E. J. VON PEIN.

CASH REGISTER.

APPLICATION FILED JUNE 4, 1913.

1,131,754.

Patented Mar. 16, 1915.

4 SHEETS—SHEET 1.

FIG. 3.

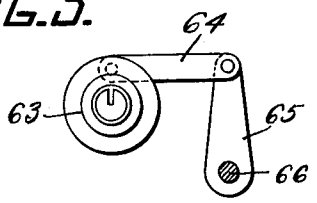


FIG. 1.

Witnesses

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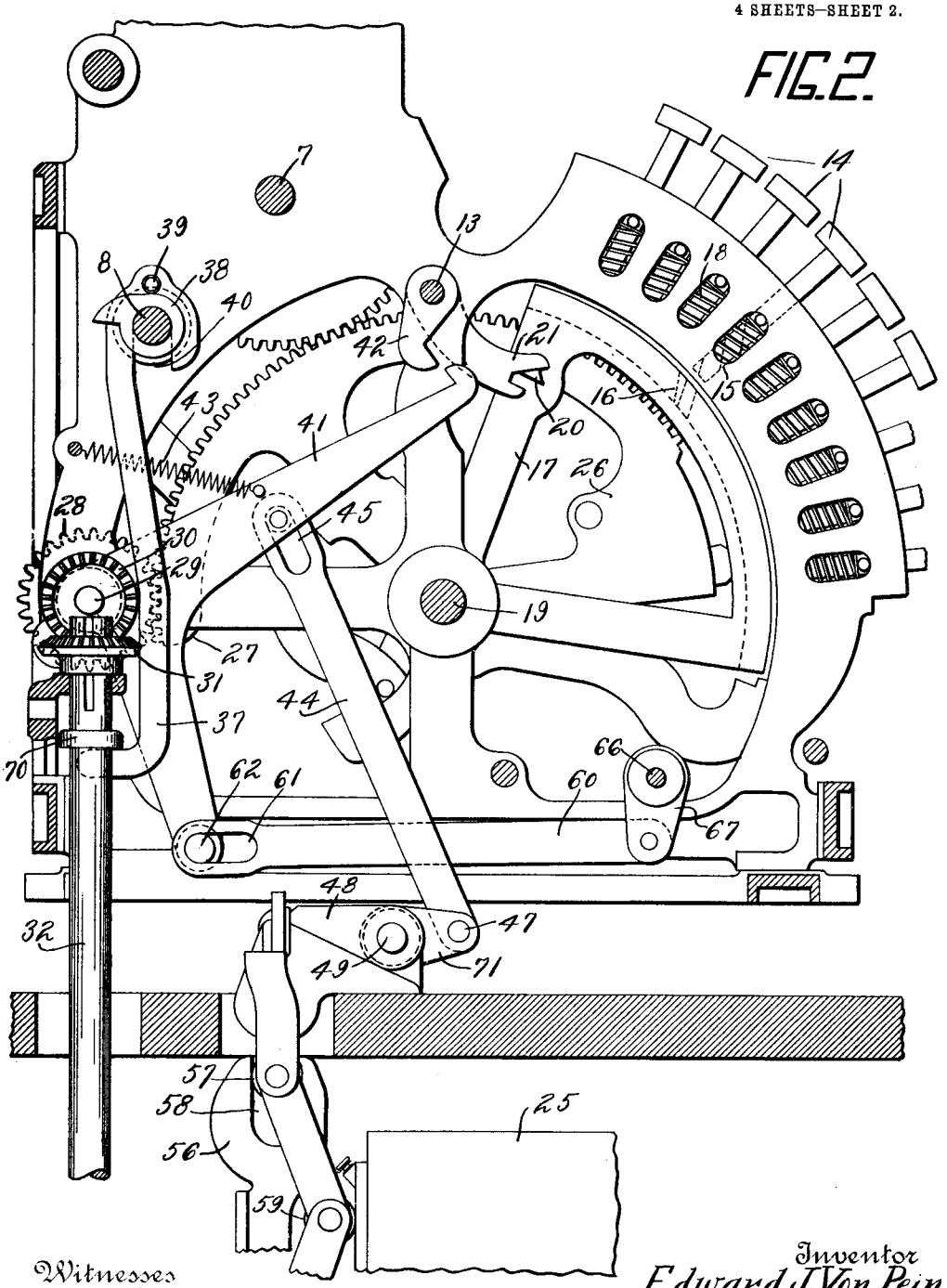
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4 SHEETS—SHEET 2.

