

Jan. 12, 1965

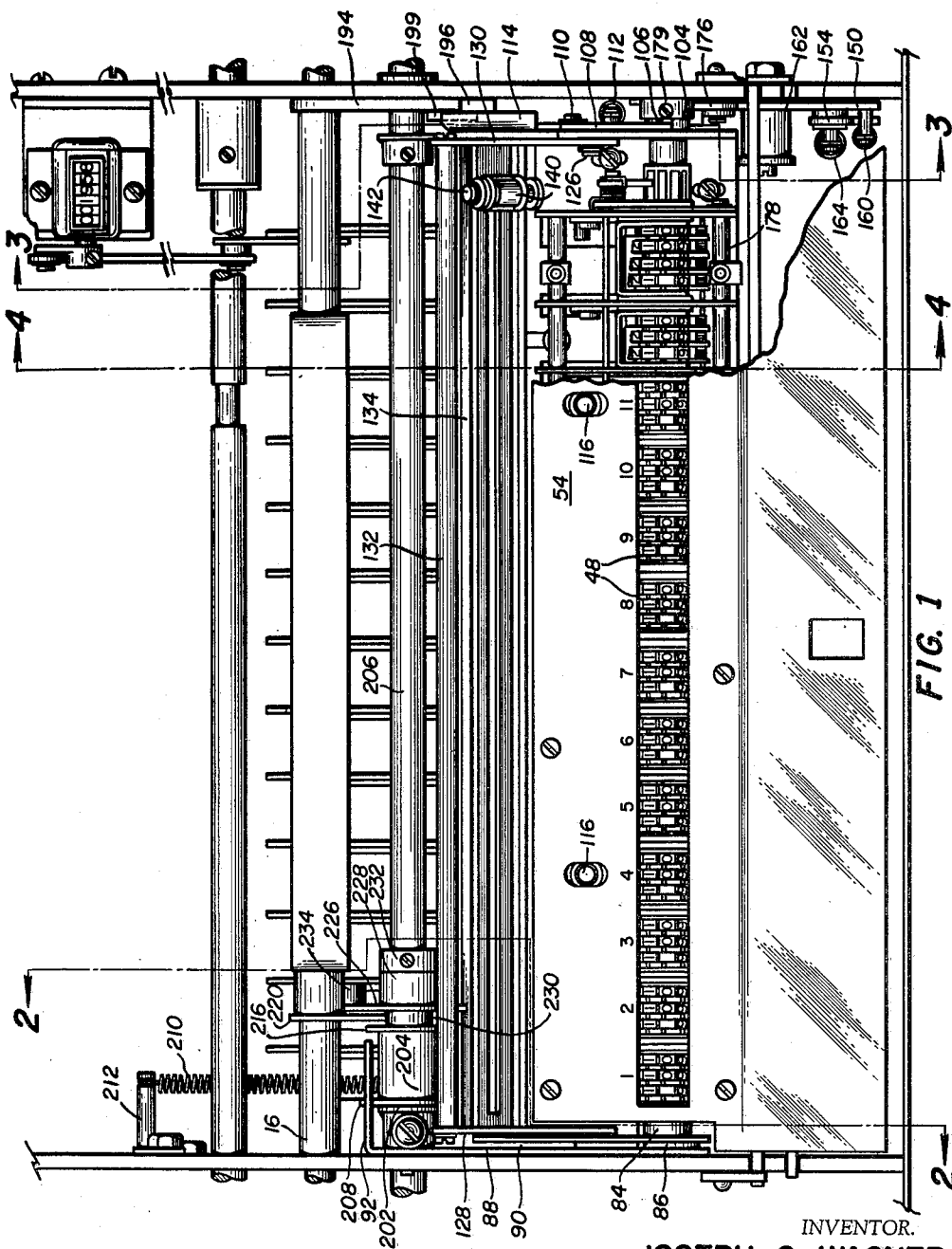
J. C. WAGNER

3,165,261

TOTALISATOR

Filed June 28, 1961

3 Sheets-Sheet 1



INVENTOR.

JOSEPH C. WAGNER

BY

Russoer, Smith, & Harding

ATTORNEYS.

