Jan. 11, 1966 W. J. HARRINGTON 3,229,074

TRANSFER CHECKING AND VALIDATING MACHINE

Filed July 20, 1959 2 Sheets-Sheet 1

FIG. 1

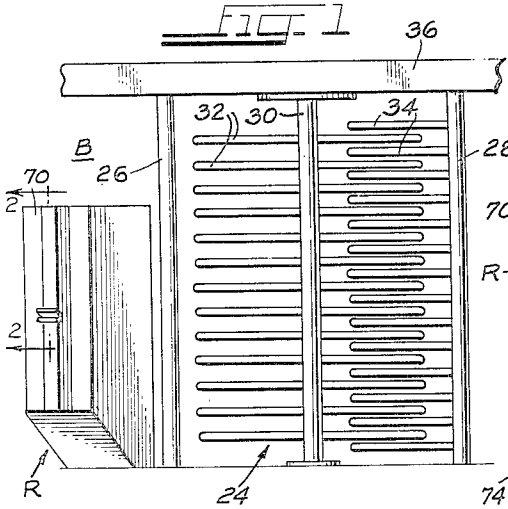


FIG. 2

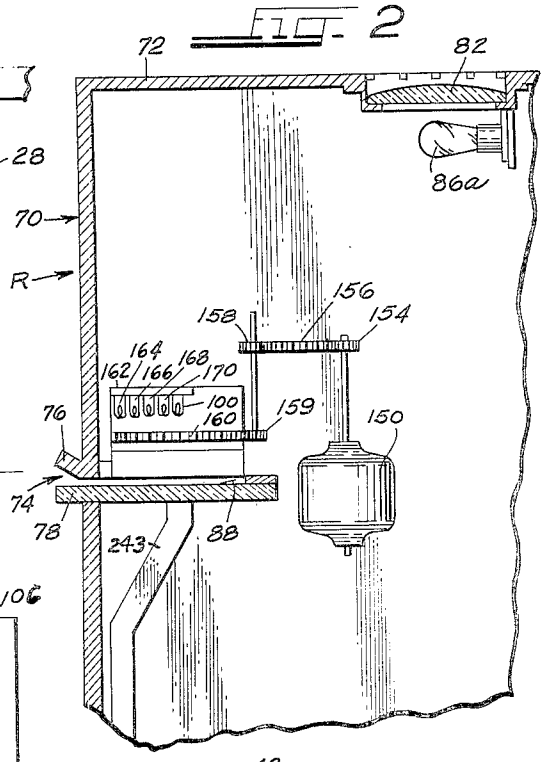


FIG. 3

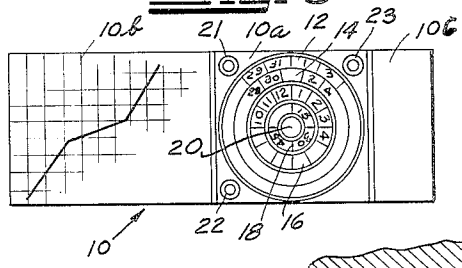


FIG. 4

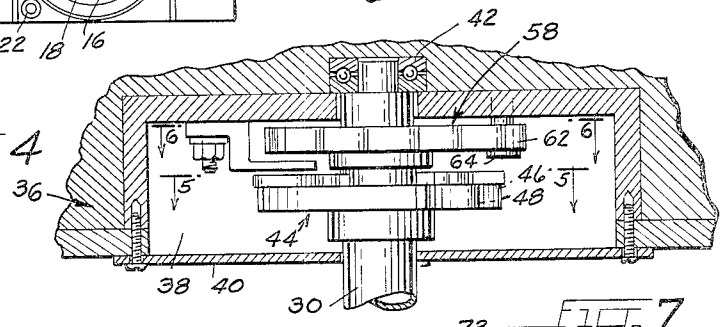


FIG. 5

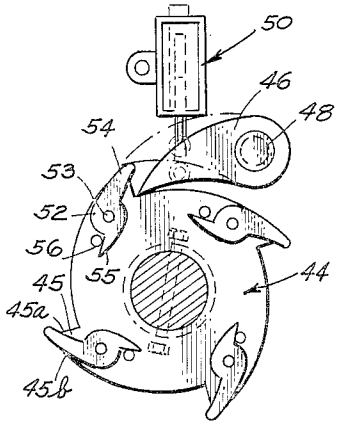


FIG. 6

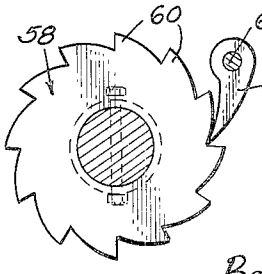
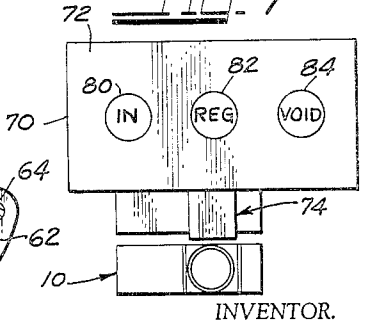


