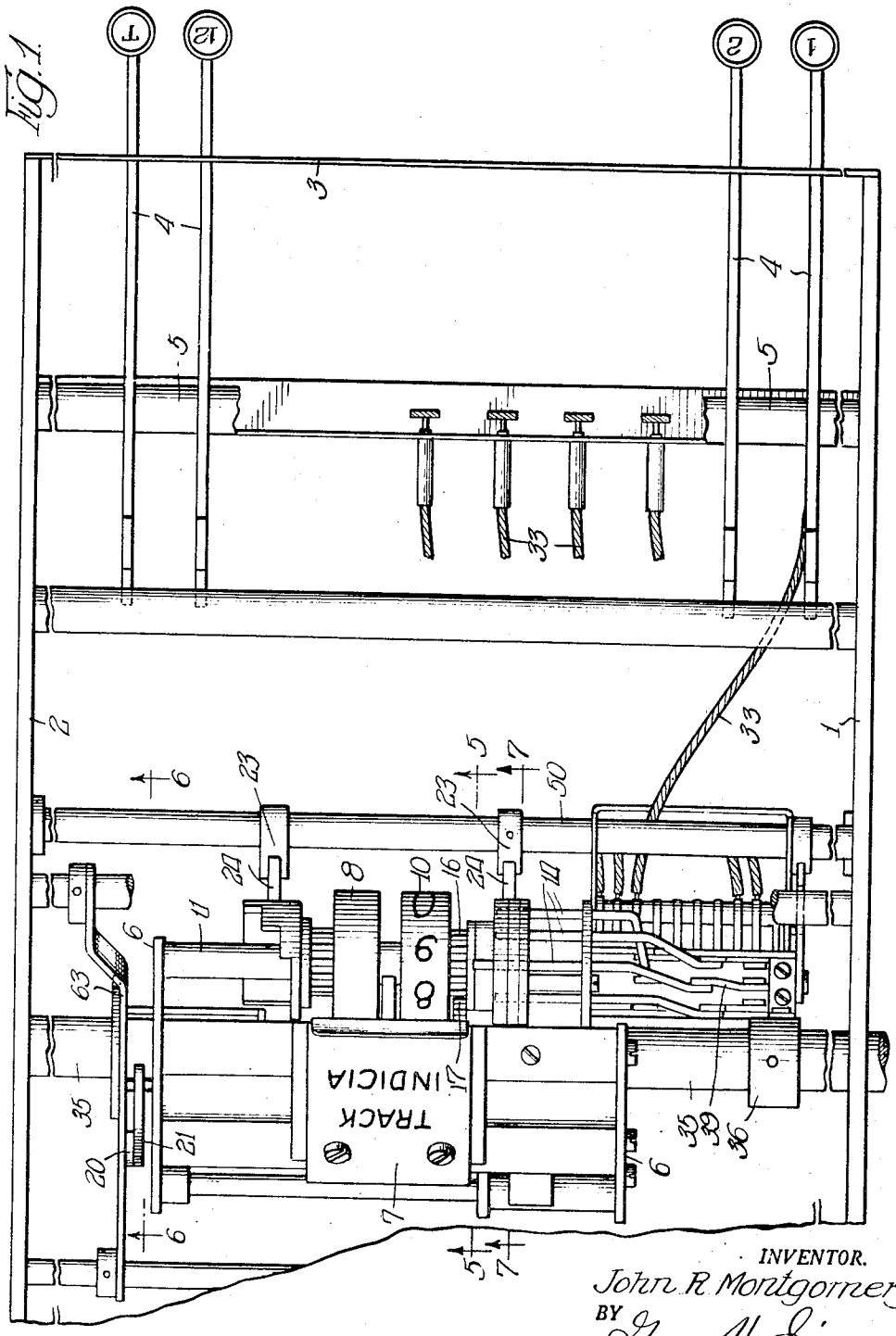
April 29, 1952 J. R. MONTGOMERY 2,594,787

TICKET PRINTING AND ISSUING MACHINE

Filed Aug. 25, 1949 3 Sheets-Sheet 1

Fig. 1.



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TICKET PRINTING AND ISSUING MACHINE