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J. C. WAGNER

3,165,261

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3 Sheets-Sheet 2

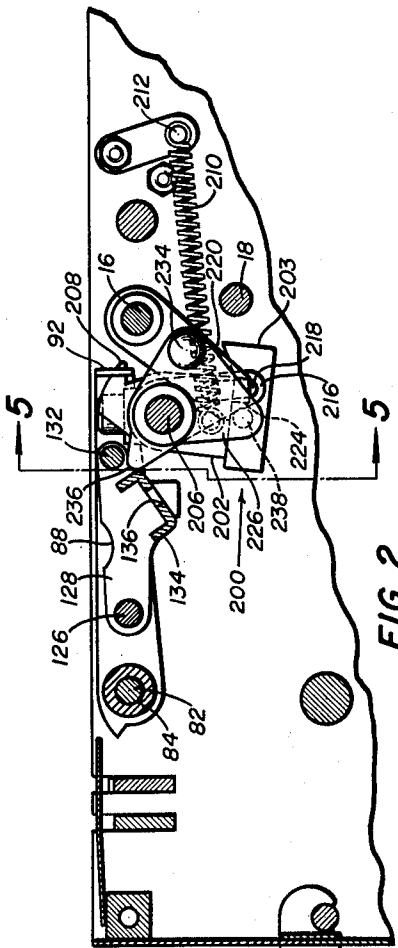


FIG. 2

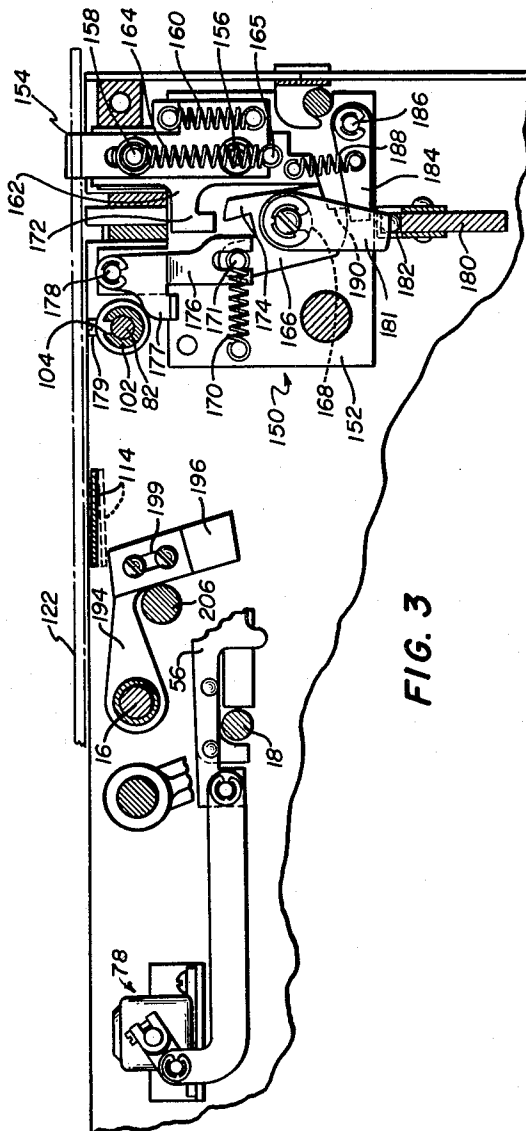


FIG. 3

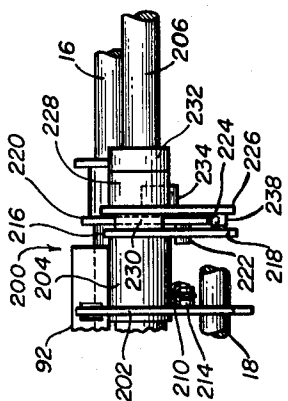


FIG. 5

INVENTOR.
JOSEPH C. WAGNER
BY
Busser, Smith & Harding

ATTORNEYS.