FIG. 2.



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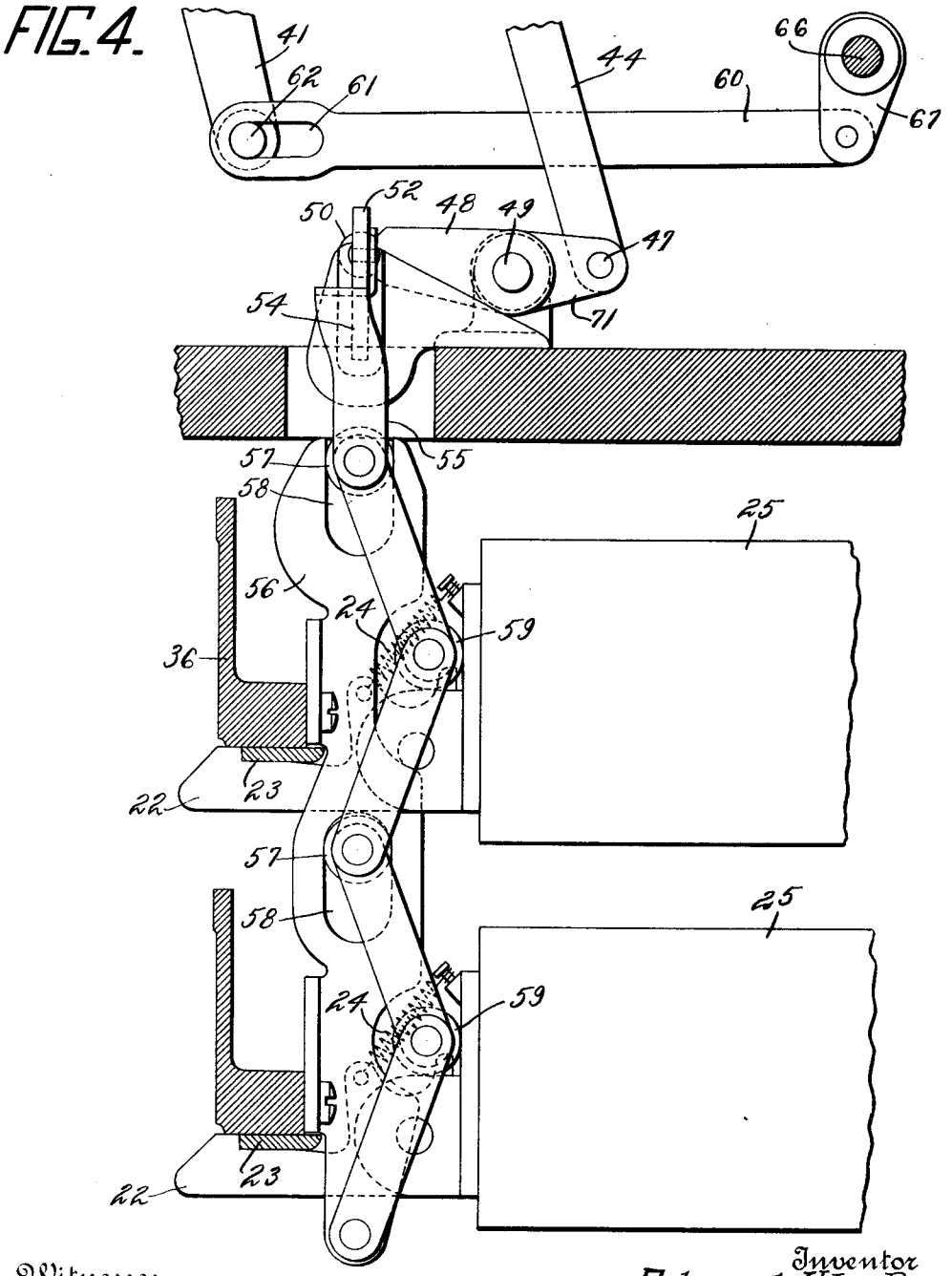
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4 SHEETS—SHEET 3.

FIG. 4.