Filed Aug. 25, 1949 3 Sheets-Sheet 2

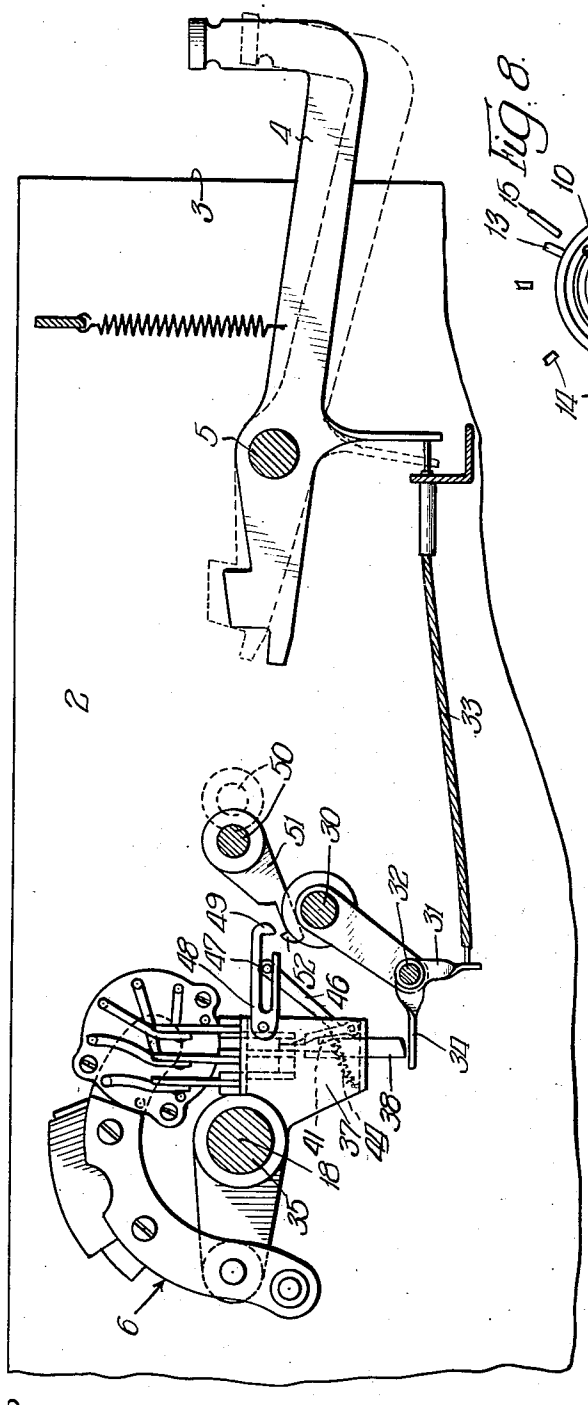


Fig. 2

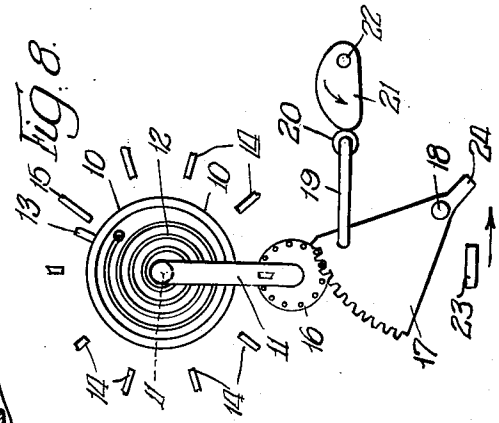


Fig. 6

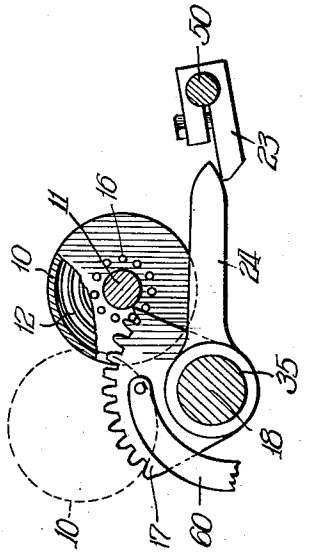


Fig. 7

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TICKET PRINTING AND ISSUING MACHINE

Filed Aug. 25, 1949 3 Sheets-Sheet 3

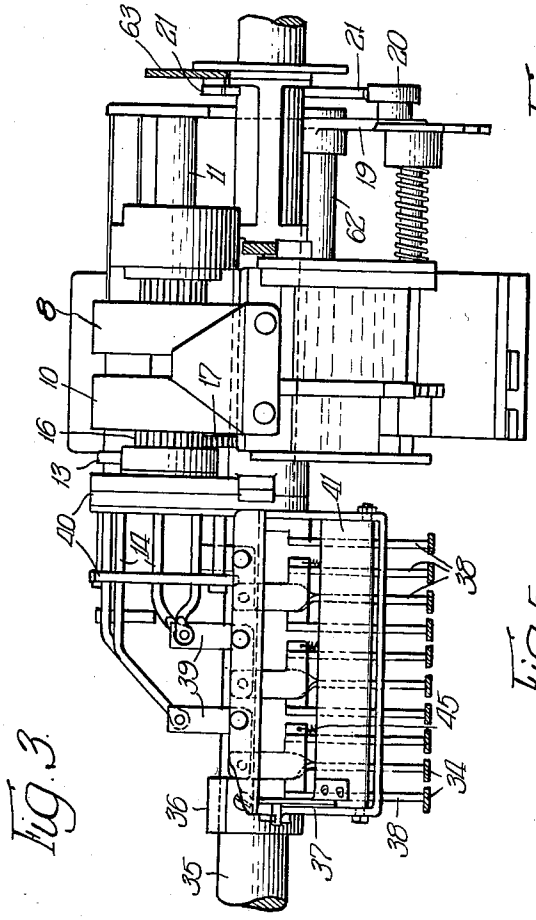


Fig. 3.

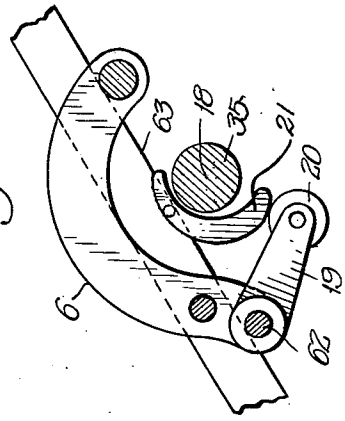


Fig. 6.