Jan. 12, 1965

J. C. WAGNER

3,165,261

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3 Sheets-Sheet 3

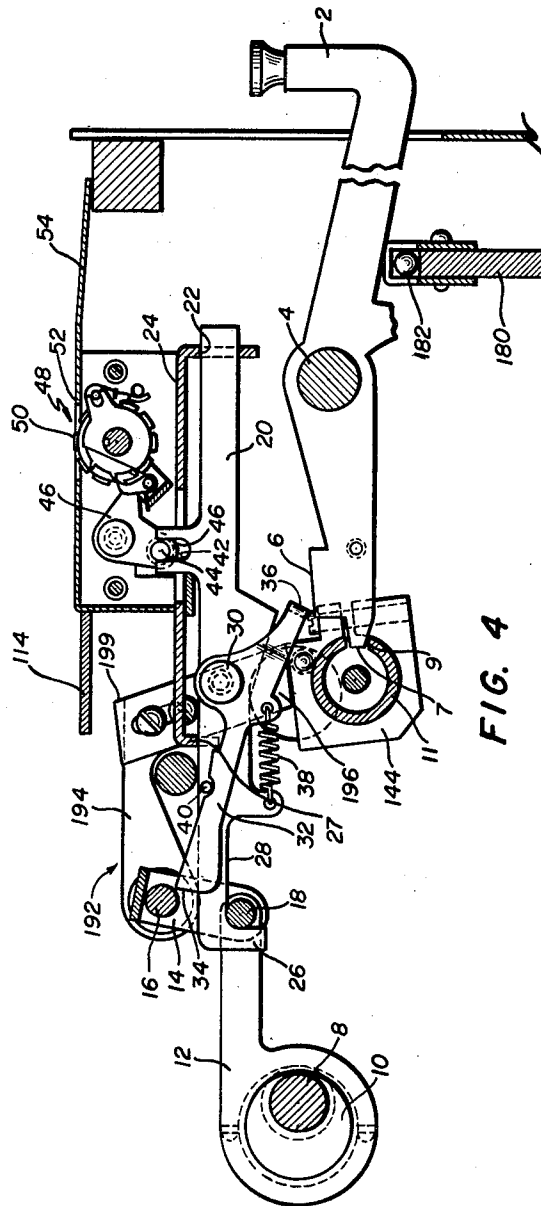


FIG. 4

INVENTOR.
JOSEPH C. WAGNER
BY
Bussey, Smith & Harding
ATTORNEYS.

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3,165,261

TOTALISATOR

Joseph C. Wagner, Bayside, N.Y., assignor to General Register Corporation, New York, N.Y., a corporation of New York

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11 Claims. (Cl. 235-91)

This invention relates to a totalisator and has particular reference to interlock means therefor to insure a desired sequence of operation.

At the present time, totalisators which are located at the various ticket windows of a race track are provided with counters which indicate the numbers of tickets issued from each machine on the various contestants. In the past, at the end of each betting period, attendants would circulate to the windows and copy down on sheets the numbers which appear on the totalisator counters and return with the notations thus made to the central accounting station where the numbers are totalled and compared with the totals centrally recorded. It will be evident that this procedure is time-consuming and subject to human error in incorrectly entering a total. Such an error would, of course, throw out the entire matter of the check so as to render it useless.

The application of Richard I. N. Weingart and Joseph C. Wagner, Serial No. 6,823, filed February 4, 1960, as a continuation of Serial No. 401,212, filed December 30, 1953, discloses a totalisator provided with printing counters instead of those which merely exhibit totals, and in association therewith means for effecting printing of the numbers exhibited on the counters so that, with a minimum of effort, a permanent record may be taken of the indications on each totalisator at the close of each betting period.

These records may then be assembled to form what amounts to a single sheet so that totals of the tickets issued on various entries may be readily secured.

It is the general object of the present invention to provide an improvement of the type of totalisator disclosed in said Weingart and Wagner application, the improved totalisator providing, in particular, means for preventing the accidental or intentional advance of the counters improperly, together with various interlocks which will be clear from the following description read in conjunction with the accompanying drawings, in which:

FIGURE 1 is a plan view, partially broken away, showing a portion of a totalisator provided in accordance with the present invention;

FIGURE 2 is a fragmentary section taken on a plane indicated at 2-2 in FIGURE 1 with various parts omitted for the sake of clarity of illustration;

FIGURE 3 is a fragmentary section taken on a plane indicated at 3-3 in FIGURE 1 with various parts omitted for the sake of clarity of illustration;

FIGURE 4 is a fragmentary section taken on a plane indicated generally at 4-4 in FIGURE 1 with various parts omitted for the sake of clarity of illustration; and

FIGURE 5 is a view taken on a plane indicated at 5-5 in FIGURE 2.

The conventional elements of a totalisator modified in accordance with the invention are not herein illustrated in detail since they will be apparent from consideration of the patent to Webb, 2,020,594, dated November 12, 1935. This patent illustrates a totalisator designed to issue tickets printed with the designations of the various contestants in a race. The machine illustrated in said patent is somewhat more elaborate than the usual machine to which it will be assumed the present invention is applied, in that the machine of the patent provides for the issuance of both "win" and "place" tickets. More

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usually, the machine at a particular race track window will issue tickets of only one class and of one value, and it will be assumed in what follows that a machine of this type is modified in accordance with the invention. Such a machine will generally comprise a single bank of keys carrying the numbers of the race contestants plus, usually, an additional key which may be depressed for testing operation. The Webb patent referred to does not disclose the conventional counters associated with each contestant key, but such counters are provided in actual machines operated by linkages from the several keys.