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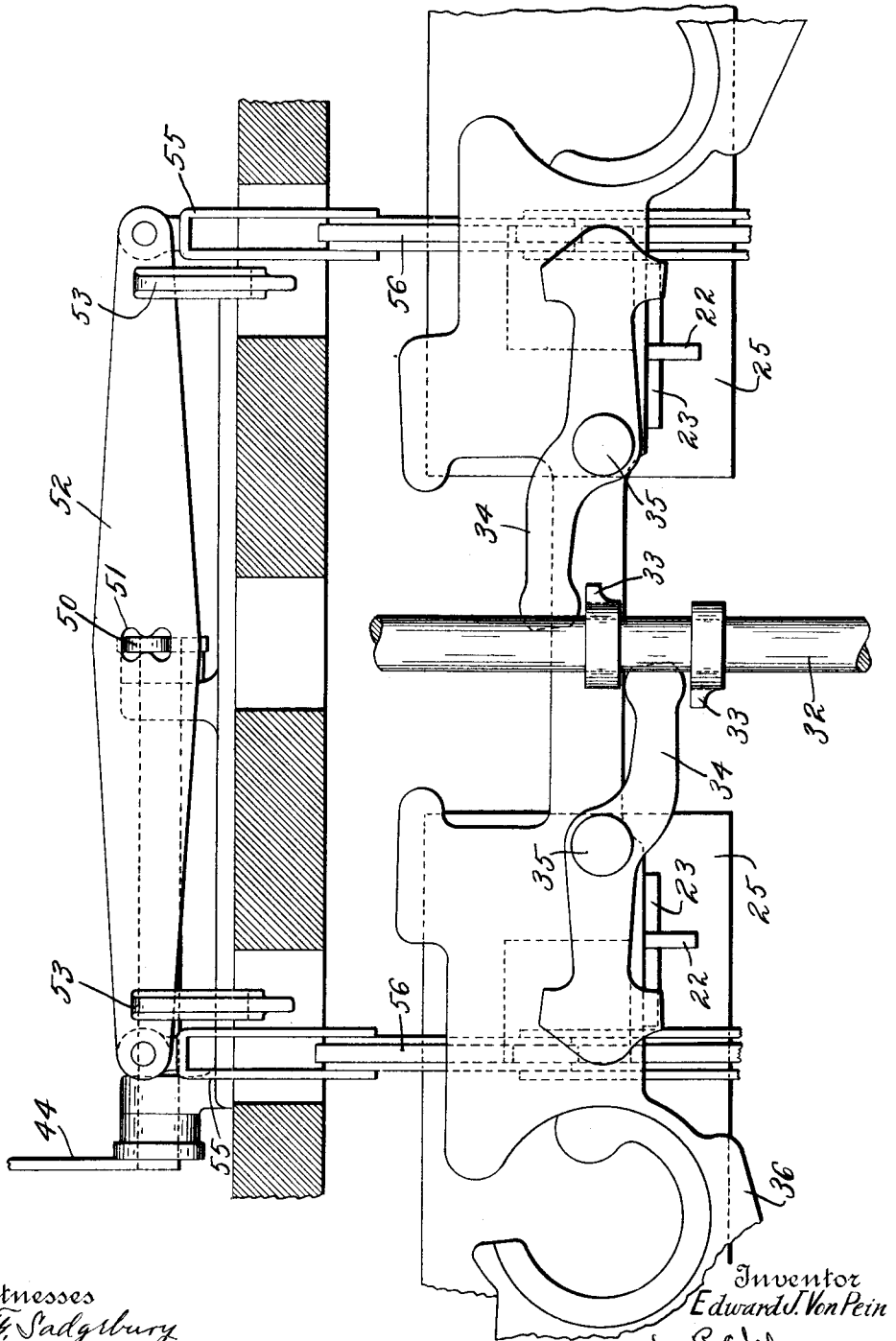
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4 SHEETS—SHEET 4.

FIG. 5.



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UNITED STATES PATENT OFFICE.

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CASH-REGISTER.

1,131,754. Specification of Letters Patent. Patented Mar. 16, 1915.

Application filed June 4, 1913. Serial No. 771,595.

To all whom it may concern:

Be it known that I, EDWARD J. VON PEIN, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which I declare the following to be a full, clear, and exact description.

This invention relates to improvements in cash registers or accounting machines and has more particular relation to mechanisms in which independent cash receptacles are provided for the respective clerks for keeping their cash separate and placing the responsibility for mistakes or shortages on the proper clerks.