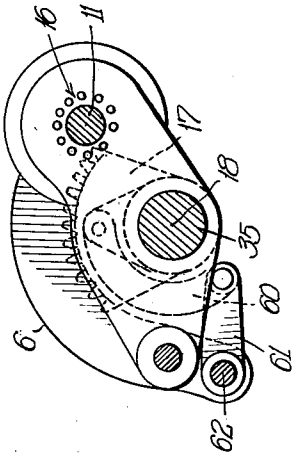


Fig. 5

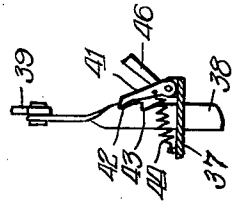


Fig. 4.

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2,594,787

UNITED STATES PATENT OFFICE

2,594,787

TICKET PRINTING AND ISSUING MACHINE

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Application August 25, 1949, Serial No. 112,341

11 Claims. (Cl. 101—66)

1

This invention relates to ticket machines and has for its principal object the provision of a new and improved machine of this type.

It is a main object of the invention to provide, in a ticket machine adapted to print and issue a ticket bearing the number of an operated key, an improved mechanism for controlling the setting of the printing wheel responsive to the operation of a selected key.

Another object of the invention is to provide a control mechanism that is positive in its action and definitely prevents the printing of wrong-numbered tickets resulting from the missetting of the printing wheel due to bouncing of the wheel and/or wearing of the cooperating parts in the mechanism.

Another object of the invention is to provide a control mechanism in which the selection is determined by the location of a selecting part relative to the printing wheel and the selection made by movement of that part without altering its position relative to the printing wheel, rather than by the movement of that part a fixed distance from a non-operated to a selecting position.

Another object of the invention is to provide a selecting mechanism having a printing wheel stop bar for each position of the printing wheel, one of which bars is moved into operative position to control the setting of the wheel.

Another object of the invention is to provide a selection mechanism in which a stop bar that has been moved into operative position is locked in that position and remains there until another stop bar is moved to operative position, at which time it is unlocked and returns to normal.

Another object of the invention is to provide an improved control mechanism which can be incorporated in an existing machine with a minimum of alterations.

Another object of the invention is to provide a control mechanism that can be cheaply manufactured without sacrificing quality and can be maintained in proper operating condition at low cost.

Further objects of the invention not specifically mentioned here will be apparent from the description and claims which follow, reference being had to the accompanying drawings in which a preferred embodiment of the invention is shown and in which:

Fig. 1 is a fragmentary top plan view of a ticket machine showing the invention;

Fig. 2 is a fragmentary side elevational view of the machine with one side plate removed;

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Fig. 3 is a fragmentary elevational view showing the printing cage and control mechanism associated therewith;

Fig. 4 is a fragmentary detail view of the mechanism;

Fig. 5 is an end elevational view taken substantially along the line 5—5 of Fig. 1, looking in the direction of the arrows and showing the printing wheel control;

Fig. 6 is a fragmentary view similar to Fig. 5 but taken substantially along the line 6—6 of Fig. 1, showing additional details of the control;

Fig. 7 is a fragmentary view along the line 7—7 of Fig. 1, showing the reset mechanism; and

Fig. 8 is a diagrammatic view illustrating the modus operandi of the control mechanism.

Ticket machines adapted to be operated in response to an operation of a selected one of a plurality of keys to print and issue a ticket bearing the number of the selected key are available on the open market. It is to a machine of this type that the present invention particularly relates.

In one type of a machine of this kind now in common use, a cage carrying various indicia to be printed on the ticket is adapted to revolve through one complete revolution from a normal position back to a normal position in response to the operation of a key thereby to print and issue a ticket. In prior art machines of the type disclosed in Patents #1,886,626 and #1,886,627, issued to H. D. Black on November 8, 1932, the cage contains a pair of rotatable printing wheels mounted for rotation around an axis parallel to the axis of rotation of the cage. One of these wheels is adapted to print the tens digit of a key number, and other suitable indicia, when the number of the key that is operated is less than 10. The other of these wheels is adapted to print the units digit of numbers over 10 and the numbers of keys under 10.

In machines of the type covered by the Black patents, the printing wheels carry stepped cams and a single stop bar is moved longitudinally of the axis of rotation of the cage when the key is depressed. The position to be assumed by the printing wheel depends upon the step in the cam with which the stop bar is aligned. When the machine is tripped to initiate a revolution of the cage, a spring incorporated in the printing wheel revolves that wheel until the step cam engages the stop bar.

As will be apparent to one skilled in the art, in a selecting system of this kind where the selection to be made depends upon the amount of

linear travel made by a selecting bar, any play in the linkage between the key and the stop bar may result in lost motion and a consequent mis-setting of the printing wheel, since the stop bar has not been moved as far as it should have been moved. This fact necessitates that the machine be carefully serviced so as to minimize lost motion and that parts of the linkage be replaced promptly as soon as they show any appreciable wear, if mis-settings of the wheel are to be avoided. Furthermore, inasmuch as when the cage is released the printing wheel spins free under the force of the tension stored in its driving spring, there will be an appreciable hammer action between the step cam and the stop bar which may result in bouncing of the printing wheel and consequent mis-setting thereof, and furthermore imposes an excessive wear on the stop bar and step cam. In installations, such as pari-mutuel systems at racetracks where each ticket issued may be redeemable for a considerable sum of money, any mis-printing of tickets is apt to be expensive and should be avoided. It is to the solving of this difficulty that the present invention particularly relates.