Further details of the mechanism are shown in said Weingart and Wagner application.

The drawings show in association with conventional elements of a totalisator an arrangement for advancing a printing counter one unit upon the issuance of each ticket on the contestant represented thereby. There is indicated at 2 one of the keys of a totalisator ticket issuing machine of the type illustrated in said Webb patent, the keys being mounted on a rod 4. Each key is provided with a ledge 6 at its rear end which is raised when the key is depressed. Beyond this ledge each key is provided with an end portion 7 arranged to engage within a slot 9 in an oscillatable tube 11 which is in the usual totalisator serves to energize the electrical system.

A transverse shaft 8 in the totalisator is rotated through a single revolution upon each operation of the totalisator and carries an eccentric 10 which, through a strap 12, oscillates a frame 14 about a transverse rod 16 to cause a rod 18 extending transversely across the totalisator to receive a forward and rearward reciprocation during each cycle of operation. The elements just described are illustrated in FIGURE 4a of said Webb patent and reference to said patent will disclose the nature of the operative cycle of the shaft. In accordance with the patent, this arrangement is provided to operate total counters, and, in the present machine, as disclosed particularly in said Weingart and Wagner application, in addition to serving to secure operation of the individual contestant counters, this arrangement is also used to operate a total counter.

Corresponding to each contestant key of the totalisator there is a slide 20 which is guided in a slot 22 of a supporting plate 24, the slide 20 being provided at its rear end with a downturned ear 26 extending to the rear of the rod 18 which serves to support the rear end of the slide. The slide is also guided through a slot 27 in a rear flange of the plate 24. Forwardly of the downturned portion 26 of the slide 20 there is the horizontal edge 28 which, with the parts in the condition illustrated in FIGURE 4, would permit the rod 18 to oscillate forwardly without advancing the slide 20.

Pivoted to the slide 20 at 30 there is a lever 32 which is provided with a rear edge 34 which is arranged to move downwardly in front of the rod 18 when the lever 32 is rocked counterclockwise against the action of spring 38 which normally tends to hold it in a position limited by a stop 40 carried by the slide 20. The rocking motion in counterclockwise direction is effected by engagement of the ledge 6 as it moves upwardly with the laterally turned end 36 of the lever 32. When the ledge 6 is thus moved upwardly, and reciprocation of pin 18 takes place, the assembly of the slide 20 and lever 32 is correspondingly oscillated first forwardly and then rearwardly during a cycle of operation, the turned end 36 of lever 32 riding forwardly and then rearwardly on the ledge 6.

The slide 20 is provided with a slot 42 which embraces a pin 44 on an actuating bell crank 46 for a corresponding printing counter 48 which is supported on the plate 24 and is provided with numeral wheels having printing numerals 50 thereon which project through a slot 52 in

a counter cover plate 54 mounted on plate 24. The arrangement is such, the counter being of conventional type, that an advance of one unit occurs upon each depression of a contestant key corresponding to the counter which gives rise to a cycle of operation of the machine and a complete reciprocation of the corresponding slide 20.

A total counter 78 is desirably provided and operated as disclosed in said Weingart and Wagner application, but this matter is not fully illustrated or discussed herein since it forms no part of the present invention. As shown in FIGURE 3, a slide 56 is actuated by the reciprocating movement of rod 18. Slide 56 operates the total counter 78 in the same manner as slide 20 operates the individual contestant counter 48.

The individual contestant counters have running through them a shaft 82 which by the impartation thereto of a single revolution will serve to zeroize all of the counters. The arrangement for doing this is conventional with counters of this type and need not be described in detail.

The shaft 82 has secured to the left-hand end thereof, as illustrated in FIGURE 1, a hub 84 for a notched ratchet 86. Arranged to oscillate with the respect to the ratchet 86 and hub 84 is a lever formed of two arms 88 and 90 which are riveted to each other, the arm 88 being provided with a turned end 92 which may be conveniently grasped by an operator to effect zeroizing. A pawl (not shown) is pivoted between the arms 88 and 90 and is urged into engagement with the ratchet 86. By imparting oscillating movements to the levers 88 and 90, the shaft 82 may be rotated in the direction of advance of the counters to effect zeroizing of all of the counters 48 and 78.