In the accompanying drawings and the description given below the improvement is shown as embodied in a register of the type described in United States Letters Patent No. 580,378, granted April 13th, 1897, to J. P. Cleal and F. A. Reinhard, with multiple drawers and multiple drawer operating mechanism, as shown in United States Letters Patent No. 616,866, granted December 27th, 1898, to W. F. Bockhoff, attached thereto. However these devices are used for illustrative purposes only and it is not the intention to limit the use of the improvement to any one style of register or to any particular type of drawer cabinet. The inventive idea is one that can be embodied in various forms in other accounting mechanisms having a plurality of cash receptacles, or it can be adapted to use in a machine having but a single receptacle.

The main object of this invention is to provide mechanism that will, when desired, prevent the operation of a multiple drawer register unless all of the drawers are closed.

With this and incidental objects in view, the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims, and a preferred form of embodiment of which is hereinafter described with reference to the drawings which accompany and form part of the specification.

Figure 1 is a right side elevation of a register showing the usual locking mechanism. Fig. 2 is a sectional view of the register partly broken away showing parts of the improvement assembled in position. Fig. 3 is a detail showing the lock and some of the parts controlling the device. Fig. 4 is a side elevation showing part of the improvement and its operative relation to the drawers. Fig. 5 is a rear elevation partly broken away of the drawer operating devices and parts of the improvement.

Cash registers having a plurality of cash drawers are usually so constructed that access can be had to a drawer by pressing a key or setting some other form of manipulative device to predetermine which drawer is to be opened and then operating the machine. This releases the desired drawer and during the operation records of one form or another are made in the various record retaining devices to show which drawer was opened, the nature and amount of the transaction, and so on. Indicators are usually provided which indicate the record of the transaction to the customer and enable him to tell whether the transaction is correctly entered.

The reason for having a number of cash receptacles attached to a cash register is to give a separate receptacle for each attendant, thereby enabling the proprietor to place individual responsibility for errors and shortages. This he is able to do by comparing the cash in the drawer with the records made in the machine as the various transactions are registered. If the attendant could put money in the receptacle or remove it without any record, the proprietor would have no certainty that the records are reliable or that he is getting all of the money to which he is entitled. A device to compel the closing of each receptacle or drawer before the machine can be again operated will aid in enforcing the proper record because if an attendant leaves his drawer open through an oversight, none of the other attendants can gain access to their cash drawers until the first attendant's drawer is closed. This feature is particularly desirable, however, where there are several attendants employed, each having a separate drawer but only one attendant on duty at a time. Under such circumstances the opportunity for fraud is greatly increased and

the proprietor is compelled to rely almost wholly on the cash register for protection. If the cash drawer must be closed before the register can be used again, records of the transactions must be entered in the machine as they occur and the proprietor's protection is more nearly complete. It is, however, occasionally desirable to be able to operate the register with one or more of the drawers open. For this reason the invention provides devices controlled by a lock and key for disabling the mechanism which locks the machine when a drawer is open. By keeping the lock key in his possession the proprietor has full control at all times over this locking mechanism.

The machine used for illustration is operated by an operating handle 1 (Fig. 1). A pinion 2 attached to the handle drives a large intermediate gear 3 which runs idly on a stub shaft 4 fastened in the machine frame. From the intermediate gear 3 the power is transmitted to gears 5 and 6 fastened to the shafts 7 and 8 running through the machine. These shafts are the main shafts of the machine and from them all the mechanism is operated. Attached to the side of the gear 5 is a disk indicated by a dotted line 9. There is a cut 10 in the periphery of this disk and when the mechanism is at normal position an extension 11 on an arm 12, which is rigidly fastened to the shaft 13, rests in this cut 10 as shown and prevents the gear 5 from being rotated. Consequently the machine cannot be operated until the arm 12 is drawn out of engagement with the disk 9. The machine has vertical rows of keys 14, the number of rows depending upon the registering capacity desired, and the operation of the arm 12 is usually controlled from one of these rows of keys. In Fig. 2 is shown such a controlling row of keys and the mechanism operated thereby for releasing the register. Each key 14 has a cam flange 15 which acts against the camming incline 16 cut in the detent 17. As the keys 14 are pressed in against the tension of their springs 18 the detent 17 is swung upwardly about the shaft 19 on which it is pivoted. Fastened on the detent 17 is a stud 20 resting under the end of a forwardly extending arm 21 attached to the shaft 13. By following this mechanism through it will be seen that when a key 14 is pressed in the shaft 13 will be rocked anti-clockwise in Fig. 2 or clockwise in Fig. 1 thereby drawing the extension 11 of the arm 12 out of engagement with the disk 9 and permitting the operating handle 1 to be turned.

