

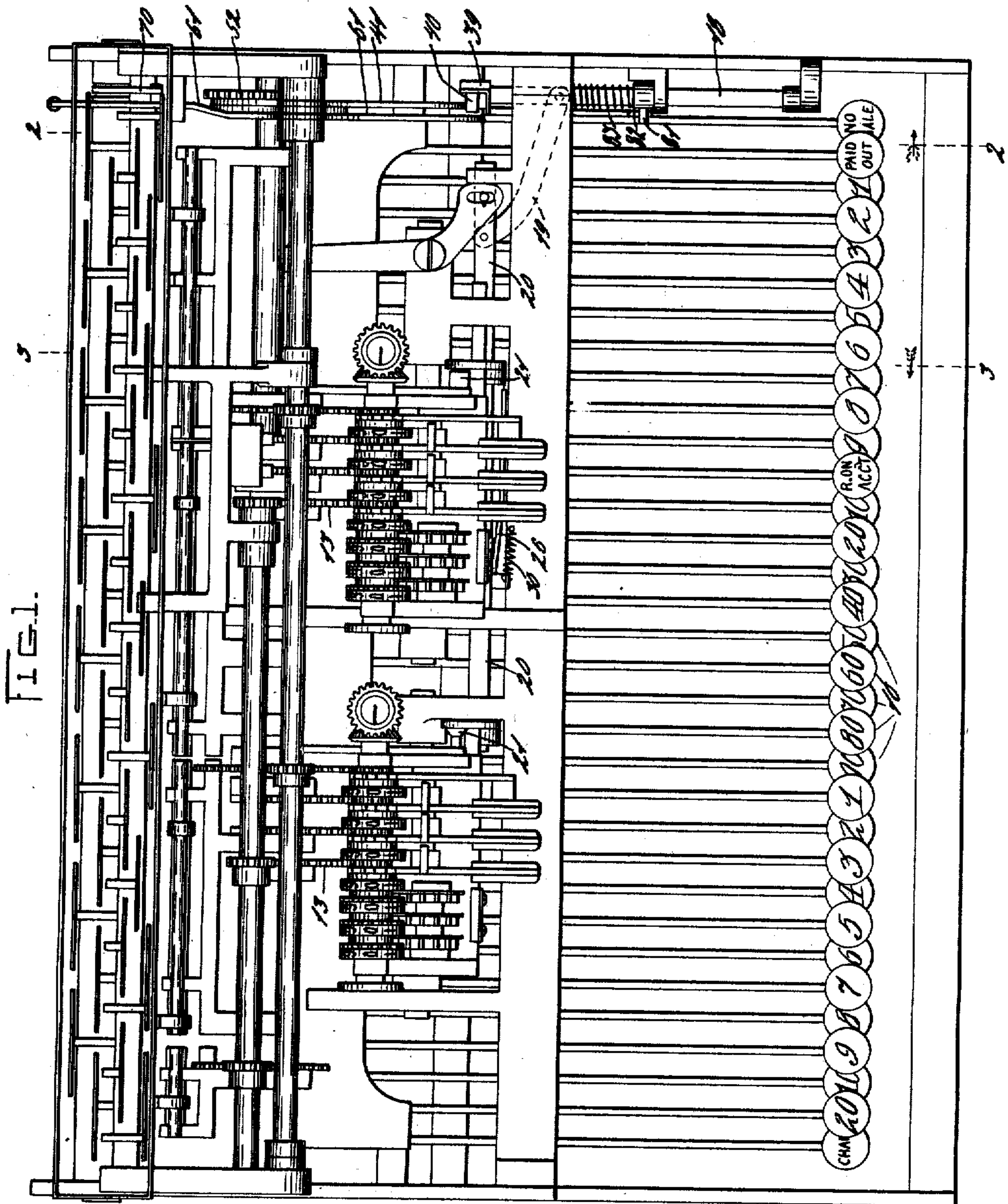
J. P. CLEAL.
CASH REGISTER.

APPLICATION FILED JUNE 18, 1908.

