Aug. 30, 1932. T. O'CONNOR 1,875,117

REGISTER

Filed Jan. 13, 1930 3 Sheets-Sheet 1

Fig. 1

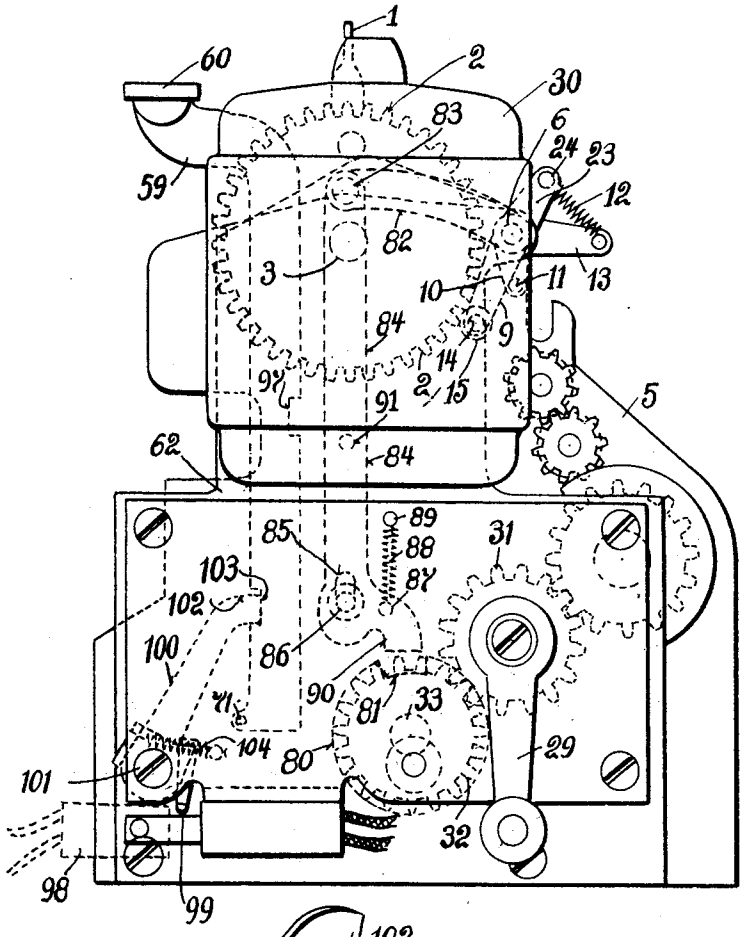
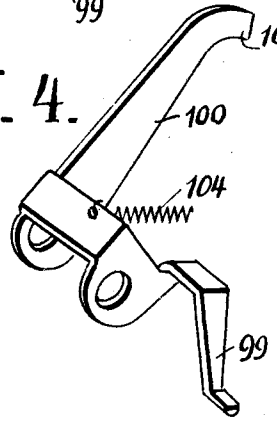


Fig. 4.



INVENTOR
Thomas O'Connor
BY H. W. Baker
ATTORNEY

Aug. 30, 1932. T. O'CONNOR 1,875,117

REGISTER

Filed Jan. 13, 1930 3 Sheets-Sheet 2

Fig. 2.

