

No. 757,601.

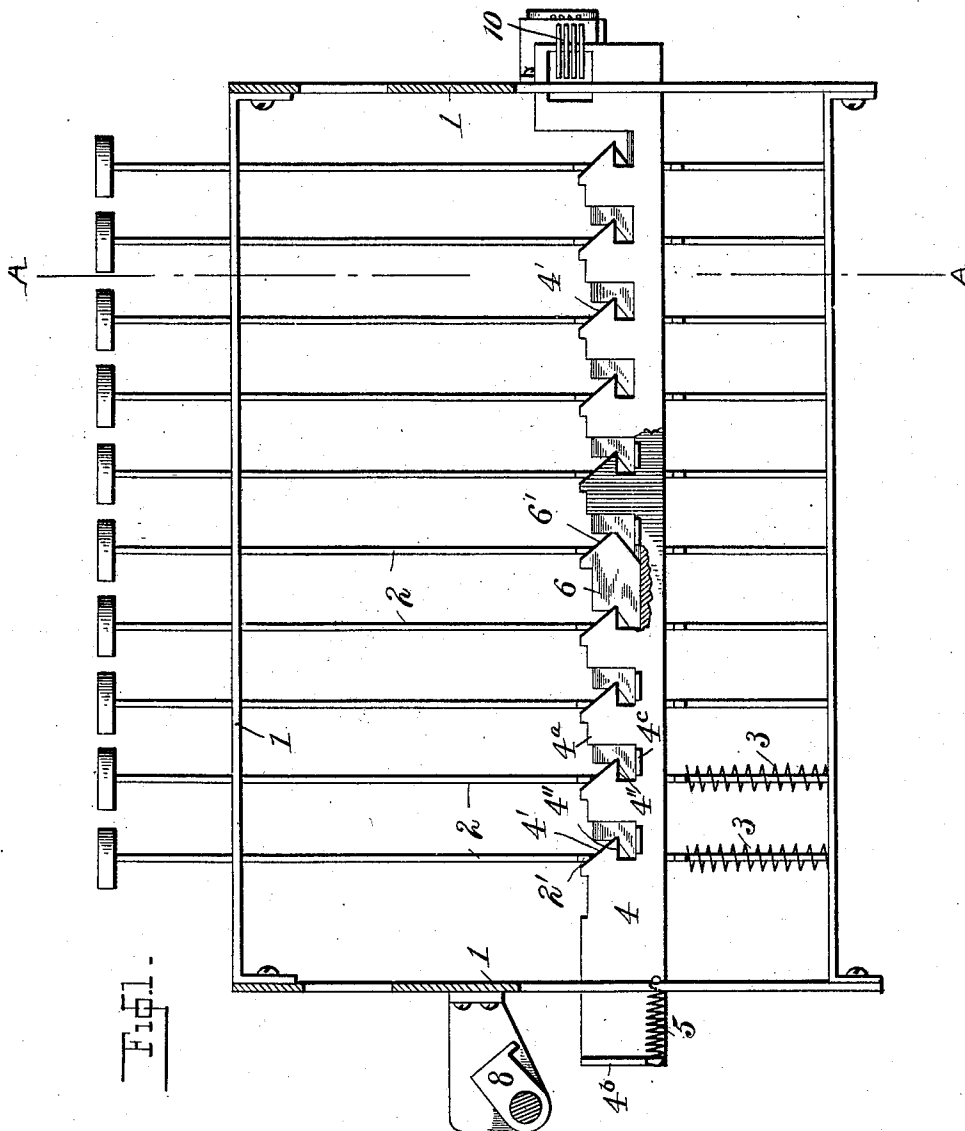
PATENTED APR. 19, 1904.

