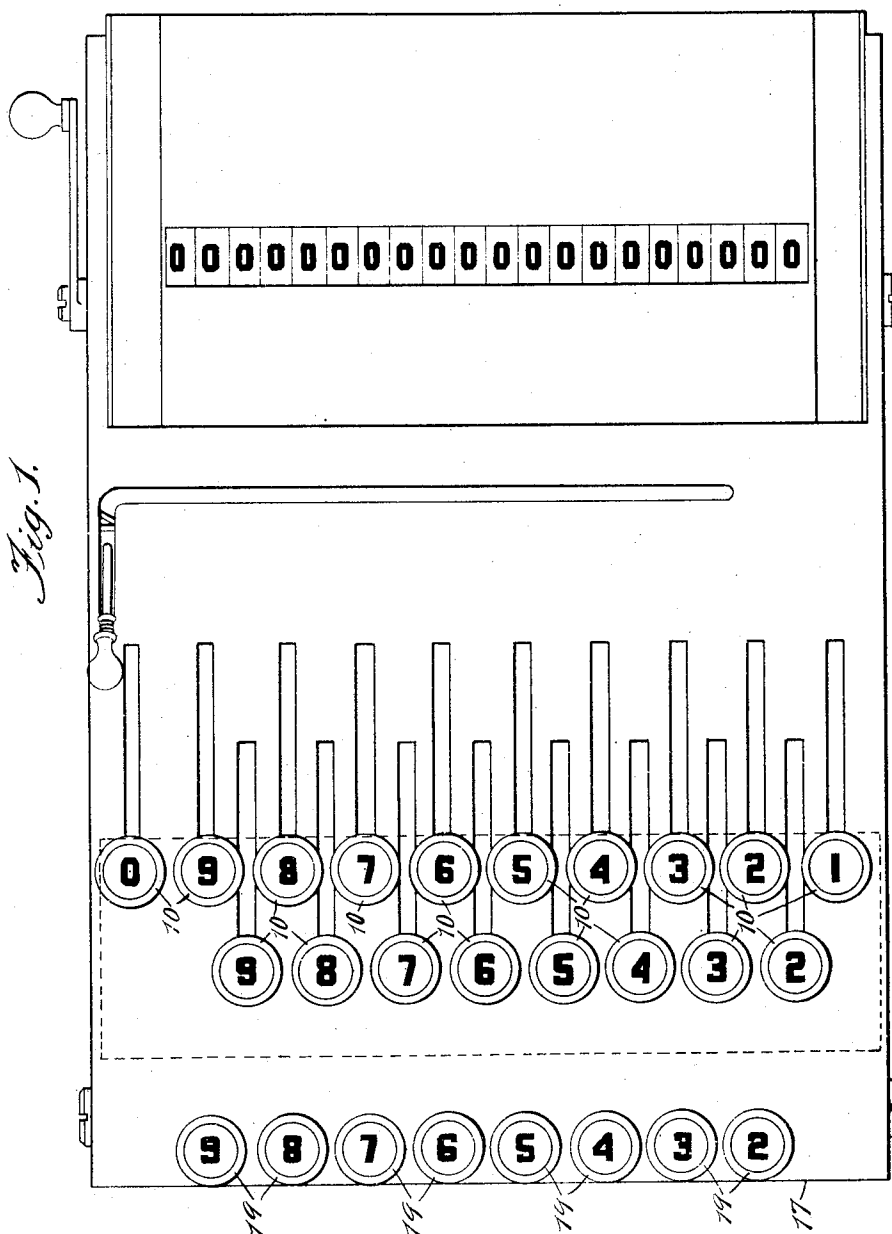


J. BRICKEN.
 CALCULATING MACHINE.
 APPLICATION FILED MAR. 18, 1909.

943,514.

Patented Dec. 14, 1909.