998,602.

Patented July 25, 1911.

3 SHEETS—SHEET 1.



Witnesses

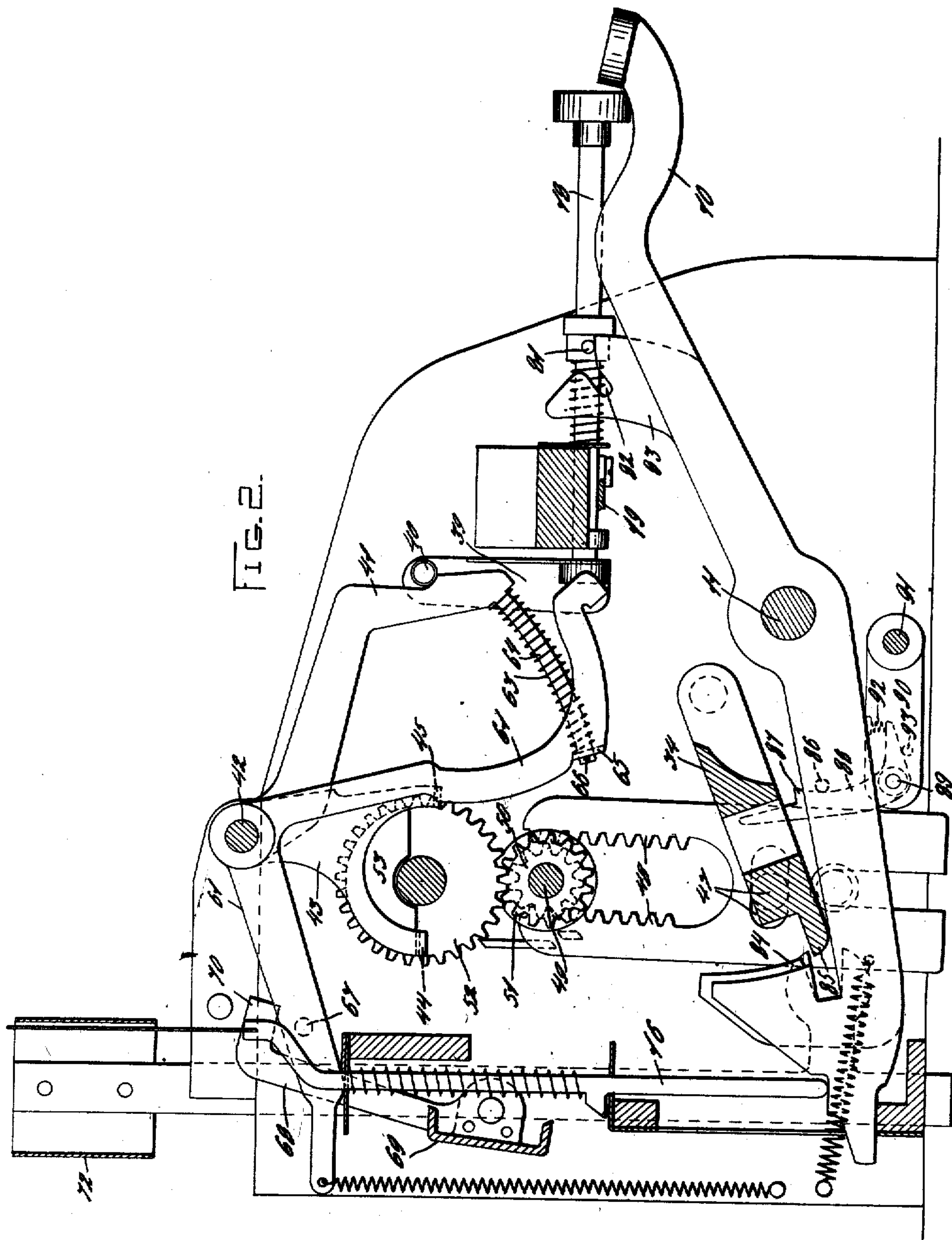
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3 SHEETS—SHEET 2.