In its preferred form, the control mechanism of the present invention utilizes an arrangement wherein the selection depends upon the position of a movable part rather than upon the distance traveled by the part as it is moved from a non-operated to an operated position. With the machine in normal adjustment, there is a certain amount of over-travel of the selecting part and as wear develops or lost motion creeps into the operating mechanism the consequent shortening of the path of travel of the selecting part is inconsequential and incapable of causing a mis-setting of the printing wheel. Furthermore, in accordance with the teachings of the present invention, the movement of the printing wheel to bring an associated stop pin into engagement with an operated stop bar under the force of the tension of the driving spring of the wheel is controlled so that there is a minimum of hammer action between the engaging stop pin and bar, and danger of bouncing of the printing wheel and excessive wearing of the stops are eliminated.

In carrying out the teachings of the invention in its preferred form, bell crank levers are pivotally mounted upon a stationary part of the machine in juxtaposition to the rotating cage so as to be rotatable around an axis that is parallel to the axis of rotation of the cage. Each of these cranks is connected by a suitable flexible link, such as a Bowden wire, to an associated key. Carried upon the cage in such position as to register with these bell cranks when the cage is in normal position are a plurality of pivoted control levers connected to respective ones of the slidable stop bars that are arranged in a circle whose center coincides to the axis of rotation of the printing wheel. An operation of the bell crank lever rotates the control lever thereby to move the stop bar longitudinally of the axis of the cage and into the path of a stop pin carried by the printing wheel. Suitable latch means holds the stop bar in this operated position. When the cage is released and moves away from its normal position, a fixed cam that is engaged by a cam roller that is connected through a suitable linkage, including a gear segment and pinion on the printing wheel, controls the movement of the printing wheel to bring stop pin carried thereby into engagement with the operated stop bar thereby to effect the setting of the printing wheel in position to print the number corresponding to the depressed key.

During the latter part of the movement of the cage, the segment is blocked and further movement of the cage causes the pinion to ride over the segment thereby to rotate the printing wheel back to its normal position in readiness for the next operation of the machine. Although the printing wheel is returned to normal, the stop bar that was moved to operated position to effect the previous selection is not returned to normal even when the associated key is restored. Rather the stop bar remains in operated position until another stop bar is moved to operated position when another key is depressed, at which time the first bar restores to normal. In case one key is operated several times in succession, the stop bar moved into operated position on the first operation will remain in that position throughout the series of transactions. This locking of the stop bar in operated position makes simpler the checking of a machine suspected of issuing wrongly numbered tickets.

The setting and restoring of the printing wheel will best be understood by referring to Fig. 8 of the drawings wherein these operations are diagrammatically illustrated.

The printing wheel 10 is mounted for rotation around an axis represented by the shaft 11 and carries a spring 12 that is tensioned to rotate the wheel in a counter-clockwise direction. A stop pin 13, fixed with respect to the wheel 10, is moved in a circular path around the axis of the wheel by a rotation of the wheel. Located upon the printing faces of the printing wheel are digits 1 to 0, inclusive. Located in juxtaposition to the path of the stop pin 13 are ten stops, indicated generally at 14, nine of which are adjustable and the tenth or zero stop 15 is fixed permanently in the path of the stop pin 13. This pin engages the fixed stop 15 to determine the normal position of the printing wheel and also to set the wheel so as to print zero.

Fixed on the wheel 10 for rotation around the axis 11 is a pinion 16 that meshes with a gear segment 17 that is mounted for rotation around an axis 18 which coincides with the axis of rotation of the cage that carries the printing indicia. Connected to the gear segment by suitable linkage 19 is a cam roller 20 which engages a cam 21 diagrammatically shown as rotatable about an axis 22, although, as will presently appear in the embodiment of the invention shown, the cam 21 is stationary. The tension of spring 12, acting through the pinion 16 and gear segment 17, urges the cam roller 20 to the right in Fig. 8. As cam 21 moves with respect to the roller in a counter-clockwise direction, as indicated by the arrow, the distance of the roller from the axis of rotation is decreased by the shape of the cam surface, and printing wheel 10 is allowed to rotate in a counter-clockwise direction under the force put upon it by the spring. This rotation continues until the stop pin 13 engages an operated stop or until it engages the fixed stop 15. The printing wheel 10 is reset to its normal position and the tension built up in spring 12 by rotation of the gear segment 17 in a counter-clockwise direction around the axis 18. For this purpose, a suitable control lever 23 engages a radial arm 24 and as the lever 23 moves to the right, as indicated by the arrow, the gear segment will be rotated and pinion 16 will rotate in a clockwise direction

thereby to move the printing wheel back to normal.

