

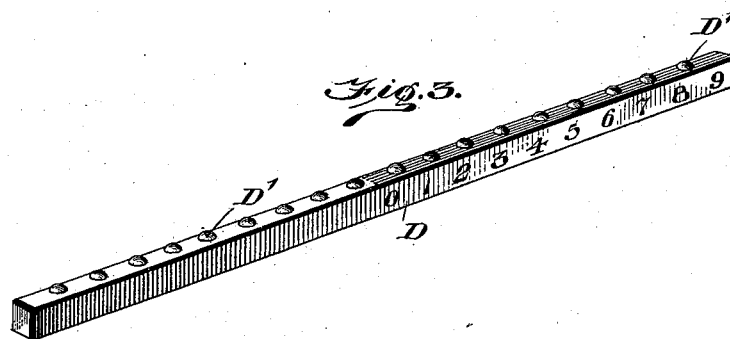
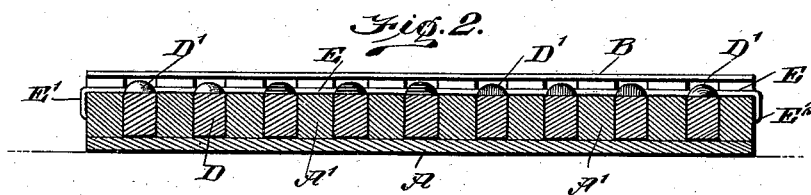
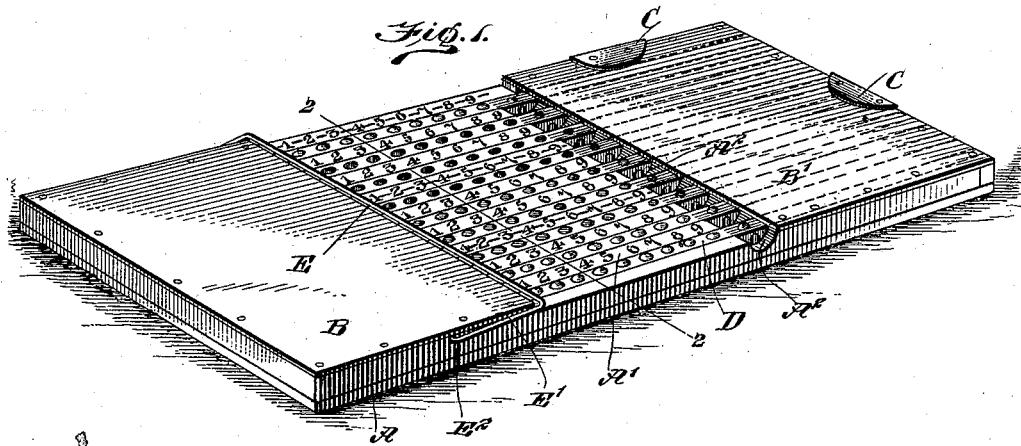
No. 689,680.

Patented Dec. 24, 1901.

C. E. LOCKE.
CALCULATING MACHINE.

(Application filed Mar. 20, 1900.)

(No Model.)



WITNESSES:

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CALCULATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,680, dated December 24, 1901.

Application filed March 20, 1900. Serial No. 9,406. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. LOCKE, a citizen of the United States, and a resident of Kensett, in the county of Worth and State of Iowa, have invented certain new and useful Improvements in Calculating-Machines, of which the following is a full, clear, and exact description.

My invention relates to calculating-machines of that class in which a plurality of independent slides are used, as exemplified by the patents of S. S. Young, No. 6,602, dated July 24, 1849, and Fowler, No. 39,222, dated July 14, 1863.

The object of my invention is to provide a calculating-machine of the above-indicated class which will be simple and durable, which will exhibit the result in such a place that there will be no danger of confusion nor any necessity for changing the position of the machine to find the result, in which a simple mechanism is provided for locking the slides when desired, and in which the slides are distinguished, so as to facilitate calculations.

The invention will be fully described hereinafter and the features of novelty pointed out in the 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 perspective view of my improved calculating-machine. Fig. 2 is a cross-section thereof on line 2 2 of Fig. 1, and Fig. 3 is a perspective view of one of the slides or bars.

The machine comprises a suitable frame or casing A, having a series of parallel guide-bars A', the central portion (about one-third) of which is exposed, while the ends are covered by plates B B', which may be used as a table or support for a sheet of paper, and clips C may be provided to hold the edge of the paper. Adjacent to the inner edge of the plate B' the guide-bars A' are provided with openings or cut-out portions A². On their central exposed portion the guide-bars A' are provided with the numerals "1" to "9" in their regular sequence from left to right, the numerals being evenly spaced. In the example shown there are nine series of such numerals, and, if desired, every third series may be dis-

tinguished from the others, as by dashes between the numerals. The lowermost series is for units, the next for tens, the third for hundreds, and so on.

Between the guides A' are adapted to move the slide-bars D. Each of these bars is about twice as long as the exposed portion of the guides A' and has on one-half of its front face a series of numerals from "0" to "9," spaced at the same intervals as the numerals of the stationary guide-bars A'. When the slide-bars D are pushed fully to the right until they abut against the end of the casing A, the numerals "0" of the slide-bars will be visible through the openings A², as shown in Fig. 1. On its upper surface each of the bars D is provided with eighteen projections or knobs D', spaced like the numerals on the guide-bars A' and so arranged that when one of the numerals on the slide-bar registers with the opening A² the knobs D' register with the numerals of the adjacent guide-bar A'. The right half of the upper surface of each bar is distinguished from the left half by a different color. For instance, one may be red and the other white. To facilitate the use of the machine, the slide-bars may be distinguished from each other by giving different colors to their projections or knobs D'. Thus since the machine is often used for adding dollars and cents the two lowermost bars D may have knobs D' of one color—for instance, black. The next three bars would have knobs of a different color—for instance, gray. Then would follow three bars with knobs of still another color, as green, and the knobs of the uppermost bar might be purple or black. This furnishes a guide for the rapid placing of figures in the proper numerical series, corresponding to the ruled columns of an account-book.