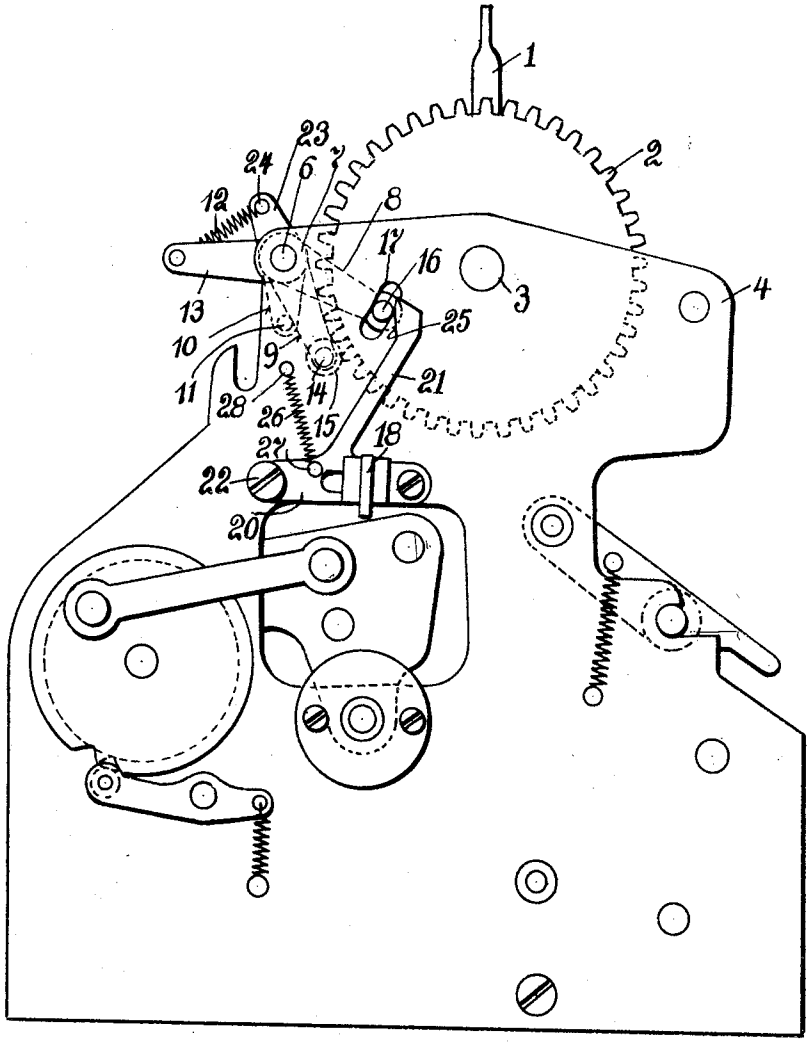


Fig. 5.



BY

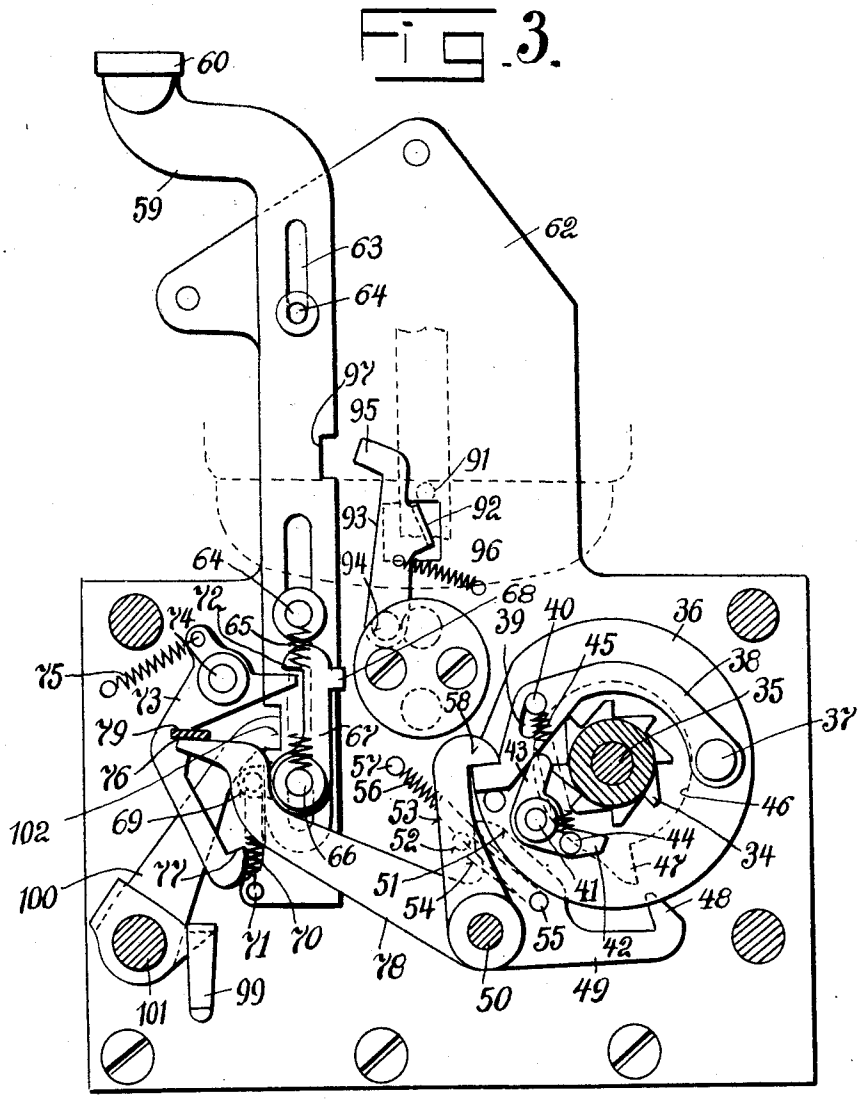
INVENTOR
Thomas O. Connor
H. W. Baker
ATTORNEY

Aug. 30, 1932. T. O'CONNOR 1,875,117

REGISTER

Filed Jan. 13, 1930 3 Sheets-Sheet 3

Fig. 3.



