

Answer, 3481

What is the interest on \$233.40 for 2 yrs.,
4 mo., at 12 per cent?

Int. 1st yr. @ 10% is (register) \$23.34 (a)

" 2nd " " " " " 23.34

" 4 mo. " " $\frac{1}{3}$ (a) " 7.78

54.46 (b)

Add one-fifth (b) for 12% - - 10.89

Answer, \$65.35

What is the square root of 56169?

$$(a + b)^2 = a^2 + b^2 + 2ab$$

5,61,69 (237 Answer

$$\begin{array}{r} 4 \\ 161 \\ 129 \\ \hline 3269 \\ 3269 \end{array}$$

Separate operations may be carried on in the same machine by placing them on different slides.

The Adder will slip into the pocket for carrying from place to place. The back may be used as a support for making memoranda in out-door work. The paper clips on the right-hand metal plate are useful for holding a slip for memoranda of results.

The Adder is the acme of simplicity, having no delicate mechanism to get out of order, or be deranged by dust, wear or accident. It is noiseless in operation, small in size, light in weight, convenient and complete in every necessary detail. No attention whatever is needed to keep it in working order, and there is nothing to break or wear out. Its results are always correct, its price within the reach of all. It is a necessity to any up-to-date business man or accountant.

C. E. LOCKE MFG. CO.,

Kensett, Iowa, U. S. A.

Cable Address: "Lockad, Kensett"

A B C Code, 4th Edition.

THE
LOCKE
ADDER

PATENTED

DEC. 24 - 1901

C. E. LOCKE
MFG. CO.

KENSITT, IOWA.
U. S. A.

ONE	1	2	3	4	5	6	7	8	9	ONE	1	2	3	4	5	6	7	8	9
TENS	1	2	3	4	5	6	7	8	9	TENS	1	2	3	4	5	6	7	8	9
HUND.	1	2	3	4	5	6	7	8	9	HUND.	1	2	3	4	5	6	7	8	9
THOUS.	1	2	3	4	5	6	7	8	9	THOUS.	1	2	3	4	5	6	7	8	9
TENS	1	2	3	4	5	6	7	8	9	TENS	1	2	3	4	5	6	7	8	9
HUND.	1	2	3	4	5	6	7	8	9	HUND.	1	2	3	4	5	6	7	8	9
THOUS.	1	2	3	4	5	6	7	8	9	THOUS.	1	2	3	4	5	6	7	8	9
TENS	1	2	3	4	5	6	7	8	9	TENS	1	2	3	4	5	6	7	8	9
HUND.	1	2	3	4	5	6	7	8	9	HUND.	1	2	3	4	5	6	7	8	9
THOUS.	1	2	3	4	5	6	7	8	9	THOUS.	1	2	3	4	5	6	7	8	9