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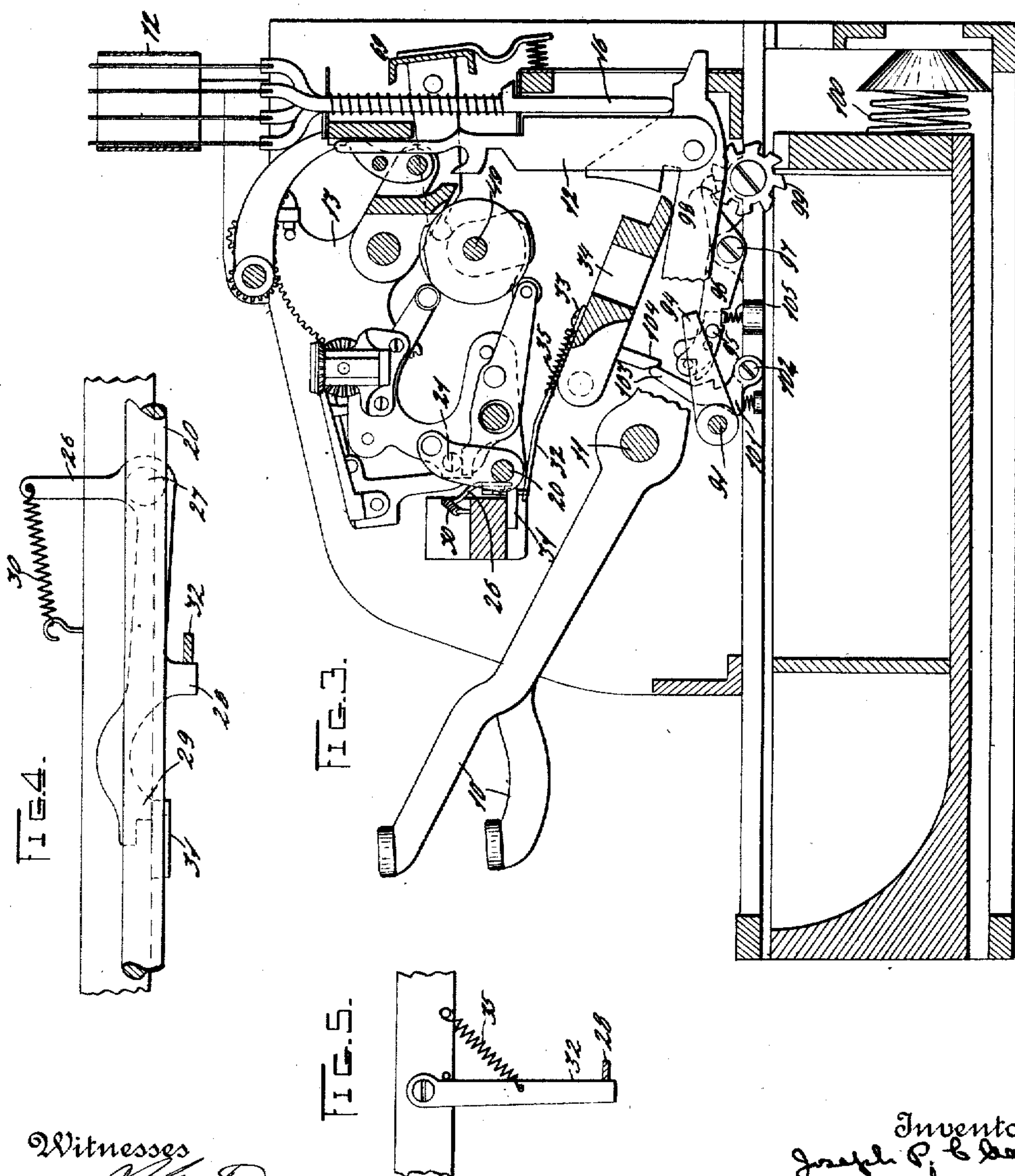
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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH P. CLEAL, OF TORONTO, ONTARIO, CANADA, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO, (INCORPORATED IN 1906.)