At its right-hand end the shaft 82 is provided with a collar 102 which has a slot 104 therein arranged to be engaged by a detent 106 on the forward end of a lever 108 which is pivoted at 110 to the frame. A tension spring 112 urges lever 108 in a direction to cause detent 106 to contact collar 102 either at slot 104 or otherwise. A finger tab 114 is engageable by an operator's finger to release the detent 106 from slot 104 to permit zeroizing to take place. The shaft 82 is normally held by the detent 106 in the position which it assumes at the end of a zeroizing operation which position is shown in FIGURES 1 and 3.

A pair of pins 116 are spring urged to project upwardly through openings in plate 54 and are yieldingly mounted so as to be depressable by the top cover plate 122 of the machine which is arranged to be locked in a closed position during normal totalisator operation. The cover plate 122 is normally located in a closed position as shown in FIGURE 3 and cannot be placed in this closed position unless the detent of lever 108 is positioned within the slot 104. Thus, the cover plate 122 cannot be locked in its closed position unless the shaft 82 is in its zeroizing position.

Pivoted at 126 at both sides of the machine is a printing frame consisting of arms 128 and 130 connected by a rod 132 and serving to mount a track 134 which is provided with a slot 136 for the reception of a carrier which supports a roller 140 through the medium of a pin 142. This arrangement is such that the assembly comprising arms 128 and 130 and their associated parts may be swung from the normally inactive position shown in the drawings to an operative position whereupon roller 140 may be caused to traverse the counters 48 and 78 to effect printing on the paper strip assemblies as is well known in the art.

Mounted on the right side of the machine is an interlock mechanism indicated generally at 150 and comprising a supporting member 152 and an operating slide 154 slidably mounted for vertical movement by pins 156 and 158 and biased upwardly by a spring 160. A slide 162 is mounted for vertical movement on pins 156 and

158. A spring 164 connected between pin 158 and a pin 165 on slide 162 insures that lever 162 will normally move in conjunction with slide 154 and permits an override movement. A slide 166 is fixedly mounted on a rotatably movable collar 168 and is biased for counterclockwise movement as viewed in FIGURE 3 by a spring 170 connected to a pin 171 mounted on lever 166. Slide 162 and lever 166 have cooperating locking arms 172 and 174, respectively, which prevent rotating movement of lever 166 when engaged and permit such movement when disengaged. The clockwise movement of lever 166, as viewed in FIGURE 3, is limited by a lever 176 pivoted at 178 and engaging pin 171 on lever 166. Lever 176 has an arm 177 which engages collar 102 to limit the counterclockwise movement of lever 166 when the detent mechanism 150 is in the key locking position as shown in FIGURE 3. Collar 102 has a screw 179 projecting therefrom for contact with arm 177 on rotation of shaft 82 to cause counterclockwise movement of lever 176 as viewed in FIGURE 3.

An arm 181 is secured to collar 168 for movement therewith and is cooperable with a transverse bar 180 having a plurality of balls 182 therein. Bar 180 is of a well-known construction wherein the total spacing between the balls approximates the thickness of one of the keys 2 whereby only one key may be depressed at a time. Bar 180 is positioned beneath the keys 2 as is shown in FIGURE 4. Arm 181 is of the same thickness as keys 2 and is adapted to move into the space of the balls 182, as shown in FIGURE 3, to prevent depression of any of the keys 2. An arm 184 is pivoted at 186 and is biased in a clockwise direction thereabout as viewed in FIGURE 3 by a tension spring 188. Arm 184 is cooperable with a cut-out shoulder 190 in lever 166 to maintain the lever 166 and arm 181 in a position in which the arm 181 is out of engagement with balls 182. This is the key unlocking position.

One of the aspects of the present invention is the prevention of the depression of keys 2 when such depression is not to take place. The interlock mechanism 150 effects this result by placing arm 181 into the space between balls 182 which will thus restrict any depression of the keys 2. The operation of interlock mechanism 150 will be hereinafter more fully described.

An interlock mechanism is provided for preventing key depression when there is a partial zeroizing or resetting of the counters. It will be apparent that if a key 2 were depressed during a resetting operation, an inaccurate zeroizing would result. This interlock mechanism is indicated generally at 192 and comprises a lever 194 pivoted on rod 16 and having a downwardly extending arm 196. Secured to arm 196 is an adjustable plate 199. The lower end of arm 196 rests on a hub 144 clamped to the tube 11. The tab 114 of zeroizing lever 108 is arranged to overlie the upper end of plate 199. The operation of the interlock mechanism 192 will be hereinafter more fully described.

