

W. T. TREADWAY.
KEYBOARD FOR CALCULATING MACHINES.

APPLICATION FILED JUNE 14, 1902.

NO MODEL.

2 SHEETS SHEET 1.

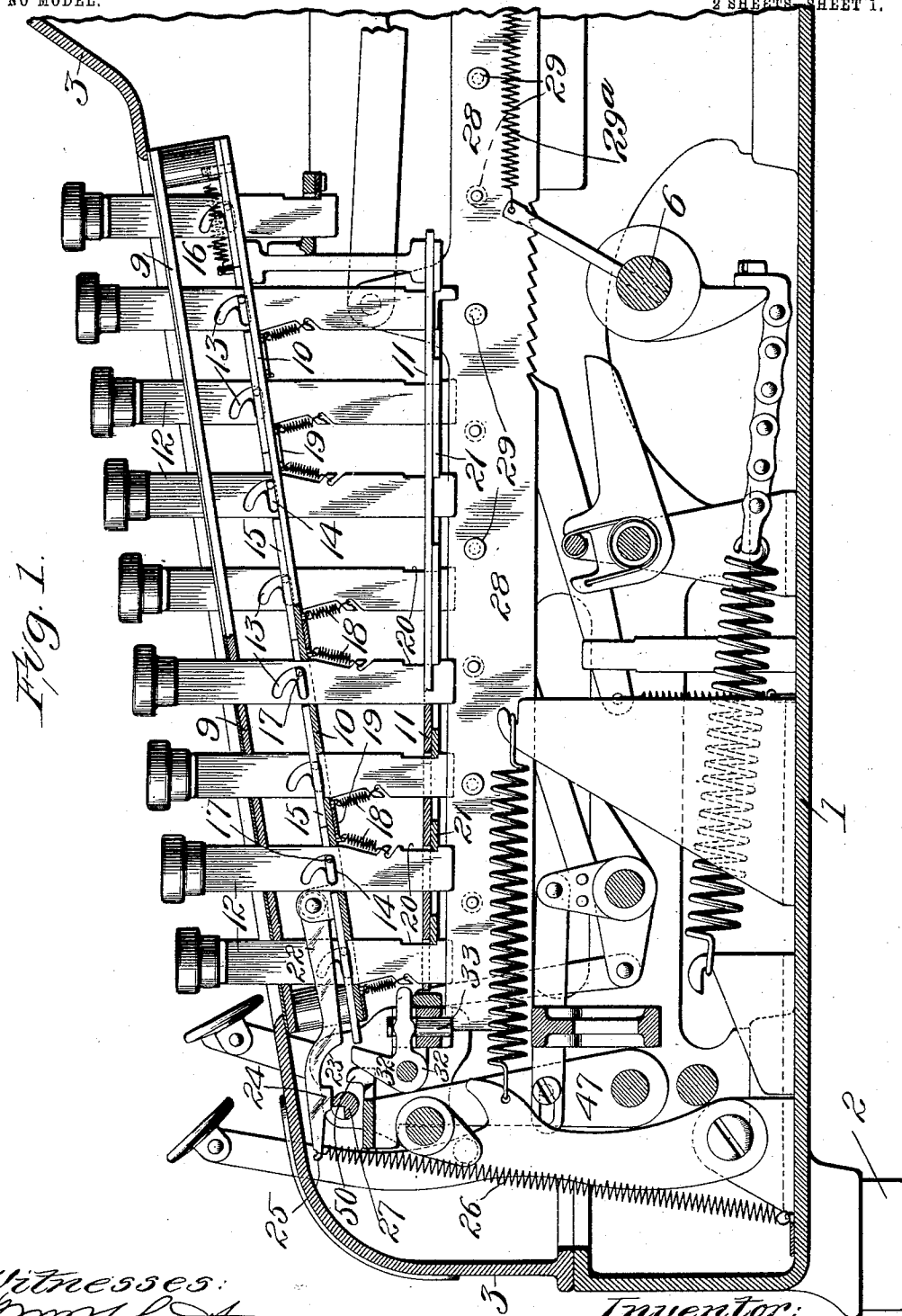


Fig. 1.

