June 13, 1939. G. C. COIL 2,162,605

REGISTER LOCKING MECHANISM

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Fig. 1.

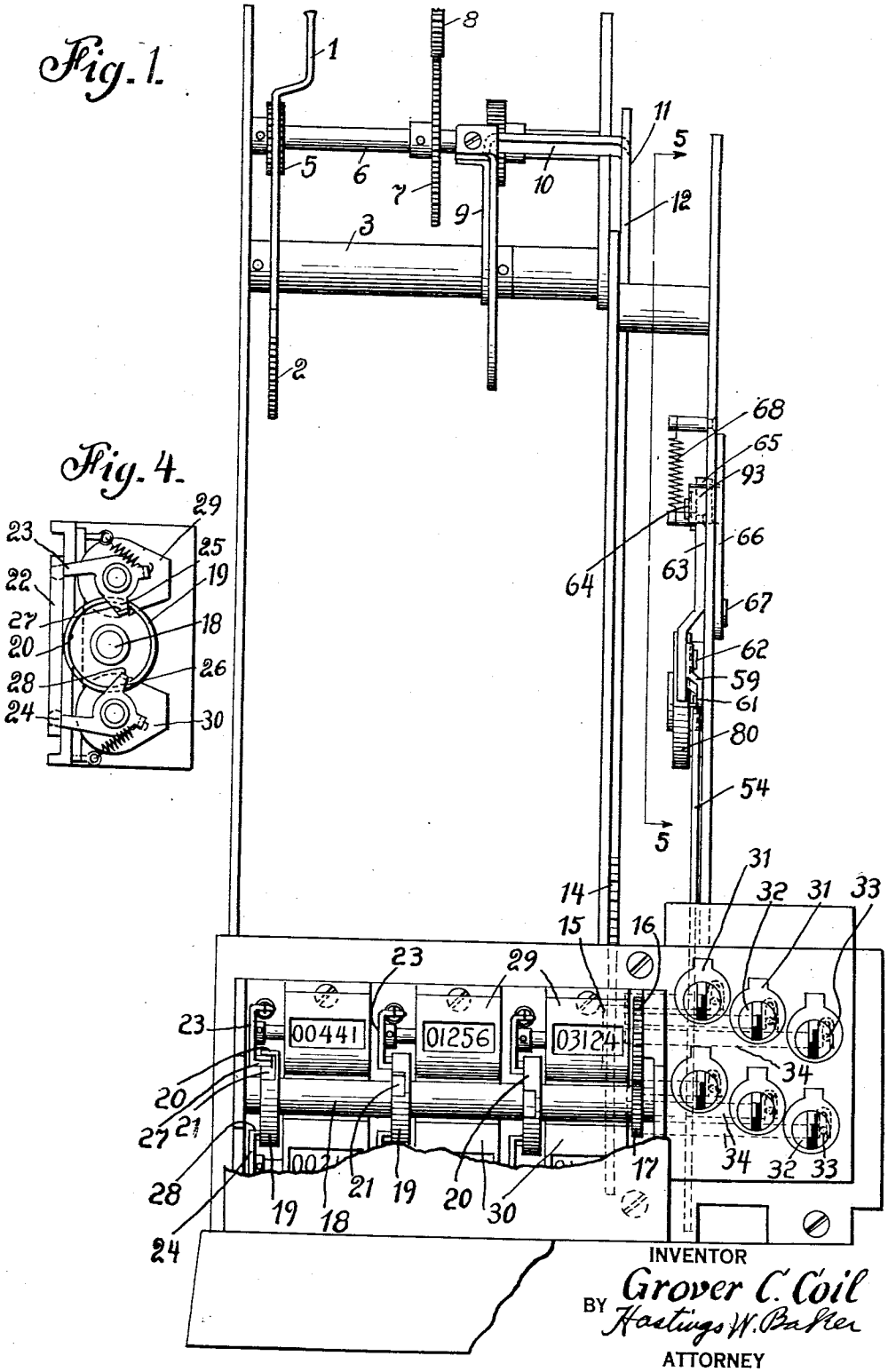


Fig. 4.

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Fig. 2.