3 SHEETS—SHEET 1.



Witnesses:

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Inventor:

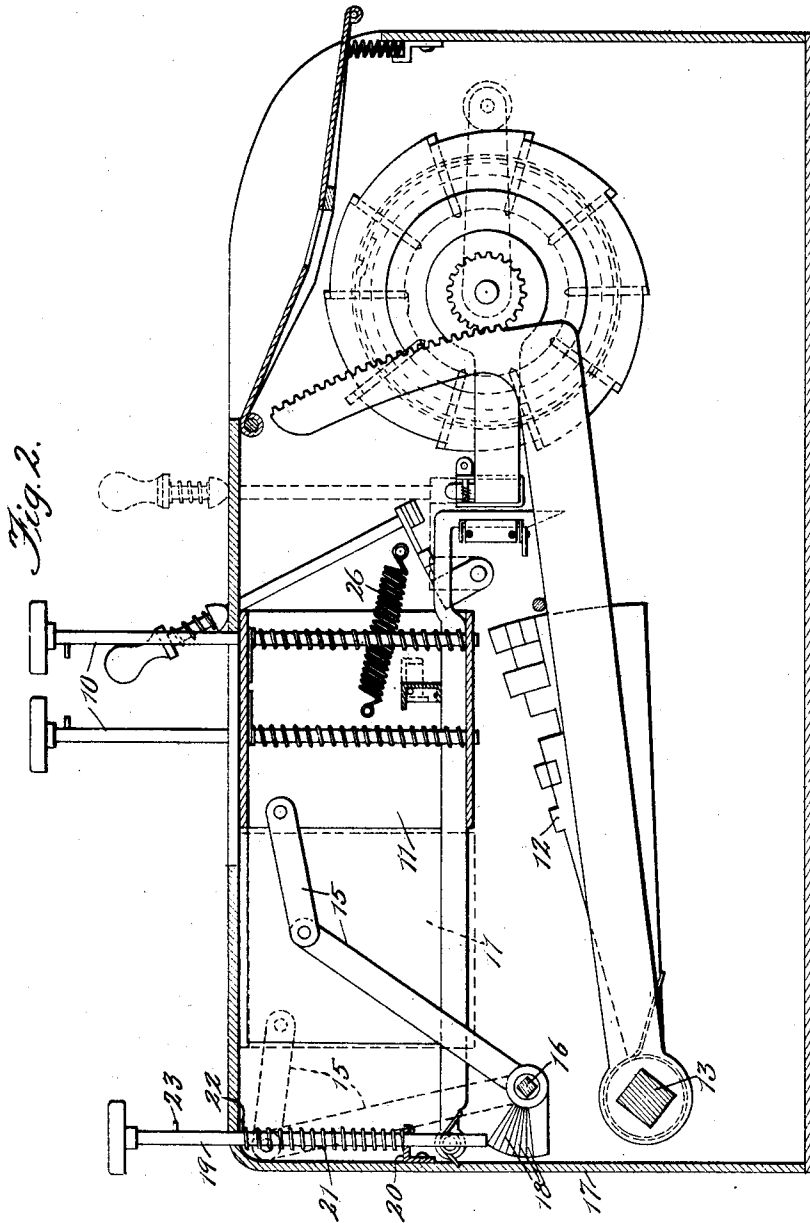
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