As will be seen in Figs. 1 and 2, the ticket machine to which the instant invention is adaptable consists of side frame members 1 and 2, and a front plate 3, through which a plurality of keys 4 project, these keys being mounted for limited rotation around a common axis 5. The keys are shown as being numbered from 1 to 12, inclusive, plus a thirteenth key marked "T" for "Test," this arrangement being one commonly employed in machines of the type shown in the above Black patents built for use in this country.

Within the machine is a rotatable cage 6 that carries various printing indicia 7 and adjustable printing wheels 8 and 10 for printing the tens and units digits respectively of the numbers. The cage is operated in response to the depressing of one of the keys through one cycle in a manner more fully explained in the above Black patents. It is to the control of the units wheel 10 of a machine of this type that the present invention particularly relates.

As will be seen best in Figs. 2 and 3, mounted by suitable brackets upon a cross bar 30 which extends from side plate to side plate of the machine are a plurality of bell cranks 31 pivotally mounted for rotation around an axis 32 that is parallel to the axis of rotation 18 of the cage 6. Each of the bell crank levers 31 is connected by a suitable link, such as a Bowden wire 33, to an associated key 4, so that when the key is moved to its operated position, as shown by dotted lines in Fig. 2, the bell crank will be moved in a clockwise direction to elevate the generally horizontal portion 34 of the crank.

Main shaft 35 of the machine, which is centered upon the axis of rotation 18 of the cage, carries a collar 36, Figs. 2 and 3, which supports a framework 37 that supports ten vertically disposed control levers 38, each of which registers with a horizontal portion 34 of one of the bell crank levers when the cage is in its normal position, as shown in the drawings. The frame 37 also carries a plurality of pivoted levers 39, each of which is connected to one of the control levers 38.

Projecting through suitable plates 40 carried by the cage and by the bracket members 37 thereon, are the stops 14, each of which is connected to one of the pivoted levers 39. Thus it will be seen that when a key 4 is depressed and through its associated Bowden wire 33 a bell crank lever 31 is rotated to raise its horizontal arm 34, the corresponding control lever 38 will be raised and the pivoted lever 39 rotated in a clockwise direction, Fig. 3, thereby to move the connected stop bar 14 to the right.

As will be seen best in Figs. 3 and 4, a latch 41 is pivotally mounted upon frame member 37 and extends from end-to-end of the frame engaging all of the levers 38. Each lever has an upper notch 42 into which the latch 41 projects when the lever is in its lowermost or normal position, and a notch 43 into which the latch projects when the lever is raised to its operated position. When a lever is operated, latch 41 rotates on its pivots in a clockwise direction, Fig. 4, against the tension of spring 44. Each lever 38 is urged downwardly by a spring 45, Fig. 3, and when the latch 41 is rotated by the upward movement of a lever 38, any other lever that is in an elevated position will be moved downwardly by its spring. This insures that only one lever 38 will be maintained in operated position and consequently only one stop bar 14 will be maintained in position to be engaged by the stop pin 13 on the printing wheel.

It will be noted in Figs. 2 and 4 that an arm 46 is fixed upon latch 41 and that a pin 47 is fixed in the free end of arm 46. Pivoted on the frame member 37 is a bifurcated arm 48 and the pin 47 rides in the slot in this arm. A hook 49 is formed on the end of arm 48. Mounted upon a cross bar 50 of the machine is a lever 51 having a hooklike end 52 disposed in juxtaposition to the hook 49. As the latch 41 is riding over one notch and into the adjacent notch as a lever 38 is being elevated, arm 46 will act to rotate arm 48 clockwise (Fig. 2), thereby to engage hook 49 with hook 52. When the latch drops into the lower notch 43 in the thus elevated lever 38, arm 48 is rotated in a counter-clockwise direction to disengage the hooks.

When the machine is tripped preparatory to operating the cage through one revolution to print and issue a ticket, in the manner pointed out in the Black patents, cross bar 50 is moved to the right (Fig. 2) to the position shown in dotted lines. If the operation of the latch 41 is faulty and is halted before the latch has rotated counter-clockwise into one of the notches 42 or 43, as might be the case if one of the levers 38 was but partially operated, hooks 49 and 52 will be engaged together and this movement of the bar 50 will be prevented. The machine will block and a ticket cannot be printed and issued until the trouble has been cleared to free the hooks so that bar 50 may move normally.

Fixed at the end of the printing wheel 10 is a pinion 16, Figs. 1, 3, 5 and 7, with which the gear segment 17 meshes, the gear segment being loosely mounted upon the main shaft 35 for rotation around the axis of rotation 18 of the cage.

As will be seen in Fig. 5, connected to the gear segment 17 is a link 60 which is pivotally connected to a lever arm 61 that is carried upon a shaft 62 that is journaled in the cage 6 and extends from end-to-end thereof substantially parallel to the axis of rotation 18. At the opposite end of the cage, that is the right-hand end, Fig. 3, shaft 62 carries a cam roller arm 19, Fig. 6, at the free end of which is mounted a cam roller 20 that engages a stationary cam 21 that is fixed upon a stationary member 63 of the machine. The tension of spring 12, Fig. 7, tends to rotate the printing wheel 10 counter-clockwise, and pinion 16 places a torque on gear segment 17 which is transmitted through link 60 and lever 61 to the shaft 62 and tends to rotate that shaft counter-clockwise. This torque tends to move the arm 19 and cam roller 20 counter-clockwise around the axis of shaft 62 and presses the cam roller 20 against the cam 21. The surface of the cam engaged by the roller is shaped so that as the roller 20 moves clockwise over the cam, Fig. 6, the distance of the roller from the axis of rotation 18 of the cage is decreased.