Mounted on the left side of the machine is a detent mechanism indicated generally at 200 and comprising a lever 202 secured to a collar 204 rotatably mounted on a rod 206 transversely mounted on the machine. Lever 202 has a detent 208 formed on the upper portion thereof and adapted to extend into the turned end 92 of the zeroizing arm 88. When lever 202 is in the position shown in FIGURE 2, detent 208 extends into turned end 92 to prevent any zeroizing movement thereof. Lever 202 is biased to rotate about rod 206 in a counterclockwise direction, as viewed in FIGURE 2, by a spring 210 connected in tension between a pin 212 on the machine frame and a pin 214 mounted on lever 202.

Collar 204 also carries an arm 216 which projects downwardly from rod 206 and has a slot 218 therein. An arm 220 is pivoted on rod 16 and has a pin 222 mounted on the lower end thereof to extend within slot 218. Arms 216 and 220 are thus coupled by the engaged connection

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of pin 222 and slot 218. The lower end of arm 220 has a cut-out portion 224 for a purpose to be hereinafter set forth.

A lever 226 is rotatably mounted on the rod 206 by a collar portion 228 and is spaced from arm 216 by a spacer 230. A collar 232 fixedly mounted on rod 206 serves to longitudinally position the detent mechanism 200. Lever 226 is biased toward rotation in a clockwise direction about rod 206, as viewed in FIGURE 2, by a balancing weight 234 mounted thereon and has a forwardly projecting arm 236. The upper portion of arm 236 is contactable with rod 132 of the printing bracket to limit clockwise movement of lever 226 in accordance with the bias thereof when the printing bracket is in the inoperative position shown in FIGURE 2. Lever 226 has a transversely projecting pin 238 at the lower portion thereof engageable with the cut-out portion 224 of arm 220 to prevent counterclockwise movement of arm 220 when lever 226 is retained in the position shown in FIGURE 2 by the printing bracket. Hence, arm 216 and lever 202 are held in the position shown in FIGURE 2 because of the coupling between arms 216 and 220 and the mounting of arm 216 and lever 202 on collar 204.

Detent mechanism 200 assures the accomplishment of an aspect of this invention relating to the insurance of a sequence of operation in which the first printing step must be made before the counters can be zeroized. This avoids the possibility of losing a reading. The detent mechanism insures this result by preventing zeroizing movement of arm 88 until after the printing frame 128, 130, 132 and 134 is rotated about pivot 126 in a manner to be hereinafter described.

The operation of the apparatus in accordance with this invention is as follows:

The drawings illustrate the position of the parts just after the cover plate 122 has been removed. The interlock mechanism 150 is in the position shown in FIGURE 3 with arm 181 inserted into the spacing between the balls 182 whereby none of the keys 2 can be depressed. The detent mechanism 200 is in its locking position as is shown in FIGURE 2 with detent 208 extending into the turned end 92 of zeroizing arm 88 whereby the operator is prevented from inadvertently resetting or zeroizing the counters 48 and 78. Instead, the operator must perform the initial printing step of rotating the printing frame, comprising arms 128 and 130, bar 132, track 134 and roller 140, forwardly to the printing position. Upon rotation of the printing frame forwardly, there is no restricting engagement by bar 132 with arm 236 of the lever 226 whereby lever 226 rotates in a clockwise direction from the position shown in FIGURE 2 in accordance with the affect of weight 234. Thus, pin 238 moves out of arresting engagement with lever 220 at cut-out 224. With the parts in the position shown in FIGURE 2, pin 238 prevents counterclockwise movement of arm 220 which, through the coupling of pin 222 in slot 218, retains arm 216 and lever 202 in the locking position with detent 208 engaging arm 92. However, when pin 238 moves out of arresting engagement with lever 220, spring 210 is effective to cause counterclockwise rotation of lever 202. The zeroizing arms 88 and 90 may then be oscillated to rotate shaft 82 in a direction to advance the counters to effect zeroizing.

It will be noted that with interlock mechanism 150 in the position shown in FIGURE 3, the keys 2 are not depressable by reason of arm 181 projecting into the spacing between the balls 182. However, as the zeroizing progresses, the camming action of screw 179 in contact with arm 177 causes counterclockwise rotation of lever 176 about pivot 178. Acting through pin 171, this cammed movement of lever 176 causes a clockwise movement of lever 166 and arm 181 until notch 190 is positioned to clear the end of arm 184 and lever 181 moves out of the spacing between balls 182. This permits clockwise movement of arm 184 into the notch 190 under

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the action of spring 188 to thereby lock lever 166 in a position in which arm 174 clears arm 172. Thus slides 162 and 154 are depressable and will thus not interfere with the replacement of the cover plate 122 should this be desired. Also, depression of keys 2 will not be restricted by the balls 182.