INVENTOR
Thomas O. Connor

BY H. W. Baker
ATTORNEY

Patented Aug. 30, 1932

1,875,117

UNITED STATES PATENT OFFICE

THOMAS O'CONNOR, OF DAYTON, OHIO, ASSIGNOR TO OHMER FARE REGISTER COMPANY, OF DAYTON, OHIO

REGISTER

Application filed January 13, 1930. Serial No. 420,356.

This invention relates to an improvement on registers and in particular consists of means to lock the motor control against operation when certain parts are in improper position. In the drawings I have shown my invention incorporated in that type of register shown in the application of Albert S. Wheelbarger and Grover C. Coil, Serial Number 65,532, filed October 29, 1925, with a motor attached thereto as shown in the application of Albert S. Wheelbarger, Serial Number 176,516, filed March 18, 1927.

In the drawings—

Fig. 1 is an elevational view of the motor and register as viewed from the right, the casing being removed for the sake of clearness.

Fig. 2 is an elevational view from the left side of the machine.

Fig. 3 is an elevational view similar to Fig. 1 partly in cross section, parts of the motor omitted so as to indicate the locking mechanism.

Fig. 4 is an enlarged perspective view of one of the locking levers.

Fig. 5 is a perspective view of the key.

In the aforementioned application of Albert S. Wheelbarger and Grover C. Coil, Serial Number 65,532, a register is described which prints and issues a ticket and prints a record. It is unnecesary, however, to describe the said register except fragmentally.

In the said register, hand operated levers 1 are secured to gears 2 mounted on a shaft 3 mounted in the side walls 4 and 5 of the machine. A shaft 6 is also secured in the said side walls and on this shaft is loosely mounted a two-armed lever 7, the two arms being designated by the characters 8 and 10. The arm 10 is provided with a cross bar 11 which extends behind a group of levers 9 there being one lever 9 for each of a group of gears 2. The lever 9 is provided with an upward extension 23 which carries a pin 24 to which is attached a spring 12 anchored in a projection 13 of the frame 4. The arm 9 is provided with a pin 14 on which is mounted a roller 15 which rides on the teeth of the gear 2. The arm 8 is provided with a pin 16 which projects through a slot 17 in the side wall 4.

A key 18 (Figs. 2 and 5) is provided with a downwardly extending cam lug 19 which when received in the machine engages the lower arm 20 of a lever 21 supported by the side wall 4 by means of a pin 22. The upper end of the lever 21 is provided with a cam surface 25 which engages the pin 16. The lever 21 is normally urged by means of a spring 26 secured to a pin 27 on the said lever and to a pin 28 carried by the side wall 4 so that the said cam surface 25 will press against the pin 16.

The machine may be manually driven as by means of a crank handle 29 or motor driven as by the motor 30. Neither the motor nor the manual drive, however, relate to this invention and it is only necessary to state that in either case a gear 31 is driven by the operating means which gear meshes with a gear 32 mounted on a shaft 33. The ratchet 34 is driven by either the motor or the crank handle by means not shown, which ratchet is loosely mounted on the main drive shaft 35 while the disk 36 is rigidly secured to said shaft. The disk 36 carries a pin 37 on which is mounted a lever 38 provided with a slot 39 through which slot extends a pin 40 likewise carried by the disk 36. The slot 39 is curved and concentric with the center of the pin 37. The disk 36 also carries a pin 41 on which is mounted a dog 42 provided with an extension arm 43 which engages the inner-side of the lever 38 at a point beyond the slot 39. The dog 42 carries a pin 44 and a spring 45 connects the pin 40 carried by the disk 36 and the pin 44 carried by the dog 42. Secured to the disk 36 is a disk 46 provided with a cam 47 which, when the disks 36 and 46 have made one revolution, engages the

nose 48 of a lever 49 pivoted on a shaft 50. The lever 49 is provided with an upper arm 51 which when the right-hand end of the lever 49 is raised engages a pin 52 on a stop arm 53 which stop arm is pivoted on the shaft 50. A spring 54 connects the said pin 52 to a pin 55 on the lever 49. A spring 56 is secured to a pin 57 carried by one of the walls of the machine and to the pin 55 carried by the lever 49. The upper end of the stop arm 53 is provided with an outstanding lug 58 adapted to engage the end of the lever 38 remote from the pin 37 when the disk 36 has completed its revolution.