I. S. DEMENT & F. J. HULL.
KEYBOARD MECHANISM FOR MECHANICAL CASHIERS,
REGISTERS, AND RECORDERS.

APPLICATION FILED MAR. 20, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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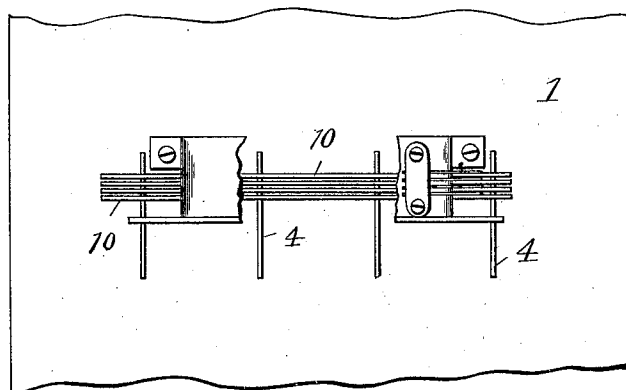
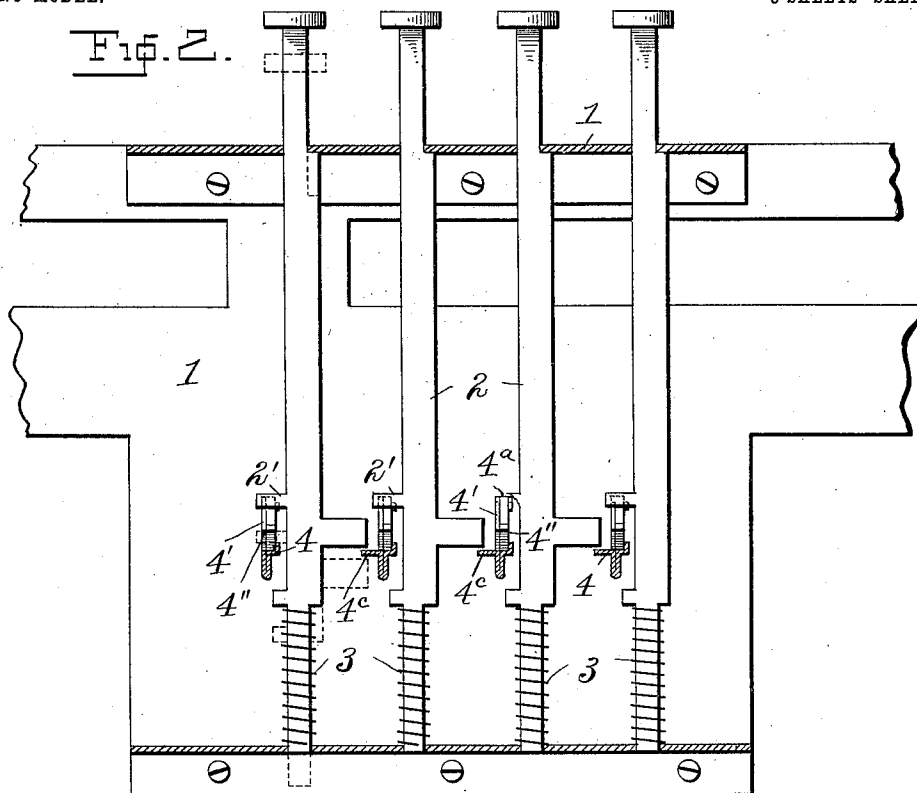
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