Thus it will be seen that when a key is depressed to initiate an operation of the machine, a stop bar is moved into the path of a stop pin carried by the printing wheel. When the cage starts moving clockwise, Figs. 2 and 5, the cam roller moves over a cam and permits the tension of the driving spring of the printing wheel to rotate that wheel gradually thereby to bring the stop pin into engagement with the pre-set stop bar. The manner of initiating this movement of the cage and controlling it is not of the essence of the present invention and reference is here made to the above mentioned Black patents for such operation.

The printing wheel having been set during the initial movement of the cage revolves with the cage and prints the ticket. After the printing wheel has engaged the ticket and during the last portion of the movement of the cage back to its normal position, the printing wheel is reset to its normal position and tension built up in the spring in the following manner.

Assuming that the key depressed is number 8, in which case when the stop pin has engaged the operated stop bar printing wheel **10** will be positioned with respect to the segment **17**, as shown in dotted lines in Fig. 7.

A reset arm **24**, which is fixed with respect to the gear segment **17** and carried by the main shaft **35** and rotatable therearound, engages a stop **23**. Stop **23** is mounted on bar **50** which was moved to the right at the beginning of the operation of the cage in the manner hereinabove mentioned. During the rotation of the cage through its cycle and before arm **24** is in position to engage stop **23**, bar **50** returns to its normal position and stop **23** is moved into the path of the arm. Engagement of the arm **24** with stop **23** prevents further movement of the gear segment **17** with the cage and continued movement of the cage causes the printing wheel to rotate in a clockwise direction from the dotted to the full line position, Fig. 7, thereby moving back to normal and restoring the printing wheel in readiness for the next operation. When the cage is again released to initiate another operation of the machine, stop **23** is again moved out of the path of the arm **24** so that the gear segment can rotate with the cage as the printing wheel moves in a counter-clockwise direction, as hereinabove explained.

When the cage returns to normal, as above, the machine clears itself in readiness for the next operation. The key which was depressed to initiate the operation was locked in depressed position and maintained there throughout the cycle, being released at the end of that cycle. Restoration of an operated key restores the associated bell crank lever to normal; however, the stop bar that was moved into operated position does not return to normal when the key restores. This is advantageous. Occasionally the ticket seller will depress a key other than the wanted key and the machine will issue a ticket other than the one wanted, and when this happens the ticket seller invariably blames the machine rather than himself for the error. With the stop bar last used remaining in operated position, it is a simple matter to determine where the error lies, and after the ticket seller has been shown a few times that the error is his rather than the machine's, he will be more careful and less apt to make further errors. In all prior art machines, insofar as I am aware, the selecting mechanism restored to normal fully when the machine cleared itself, and checking of an error as above was not possible.

From the foregoing it will be seen that movements of the printing wheel in and out of the normal position are controlled; that the amount of such movement depends upon the position of an operated stop bar; that the stop bar is moved from an operated to a normal position through a linkage that requires a minimum of maintenance to maintain it in condition for properly controlling the printing wheel; and that the mechanism is of simple construction capable of being manufactured at low cost without sacrificing quality and capable of being maintained operative cheaply.

While I have chosen to show my invention by illustrating and describing a preferred embodiment of it, I have done so by way of example only, as there are many modifications and adaptations which can be made by one skilled in the art within the teachings of the invention.

Having thus complied with the statutes and shown and described a preferred embodiment of my invention, what I consider new and desire to have protected by Letters Patent is pointed out in the appended claims.

What is claimed is:

1. In a ticket printing and issuing machine in which a cage is rotated through one revolution to print a ticket for issuance and a printing wheel on said cage is rotated during the initial movement of the cage to set it to print on the ticket a number corresponding to a depressed key in the machine, a control for said printing wheel comprising: a plurality of bell cranks mounted upon a stationary part of the machine in juxtaposition to said cage; means connecting each key to a corresponding bell crank to operate the bell crank when the key is operated; a plurality of stop bars mounted upon the cage, there being a stop bar for each of the ten printing positions of the printing wheel; a control lever for each stop mounted on said cage and adapted to be operated by a corresponding bell crank in operated position; latch means for holding an operated control lever in operated position thereby to maintain the associated stop in operated position; a stop pin on the printing wheel adapted to engage an operated stop bar to position the printing wheel with a selected number in printing position; a spring tensioned to rotate the printing wheel; a pinion fixed on the printing wheel; a gear segment on the cage movable with respect thereto and engaged with said pinion; a cam roller on said cage connected to said segment; and a stationary cam engaged by said roller and shaped to permit said spring to rotate the printing wheel as the cage rotates thereby to set the wheel to print a number corresponding with an operated key in the machine.