A push rod 59 provided with a finger piece 60 is slidably mounted on the motor wall 62. The push rod 59 is provided with slots 63 through which extend pins 64 carried by the motor wall 62 and serving as means of guiding the push rod. The lower pin 64 carries a spring 65 having its other end attached to a pin 66 carried by the push rod 59, which spring 65 tends to hold the push rod 59 in its elevated position. A tripping member 67 is pivoted on the pin 66 which tripping member is provided with an arm 68 extending from one side of the push rod 59 and an arm 69 extending from the other side thereof, which arm 69 is secured to a spring 70 mounted on a pin 71 carried by the lower end of the push rod. The spring 70 tends to hold the tripping member 67 in the position shown in Fig. 3 so that the lug 72 carried by the upper end of the tripping member 67 is in position to engage one end of a bell crank lever 73 pivoted on a pin 74 carried by the wall 62. The lever 73 is tensioned by means of a spring 75 and is provided with a recess 76 and a lug 77. An arm 78 which is an extension of the lever 49 engages a contact 79 which forms a part of an electric circuit. It is not necessary to describe the electrical connections. It is sufficient to mention that when the contact 79 is raised the circuit is broken and when it is lowered the circuit is made. The manual or electrical driving means which forms no part of this invention is shown and described in the application of Albert S. Wheelbarger, Serial Number 176,516, filed March 18, 1927.

The operation of the machine thus far described is as follows: The operator inserts the key 18 and moves the levers 1 to their proper setting. He then presses with his thumb against the finger piece 60 depressing the push rod 59. The pin 66 being secured to the push rod carries the tripping member 67 downwardly so that the lug 72 engages the left-hand end of the bell crank lever 73 rotating it clockwise so that the recess 76 is disengaged from the extreme right-hand end of the arm 78. The spring 56 now rotates the lever 49 and arm 78 anti-clockwise until the left-hand end of the arm 78 engages the lug 77 of the bell crank lever 73 and stops it. This anti-clockwise movement of the lever 49 moves the nose 48 thereof upwardly towards the disk 46 so that it engages the said disk immediately to the right of the cam 47 as viewed in Fig. 3. The upper arm 51 of the lever 49 engages the pin 52 of the stop arm 53 and moves the said stop arm in an anti-clockwise direction so as to disengage the lug 58 from the left-hand end of the lever 38. The spring 45 now rotates the dog 42 anti-clockwise so that said dog engages the ratchet 34 while the arm 43 of the dog 42 cams the lever 38 upwardly until the lower end of the slot 39 rests against the bottom of the pin 40. It will be remembered that the ratchet 34 is the driving member. When the dog 42 is in engagement therewith the disk 36 and main drive shaft 35 rotate with the said ratchet 34. At the end of one revolution in a clockwise direction of the disk 46 the cam 47 engages the nose 48 of the lever 49 rocking the lever 49 downwardly or in a clockwise direction thereby elevating the left-hand end of the arm 78 which rests beneath the contact 79 raising the said contact and breaking the circuit. The left-hand end of the arm 78 is elevated to a point adjacent the recess 76 of the bell crank lever 73 and the spring 75 now rocks the said bell crank lever in an anti-clockwise direction so that the left-hand end of the arm 78 is seated in the said recess and held therein. If the lever 49 was rocked by means of the cam 47 the upper arm 51 of the lever 49 would be disengaged from the pin 52 and the spring 54 moves the stop arm 53 in a clockwise direction so that the lug 58 carried thereby is in position to engage the left-hand end of the lever 38. After it engages the same the said lever 38 is moved downwardly until the upper end of the slot 39 is engaged by the upper end of the pin 40. This movement rocks the dog 42 out of engagement with the driving ratchet 34 so that if the driving ratchet continues to rotate such movement is not imparted to the disk 36 or main drive shaft 35 which parts are now locked against rotation.

It is desirable to have locking means to prevent the push rod 59 from being depressed until the electric plug has been inserted and to prevent the said push rod from being depressed until all of the levers 1 are in correct position and the key 18 has been inserted. If the machine can be operated with one of the levers 1 in incorrect position, the registration of the printing will not be perfect. If the machine can be operated without the key being inserted it might be operated by unauthorized parties. Furthermore, in practice, the key is made into a printing key. If, therefore, the machine could be operated without the key being inserted there would be nothing to identify who operated the machine. The object of this invention is to pro-