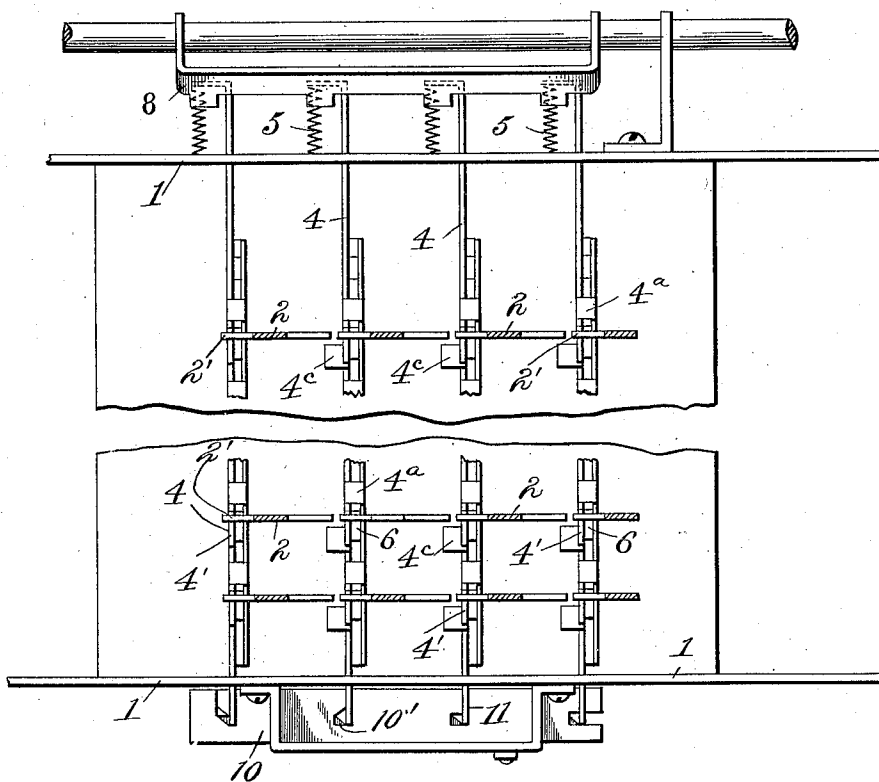


Fig. 5.

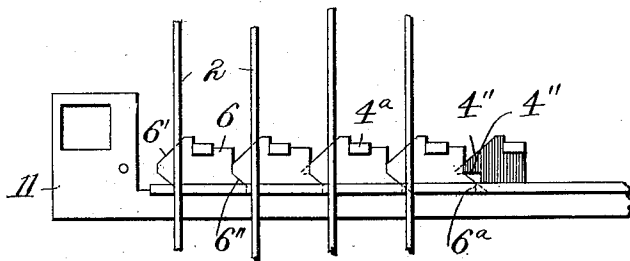
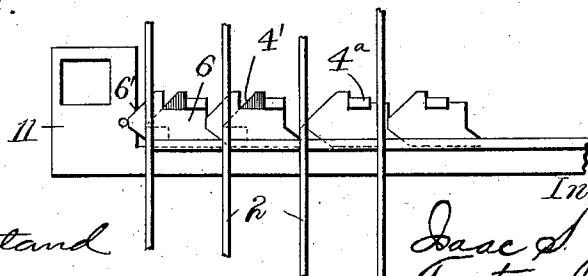


Fig. 6.



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UNITED STATES PATENT OFFICE.

ISAAC S. DEMENT, OF EAST ORANGE, NEW JERSEY, AND FOSTER J. HULL, OF BROOKLYN, NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO AMERICAN MECHANICAL CASHIER COMPANY, A CORPORATION OF NEW JERSEY.

KEYBOARD MECHANISM FOR MECHANICAL CASHIERS, REGISTERS, AND RECORDERS.

SPECIFICATION forming part of Letters Patent No. 757,601, dated April 19, 1904.

Application filed March 20, 1902. Serial No. 99,132. (No model.)

To all whom it may concern:

Be it known that we, ISAAC S. DEMENT, residing at East Orange, in the county of Essex and State of New Jersey, and FOSTER J. HULL, residing at Brooklyn, in the county of Kings and State of New York, both citizens of the United States, have invented certain new and useful Improvements in Keyboard Mechanism for Mechanical Cashiers, Registers, and Recorders, of which the following is a specification.

This invention relates to improvements in keyboard mechanisms for mechanical cashiers, registers, and recorders; and its object is to provide locking means to prevent improper operation of the keys.

The invention comprises, in combination with a plurality of groups of keys, a series of slides operated by the respective groups of keys, each slide having a plurality of blocks or dogging devices slidably mounted thereon so as to be engaged by the operated keys and when thus engaged to prevent operation of the other keys.

In our application, Serial No. 77,473, filed October 3, 1901, is disclosed an apparatus embodying locking-slides having certain features in common with those herein described. The present application relates more particularly to the adjunctive means used in connection with such slides to effect the blocking or locking of the keys, such adjunctive mechanism comprising the sliding blocks above referred to.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of a mechanism embodying our invention. Fig. 2 is a transverse section of same on the line A A in Fig. 1. Fig. 3 is a front elevation, and Fig. 4 is a plan. Figs. 5 and 6 are side views of a part of one slide, showing different positions of the sliding blocks thereon.