CASH-REGISTER.

998,602.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed June 12, 1906. Serial No. 322,252.

To all whom it may concern:

Be it known that I, JOSEPH P. CLEAL, a citizen of the United States, residing at Toronto, in the Province of Ontario, Canada, 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, and more particularly to that class of machines in which a certain number of complete operations of the machine constitute a cycle of operations for correlated transactions.

Machines of this character may have various purposes in the cash register art, one example of such machines being the so-called "Cost and Selling Price" machine, in which the machine is first completely operated to take an accounting of the cost price and then completely operated again to take an accounting of the selling price.

It is the purpose of the present improvements to provide such improved forms of devices in connection with machines of this type, as to automatically insure the separate accounting or grouping of these various correlated transactions upon a continued succession of operations of the machine; also to provide devices whereby when the machine stands at an intermediate stage in any one of these cycles of operations, certain normal functions of the machine will be or will have been disabled so as to indicate to the operator or to the purchaser that the normal cycle of operations has not been completed.

With these and incidental objects in view, the invention consists in certain novel features of constructions 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 specifically described with reference to the drawings which accompany and form part of this specification.

Of said drawings, Figure 1 is a plan view of the machine to which I have shown my invention as adapted. Fig. 2 is a transverse vertical section on the line 2-2 of Fig. 1. Fig. 3 is a transverse section on line 3-3 of Fig. 1, showing means for releasing the drawer. Fig. 4 is a detail view showing a locking device. Fig. 5 is a detail of construction.

It is to be understood that in some of these views it has been necessary to omit certain parts of the machine for the sake of clearness.

The type of machine to which these improvements are applied in its general form of construction is now well known in the art, being of the type shown in patent to Thomas Carney No. 497,860 dated May 23, 1893, and No. 683,877 dated Oct. 1, 1901, and certain of the devices herein, connected with the mechanism for preventing operation of the totalizer are similar to those shown in patent to J. P. Cleal, No. 773,060, dated October 25, 1904, to all of which patents reference may be had for a more detailed description.

For the purpose of a better understanding of the description to follow, it may be stated, that the specific form of means adopted in the present instance for securing the general broad results above outlined, comprises a machine having two independent totalizers which are operated upon by a series of amount keys; and by means of an automatic shifting device, after the first operation of the keys has effected the actuation of one of these totalizers, the next succeeding operation of the keys acts upon the other totalizer, and then the following operation acts upon the first totalizer, and so on, thus shifting from the use of one totalizer to the other, so that the first totalizer could be used to register the cost price of goods sold and the second totalizer could be used for registering the selling price of the goods sold and thus the first totalizer would give a total of the cost price of all of the goods sold during any particular period and the second totalizer would give the total amount of the selling price for the same period. Further, since it is extremely necessary and desirable that the machine should not be left at an intermediate stage in its cycle of operations, that is, that it should be completely operated twice so as to register upon both totalizers and then leave the machine in condition so that upon the next operation of the machine the first totalizer will be prepared for operation and thus no mistake can be made by getting the cost price on the wrong totalizer, the indicator flash mechanism is so arranged that the indicators will not be exposed except after the complete cycle of operations when both totalizers have

been properly operated or the machine has been properly operated twice in succession, and in order to call attention still further to the incomplete stage of the machine at the end of one operation, the cash drawer is arranged so that it will be released only at the end of each second operation, so that if the machine is only given one complete operation, the machine will obviously rest in such condition as to show immediately that the necessary cycle of operations has not been completed.

Described in general terms the machine may be said to comprise a plurality of operating keys 10 journaled on the main rod 11, and which keys carry at their rear ends standards 12 adapted to engage and actuate segments carrying racks 13, shown in Fig. 1. There are four denominations of keys and two sets of segment racks 13, each set comprising a rack for each denomination, the racks of corresponding denominations are connected to move together so that upon the depression of any key one rack in each set will move a distance depending on the key depressed. The keys 10 are also adapted to engage and elevate the usual indicators 16.