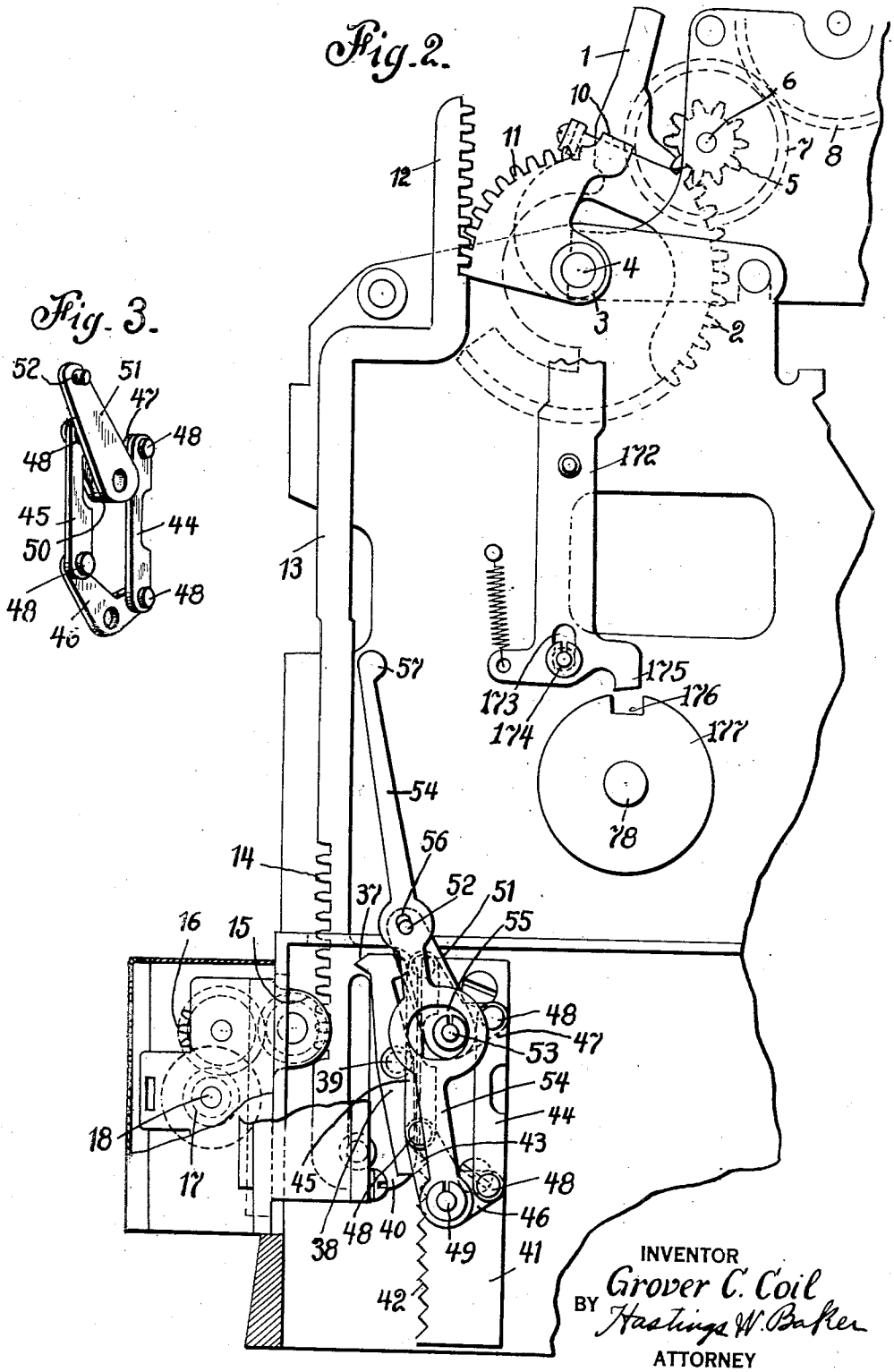


Fig. 3.

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Fig. 5.