2. In a ticket printing and issuing machine in which a cage is rotated through one revolution from and to a normal position to print and issue a ticket and a printing wheel on said cage is rotated during the initial movement of the cage to set it to print on the ticket a number corresponding to an operated key in the machine, a control for said printing wheel comprising: a bell crank for each position of the printing wheel, located on a stationary part of the machine in juxtaposition to the cage; a plurality of printing wheel stop bars mounted upon the cage, a control lever for each stop bar mounted upon the cage and registered with a corresponding bell crank when the cage is in said normal position; a link connecting each key to the corresponding bell crank and adapted to operate the crank as the key is depressed thereby to move the corresponding control lever to move the associated stop bar into position to limit movement of the printing wheel, latch means on the cage for holding said stop bar in said position; a stop pin on the printing wheel, a spring tensioned to rotate the printing wheel to move said stop pin towards said operated stop, a cam, and means moving over the cam as the cage rotates for controlling the movement of said printing wheel by said spring to move said stop

pin into engagement with the stop thereby to set the printing wheel to print the number corresponding to the key that has been operated.

3. In a ticket printing and issuing machine in which a cage is rotated from a normal position through one revolution to print and issue a ticket and in which a printing wheel on the cage is rotated with respect to the cage during the initial movement of the cage to set it to print on the ticket a number corresponding to the number of the key that has been operated to initiate an operation of the machine, a control for said printing wheel comprising: a plurality of stop bars on the cage, means actuated by the operation of a key in the machine for moving a corresponding one of said stop bars into operative position; latch means for holding the stop bar in said operative position, a stop pin on the printing wheel, a spring tensioned to rotate the printing wheel; a pinion carried on the printing wheel; a gear segment meshed with said pinion and mounted on the cage for limited rotation with respect thereto; a cam roller mounted on said cage for limited movement radially towards the axis of rotation of the cage; link means connecting said cam roller to said gear segment thereby to cause the tension in said spring to urge the roller towards the axis of rotation of the shaft; and a stationary cam over which the roller moves as the cage is rotated thereby to permit said spring to rotate the printing wheel until said stop pin engages the stop to arrest said rotation with the printing wheeel in position to print the number corresponding to the key that was operated.

4. In a ticket printing and issuing machine having a plurality of keys operable one at a time to initiate an operation of the machine and in which a cage is rotated through one revolution from a normal position for each operation of the machine to print and issue a ticket bearing the number of the operated key, means for setting a printing wheel on the cage to print the number of an operated key comprising: a plurality of levers pivotally mounted for rotation around an axis that is parallel to the axis of rotation of the shaft and is in juxtaposition to the cage, a Bowden wire connecting each key to a corresponding one of said levers and arranged to raise the lever when the key is depressed, a stop pin on the printing wheel, a plurality of stop bars on the cage, an operating lever for each stop bar registered with a corresponding one of said levers when the cage is in normal position, said operating lever being operated when the lever with which it is registered is raised to move the associated stop bar into the path of the stop pin; latch means engaging said operating lever for holding said bar in said path; and means for rotating the printing wheel to bring the stop pin into engagement with the stop bar as the cage moves out of normal position thereby to set the wheel to print the number corresponding to the operated key.

5. In a ticket printing and issuing machine in which a cage is rotated through one revolution from a normal position to print and issue a ticket bearing a number corresponding to the number of an operated key in the machine, a printing wheel pivotally mounted on said cage for rotation around an axis parallel to the axis of rotation of the cage; a spring tensioned to rotate said wheel in one direction, a stop pin fixed on said wheel, a plurality of stop bars selectively movable

into the path taken by said stop pin as the wheel rotates; means responsive to an operation of a key in the machine for moving the associated stop into said path; means for holding an operated stop in operated position; a pinion on said wheel; a gear segment journaled for rotation around the axis of rotation of the cage and meshed with said pinion, a cam roller, means connecting said cam roller through said segment and pinion to said wheel thereby to cause said spring to urge said cam roller towards the axis of rotation of the cage, a cam engaged by said cam roller and shaped to permit said roller to move towards said axis of rotation during the first portion of a revolution of the cage thereby to permit said spring to rotate said wheel until said stop pin moves into engagement with said associated stop to position the wheel to print on a ticket the number corresponding to the key that is operated.

6. In a ticket printing and issuing machine in which a cage is rotated through one revolution from a normal position to print and issue a ticket bearing a number corresponding to the number of an operated key in the machine, a printing wheel pivotally mounted on said cage for rotation around an axis parallel to the axis of rotation of the cage; a spring tensioned to rotate said wheel in one direction; a stop pin fixed on said wheel; a plurality of stop bars selectively movable into the path taken by said stop pin as the wheel rotates; means responsive to an operation of a key in the machine for moving the associated stop into said path; means for holding an operated stop in operated position; a pinion on said wheel; a gear segment journaled for rotation around the axis of rotation of the cage and meshed with said pinion; a cam roller; means connecting said cam roller through said segment and pinion to said wheel thereby to cause said spring to urge said cam roller towards the axis of rotation of the cage; a cam engaged by said cam roller and shaped to permit said roller to move towards said axis of rotation during the first portion of a revolution of the cage thereby to permit said spring to rotate said wheel until said stop pin moves into engagement with said associated stop to position the wheel to print on a ticket the number corresponding to the key that is operated; an arm fixed on said gear segment and extending radially outwardly from the axis of rotation of the cage; and a stop bracket into engagement with which said arm is moved during the latter part of the rotation of the cage thereby to stop rotation of the segment so that the final movement of the cage into normal position will rotate the wheel in the opposite direction to move it into a normal position and to restore tension to said spring.