In order to lock the slide-bars to prevent their being disturbed when a calculation is interrupted, I provide a locking-bar E, extending transversely of the slides D and having arms E', by which it is pivoted to the frame A, as at E². The locking-bar is thus adapted to project into the path of the projections D', as shown in Figs. 1 and 2, but may be swung back on top of the plate B, so as to allow the slides to be moved freely.

The operation of my machine is substan-

tially the same as that of the Young and Fowler machines above referred to—that is, before starting an addition all the bars are moved to the right, so as to take the position shown in Fig. 1. Then if, for instance, two hundred and fifty-four is to be added to one hundred and thirty-seven the three lowermost bars D will be shifted until “137” shows in the openings A². To do this, the operator puts his finger upon that knob D' of the third bar D which is in registry with the numeral “1” of the adjacent guide-bar A' and shifts this slide-bar D to the left until the knob on which his finger rests passes under the edge of the plate B. The numeral “1” will then appear in the opening A². Similarly the two lowermost bars are shifted to make them show the numerals “3” and “7,” respectively, in the corresponding openings A². To add two hundred and fifty-four, the operator then places his finger on that knob D' of the third (or hundreds) bar D which is below the numeral “2” of the adjacent guide-bar A' and shifts the bar to the left until such knob passes under the edge of the plate B. The third bar D will then exhibit the numeral “3” in the opening A². In the same manner the second bar D is moved five spaces to the left, causing the numeral “8” to appear in the opening A². Finally the bottom bar D is shifted. Now instead of moving it to the left, as before, it is moved to the right with the operator's finger on the knob below the numeral “4” of the adjacent guide-bar A' until said knob passes under the edge of the plate B'. The bottom bar will then show the numeral “1” in the opening A². Whenever in adding one of the bars D is moved to the right, the next bar above must be moved to the left by one space. Therefore in the case above mentioned the second bar would receive an additional movement of “1” to the left, making the total appear as “391.” Whenever in adding the operator has to place his finger on one of the knobs of the left half of the slide-bar, he shifts this bar to the left. If, however, the knob is on the right half of the slide-bar, he shifts the bar to the right and “carries one”—that is, he gives the next bar above a movement of one space to the left. As the two halves of each slide-bar are clearly distinguished, the operator can readily tell if he must move the slide to the left or to the right. It will be seen that the several columns may be added in any desired succession, and if the units are added first the tens may be carried at once whenever the units-bar is moved to the right, or the figures to be carried may be noted down upon a sheet of paper and added at one time to the number of hundreds. Thus if in a long addition the units-column foots up to “91” instead of moving the tens-bar nine times to the left by one space said bar would be moved just once nine spaces to the left to carry the nine tens.

The machine is also adapted for use in sub-

traction and for performing operations in which some numbers are to be subtracted and others added, as well as for multiplication and division.

The result shows on the front face of the machine and is therefore plainly visible without turning the machine upside down, while it is so clearly separated from the numerals on the stationary bars A' that confusion is impossible. The stop-bar or lock-bar E enables the operator, if interrupted in the calculation, to lock the slides D against accidental displacement, so that he may resume the operation where he left off. The various means for distinguishing the slide-bars and series of stationary numbers from each other reduces the chances of mistakes and enables greater speed to be obtained. The lock-bar E may be combined with a spring or catch to normally hold it down. Instead of using three or more colors for the projections or knobs D' they may simply be made alternately black and white.

The machine is readily set to zero by merely tipping it on end to the right, so that all the bars D will slide down to the proper position. The knobs D' afford a much superior means for moving the slide-bars D to the stylus generally employed in such machines in connection with holes in the bars. It will be seen by reference to Figs. 1 and 2 that the central portion of each guide-bar A' is depressed relatively to the end portions. By this construction the central or exposed portions of the guide-bars can be made flush with the slide-bars, so that the latter can be moved readily.

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

1. A calculating-machine, comprising a frame having a series of stationary guides each provided with consecutive numerals on its upper face, bars mounted to slide between said guides and each provided with consecutive numerals, and with projections on its upper face, and a stop pivotally attached to the frame and adapted to be swung into the path of said projections to lock the slide-bars.

2. A calculating-machine, comprising a frame having a series of spaced stationary guides provided with cut-out portions or apertures at corresponding points, and each having consecutive numerals on its upper face, and a series of bars arranged to slide between said guides and each provided with consecutive numerals on its front face, said numerals being adapted to show through the openings of the guides.

3. A calculating-machine, comprising a frame having a series of spaced stationary guides having depressed central portions and provided with openings at corresponding points of said depressed central portions, each of said guides bearing consecutive numerals on its upper face, and a series of bars arranged to slide between said guides and pro-

jecting upwardly at least to the level of the
central depressed portions of the guides, each
of said slide-bars bearing upon its front face
a series of consecutive numerals adapted to
5 show individually through the openings of the
guides.

4. A calculating - machine, comprising a
frame having a series of spaced stationary
guides each bearing consecutive numerals, a
10 series of numeral-bearing bars arranged to
slide between said guides and each provided
on its upper surface with a series of projec-

tions spaced the same distance apart as the
numerals, and a stop-bar pivoted to the frame
and adapted to be swung into the path of 15
said projections to lock the slide-bars.

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

CLARENCE E. LOCKE.

Witnesses:

N. E. HANGEN,
H. O. HANGEN.