With the parts in the position shown in FIGURE 3, i.e. immediately after the cover plate 122 has been removed and before any zeroizing rotation of shaft 82, the detent 106 of lever 108 projects into slot 104 whereby the tab 114 is in the position indicated by the solid lines in FIGURE 3. In this position, lever 194 is pivotally movable whereby the interlock mechanism 192 permits depression of keys 2. To permit zeroizing, tab 114 is depressed to the position shown in the dashed lines in FIGURE 3 and is retained in this position once zeroizing is begun by the contact of detent 106 with the exterior of collar 102. With the tab 114 in the dashed line position in FIGURE 3, the lever 194 cannot rotate upwardly by reason of the contact between plate 199 and tab 114. It will thus be apparent that keys 2 cannot be depressed since arm 196 contacting hub 144 prevents rotation of shaft 11 which in turn prevents any upward movement of the end portion 7 of the keys 2. Thus, interlock mechanism 192 serves to prevent depression of keys 2 during the zeroizing operation and thus eliminates any inaccurate zeroizing which could result from an inadvertent depression of the keys 2 during this period. The interlock mechanism 192 also serves to prevent depression of the keys 2 if the resetting to zero is only partial since tab 114 will be maintained in the dashed line position until the shaft 82 is moved to the position shown in FIGURE 2 wherein the detent 106 can project into slot 104. Also, as was noted previously, the cover plate 122 cannot be locked in its normal position unless the detent 106 of lever 108 is positioned within slot 104.

When the zeroizing has taken place properly, cover plate 122 is replaced to the normal position shown in the dashed lines in FIGURE 3. This replacement of cover plate 122 depresses slide 154. It will be noted that prior to the zeroizing rotation of shaft 82, any attempt to replace the cover plate 122 would have been prevented by slide 154 which could not be depressed because of the interference at arms 172 and 174. However, after zeroizing, these portions 172 and 174 are in non-interfering position whereby slides 154 and 166 may be depressed. As slide 154 moves downwardly, the lower end thereof contacts lever 184 to move the same in a counterclockwise direction out of engagement with notch 190. However, before arm 184 completely clears notch 190, arms 172 and 174 are in engagement to thereby hold lever 166 and arm 181 in the unlocking position, permitting depression of keys 2 into the space between the balls 182. At this time, the interlock mechanism 150 is set to be snapped to the locking position shown in FIGURE 3 upon a subsequent removal of cover plate 122 in the manner previously described.

Before the cover plate 122 is closed, the printing bracket is returned to the position shown in FIGURE 2 to thereby move lever 226 to the position shown in FIGURE 2 against the bias of weight 234. It will be noted that lever 226 under the bias of weight 234 is only rotated a small amount from the FIGURE 2 position, this amount being only sufficient to have pin 238 clear notch 224. After the cover plate 122 has been locked in its closing position, the machine is ready to issue tickets. When the first ticket is issued by the depression of one of the keys 2, shaft 18 is reciprocated forwardly and rearwardly as was previously described. As the shaft 18 moves forwardly, it engages the lever 202 at shoulder 203 moving the same in a clockwise direction against the bias of spring 210 into the locking position shown in FIGURE 2. Clockwise movement of lever 202 is transmitted through collar 204, arm 216 and pin 222 to arm 220. At the end of the forward rotation of shaft 18, arm 220 is moved to the position shown in FIGURE 2 with

the notched portion 224 engaging pin 238 on lever 266. This engagement restricts any counterclockwise movement of arm 220 upon the return movement of shaft 18 whereby interlock mechanism 200 is set in the locked position shown in FIGURE 2 with the notched portion 224 engaging pin 238 on lever 226. This engagement restricts any counterclockwise movement of arm 220 upon the return movement of shaft 18 whereby interlock mechanism 200 is set in the locked position shown in FIGURE 2. The interlock mechanism 200 will remain in this position until the printing bracket is rotated to the printing position permitting clockwise rotation of lever 226 to clear the engagement of pin 238 with notched portion 224 of arm 220 as was previously described.