Witnesses:
J. M. Ford.
G. A. Pennington

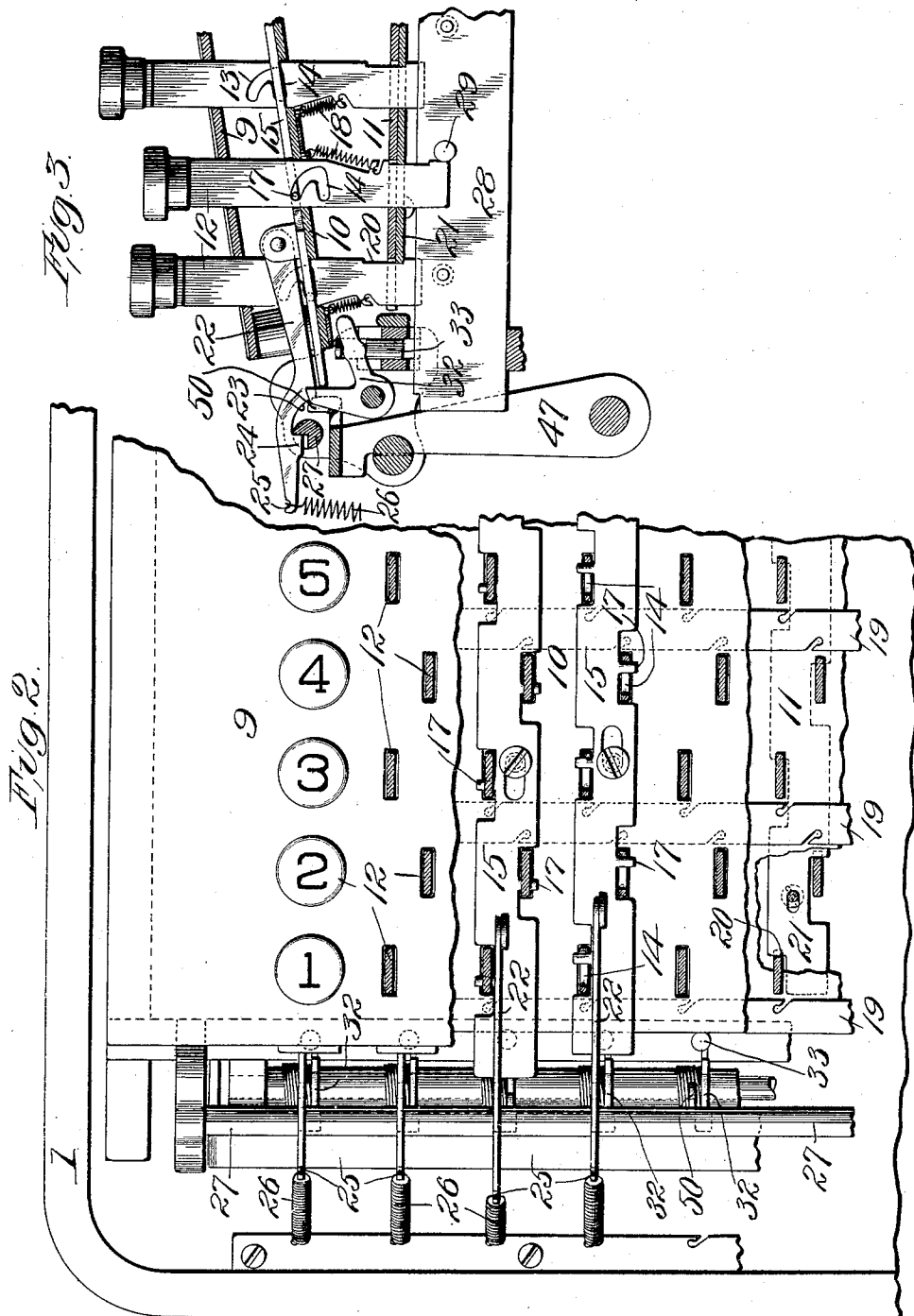
Inventor:
William T. Treadway,
by Parkerell Cornwall
attys.