In this type of machine the totalizers are adapted to be separately engaged and operated by the segment racks 13 only one set of operating keys being employed. To determine on which totalizer registration shall take place, there is provided a push key 18 (see Figs. 1 and 2) which when moved rearwardly serves through the link 19 to shift laterally bar 20, this bar controls the movement of plungers 21, one for each totalizer. When the push key 18 has been depressed it is desirable to maintain the operative relation then created until the end of the operation of the machine and for this purpose means are arranged for locking the laterally shifting bar 20 in its adjusted position. This means is shown in Fig. 4 and comprises the bell crank lever 26 pivoted at 27 to the shifting bar 20; the projection 28 and the lug 29 are also provided on the said lever 26. When the bar 20 is moved to the right in Fig. 4 the lug 29 will under the influence of spring 30 drop over the edge of the stationary locking plate 31. This will evidently maintain bar 20 in its shifted position. To provide for releasing this lever 26 from the locking plate 31, at the end of the operation a bar 32 is employed shown in section in Fig. 4 and also shown in Fig. 5, which is pivoted at 33 to the usual key coupler 34.

When the coupler is elevated the lever 32 will be rocked downwardly it having been previously moved laterally by the movement of the projection 28 of the lever 26 which is of course carried laterally with the shifting bar 20. A spring 35 serves to return the lever 32 to its normal position and this

will take place as soon as said lever is depressed by the movement of the coupler. When the coupler returns to normal position, the lever 32 will be elevated and will then be directly under the projection 28. The last part of the motion of lever 32 will therefore raise lever 26 withdrawing its lug 29 from the locking plate 31 and thereby permitting shift bar 20 to return to its normal position.

What may be called a complete operation of this machine really comprises two operations of one or more of the keys. In connection with the registration of the cost amount the amount is entered on the left hand totalizer and this is provided for by a depression of push key 18. The selling price amount is to be entered on the right hand totalizer and this does not require a depression of push key 18. In order to compel this alteration of operation of totalizers or as it may be termed the cyclic succession of operations, means for locking the operating mechanism at alternate partial operations are supplied and to compel a depression of the push key 18 at such partial operations means are desirable for locking the operating mechanism, said means to be released when the push key is depressed. This locking means is shown in Fig. 2 and comprises a vertical bar 39, rigidly attached to the push key 18, carrying a roller 40. This roller is adapted to engage and rotate the lever 41 journaled on the rod 42 and rigid with lever 41 is an escapement 43, comprising pallets 44 and 45. Connected to the coupler 34 by a pin and slot connection 47 is a double reciprocating rack 48 adapted as is usual in this type of machine to give at each reciprocation a complete rotation to a shaft 49 through a connecting pinion 50 rigid with the shaft. Also tightly mounted on the shaft is a gear wheel 51 meshing with a gear 52 of twice the number of teeth of gear 51. This gear 52 has mounted thereon a locking plate 53 which is more or less nearly semi-circular in shape. In the normal position of the mechanism, one edge of the plate 53 engages pallet 44 of the escapement 43, and the mechanism is therefore locked. When however the push key 18 is moved rearwardly, the escapement 43 is rocked to carry pallet 44 away from plate 53 and the keys 10 may then be operated. At the end of the first operation of the keys the push key 18 is released by the return of lever 32 as previously described and this permits the escapement 43 to rock back to normal position, the pallet 45 will thereby be moved out of the path of plate 53 so that the second operation does not require a depression of the push key 18.

It will be seen that the mechanism described provides for the function above stated. That is, alternate operations of the

machine are compelled to be entered on the alternate totalizers in order. In using the machine it is first necessary to move rearwardly the push key 18 but the movement of this key serves to connect the left hand totalizer to the operating mechanism. After the amount is entered on this left hand totalizer the push key 18 returns to normal position and the keys may be freely operated to enter an amount on the right hand totalizer. At this second partial operation the depression of the push key 18 is prevented as the locking plate 53 is then in the path of pallet 45 of the escapement 43.