The cash drawers 25, which are in the embodiment shown arranged in two vertical rows, are held shut by their catches 22, which have formed on their rear ends hooks to engage drawer catch plates 23 fastened to frame 36 extending across the rear of the drawers. Springs 24 hold the drawer catches 22 in engagement with the plates 23. It will readily be seen that in order to release any desired one of the cash drawers 25 all that is necessary is to press the end of the drawer catch 22 down so that the hook will be disengaged from the plate 23. In the operation of the machine this is done by the drawer catch trip lever 34 (Fig. 5) in the following manner:—When a key 14 is pressed and the register operated, a segment 26 is differentially positioned dependent upon the key that has been pressed in. The manner in which this is done is fully explained in the Cleal and Reinhard patent above mentioned. The segment 26 has an extension 27 which is in engagement with a spur gear 28 fastened to a shaft 29. Attached to the shaft 29 is also a bevel gear 30 which is always in mesh with another bevel gear 31. This gear 31 is splined on a shaft 32. It will readily be seen that any movement of the segment 26 will be transmitted to the shaft 32, causing the shaft to rotate extents determined by the movements of the segment. Helically arranged on the shaft 32 which extends vertically intermediate the rear ends of the two rows of drawers, are the drawer fingers 33, one for each drawer and these are so positioned that when the segment 26 is stopped by a certain one of the keys 14, one of the drawer fingers 33 will be under the drawer catch trip lever 34 for the drawer that corresponds to the key pressed. The finger shaft 32 is next raised so that the finger 33 for the drawer that is to be opened will rock the trip lever 34 about its pivot 35, forcing the opposite end of the lever down against the end of the catch 22 and disengaging it from the plate 23. The drawer is then usually ejected by a spring (not shown) provided for that purpose.

The finger shaft 32 can be raised by any one of a number of different forms of lifting mechanism. In Fig. 2 of the drawings is shown a conventional device comprising a pitman 37, a collar 40 and a cam 38. The upper end of the pitman has a hook which engages the main rotary shaft 8 and the pitman is held against lateral movement on the shaft by the cam 38 on one side and the collar 40 on the other. An extension on the lower end of the pitman 37 engages the collar 70 secured to the shaft 32. Attached to the side of the pitman 37 is an anti-friction roller 39 resting on the cam 38 as shown. This cam is rigidly fastened to the rotary shaft 8 and as the shaft is turned during an operation of the machine the pitman 37 will lift the shaft 32 and release the drawer that is to be opened.

All of the mechanism mentioned so far is old in the art and needs no more detailed description. The reason it has been covered

to any extent is because some explanation is thought necessary to make the following description of the new mechanism more easily understood.