W. T. TREADWAY.
KEYBOARD FOR CALCULATING MACHINES.

APPLICATION FILED JUNE 14, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:
Wm. H. Coffey
G. A. Pennington

Inventor:
William T. Treadway
by Bakewell & Cornwell
attys

UNITED STATES PATENT OFFICE.

WILLIAM T. TREADWAY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNIVERSAL ACCOUNTANT MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

KEYBOARD FOR CALCULATING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 718,176, dated January 13, 1903.

Application filed June 14, 1902. Serial No. 111,643. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. TREADWAY, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Keyboards for Calculating-Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view through the front portion of a calculating-machine, showing my improved keyboard in position thereon. Fig. 2 is a fragmentary top plan view, partly in horizontal section; and Fig. 3 is a detail view, in vertical section, showing the parts in a changed position.

This invention relates to a new and useful improvement in keyboards for calculating-machines of that type shown and described in United States Letters Patent No. 654,181, granted to Frank C. Rinsche July 24, 1900.

In the accompanying drawings I have not shown all of the elements entering into the construction of calculating-machines, but have illustrated only those which directly cooperate with my improved form of keyboard.

It is the object of my present invention to construct the keyboard in such manner that the sliding plates which cooperate with a series of keys will be locked in their operated positions, so as to hold the operated key in a depressed position, the remaining keys of that series being locked in an elevated position.

Another object is to compel a full operation of a key before the associate parts controlled thereby are set in an adjusted position.

Another object is to simplify the construction of keyboards of this character and so arrange the parts that their operation is positive to an extent whereby in the event of breakage of springs the keyboard would not be placed out of commission.

With these objects in view my invention consists in the construction, arrangement,

and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, 1 indicates the base-casting of a calculating-machine, which is preferably supported by cushions 2 and upon which casting is arranged a casing 3, provided with suitable openings through which project certain parts of the machine.

The keyboard is removably supported upon the forward ends of right and left hand frame-plates. This keyboard consists of a top plate 9, an intermediate plate 10, and a bottom plate 11, said plates being provided with openings for guiding the shanks 12 of the keys in their movements. Suitable spacing-posts are provided between these plates 9, 10, and 11. Each key-shank is provided with a cam-groove 13, which groove communicates at its lower end with a horizontally-disposed locking-groove 14.

15 indicates sliding plates, which are normally held in a rearward position by springs 16. These sliding plates, as shown in Fig. 2, are recessed on their opposite edges to receive the key-shanks, and said sliding plates are furthermore provided with pins or projections 17, which cooperate with the slots in the key-shanks. The key-shanks are held elevated by means of springs 18, which springs are secured at their upper ends to projections formed on the transverse plates 19, which are arranged under the intermediate plate 10. The lower ends of the key-shanks are provided with recesses 20, forming shoulders, which shoulders cooperate with plates 21, secured under the bottom plate 11. These plates 21 are preferably provided with recesses in their opposite edges, so that the plates can be introduced into position in a convenient manner, said plates being secured in place by screws which pass through elongated openings therein, which openings permit the plates to be slid longitudinally and forwardly to place the edges of their recesses over the lowermost shoulders of the recesses of the shanks.

22 indicates a locking-detent, there being one of such detents pivotally connected to

each of the sliding plates and near their forward ends. These detents each have cam-faces 23, a locking-hook portion 24, and a forwardly-extending finger 25, the latter providing means for the attachment of a spring 26. The locking-hook portion 24 coöperates with a bar 27, said bar being shown as having a groove milled therein; but it is obvious that other forms of fixed projections could be provided with which the locking-hook portions 24 could coöperate. Cam-faces 23 coöperate with fingers 50, which fingers are mounted upon a rocking frame 47, which frame is operated whenever the main shaft 6 is rocked by connections not shown in these drawings or by the manipulation of the total-key 42.