The machine as above described is complete and would be fairly satisfactory. As a matter of further improvement however means are employed for preventing the amount indicators being viewed when the cost totalizer is operated. This mechanism is shown in Fig. 2, and comprises a bell crank lever 61 journaled on the shaft 42 and which is adapted to be moved through a spring 63 surrounding a rod 64 attached to the lever 41 previously referred to. Lever 61 has a flange 65 through a hole in which the bar 64 passes, relative movement between the two being limited by a pin 66. The rear arm of lever 61 carries a pin 67 which will be raised under the lever 68 connected to the usual indicator support 69. This indicator support is of course rocked first rearwardly and then forwardly at the top the rearward rocking serving to release any indicator which had been raised at the previous operation and the forward serving to lock in raised position the indicator corresponding to the operated key. When the push key 18 is moved rearwardly the lever 61 will be rocked as before stated. This will tension spring 63 and serves to raise pin 67 on the lever 61 under the hook 70 of the arm 68. When the indicator support 69 is rocked rearwardly at the top the arm 68 will also be carried rearwardly and the hook 70 will move from over the pin 67 when lever 61 may rock still further around its pivot carrying pin 67 in front of the hook 70. This will evidently prevent the indicator support 69 from being rocked forwardly so that the indicators corresponding to the keys depressed will, although they will be raised by the keys, also return to normal position with them. This will prevent the exposure of the cost price indicators, as the machine will of course in practice be provided with the usual flash or shutter 72 which will move down with the indicators. At the second partial operation of the machine which serves to enter the selling price on the right hand totalizer the indicator support 69 will of course be permitted to move in the customary manner first rearwardly and then forwardly at its top. The pin 67 will in this case form no obstruction

to the movement of arm 68 as the push key 18 is not and in fact cannot be depressed at this part of the operation.

To compel a registration of the selling price amount means are employed for releasing the cash safe only at the completion of the second partial operation. The push key 18 carries a pin 81 adapted to enter a slot 82 on a lever 83 journaled on the main rod 11. This lever has a projection 84 at its rear end which is adapted to be engaged and raised by the usual lug 85 on the coupler 34. Also mounted on the lever 83 is a pin 86. When the push key 18 is moved rearwardly pin 81 will enter slot 82 and raise the forward end of lever 83 as is evident from the direction of extent of said slot. Raising the forward end of lever 83 will evidently depress the rearward end and carry the projection 84 out of the path of the lug 85 of the coupler so that the lever 83 will not be carried with the coupler through its stroke. At the second partial operation when the push key 18 is not depressed the projection 84 of lever 83 will be engaged by the coupler and the rear end of said lever raised. This serves to carry pin 86 over the lug 87 on the pawl 88. This pawl is pivoted at 89 on the lever 90 said lever being rigidly mounted on the shaft 91. The pawl 88 is pressed in one direction by the spring 92 against the pin 93 mounted on lever 90. Also rigid with shaft 91 (see Fig. 3.) is an arm 94 which is directly over a pin 95 mounted on a lever 96. This lever is pivoted on a pin 97 and at its rearward end is provided with a projection 98 adapted to engage the teeth of a wheel 99. This wheel serves to prevent the cash drawer from moving outwardly. At the second partial operation of the machine lever 83 will be raised with the coupler as previously stated and this will carry pin 86 mounted on said lever over the projection 87 of the pawl 88, the pawl will then move in under the pin 86 under the impulse of its spring 92. When the lever 83 is carried downwardly with the key coupler the pin 86 will engage the projection 87 and serve to rock the lever 90 around its pivot on shaft 91. This will depress the arm 91 and rock the lever 96 raising its lug 98 away from the teeth of wheel 99. The spring 100 will then serve to eject the cash drawer. It is evident that as above stated this operation does not take place until the selling price totalizer is operated.