vide means whereby the machine cannot be operated electrically until the plug and the key have been inserted and each of the levers 1 is in correct position and so that it cannot be operated manually until the key has been inserted and each of the levers 1 is in correct position. To secure these ends I have provided a disk 80 secured to the gear 32 which disk has a substantially rectangular cut-away portion 81. If any one of the gears 2 is in incorrect position the teeth thereof will push outwardly on the roller 15 carried by the pin 14 carried by the arm 9 which arm will be engaging the pin 11 carried by the arm 10 and will rotate the same in a counter-clockwise direction as viewed in Fig. 1 and will depress the arm 82 secured to the said arm 10. This arm 82 is provided with a pin 83 which connects with a push rod 84 provided at its nearest lower end with a slot 85 through which extends a pin 86 carried by the wall 62 of the motor. The said rod 84 is also provided with a pin 87 to which is secured a spring 88 attached by means of a pin 89 to a fixed part of the machine. The push rod 84 has a depending off-set nose 90 immediately above the shaft 33 and so positioned that if anyone of the levers 1 is in incorrect position so as to depress the arm 82 as heretofore described, the nose 90 will be seated in the cut-away portion 81 of the disk 80 thereby locking the said disk and its gear 32 against rotation which thereby locks the gear 31 against rotation and prevents the machine being driven manually. The push rod 84 also carries a pin 91 (Figs. 1 and 3) which when the push rod 84 is in its elevated position is just above a cam surface 92 of a lever 93 pivoted on a pin 94 which lever carries an outstanding lug 95. When this push rod is in its elevated position a spring 96 attached to the lever 93 holds the said lever 93 in the position shown in Fig. 3 but when the push rod is depressed the pin 91 engages the cam surface 92 and moves the lever 93 against the tension of the spring 96 so that the lug 95 rests in a cut-away portion 97 of the push rod 59 locking the same against being depressed. It is obvious, therefore, that the machine cannot be manually operated until all of the levers 1 are in correct position and the push rod 59 cannot be depressed until these conditions are met so that the machine cannot be electrically operated.

When the key 18 is in position in the machine the spring 26 moves the lever 21 in an anti-clockwise direction so that the surface 25 cams the pin 16 carried by the lever 8 in a clockwise direction thereby rotating the arm 10 and depressing the push rod 84 so that the machine can neither be electrically nor manually operated.

In order to operate the machine electrically the plug 98 must be inserted beyond the position in which it is shown in Fig. 1 so that it will engage the depending arm 99 and rock the lever 100 mounted on a shaft 101 so as to disengage the nose 102 of the lever 100 out of the cut-away portion 103 of the push rod 59. A spring 104 pulls the lever 100 so that the nose 102 will be seated in the said cut-away portion 103 when the plug is not fully inserted. It will therefore be impossible to depress the push rod 59 unless the electric plug has been fully inserted.

It is fully realized that many changes may be made in the invention as shown by way of illustration in the drawings and described in the specification without departing from the spirit thereof and I therefore desire to claim my invention broadly regardless of the modifications which may be made therein except as I may limit myself in the appended claims.

Having now described my invention, I claim:

1. In an electrically operated register, a circuit making means, a setting means for said register and means whereby said circuit making means is locked against operation until said setting means is in correct position.

2. In an electrically operated register, a circuit making means, a push member forming a part thereof, setting means for said register, and means whereby said push member is locked against actuation until said setting means is in correct position.

3. In an electrically operated register, a circuit making means, a push rod forming a part thereof, a plug, setting means, a key, and means whereby said push rod is locked against operation when said key is removed from the register or when any one of said setting means is in improper position or when said plug is not fully inserted.

4. In an electrically operated register, a circuit making means, a plug, setting means for said register, and means whereby said circuit making means is locked against operation until said plug has been inserted and until each of said setting means is in correct position.

5. In an electrically operated register, a circuit making means, a plug, a setting means, a key and means whereby said circuit making means is rendered inoperative until said plug has been inserted and said setting means has been placed in correct position and said key has been inserted.

6. In a register, a rod, a setting means, means whereby said rod is depressed when said setting means is in incorrect position, a pin carried by said rod, a lever provided with a cam surface adapted to be engaged by said pin so as to rock said lever when said rod is in depressed position and means whereby said lever locks said machine against operation when said rod is in depressed position.

7. In a register, a rod, a setting means,

means whereby said rod is depressed when said setting means is in incorrect position, a pin carried by aid rod, a lever provided with a cam surface adapted to be engaged by said pin so as to rock said lever when said rod is in depressed position, a circuit making means, a push rod forming a part thereof and provided with a cut-away portion, said lever engaging one of the sides of the cut-away portion of said push rod when said first mentioned rod is in depressed position.

In testimony whereof I affix my signature.

THOMAS O'CONNOR.