7. In a ticket printing and issuing machine in which a cage is rotated through one revolution from a normal position to print and issue a ticket and in which a printing wheel on the cage is set selectively to cause it to print on the ticket a number corresponding to an operated key in the machine, means for controlling the printing wheel to print the number of the key comprising: a bell crank mounted on a stationary part of the machine for movement around an axis that is parallel to the axis of rotation of the cage, said bell crank having an arm normally in a horizontal position; link means connecting said bell crank to said key and operable to raise said arm from said horizontal position when said key is depressed; a stop pin on the printing wheel; a stop bar on the cage; a lever operable to move said

stop bar into the path of said stop pin, said lever registering with said bell crank arm when the cage is in a normal position and being operated to move the stop bar into said path as the bell crankarm is raised from said horizontal position; a latch for holding said lever in operated position; a spring tensioned to rotate the printing wheel to bring said stop pin into engagement with the operated stop bar; and means including a cam for holding said wheel against rotation when the cage is in normal position and for controlling the rotation of the wheel as the cage moves out of normal position.

8. In a ticket printing and issuing machine in which a cage is rotated through one revolution from a normal position to print and issue a ticket and in which a printing wheel on the cage is set selectively to cause it to print on the ticket a number corresponding to an operated key in the machine, means for controlling the printing wheel to print the number of the key comprising: a bell crank mounted on a stationary part of the machine for movement around an axis that is parallel to the axis of rotation of the cage, said bell crank having an arm normally in a horizontal position; a Bowden wire link connecting said bell crank to said key and operable to raise said arm from said horizontal position when said key is depressed; a stop pin on the printing wheel; a stop on the cage; a lever operable to move said stop into the path of said stop pin, said lever registering with said bell crank arm when the cage is in a normal position and being operated to move the stop into said path as the bell crank arm is raised from said horizontal position; a latch for holding said lever in operated position; a spring tensioned to rotate the printing wheel to bring said stop pin into engagement with the operated stop; and means including a cam for holding said wheel against rotation when the cage is in normal position and for controlling the rotation of the wheel as the cage moves out of normal position.

9. In a ticket printing and issuing machine having a plurality of keys operable one at a time to initiate an operation of the machine and in which a cage is rotated through one revolution from a normal position for each operation of the machine to print and issue a ticket bearing the number of the operated key; a printing wheel mounted on the cage for rotation around an axis that is parallel to the axis of rotation of the cage; a spring within the wheel tensioned to rotate the wheel in one direction; a stop pin fixed to the wheel; a plurality of adjustable stop bars, mounted on said cage, one for each number the printing wheel is adapted to print, located on a circle that is centered on the axis of rotation of the wheel; means responsive to an operation of a key for moving a corresponding one of said stop bars longitudinally of the axis of rotation of the printing wheel into the path of said stop pin; and means including a cam for controlling the rotation of said printing wheel and consequent movement of said stop pin into engagement with the operated stop bar during rotation of the cage away from said normal position thereby to set the machine to print a ticket bearing a number corresponding to the number of the operated key.

10. In a ticket printing and issuing machine having a plurality of keys operable one at a time to initiate an operation of the machine and in which a cage is rotated through one revolution from a normal position for each operation of the machine to print and issue a ticket bearing the number of the operated key; a printing wheel mounted on the cage for rotation around an axis that is parallel to the axis of rotation of the cage; a spring within the wheel tensioned to rotate the wheel in one direction; a stop pin fixed to the wheel; a plurality of slidable stop bars mounted on said cage, one for each number on the wheel, located on a circle that is centered on the axis of rotation of the wheel and spaced on that circle so that when said stop pin engages one of the stop bars the corresponding number on the wheel will be in printing position; means responsive to an operation of a key for moving a corresponding one of said stop bars longitudinally of the axis of rotation of the printing wheel into the path of said stop pin; and means including a cam for controlling the rotation of said printing wheel and consequent movement of said stop pin into engagement with the operated stop bar during rotation of the cage away from said normal position thereby to set the machine to print a ticket bearing a number corresponding to the number of the operated key.

11. In a ticket printing and issuing machine having a plurality of keys operable one at a time to initiate an operation of the machine and in which a cage is rotated through one revolution from a normal position for each operation of the machine to print and issue a ticket bearing the number of the operated key; a printing wheel mounted on the cage for rotation around an axis that is parallel to the axis of rotation of the cage; a spring within the wheel tensioned to rotate the wheel in one direction; a stop pin fixed to the wheel; a plurality of slidable stop bars mounted on said cage, one for each number on the wheel, located on a circle that is centered on the axis of rotation of the wheel and spaced on that circle so that when said stop pin engages one of the stop bars the corresponding number on the wheel will be in printing position; means responsive to an operation of a key for moving a corresponding one of said stop bars longitudinally of the axis of rotation of the printing wheel into the path of said stop pin; a pinion fixed on said wheel; a gear segment meshed with said pinion; a cam fixed upon a stationary part of the machine; and means engaging said cam and connected to said segment for controlling rotation of the wheel to bring said stop pin into engagement with said operated stop bar as the cage rotates away from said normal position thereby to set the machine to print a ticket bearing a number corresponding to the number of the operated key.

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