The keys 2 are mounted to slide in a suitable frame 1 and are kept in normal position by spring 3. Said keys are arranged in a plu-

45 rality of groups or series corresponding to different denominations of numerals or different departments. For each group of keys is provided a slide or bar 4, mounted to slide in frame 1 and provided with cam-faces or inclines 4', adapted to be engaged by lugs 2' on keys 2, so that depression of any key of that group or series will force the corresponding slide 4 to the rear. When the key is fully depressed, its lugs 2' pass a shoulder 4'' on bar 4, and said bar then snaps back by the action 55 of a spring 5, so as to hold the key in operated position by the shoulder 4'' engaging over same.

Each of the bars 4 carries in guides or flanges 4^a thereon a series or group of blocks or subsidiary sliding devices 6, one for each key. The forward faces of these blocks have a cam or incline portion 6', corresponding to and normally coinciding with the incline 4' of bars 4, so that when any key is depressed its lug 2' will strike this incline 6' and will force the corresponding block 6 to the rear. The blocks 6 are arranged in close order or contact end to end or one behind another, so that when any block is thus pushed back it will push back all those behind it. The blocks forward of the actuated block will, however, remain in normal position, the lug 2' of the operated key coming behind the tail 6^a of the block directly in front of it and an incline 6'' being provided on the back of each block to insure that the key-lug can pass behind such tail.

A restoring or resetting device for the main slides 4 is provided, consisting of a bail or swinging frame 8, operated by suitable handle means and acting on lugs 4^b on the said slides to push the operated slide or slides back far enough to permit the operated key or keys to escape from the locking-shoulders 4'' and to return to normal position. Then on return movement of bail 8 the springs 5 drive the slides 4 forward to normal position. In this movement the blocks 6 in rear of the operated

key are moved forward to normal position by engagement of upper lugs or flanges 4^a of slides 4 with said blocks.

Each slide 4, except the slide to the extreme left, may be provided with horizontally-projecting lugs 4^a, which are just forward of the path of the keys of the next adjacent series, so as not to interfere with the depression of any key unless it be attempted to depress two keys simultaneously, in which case the rearward movement of such lugs is sufficient to intercept and block the downward movement of the keys of the next higher denominational series.

The mechanism above described is preferably used in connection with the interlocking mechanism for securing the operation of the groups in a predetermined order, which is fully shown and described in the application above referred to. Sufficient only of the said interlocking mechanism is herein shown and described to explain its relation and coöperation with the mechanism which forms more specifically the subject-matter of the present application. The mechanism for securing the operation of the groups in a predetermined order consists of locking-slides 10, Figs. 1, 3, and 4, sliding transversely in suitable guides and provided with cam-slots 10', which are engaged by the bail-shaped end portions 11 of the bars 4, each bar thus coöperating with any one of the slides. The cam-slots 10' are so shaped that when one of the bars 4 is moved rearwardly by the operation of a key it causes one of the slides 10 to move transversely of the keyboard. This movement of a slide brings the cam-slots 10' therein to such position that all the slides 4 except the one next in the predetermined order of operation are locked from movement.

In normal position of the above-described parts any one of the keys is free to operate; but when any key is operated it will engage the inclined portion 6' of corresponding block or slide 6 and move it endwise, and said block will push back all the blocks to the rear, so as to bring said blocks or slides under the respective keys to the rear and prevent operation thereof. At the same time the operated key will pass behind the tail 6^a of next block in front and will hold that block, and therefore all the forward blocks, from backward movement, so that operation of any of the keys of that group in front of the operated key is prevented. The operation of any key, therefore, prevents operation of any other key of the same group until it is reset to normal position.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. A keyboard mechanism for the purposes described comprising groups of keys representing different denominations, said groups

being capable of operation in a predetermined order of sequence, means actuated on operation of a key of one group to prevent operation of keys in another group out of said order of sequence, and means to prevent operation of all other keys in the group of the actuated key.

2. In a machine of the class described, the combination of a series of keys, a slide common to the series and engaged by the keys thereof, key-locking devices mounted on said slide and actuated by one of said keys to prevent operation of the other keys.

3. In a machine of the class described, the combination of a series of keys, a spring-controlled slide common to the series and engaged by the keys thereof, key-locking devices mounted on said slide and actuated by one of said keys to prevent operation of the other keys.

4. In a machine of the class described, the combination of a series of keys, a slide common to the series and actuated by any key of the series, said slide provided with means to lock the keys in operated position, and means mounted on said slide and actuated by one of the keys to prevent operation of the other keys.