The issuance of tickets will then take place in the conventional fashion and as each ticket is issued, the corresponding counter 48 will be advanced one unit and the total counter 78 will be advanced one unit. At the close of the betting period authorized persons will go to the ticket issuing windows to secure the records of the totals exhibited in the machines. This person will unlock and lift the cover plate 122 of each machine exposing the counters. The interlock mechanism 150 will assume the position shown in FIGURE 3 by reason of the upward movement of slides 154 and 162 under the action of springs 160 and 164 and the counterclockwise movement of levers 166 and 181 under the action of spring 170. By reason of the detent mechanism 200, the printing of a record sheet and the resetting of counter 48 and 78 must take place in sequence in the manner previously described.

It will be evident that various changes in details of the construction may be adapted without departing from the invention as defined by the following claims.

What is claimed is:

1. In a machine for the issuing of tickets of a plurality of types, a plurality of counters individually registering the number of tickets issued corresponding to the various types, means operable to selectively effect advances of said counters, a cover plate movable between a closed position covering said counters and an open position uncovering said counters, means cooperable with said advancing means and movable between a locking position preventing operation of said advancing means and an unlocking position permitting operation of said advancing means, said last mentioned means having a slidably mounted lever biased to an extended position outwardly of the closed position of said cover plate and being movable between a locking position preventing operation of said advancing means and an unlocking position permitting operation of said advancing means, said lever being moved against the bias thereof by contact with said cover plate in said closed position thereof to thereby actuate said last mentioned means to said unlocked position said cover plate being movable out of contact with said lever in said open position thereof whereby said lever is moved under its bias to said locking position thereof.

2. In a machine for the issuing of tickets of a plurality of types, a plurality of counters individually registering the number of tickets issued corresponding to the various types, means operable to selectively effect advances of said counters, means operable to zeroize said counters, a detent for said zeroizing means, means including a printing frame for locking said detent in position to prevent movement of said zeroizing means, said printing frame being movable from an inoperative position to a printing position, and means operable to release said detent upon movement of said printing frame to said printing position.

3. A machine as claimed in claim 2 wherein said advancing means is mounted for engagement with said locking means upon operation of said advancing means to advance said counters to return said detent to said position preventing movement of said zeroizing means.

4. A machine as claimed in claim 2 wherein said releasing means includes a spring biasing said detent means to said released position, said locking means including a lever engageable with said printing frame.

5. In a machine for the issuing of tickets of a plurality of types, a plurality of counters individually registering the number of tickets issued corresponding to the various types, means operable to selectively effect advances of said counters, a cover plate movable between a closed position covering said counters and an open position uncovering said counters, means operable to zeroize said counters, a detent for said zeroizing means, means including a printing frame for locking said detent in a position to prevent movement of said zeroizing means, means engageable with said advancing means for preventing operation of said advancing means when said cover plate is in said open position, said printing frame being movable from said inoperative position to a printing position, and means including a disengageable connection between said detent and said locking means operable to release said detent upon movement of said printing frame to said printing position whereby said printing frame must be moved to said printing position before said zeroizing means is operable.

6. A machine as claimed in claim 5 wherein said means for preventing operation of said advancing means is movable to an inoperative position by said cover plate in said closed position whereby said advancing means is operable.

7. A machine as claimed in claim 6 wherein said advancing means is engageable with said locking means upon operation of said advancing means after said cover plate is closed to return said detent to said position preventing movement of said zeroizing means.

8. A machine as claimed in claim 5 including interlock means interconnected between said zeroizing means and said advancing means for preventing operation of said advancing means during the operation of said zeroizing means.

9. In a machine for the issuing of tickets of a plurality of types, a plurality of counters individually registering the number of tickets issued corresponding to the various types, means operable to selectively effect advances of said counters, a cover plate movable between a closed position covering said counters and an open position uncovering said counters, interlock means operatively engageable with said advancing means and said cover plate and movable between a locking position preventing operation of said advancing means and an unlocking position permitting operation of said advancing means, said interlock means being maintained in said unlocking position by engagement with said cover plate in said closed position and movable to said locking position upon movement of said cover plate to said open position, means operative to zeroize said counters, and means retaining said interlock means in a restricting position to prevent placement of said cover in said closed position until operation of said zeroizing means to zeroize said counters.

10. A machine as claimed in claim 9 including means cooperable with said zeroizing means and said retaining means during a zeroizing operation to actuate said retaining means to a position releasing said interlock means from said restricting position to thereby permit placement of said cover in said closed position after a zeroizing operation.

11. A machine as claimed in claim 9 including means operatively engageable with said advancing means to prevent operation of said advancing means until the completion of said zeroizing operation.

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