The improvement consists of devices to lock the shaft 13 so that it cannot be rocked as long as one of the cash drawers remains open. This is accomplished by a bell crank lever 41 which has a hook engaging an arm 42 depending from the rock shaft 13 and other parts working in connection with the lever. The bell crank lever is always under the tension of the spring 43. It is normally held down out of engagement with the arm 42 by a link 44 which has a slot 45 at one end engaging a stud in the bell crank lever 41. The purpose of the slot 45 will be explained later. The lower end of this pitman is pivoted at 47 to an arm 71 which is fastened to a shaft 49. A rearwardly extending arm 48, which is also attached to the shaft 49, has a circular extension 50 extending through the hour-glass opening 51 in the beam 52. The beam 52 is held in the position shown and guided in its movements by guides 53 having slots 54 (Fig. 4) which permit the ends of the beam to slide freely up and down. Attached to opposite ends of the beam are the upper ends 55 of two series of toggles, one series for each row of drawers, carried by brackets 56 attached to frames 36 in the rear of the drawers. These toggles are composed of short double links as shown in Figs. 4 and 5 with a roller at each joint and with the sides of the links spanning the bracket, thereby holding the toggles in position. As shown in Fig. 4, the lower ends of both series of toggles are pivoted to the corresponding brackets 56 and at each alternate joint of the toggles the rolls 57 are surrounded by guide slots 58 in the supporting brackets. The alternate rolls 59 rest normally against plates attached to the back of the cash drawers 25. When one of the cash drawers opens, the toggle for the row including the opening drawer is no longer supported at that point by the drawer and consequently drops, carrying the end to which it is attached of the beam 52 in a downward direction. The other end of the beam is still supported by the series of toggles for the other row of cash drawers which is not affected by the opening of a drawer not belonging to its row, forming a pivot on which the beam turns. The hour-glass shaped opening 51 in the beam 52 and the circular end 50 of the lever 48 are designed to permit its parts to accommodate themselves to the movement just described. When either end of the beam is allowed to drop by the support of the toggle at that end being withdrawn by the opening of a drawer in the corresponding row, the rear end of the lever 48 is pulled down and the link 44 allowed to rise, thereby permitting the spring 43 to rock the bell crank lever 41 about the shaft 29 on which it is pivoted and the hook on the upper extension of the lever will engage the arm 42 fastened to the rock shaft 13, preventing any movement of the shaft and making the machine inoperable. Closing the drawer forces the toggle joint back to its original extended position and all of the parts of the device are restored to normal.

As stated above, it is sometimes desirable to be able to operate the register with one or more of the cash drawers open. To do this all that is necessary is to prevent the bell crank lever 41 from engaging the arm 42 when a cash drawer is opened. This is accomplished by the pitman 60 being thrown back so that the forward end of the slot 61 engages the stud 62 in the lower extension of the bell crank lever 41. The pitman is thrown back by turning the lock 63 shown in Fig. 3. Pivoted to the flange of the lock barrel is one end of a short link 64. The other end of the link is loosely riveted to a short arm 65 which is fastened to the shaft 66 (Fig. 2). Attached to this shaft 66 is also an arm 67 to which the forward end of the link 60 is pivotally attached. When the lock 63 is turned in a clockwise direction the shaft 66 is rocked and the arm 67 throws the link 60 rearwardly so that the bell crank lever is supported in its normal position. The slot 45 in the pitman 44 is provided so that even when the lock has been set as just described the toggle can still drop, relieving the bell crank lever 41, the link 60 and the lock mechanism controlling the movements of the link from any strain caused from having to support the weight of the toggle.

In the above description and the accompanying drawings, the improvement has been shown in connection with drawers arranged in two tiers.

In order to give a good idea of the working of the device a brief statement will be given of what occurs on an operation of the machine. When a key is pressed it rocks the shaft 13, releasing the mechanism, and determines the position at which the differentially moved segment 26 is to be placed. Through intermediate mechanism driven by the segment the finger shaft 32 is rotated so that one of the drawer fingers attached to the shaft is positioned to release the drawer corresponding to the key pressed. The finger shaft is then lifted, causing the drawer latch which holds the drawer closed to be tripped and the drawer released. Each drawer when closed is in contact with the roll in one of the free joints of a series of toggles and aids in holding the toggles in an extended position. When a drawer opens the toggle is no longer supported at that point and collapses, thereby drawing down on the end to which it is attached of a sliding beam 52. This movement of the beam

52 is transmitted to an arm 48 rocking the shaft to which it is attached and raising the lever 71 and the link 44. This releases the bell crank lever 41 so the spring 43 can pull it up to bring the hook on the end of the lever into engagement with an arm fastened to the rock shaft 13, thereby holding the rock shaft against movement and making the machine inoperable. Closing the drawer forces the toggle back to extended position, and through the intervening mechanism, draws the hook of the bell crank lever 41 out of engagement with the arm on the rock shaft 13, thereby restoring the machine to normal condition ready for operation.

While the form of mechanism herein shown and described is admirably adapted to fulfil the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described, as it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

I claim—

1. In a machine of the class described, the combination with an operating mechanism, of a series of cash receptacles, and a single locking device coöperating with said receptacles and arranged to lock the operating mechanism when any one of the receptacles is opened.

2. In a machine of the class described, the combination with an operating mechanism, of a series of cash receptacles, a single locking device controlled by said receptacles and arranged to lock the operating mechanism when any one of the receptacles is opened, and manipulative devices whereby said locking device may be rendered ineffective.