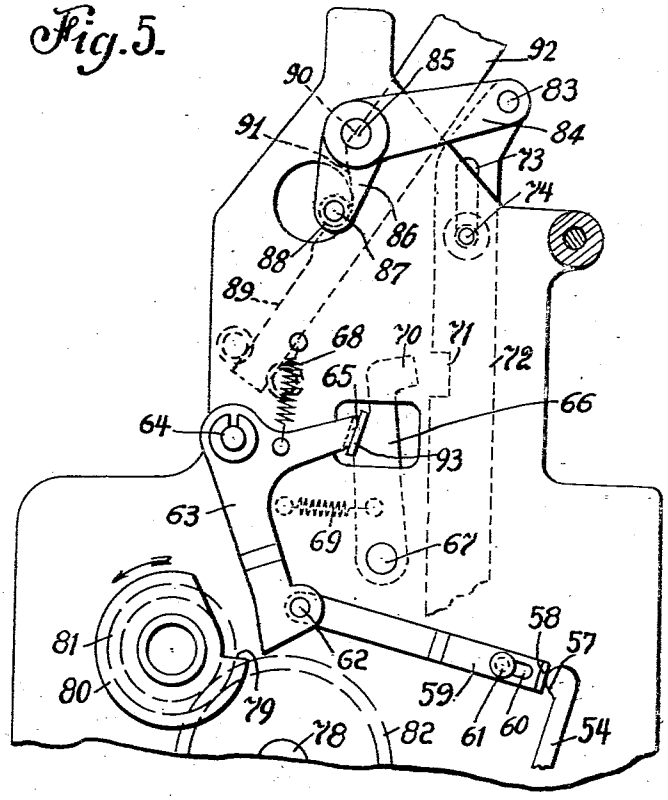
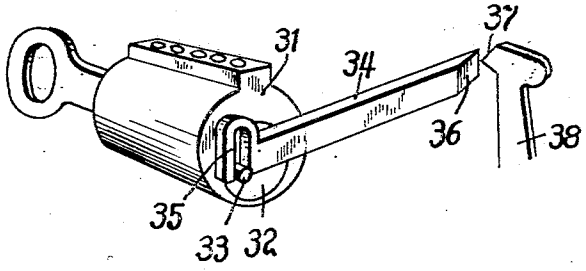


Fig. 6.



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UNITED STATES PATENT OFFICE

2,162,605

REGISTER LOCKING MECHANISM

Grover C. Coil, Dayton, Ohio, assignor, by mesne assignments, to Central National Bank of Cleveland, Cleveland, Ohio

Application September 12, 1935, Serial No. 40,294

12 Claims. (Cl. 235—130)

The object of this invention is to provide a locking mechanism for cash registers which are provided with clerk's counters whereby any clerk can lock against actuation his counter so that no other clerk can actuate his counter. These counters are of the type which register the number of transactions performed by any clerk.

In the drawings:

Fig. 1 is a front elevational view with certain of the parts broken away;

Fig. 2 is a side elevational view of the mechanism shown in Fig. 1;

Fig. 3 is a perspective view of the parallel bars shown near the bottom of Fig. 2;

Fig. 4 is a side elevational view of the counter and the operating mechanism therefor;

Fig. 5 is a side elevational view taken on the line 5—5 of Fig. 1 and looking in the direction of the arrow; and

Fig. 6 is a detailed perspective view of one of the locks and the mechanism directly associated therewith.