When the lever 96 is depressed as above stated it is caught and held by the pawl 101 mounted on a pin 102. This pawl has an upwardly extending arm 103 adapted to be engaged by a beveled arm 104 mounted on the coupler. This mechanism compels the completion of an operation before the drawer can be latched in its rearward position. When the coupler returns to normal

position, the beveled edge of arm 104 will engage the extension 103 of pawl 101 and move it away from lever 96. This lever will then be rocked under the impulse of its spring 105 thereby lowering the rear end of said lever into the path of the teeth of wheel 99. The drawer may then be moved to its closed position and locked therein.

It is old in the art to have a cost and selling price machine in which amounts are alternately registered first upon one counter and then upon another, such for example as shown in patent to J. P. Cleal No. 693,498, dated Feb. 18, 1902 and in this patent it is necessary for the operator first to operate a manipulative device to prepare the first totalizer for operation, which manipulative device is automatically returned to normal position at the end of this first operation of the machine so that upon the next succeeding operation of the machine the amount is added upon the other or selling price totalizer. It is then necessary to work the manipulative key device again to prepare for operation of the cost totalizer, and it is believed that it is broadly new in the art to provide means for compelling an operation of such a manipulative device at alternate operations; that is: it is broadly new in machines of this character to incorporate therein means for causing successive operations of the operating mechanism to automatically operate accounting devices in cyclic succession according to a certain predetermined order, whether these accounting devices be registers or printing devices.

While the form of mechanism here shown and described is admirably adapted to fulfill 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 disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is as follows:

1. In a cash register, the combination with two totalizers, of an operating mechanism common thereto, a push key for selecting one totalizer for operation, and means requiring its depression at alternate operations of the machine.

2. In a cash register, the combination with an operating mechanism, of two totalizers separately operable thereby, a push key for determining which totalizer shall be operated and means preventing its depression at alternate operations of the machine.

3. In a cash register, the combination with an operating mechanism, of a plurality of totalizers, a device for locking said operating mechanism after alternate operations, and a push key for selecting a totalizer and releasing said locking device.

4. In a cash register, the combination with independent accounting devices, of means

compelling them to be operated alternately on successive operations.

5. In a cash register, the combination with an operating mechanism, of manipulative means arranged to be actuated according to the transaction to be entered, accounting devices, and means compelling a segregation of successive and correlated transactions on separate accounting devices.

6. In a cash register, the combination with a plurality of totalizers, and a common amount determining means therefor, of an operating mechanism, and means compelling a succession of operations of said operating mechanism to operate first one totalizer and then another.

7. In a cash register, the combination with two independent accounting devices, and a common operating mechanism therefor, of means compelling operations of the operating mechanism to cause an operation of said accounting devices alternately.

8. In a cash register, the combination with a plurality of totalizers, and a series of operating keys common thereto, of means for compelling successive operations of said keys to cause an operation of the totalizers in cyclic succession.

9. In a cash register the combination with two independent totalizers, and an indicating device for indicating the amounts added on the totalizers, of a series of operating keys, means compelling successive operations of said keys to operate alternately, first on one totalizer and then on another, and means to likewise alternately prevent and permit the exposure of the indicating device on the corresponding alternate operations of the totalizers.

10. In a cash register, the combination with a main operating mechanism, a cash receptacle, and means normally locking said receptacle, of mechanism for releasing said receptacle locking means, and devices for connecting said releasing means to said operating mechanism at alternate operations only of said operating mechanism.

11. In a cash register, the combination with a main operating mechanism, a cash receptacle, and means normally locking said receptacle, of mechanism connecting said operating mechanism, and constructed to release said locking means, a manipulative device for disabling said connecting mechanism, and means compelling actuation of said manipulative device at alternate operations of said operating mechanism.

12. In a cash register, the combination with an operating mechanism, a cash drawer, and a drawer release, of means controlled by said operating mechanism for intermittently operating said drawer release upon a succession of single operations of the operating mechanism.