5. In a machine of the class described, the combination of a series of keys, a slide common to the series and engaged by the keys thereof, slidable blocks mounted on said slide and actuated by one of said keys to prevent operation of the other keys.

6. The combination of a series of keys, a series of slidable blocks corresponding to and engaged by said keys, each block provided with an inclined portion for engagement with a key, a stop portion to arrest the action of a key, and a portion to engage with a key when the latter is operated to lock all the blocks in advance of said operated key from movement, and means consisting of a slide carrying said blocks and in engagement therewith to reset all said blocks.

7. The combination of a plurality of keys arranged in groups, a slide for each group, means on each slide adapted to be engaged by any key of the corresponding group whereby any operated key in the group acts to operate the slide, a plurality of locking devices movably mounted on each slide and adapted to be operated by any key in the corresponding group, the operation of any key in group thereby locking all the other keys in the group.

8. The combination with a plurality of keys, arranged in groups, of a main slide for each group, provided with means whereby it is operated by all the keys of that group, and a plurality of subsidiary sliding devices mounted on each main slide, arranged end to end and provided with means for engaging with the keys and with the main slide, so that operation of any key will operate one of the subsidiary sliding devices and will also operate

the main slide, said main slide being provided with means for holding the operated key in operated position, and the subsidiary slides being provided with means for locking all the other keys of that group from operation.

9. The combination with a plurality of groups of keys of a corresponding plurality of slides, each key provided with portions engaged by the respective slides to operate the slides, and to lock the operated key in operated position, a plurality of locking devices mounted on the said slides aforesaid and adapted to be engaged by the respective keys to prevent operation of unoperated keys, said slides being provided with means engaging said locking devices to restore same to normal position, and a resetting means adapted to restore all said slides to normal position.

10. The combination with a plurality of keys, arranged in groups, of a main slide for each group, provided with means whereby it is operated by all the keys of that group, and a plurality of subsidiary sliding devices mounted on each main slide, arranged end to end and provided with means for engaging with the keys and with the main slide, so that operation of any key will operate one of the subsidiary sliding devices and will also operate the main slide, said main slide being provided with means for holding the operated key in operated position, and also with means for intercepting the keys of an adjacent group, and the subsidiary slides being provided with means for locking all the other keys of that group from operation.

11. In a machine of the class described, the combination of a series of keys, a slide common to the series and engaged by the keys thereof, key-locking devices mounted on said slide and actuated by one of said keys to prevent operation of the other keys, and means to restore said key-locking devices to normal position.

12. In a machine of the class described, the combination of a series of keys, a slide common to the series and actuated by any key of the series, said slide provided with means to lock the keys in operated position, other locking devices mounted on said slide and actuated on operation of a key to lock unoperated keys, and means to restore both locking devices to normal position.

13. In a machine of the class described, the

combination of a series of keys, a slide common to the series and actuated by any key of the series, said slide provided with means to lock the keys in operated position, other locking devices mounted on said slide and actuated on operation of a key to lock unoperated keys, and means to restore simultaneously both locking devices to normal position.

14. In a machine of the class described, the combination of groups of keys, a slide for each group, and means for engaging the slide by each key of a group, each slide provided with means to lock the keys of an adjacent group, and also provided with locking means for the unoperated keys of the group.

15. In a machine of the class described, the combination of a series of keys, a slide common to the series and actuated by any key of the series, said slide provided with means to lock the keys in operated position, other locking devices mounted on said slide and actuated on operation of a key to lock unoperated keys, and means to restore simultaneously both locking devices to normal position, and means to release all locking devices simultaneously.

16. A keyboard mechanism for the purposes described, comprising groups of keys representing different denominations, the keys of different groups being capable of operation in a predetermined order of sequence, and devices controlled by the operation of each group to lock the keys of all the other groups except the one next in said predetermined order of sequence, and means to lock all the unoperated keys of the operated group.

17. A keyboard mechanism for the purposes described comprising groups of keys representing different denominations, the keys of different groups to be operated in a predetermined order of sequence, devices controlled by the operation of any key in a group to lock the keys of all the other groups except the one next in the predetermined order of sequence, other locking devices actuated by the operated key to lock all unoperated keys of the same group, means to lock the operated keys in depressed position and means to release all the locking devices simultaneously.

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Witnesses:

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