For the purpose of illustration, I have shown the invention incorporated in the type of register shown in Patent 1,981,205, patented November 20, 1934. The clerk's lever 1 is provided with a segmental rack 2 secured to a sleeve 3 rotatably mounted on a shaft 4. The rack 2 meshes with and drives a pinion 5 secured to a shaft 6 which has pinned thereto a gear 7 which meshes with and drives a gear 8 connected to an indicator. The sleeve 3 has secured thereto an arm 9 operatively connected to a bracket 10 which is operatively connected to a segmental gear 11, which segmental gear meshes with and drives a rack 12 on a slide rod 13 which near its lower end is provided with a rack 14 which meshes with and drives a pinion 15. The pinion 15 drives a pinion 16 which meshes with and drives a pinion 17 secured to a shaft 18. The shaft 18 is provided with disks 19 having over-turned flanges 20, each of which is provided with two apertures 21. As shown in the application of Albert S. Wheelbarger and George H. Darst, Serial No. 333,460, filed August 5, 1929, which issued March 2, 1937, as Patent No. 2,072,413, there is a gate 22 which is raised and lowered each time the machine is operated. The apertures in this gate receive arms 23 and 24 which are provided with arms 25 and 26 having over-turned flanges 27 and 28 which normally lie on the inner periphery of the flanges 20. When the shaft 18 is rotated so as to bring one of the apertures 21 adjacent one of the flanges 27 or 28 the selected clerk's counter 29 or 30 will be operated when the gate is actuated. Inasmuch as this structure is fully shown and described in the said application, further description in this application is not considered to be necessary, it being sufficient to remark that there are as many counters as there are clerks and there is one disk 19 for each two clerks; that is, there is one-half as many disks 19 as there are clerk's counters.

By means of the above described mechanism the clerk, by the manipulation of the clerk's lever 1, positions one of the apertures 21 so that it will be adjacent the lever which controls his counter, which counter will be actuated when the machine is operated. A clerk should not position the lever 1 so that any other clerk's counter would be actuated but heretofore there would be nothing to prevent a dishonest clerk from so doing.

In order to prevent one clerk from registering on another clerk's counter there is associated with each clerk's counter a lock 31 of such a character that when the lock associated with any counter is in its locking position the mechanism for operating the counters will be locked against movement so long as the setting mechanism is adjusted to a position to select that particular counter for operation. As shown in Figs. 1 and 6, each counter lock 31 includes a rotatable barrel 32 and a locking member or bar 34 which is connected with the barrel for movement thereby. As here shown, the locking bar extends transversely to the barrel and is provided with a transverse slot which, in the present instance, is formed in a U-shaped prong 35 and receives a pin 33 projecting from the end of the barrel 32, so that when the barrel is rotated by its key through an arc of 180° the locking bar 34 will be moved into or out of its locking position and when moved to its locking position this locking bar will operate or control the operation of a device for locking the operating mechanism for the counters against operation.

In the present apparatus the means for controlling the movement of the locking device for the operating mechanism comprises an actuating member 38 (Fig. 2), the position of which is controlled by the setting mechanism and the operative movement of which, with relation to the setting mechanism, controls the position of the locking device. In the present instance this actuating member 38 is in the form of a lever pivotally mounted between its ends on a stud 39 carried by a bracket 40 which is secured to and forms a part of the reciprocatory slide bar 13 which constitutes a part of the setting mechanism. The operating or pivotal movement of this ac-

tuating lever operates through suitable connecting mechanism to control the position of the locking device for the operating mechanism, and the actuating lever 38 is provided at its upper end with a head which contacts with the connecting mechanism and is provided at one side with a tapered nose, as shown at 37. At its other end the actuating lever is provided with a tapered nose 43 which cooperates with teeth 42 formed on a stationary rack bar 41. The connecting mechanism is resiliently held in engagement with the head at the upper end of the actuating lever so that the selecting movement of the slide bar 13 will cause the nose 43 of the actuating lever to ride over the teeth of the rack bar 41 thus imparting oscillatory movement to the actuating lever and to the connecting mechanism.

In the arrangement here illustrated the connecting mechanism comprises a lever 54 pivotally mounted at its lower end on a stud 49 and having at its upper end a contact surface 57 (Fig. 5) which bears against a flange 58 on the adjacent end of a connecting bar 59. This connecting bar is slidably supported at one end by a stationary pin 61 which extends through a slot 60 in the bar, and is pivotally connected at its other end with a locking device 63 which is here shown as an arm pivotally mounted on a stud 64 and has its free end arranged for movement into and out of the path of a shoulder 79 formed on a disk 80 which is rigidly secured to a gear 81 meshing with a gear 82 rigidly secured to the main drive shaft 78, so that when the locking device is in the path of the shoulder 79 the drive shaft and consequently the counter operating mechanism is locked against operative movement. A spring 68 acts on the locking device 63 to hold the latter normally in its inoperative or unlocking position and this spring also serves to move the lever 54 in a reverse direction so as to hold the connecting mechanism in engagement with the actuating lever 38.