3. In a machine of the class described, the combination with an operating mechanism, of a series of cash receptacles, a single locking device controlled by said receptacles and arranged to lock the operating mechanism when any one of the receptacles is opened, and devices comprising a key operated lock for disabling said locking devices when it is desired to operate the operating mechanism with one or more of the receptacles open.

4. In a machine of the class described the combination with an operating mechanism therefor, of a plurality of normally inaccessible receptacles, manipulative devices for predetermining which receptacle is to be rendered accessible on an operation of the operating mechanism, and a single means locking the manipulative devices against manipulation while a receptacle remains accessible.

5. In a machine of the class described, the combination with an operating mechanism therefor; of a plurality of normally inaccessible cash drawers; devices under control of which said drawers may be selectively rendered accessible on operation of the operating mechanism; and a single means rendering said controlling devices inoperable while a drawer remains accessible.

6. In a machine of the class described, the combination with an operating mechanism therefor, of a plurality of normally inaccessible cash drawers, devices under control of which said drawers may be selectively rendered accessible on operations of the operating mechanism, means locking said controlling devices while a drawer remains accessible, and manipulative means for rendering said locking means ineffective when it is desired to have more than one drawer accessible at the same time.

7. In a machine of the class described, the combination with an operating mechanism therefor; of a plurality of normally inaccessible receptacles; devices under control of which said receptacles may be selectively rendered accessible on operations of the operating mechanism; means rendering said controlling devices inoperative while a receptacle remains accessible; and means whereby restoring said receptacle to normal condition will render the aforesaid controlling devices again operable.

8. In a machine of the class described, the combination with a plurality of normally inaccessible receptacles, of manipulative devices controlling the rendering of said receptacles accessible; and a single means controlled by any of the receptacles while accessible for preventing operation of the manipulative devices.

9. In a machine of the class described, the combination with a normally locked main operating mechanism, of manipulative means for unlocking said mechanism; a plurality of normally inaccessible cash drawers arranged to be rendered accessible on operation of the operating mechanism; and devices controlled by any accessible drawer for preventing the unlocking of the operating mechanism, said devices comprising a member to engage the locking mechanism and hold it to prevent unlocking.

10. In a machine of the class described, the combination with a normally locked operating mechanism therefor; of a plurality of normally closed drawers; manipulative devices for unlocking the operating mechanism and predetermining which drawer is to be rendered accessible on an operation of the operating mechanism; and means controlled by any drawer that is accessible for rendering said manipulative devices inoperable.

11. In a machine of the class described, the combination with an operating mechanism therefor; of a plurality of normally closed cash drawers arranged to be selec-

tively opened on operations of the operating mechanism; devices comprising a rock shaft and normally locking the operating mechanism; and means holding said rock shaft against movement and in a locking position while any of the cash drawers remains open.

12. In a machine of the class described, the combination with an operating mechanism; of a plurality of normally closed receptacles; a manipulative device for each receptacle under control of which its drawer may be opened on an operation of the operating mechanism; and means made effective by the opening of the drawer rendering all of the manipulative devices inoperable.

13. In a machine of the class described, the combination with an operating mechanism and manipulative devices; of a plurality of drawers arranged to be selectively opened under control of said manipulative devices by actuations of the operating mechanism; and devices comprising a series of toggles and connecting parts to prevent actuation of the operating mechanism while any of said drawers remains open.

14. In a machine of the class described, the combination with an operating mechanism and manipulative devices; of a plurality of drawers arranged to be selectively opened under control of said manipulative devices by actuation of the operating mechanism; means for locking the operating mechanism when any of said drawers is opened; and devices comprising series of toggles for disabling said locking means when the cash drawer is restored to normal position.

15. In a machine of the class described, the combination with a plurality of normally inaccessible cash drawers and a normally locked operating mechanism therefor; of manipulative devices for unlocking the operating mechanism and determining which drawer is to be opened on an operation of said mechanism; and means comprising series of toggles and controlled by the open drawer for preventing said manipulative devices from unlocking the operating mechanism.

16. In a machine of the class described, the combination with a plurality of normally inaccessible cash drawers and a normally locked operating mechanism therefor; of manipulative devices for unlocking the operating mechanism and determining which drawer is to be opened on an operation of said mechanism; means preventing operation of said manipulative devices while a cash drawer is open; and means comprising series of toggles for disabling said preventing means when the drawer is closed.