28 indicates slide-bars, which are provided with stops 29 for coöperating with a depressed key, said slide-bars being pulled forwardly under the action of springs 29^a, when the main shaft 6 is rocked, usually by means of a hand-lever or operating-handle upon one end thereof and external the casing of the machine. The slide-bars referred to are restrained from forward movement by means of latch-pins 33, which pins are mounted upon bell-crank levers 32. The upwardly-extending member of each bell-crank lever is in the path of a coöperating sliding plate, and by this construction whenever a key in a series is depressed the sliding plate is positively moved forwardly, so as to raise the bell-crank lever referred to and release the slide-bar 28, identified with the series of keys under consideration. Unless the locking-hook portion 24 rides beyond its coöperating bar 27 it follows that when the operator releases the depressed key it will return to its normal position under the impulse of its spring and under the action of the backwardly-moving sliding plate, which is returned by its connected spring, the curved slot 13 coöperating with the pin 17 to restore the key. Thus if a key is not fully depressed, while the slide-bar 28 might be temporarily released, said slide-bar will be prevented from moving forwardly when the handle is operated because the controlling elements therefor—to wit, the latch-pin, the bell-crank lever, the sliding plate, and the series of keys common thereto—are restored to normal position before the handle is operated. However, when the key is fully depressed it effects the setting up of a stop in the path of one of the pins 29, and at the same time the sliding plate is moved forwardly to raise the latch-pin 33 through the medium of the bell-crank lever 32, and finally the hook portion 24 engages the bar 27 and holds the parts in their set position. This set position of the parts is shown in Fig. 3, wherein it will be seen that one of the projections 17 occupies a position at the upper end of the curved slot of the operated key-shank, and all of the other projections of the operated sliding

plate occupy positions in the front portions of the horizontal slot, so that none of the other keys of that series can be depressed when the sliding plate occupies its forward position, as described.

When the operating-handle is manipulated to move the slide-bar 28 forwardly against the stops set up by the operated key, said operating-handle also rocks the frame 47 rearwardly, and in so doing the finger 50 engages the cam-face 23 of the locking-detent, raising the locking-hook portion thereof out of engagement with the bar 27, which permits the sliding plate to be restored to its home position under the impulse of its spring. If for any reason this spring refuses to act, the finger 50, after raising the detent 22, will positively restore the sliding plate, which sliding plate will positively restore the depressed key should its spring 18 refuse to act.

It will be observed by referring to Fig. 1 that the horizontal portion 14 of the slot in the key-shank is of such dimensions that when the keys are home the projections 17 can play freely therein without frictional contact. Of course when a key is depressed there is frictional contact between the projections 17 and the upper wall of the curved slot 13, due to the cam action in moving the sliding plate forwardly.

I am aware that many minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. The combination with a series of keys, of a sliding plate common thereto, a locking-detent for holding said plate in one position, an operating-handle, a total-key, and means operated by said handle and total-key for releasing said detent from its locked position; substantially as described.

2. The combination with a series of keys, of a sliding plate coöperating therewith, a locking-detent coöperating with said sliding plate, a cam-face on said detent, a rocking frame coöperating with said cam-face, and means for rocking said frame; substantially as described.

3. The combination with a series of keys, of a sliding plate coöperating therewith, a spring-held locking-detent carried by said sliding plate, a cam-face on said detent, and means coöperating with said cam-face for moving said detent out of locked position; substantially as described.

4. The combination with a series of keys, of a sliding plate coöperating therewith, a locking-detent coöperating with said sliding plate, and means, whereby, by the depression of any key in the series, a stop will be

set up, and upon the final movement of the depressed key, the locking-detent will become operative; substantially as described.

5 5. The combination with a slide-bar, of a latch for restraining the movement thereof, a series of keys for setting up stops for cooperation with said slide-bar, a sliding plate common to said series of keys, said sliding plate, when actuated, releasing the slide-bar, 10 and a detent cooperating with said sliding plate to lock same in position after a stop has been set up and the slide-bar released; substantially as described.

6. The combination with a series of keys, |

of a sliding plate cooperating therewith, a 15 locking-detent 22 on said sliding plate, said detent having a cam-face 23, a locking-shoulder 24, and a projection 25, a spring 26 cooperating with said projection 25, and a bar 27 cooperating with the locking-shoulder 24; 20 substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 12th day of June, 1902.

WILLIAM T. TREADWAY.

Witnesses:

F. R. CORNWALL,

WM. H. SCOTT.