The means for operatively connecting the actuating lever 38 with the lever 54 may take various forms but inasmuch as the actuating lever moves lengthwise of the lever 54 it is important that this connecting means shall be of such a character as to maintain the operative connection between the two levers in all positions which the actuating lever may assume. I have therefore shown means for connecting the two levers in the form of a parallelogram, see Fig. 3, comprising side members 44 and 45 and lower and upper members 46 and 47, the side members being connected at their ends with the respective end members by pivot studs 48. The lower end member 46 is pivotally mounted on the stud 49 and the upper end member 47 carries a sleeve 50 adapted to receive a stud shaft 53, and secured to this sleeve is a crank arm 51 having at its free end a pin 52 which extends into a slot 56 in the lever 54. The head of the actuating lever 38 has sliding contact with the side member 45 of the parallelogram and the member 45 is held in constant contact with the actuating lever 38 by the action of the spring 68 above described. Consequently the parallelogram and crank arm 51 will move with the actuating lever 38 as the latter moves about its pivotal axis 39 and this movement will control the position of the locking device 63. The teeth 42 of the rack bar 41 are so arranged with relation to the setting mechanism that when the slide bar 13 is adjusted to select a particular counter for operation the nose 43 of the actuating lever will enter the space or recess between adjacent teeth of the rack bar 42, thereby permitting the locking device 63 to be moved to its inoperative or unlocking position by the spring 68. As the slide bar 13 moves from one selecting position to another, the nose 43 of the actuating lever 38 will ride over one of the teeth 42 and will thus be moved about its axis in a direction to positively move the locking device 63 into its locking position with relation to the disk 80. Thus it will appear that the operating mechanism is released for operation when the setting mechanism is in its selecting position with relation to any counter and said operating mechanism will be locked against operation when said setting mechanism is in a non-selecting position.

When a counter lock 31 (Figs. 1 and 6) has been actuated to move its locking bar 34 into locking position that bar will be located in operative relation to the actuating lever 38 and may either impart movement to the actuating lever to cause the locking device 63 to be moved to locking position or it may prevent the movement of the actuating lever in a direction to release the locking device, if the latter is already in its locking position when the slide bar 13 of the setting mechanism is adjusted to select for operation the counter associated with that locking device. Assuming that the slide bar 13 is not adjusted to select that particular counter for operation, the locking bar 34, when in its locking position, will lie in the path of the nose 37 of the actuating lever 38 and as the slide bar 13 approaches a position to select for operation the counter associated with that locking bar the lever 38 will be actuated by the adjacent rack tooth 42 to move the locking device 63 to its locking position and the further movement of the slide bar 13 to accurately select that counter for operation will move the nose 37 of the actuating lever into contact with the face of the locking bar 34 and that bar will then hold the lever against movement in a direction to release the locking device so long as the slide bar 13 is adjusted to select that particular counter for operation, or until the locking bar 34 is moved to its inoperative position. The rack teeth 42 are provided merely for the purpose of locking the operating mechanism when the slide bar 13 is in a non-selecting position and if these teeth were omitted it will be apparent that the actuating lever would remain in its retracted position, with the locking device in its unlocked position, during the movement of the slide bar 13 until the nose 37 of the actuating lever 38 engaged a locking bar 34 which was in locking position and the further movement of the slide bar 13 would cause the beveled nose 37 to move over the locking bar 34, thus moving the actuating lever about its axis in a direction to move the locking device 63 to locking position. Should a counter lock be actuated to move its locking bar 34 into locking position while the slide bar 13 was adjusted to select for operation the counter associated with that particular lock the movement of the locking bar to its locking position would cause the beveled end 36 thereof to engage the nose 37 of the actuating lever 38, which would then be in line with the locking bar, and thus rock lever 38 in a direction to move the locking device 63 to its locking position. In any event the movement of the locking bar of any counter lock to its locking position will prevent the operation of the counter operating mechanism so long as the setting mechanism is adjusted to select for operation the

particular counter with which that locking bar is associated.