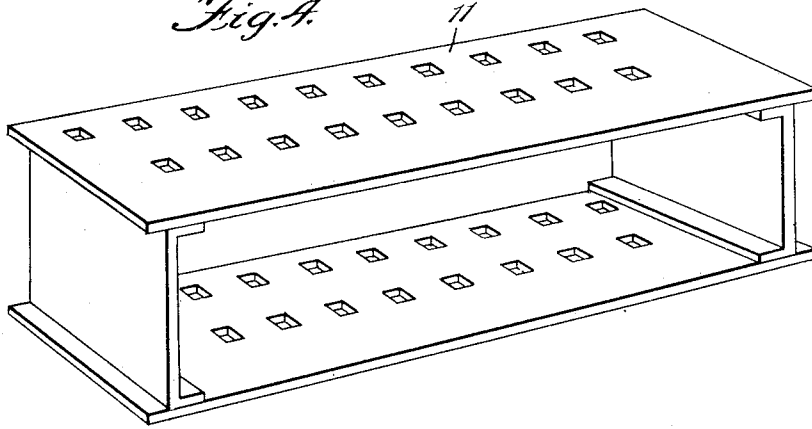
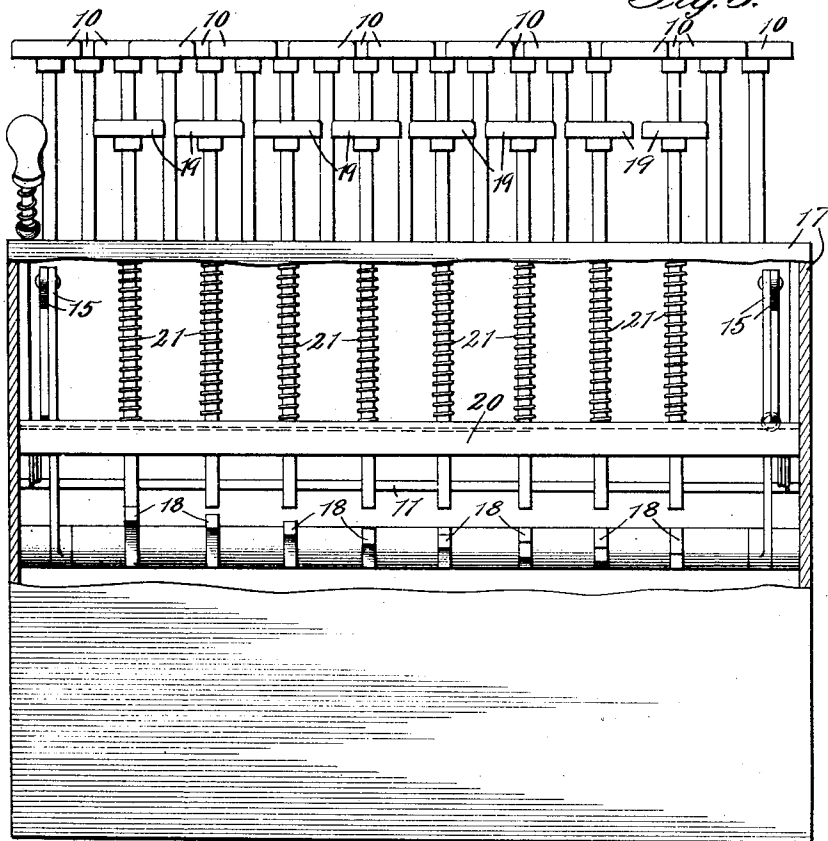


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN BRICKEN, OF CHICAGO, ILLINOIS, ASSIGNOR. BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-THIRD TO HARRY MARKS, OF CHICAGO, ILLINOIS, AND ONE-THIRD TO REUBEN MARKS, OF DES MOINES, IOWA.

CALCULATING-MACHINE.

943,514.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed March 18, 1909. Serial No. 484,078.

To all whom it may concern:

Be it known that I, JOHN BRICKEN, a subject of the Emperor of Russia, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Calculating-Machines, of which the following is a specification.

My invention relates to calculating machines, and the object of the invention is to provide means for shifting the key-board in a machine embodying the invention forming the subject matter of my Patent No. 938,550 issued November 2, 1909. In that case the key-board was adapted to be shifted by hand to the position proper for multiplying by the factor desired. As a result of my present invention it is impossible to shift the key-board by merely depressing a key.

The object of my invention is accomplished by the mechanism illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of the complete machine. Fig. 2 is a side sectional elevation. Fig. 3 is a front elevation of the machine, portion of the casing being removed to disclose the inner mechanism. Fig. 4 is a perspective view of the shiftable key-board.

Similar numerals refer to similar parts throughout the several views.

Inasmuch as the shiftable key-board, the keys mounted thereon and the mechanism operated by said keys are fully shown and described in my prior patent above referred to, it will be sufficient in the present application to state that the main figure keys 10 are vertically movable in the horizontally shiftable carriage 11 and are adapted when depressed to actuate their respective differential members 12 rigidly secured to the rock shaft 16, thus producing a differential movement in said rock shaft which is imparted to the totalizing mechanism indicated at the right portion of Fig. 2. In this machine as in the prior one, a given figure key will produce different multiplications depending upon the position to which the key-board or carriage 11 is shifted.

In the construction selected to illustrate my present improvement the carriage is shifted by means of links 15 connected at one end to the key-board and at the other end rigidly secured to the rock shaft 16. Said rock shaft is journaled in the sides of

the casing 17 and has arms 18 rigidly secured thereto in position to be engaged by the factor keys 19. Said factor keys are vertically movable, being guided preferably by the suitably apertured top of the casing 17 and by a bracket 20 secured to the front of the casing as shown in Fig. 2. Said keys are normally held in raised position by means of coiled springs 21 which encircle the stems on their respective keys 19, one end of each spring bearing by preference against the bracket 20 and the other end against a pin 22 secured to the spindle. The downward movement of the factor keys is limited by stop pins 23 fixed in the side of the key stem as shown in Fig. 2.