13. In a cash register, the combination

with an indicating device, and means for setting the same, a cash drawer, and an operating mechanism; means for alternately preventing and permitting the exposure of
 5 said indicating device upon a continued succession of operations of the machine; and means for causing the operating mechanism to release the cash drawer only upon operations in which the indicating device is exposed.
 10

14. In a cash register, the combination with a plurality of accounting devices, an indicating device, a cash drawer, and an operating mechanism; of means for compelling successive operations of said operating mechanism to operate said accounting devices in a certain predetermined sequence; means for also causing said operating mechanism to alternately prevent and permit the
 15 exposure of said indicating device; and means for likewise causing said operating mechanism to release said cash drawer only when said indicating device is exposed.
 20

15. In a cash register, the combination
 25 with an operating mechanism arranged to be given two operations in a complete cycle of use, of a cash safe and means for releasing same only on the second operation of the operating mechanism.

30 16. In a cash register, the combination with an operating mechanism, of a plurality of accounting devices common thereto, means for establishing an operative connection between said operating mechanism and
 35 the accounting devices separately, and means for compelling a shift of the operative connection at successive operations from one accounting device to a second.

40 17. In a cash register the combination with a plurality of accounting devices and an operating mechanism common thereto, of means for compelling successive operations of said mechanism to operate different accounting devices.

45 18. In a cash register, the combination with a plurality of accounting devices for retaining an entry of correlated transactions, of an operating mechanism common to said devices for separately actuating
 50 them, means for controlling the operative connection between said operating mechanism and a particular accounting device, and means compelling an actuation of said controlling means at alternate operations.

55 19. In a cash register, the combination with an operating mechanism, and accounting devices operated thereby, of means for locking said mechanism, a manipulative device for releasing said locking means, and means under the control of said manipulative device for obstructing said operating mechanism at an intermediate stage of its movement until said manipulative device is restored to its normal position.

65 20. In a cash register, the combination

with an operating mechanism, of accounting devices arranged to be separately controlled therefrom, means for shifting the control by the operating mechanism from one accounting device to another, and means
 70 to compel an operation of said shifting means at alternate operations of the machine.

21. In a cash register, the combination with a plurality of accounting devices for retaining an entry of correlated transactions of an operating mechanism common to said devices for separately actuating them, means for controlling the operative connection between said operating mechanism and
 80 a particular accounting device, and means preventing an actuation of said controlling means at alternate operations.

22. In a cash register, the combination with an operating mechanism, of accounting
 85 devices arranged to be separately controlled therefrom, means for shifting the control by the operating mechanism from one accounting device to another and means to prevent an operation of said shifting means at alternate operations of the machine.
 90

23. In a cash register the combination with accounting devices and an operating mechanism common thereto for causing an operation of said accounting devices separately, means for regulating the operative relation of the operating mechanism to the separate accounting devices, and means to require an adjustment of said regulating
 95 means at alternate operations.
 100

24. In a cash register, the combination with an operating mechanism, of a plurality of accounting devices, a device for selecting a desired accounting device for operation, means controlled thereby for unlocking the
 105 operating mechanism, and means preventing the operation of said selecting device at the succeeding operation of the machine.

25. In a machine of the class described, the combination with totalizers, and an operating mechanism therefor including keys, of means tending to and normally locking
 110 said operating mechanism, a manipulative device for releasing said locking means, and devices for preventing the relocking of said
 115 operating mechanism until two operations thereof have been made.

26. In a machine of the class described, the combination with accounting devices, and an operating mechanism therefor including keys, of means normally locking
 120 said operating mechanism, a manipulative device for moving said locking means to releasing position, means permitting restoration of said manipulative device to normal
 125 position during a first operation of said operating mechanism, and means for restoring said locking means to locking position during a second operation of said operating mechanism.
 130

27. In a machine of the class described,
the combination with accounting devices,
and an operating mechanism therefor, of
means automatically locking said operating
5 mechanism only after two operations there-
of, a manipulative device for releasing said
locking means, and connections whereby
said manipulative device determines the op-

erative relation between the operating mech-
anism and the accounting devices.

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

JOSEPH P. CLEAL.

Witnesses:

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