It is customary to provide a register of the type here shown with a controlling device which serves to initiate the operation of the registering mechanism, as by closing the motor switch, and the counter locks may also serve to prevent the operation of this controlling device to initiate the operation of the mechanism while the setting mechanism is adjusted to select a counter whose lock is in locking position. As shown in Fig. 5, this controlling device comprises a reciprocatory controlling bar 72 which is connected with the device to be controlled, not here shown. The bar 72 is provided with slots, one of which is shown at 73, to receive stationary guide pins 74 and it is connected at its upper end by a pin 83 with a crank arm 84 mounted on a shaft 85 and rigidly connected with a second crank arm 86, thus providing in effect a bell crank lever. The arm 86 is provided with a roller 88 mounted on a stud 87 and contacting the edge of a push bar 92, commonly called a motor bar. This push bar has at one edge parallel surfaces 89 and 90 connected one with the other by an inclined or cam surface 91. When the push bar 92 is in its retracted position the roller 88 engages the surface 89 at the lower end of the cam surface and the depression of the push bar causes the cam surface 91 to rock the arms 86 and 84 about the axis of the shaft 85 and thus depress the bar 72. The bar 72 of the controlling device is provided with a locking recess 71 adapted to receive the nose 70 of a locking lever 66 which is pivotally mounted on a stud 67 and is held normally in its retracted or inoperative position by a spring 69. The locking lever 66 is moved into locking engagement with the bar 72 by the action of the locking device 63. For this purpose that device is provided with an arm having at its outer end a flange 65 arranged to engage a cam surface 93 on the lever 66 and actuate the same to move the nose 70 thereof into the locking recess 71. Thus the counter lock not only locks the operating mechanism against operation but prevents the closing of the motor switch.

In Fig. 2 there is shown a separate device for locking the operating mechanism, comprising a reciprocatory bar 172 having a slot 173 engaging a stud 174 to guide the bar. At its lower end the bar is provided with a locking arm 175 adapted to enter a locking notch 176 in the disk 177 secured to the main drive shaft 78. However, this locking device is not in the present instance controlled by the counter lock but is controlled by mechanism independent thereof.

I realize that many changes may be made in my invention without departing from the spirit thereof and I, therefore, desire to claim the same broadly except as I may limit myself in the appended claims.

Having now described my invention, I claim:

1. In a register comprising a plurality of counters, setting mechanism to select the counter which is to be operated, and operating mechanism to actuate the selected counter, means for locking said operating mechanism against operation including an element connected with said setting mechanism for movement therewith and for movement with relation thereto and locks associated with the respective counters, each lock having a part which, if moved to locking position while said setting mechanism is adjusted to select for operation the counter with which said lock is associated, will impart movement to said element and actuate the locking means for said operating mechanism.

2. In a register comprising a plurality of counters, setting mechanism to select the counter which is to be operated, operating mechanism to actuate the selected counter, and a controlling device to initiate the operation of said operating mechanism, locks associated with the respective counters, separate locking devices for said operating mechanism and said controlling device, and means controlled by the selecting movement of said setting mechanism to move both locking devices into and out of their locking positions, said counter locks having means for retaining both locking devices in their locking positions while said setting mechanism is positioned to select for operation the counter whose lock is in locking position.

3. In a register comprising a plurality of counters, setting mechanism to select the counter which is to be operated and operating mechanism to actuate the selected counter, a device to lock said operating mechanism against operation, an actuating member connected with said setting mechanism for movement therewith and with relation thereto, means for operatively connecting said actuating member with said locking device, means acting on said actuating member during the movement of said setting mechanism to impart operative movement to said actuating member, and locks associated with the respective counters, each lock having a part which, if moved to its locking position while said setting mechanism is adjusted to select for operation the counter with which that lock is associated, will operate said actuating member to lock said operating mechanism.