17. In a machine of the class described, the combination with an operating mechanism; of a plurality of normally inaccessible cash drawers; means for determining the cash drawer to be rendered accessible upon an operation of the operating mechanism; and means comprising series of toggles controlled by the accessible cash drawer for preventing the operation of the operating mechanism.

18. In a machine of the class described, the combination with an operating mechanism; of a series comprising three or more normally inaccessible receptacles; means for selectively rendering said receptacles accessible on operations of the operating mechanism; and a single means coöperating with said receptacles to render the operating mechanism inoperable while any one of said receptacles remains accessible.

19. In a machine of the class described, the combination with an operating mechanism; of normally inaccessible cash receptacles; means for rendering said receptacle accessible on operations of the operating mechanism; and means comprising a toggle mechanism for locking the operating mechanism so long as said receptacle remains accessible.

20. In a machine of the class described, the combination with a plurality of drawers normally closed but any one of which may be opened; of a single means controlled by the drawers and adapted when one of the drawers is opened to prevent the opening of any other drawer until the first drawer is again closed.

21. In a machine of the class described, the combination with an operating mechanism and a plurality of cash drawers; of a single locking means for the operating mechanism, said locking means being normally ineffective; and means controlled by the cash drawers whereby opening any one of the plurality of drawers will render said locking means effective.

22. The combination with a plurality of normally inaccessible receptacles, of means common to and controlled by the receptacles for preventing access to more than one receptacle at a time.

23. The combination with a plurality of cash drawers normally closed but any one of which may be opened, of mechanism common to all the drawers held in ineffective position by the drawers while all of the drawers are closed but rendered effective by the opening of any drawer to prevent the opening of a second drawer until the first is restored to normal condition.

24. The combination with a plurality of cash drawers, of latches for the drawers, means for unlatching any desired drawer, means for opening an unlatched drawer, and means common to all the drawers and

rendered effective by the opening of any drawer whereby the unlatching of a second drawer is prevented while a drawer is open.

25. The combination with an operating mechanism, of a plurality of normally inaccessible receptacles, means requiring an operation of the operating mechanism whereby said receptacles may be selectively rendered accessible, a normally ineffective lock for the operating mechanism, and means whereby rendering any one of the receptacles accessible renders said lock effective until the receptacle is restored to normal condition.

26. The combination with an operating mechanism, of a plurality of normally inaccessible cash drawers, means requiring an operation of the operating mechanism whereby said drawers may be selectively rendered accessible, a normally ineffective lock for the operating mechanism, and means whereby rendering any one of the drawers accessible also renders said lock effective until the drawer is restored to normal condition.

27. The combination with an operating mechanism, of a plurality of normally inaccessible receptacles, means requiring an operation of the operating mechanism whereby the receptacles may be selectively rendered accessible, a lock normally preventing operation of the operating mechanism, means for disabling said lock as a preliminary to an operation, a second lock, said second lock being normally ineffective, and means whereby by rendering a receptacle accessible will render the second lock effective to prevent disabling the first lock until the accessible receptacle is restored to normal condition.

28. The combination with an operating mechanism, of a plurality of normally inaccessible cash drawers, means requiring an operation of the operating mechanism whereby the drawers may be selectively rendered accessible, a lock normally preventing operation of the operating mechanism, means for disabling said lock as a preliminary to an operation, a second lock, said second lock being normally ineffective, and means whereby rendering a drawer accessible will render the second lock effective to prevent disabling the first lock until the accessible drawer is restored to normal condition.

29. The combination with an operating mechanism, of a plurality of normally closed receptacles, means for opening the receptacles, a plurality of devices normally preventing said means from performing their function, means requiring an operation of the operating mechanism for disabling the preventing device for any desired receptacle thereby allowing same to be opened by the opening means, and means common to all of the receptacles and controlled by an open receptacle for preventing an operation of the operating mechanism until said receptacle is closed.

30. The combination with an operating mechanism, of a plurality of cash drawers, latches for the drawers, means requiring an operation of the operating mechanism for unlatching any desired drawer, means for opening the unlatched drawer, and means common to all the drawers and controlled by the open drawer preventing operation of the operating mechanism until the drawer is closed.

In testimony whereof I affix my signature in the presence of two witnesses.

EDWARD J. VON PEIN.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."