The parts are so constructed that when any factor key is depressed it will contact its respective arm 18 and produce the proper amount of rotation in the rock shaft 16 to bring the key-board 11 to proper position above the differential members 12. For example, if the factor key "5" is depressed, the key-board 11 will be brought to the position where the figure keys 10 in descending will contact the differential members 12 at the proper point to produce multiplication by 5. After a factor key has been depressed the carriage will be returned to normal position by means of a spring 26 one end of which is secured to the key-board 11 and the other end to the casing 17 as best shown in Fig. 2.

Eight factor keys are sufficient to produce the necessary shifting movement of the key-board. According to the present design the spring 26 normally holds the key-board at the point where simple addition or subtraction will result from the operation of the figure keys 10 and hence it is unnecessary to provide a "1" factor key.

In operation, if the operator wishes to perform simple addition or subtraction he operates the figure keys 10 in the manner described in the aforesaid application. If he desires to multiply by any given factor, for instance "four" the operator will first press the factor key "4" which will shift the key-board to proper position over the differential members 12. Keeping said factor key depressed, the operator then manipulates the main figure keys 10 in the manner described in my prior patent, after which the factor key will be released.

As a result of my present invention it is unnecessary for the operator to manually shift the key-board or to exercise any care to see that the key-board is shifted to proper position. All that is necessary is for him to depress the proper factor key and hold it depressed while he manipulates the figure keys in the manner described.

What I claim as new and desire to secure by Letters Patent, is:

1. A calculating machine having figure keys and factor keys for shifting said figure keys to different positions to thereby produce multiplication by different factors.

2. In a calculating machine, carrying mechanism, differential mechanism for operating the same, figure keys for operating said differential mechanism, and key connections for shifting said keys relatively to said differential mechanism for the purpose described.

3. In a calculating machine, computing mechanism, differential members connected thereto for operating the same, figure keys for operating said differential members, said differential members being so constructed as to produce different effects upon the computing mechanism depending upon the position of the figure keys relatively to said differential members, a shiftable key-board wherein said figure keys are mounted, a rotatable member connected to said key-board for shifting said keys, and means for rotating said rotatable member.

4. In a calculating machine, computing mechanism, differential members connected thereto for operating the same, figure keys for operating said differential members, said differential members being so constructed as to produce different effects upon the computing mechanism depending upon the position of the figure keys relatively to said differential members, a shiftable key-board wherein said figure keys are mounted, a rock shaft connected to said key-board for shifting said keys and means for rotating said rock shaft.

5. In a calculating machine, computing mechanism, differential members connected thereto for operating the same, figure keys for operating said differential members, said differential members being so constructed as to produce different effects upon the computing mechanism depending upon the position of the figure keys relatively to said dif-

ferential members, a shiftable key-board wherein said figure keys are mounted, a rock shaft connected to said key-board for shifting said keys, and key operating mechanism for rotating said rock shaft.

6. In a calculating machine, computing mechanism, differential members connected thereto for operating the same, figure keys for operating said differential members, said differential members being so constructed as to produce different effects upon the computing mechanism depending upon the position of the figure keys relatively to said differential members, a shiftable key-board wherein said figure keys are mounted, a rock shaft connected to said key-board for shifting said figure keys and arms on said rock shaft for rotating the same, and factor keys operative upon said arms for rotating said rock shaft.

7. In a calculating machine, computing mechanism, differential members connected thereto for operating the same, figure keys for operating said differential members, said differential members being so constructed as to produce different effects upon the computing mechanism depending upon the position of the figure keys relatively to said differential members, a shiftable key-board wherein said figure keys are mounted, a rock shaft connected to said key-board for shifting said key-board and the figure keys in one direction, a spring for shifting said key-board in the opposite direction and key operated means for operating said rock shaft.

8. In a calculating machine, the combination of a totalizer, actuating means therefor including differential members, figure keys for operating said differential members and a shiftable key-board for shifting said figure keys relatively to said differential members, the parts being so constructed that the figure keys produce different effects upon the totalizer depending upon the position of the figure keys relatively to said differential members, a spring for urging said key-board in one direction, a manually operated rock shaft for urging said key-board in the opposite direction and connections between said rock shaft and key-board substantially as described.

JOHN BRICKEN.

Witnesses:

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