4. In a register comprising a plurality of counters, setting mechanism including a longitudinally reciprocatory member to select the counter which is to be operated and operating mechanism to actuate the selected counter, a device to lock said operating mechanism against operation, a toothed rack extending lengthwise of said reciprocatory member, an actuating member pivotally mounted on said reciprocatory member for oscillatory movement with relation thereto about a transverse axis, means for operatively connecting said actuating member with said locking device to control the position of the latter, said actuating member having a part arranged to move over the teeth of said rack and to cause said locking device to move to its locking position as said reciprocatory member moves from one selecting position to another selecting position and to enter a recess between adjacent teeth and cause said locking device to move to its unlocking position when said reciprocatory member is in a selecting position, and locks associated with the respective counters, each lock having a part adapted when in locking position to prevent said part of said actuating member from entering said recess so long as said reciprocatory member is in a position to select for operation the counter with which that lock is associated.

5. In a register comprising a plurality of counters, setting mechanism comprising a reciprocatory member to select the counter which is to be operated, and mechanism for operating the selected counter, a device for locking said operating mechanism against operation, and actuating member mounted on said reciprocatory member for movement therewith and for operative movement with relation thereto, means controlled

by the operative movement of said actuating member to move said locking device to its locking position, and locks associated with the respective counters, each counter lock having a movable part arranged to engage and operate said actuating member when said counter lock is moved to locking position after said setting mechanism has been adjusted to select for operation the counter with which said counterlock is associated and to be engaged by said actuating member and impart operative movement to the latter when said counter lock is moved to locking position before said setting mechanism is adjusted to select for operation the counter with which said counter lock is associated.

6. In a register comprising a plurality of counters, setting mechanism including a longitudinally reciprocatory member to select the counter which is to be operated, and operating mechanism to actuate the selected counter, a device to lock said operating mechanism against operation, a toothed rack extending lengthwise of said reciprocatory member, an actuating lever pivotally mounted between its ends on said reciprocatory member, means for operatively connecting said actuating lever with said locking device to control the position of the latter, said actuating lever having at one end a part arranged to travel over the teeth of said rack and thereby impart oscillatory movement to said actuating member as said reciprocatory member moves from one position to another position, said actuating lever having a nose at its other end, and locks associated with the respective counters, each counter lock having a part movable to a position to engage the nose on said actuating lever when said reciprocatory member is in a position to select for operation a counter with which that lock is associated and thus prevent the movement of said actuating member to release said locking device.

7. In a register comprising a plurality of counters, a setting lever, a slide bar, means for operatively connecting said slide bar with said setting lever, means actuated by said slide bar to select the counter which is to be actuated, operating mechanism to actuate the selected counter, means including a movable member to lock said operating mechanism against operation, an actuating member, means for connecting said actuating member with said slide bar for movement therewith and for movement transversely thereto, a connecting device comprising two relatively movable members, means for operatively connecting one member of said connecting device with said locking member, the other member of said connecting device being arranged to have operative engagement with said actuating member in all positions of the latter and having means for actuating the first mentioned member of said connecting device, a toothed member extending lengthwise of said slide bar, said actuating member having a part arranged to be engaged and actuated by a tooth of said toothed member as said slide bar moves from one selecting position to another selecting position to cause said actuating member to impart movement to the last mentioned member of said connecting device, and locks associated with the respective counters, each lock having a part movable to a position to engage said actuating member and control the movement thereof when said slide bar is adjusted to select for operation the counter with which that lock is associated.

8. In a register comprising a plurality of counters, a setting lever, a slide bar, means for operatively connecting said slide bar with said setting lever, means actuated by said slide bar to select the counter which is to be actuated, operating mechanism to actuate the selected counter, means including a movable member to lock said operating mechanism against operation, a bar extending lengthwise of and movable transversely to said slide bar, means for operatively connecting said transversely movable bar with said locking member, a toothed bar extending lengthwise of said slide bar, an actuating lever connected with said slide bar for movement therewith and for oscillatory movement with relation thereto, said actuating lever having a part in sliding engagement with said transversely movable bar and having a second part arranged to engage the teeth of said toothed bar and impart oscillatory movement to said actuating lever to actuate said transversely movable bar and said locking member when said slide bar is adjusted to select a counter which is to be operated, and locks associated with the respective counters, each lock having a part movable to a position to engage said actuating member and control the movement thereof when said slide bar is adjusted to select for operation the counter with which that lock is associated.

9. In a register comprising a plurality of counters, setting mechanism including a longitudinally reciprocatory member to select a counter which is to be operated, and operating mechanism to actuate the selected counter, a device including a movable member to lock said operating mechanism against operation, a toothed member extending lengthwise of said reciprocatory member, a movable member extending lengthwise of said reciprocatory member and movable transversely thereto, means for operatively connecting the last mentioned member with the movable member of said locking device, an actuating lever pivotally mounted between its ends on said reciprocatory member, having one end in sliding engagement with said last mentioned member and having its other end arranged to engage and to be actuated by the teeth of said toothed member when movement is imparted to said reciprocatory member, spring means to move said movable member of said locking device in one direction and to hold said last mentioned member in engagement with said actuating lever, and locks associated with the respective counters, each lock having a part movable to a position to engage said actuating member and control the movement thereof when said reciprocatory member is adjusted to select for operation the counter with which that lock is associated.

10. In a register comprising a plurality of counters, setting mechanism including a longitudinally reciprocatory member to select a counter which is to be operated, and operating mechanism to actuate the selected counter, a device including a movable member to lock said operating mechanism against operation, a connecting member pivotally mounted at one end on a fixed axis, means for operatively connecting the other end of said connecting member with the movable member of said locking device, a toothed bar extending lengthwise of said reciprocatory member, a member having a contact surface extending lengthwise of said reciprocatory member, means for pivotally supporting the last mentioned member adjacent the pivotal axis of said connecting member, means for operatively connecting said last mentioned member with said connecting member at a point spaced

from the axis of the latter, an actuating lever pivotally mounted between its ends on said reciprocatory member, having at one end a part slidably engaging the contact surface of said last mentioned member and having at its other end a part to ride over the teeth of said toothed member, spring means acting on said last mentioned member and said actuating member to hold the latter in engagement with said toothed member, and locks associated with the respective counters, each lock having a part movable to a position to engage said actuating lever and control the movement thereof when said reciprocatory member is adjusted to select for operation the counter with which that lock is associated.

11. In a register comprising a plurality of counters, setting mechanism including a longitudinally reciprocatory member to select the counter which is to be operated and operating mechanism to actuate the selected counter, a device including a movable member to lock said operating member against operation, a connecting member pivotally mounted at one end on a fixed axis, means for operatively connecting the other end of said connecting member with the movable member of said locking device, a parallelogram having side members and end members pivotally connected one to the other, means for pivotally mounting one end member of said parallelogram on an axis coincident with the axis of said connecting member to support said parallelogram for oscillatory movement, means for connecting the other end member of said parallelogram with said connecting member, a rack bar extending lengthwise of said reciprocatory member and having teeth on one longitudinal edge thereof, an actuating lever pivotally mounted between its ends on said reciprocatory member, having at one end a part slidably engaging one side member of said parallelogram and having at its other end a part engaging the teeth of said rack bar, spring means to move the movable member of said locking device to an inoperative position and to press said parallelogram against the first mentioned part of said actuating member, whereby the movement of said reciprocatory member will move the last mentioned part of said actuating lever over the teeth of said rack bar and thus cause said movable member of said locking device to be actuated alternately by said actuating lever and by said spring means, and locks associated with the respective counters, each lock having a part movable to a position to engage said actuating lever near the first mentioned end thereof and hold said movable locking member in an inoperative position when said reciprocatory member is in a position to select for operation that counter with which said lock is associated.

12. In a register comprising a plurality of counters, setting mechanism comprising a reciprocatory member to select the counter which is to be operated, and mechanism for operating the selected counter, a device for locking said operating mechanism against operation, an actuating member mounted on said reciprocatory member for movement therewith and for operative movement with relation thereto, means controlled by the operative movement of said actuating member to move said locking device to its locking position, and a lock associated with the respective counters, each counter lock having a part movable by the locking movement of said counter lock to a position adjacent the position occupied by a part of said actuating member when said setting mechanism is adjusted to select the counter with which that counter lock is associated, said parts being so arranged that when one of said parts is moved to its said position while the other part is in its said position the part which is so moved will engage the other part and cause operative movement to be imparted to said actuating member.

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