FIG. 7



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TRANSFER CHECKING AND VALIDATING MACHINE

Filed July 20, 1959 2 Sheets-Sheet 2

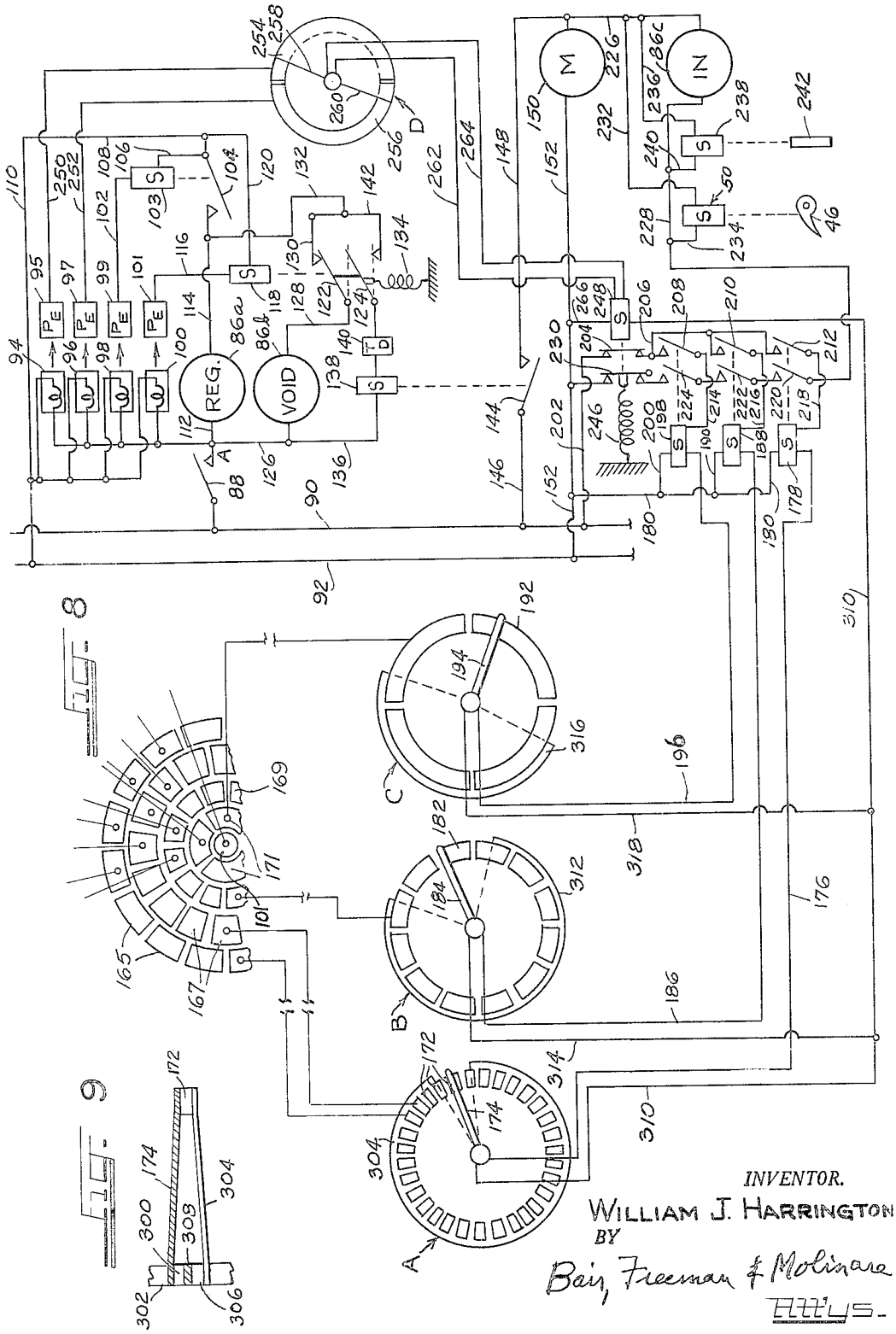

FIG. 8

FIG. 9

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3,229,074

TRANSFER CHECKING AND VALIDATING MACHINE

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Filed July 20, 1959, Ser. No. 828,252
12 Claims. (Cl. 235—61.11)

This invention relates to a validating device and more particularly to a device for automatically checking and validating transportation system transfers.

In public transportation systems, principally those in large metropolitan centers, such as, for example in Chicago, there may be a plurality of interconnecting transportation modes which require transfer of passengers from one mode to another mode in order to complete the trip paid for by the passenger. More specifically, Chicago, for example, has elevated train lines, a subway system, and surface transportation such as buses and the like. The entire transportation system is unified, and where the various transport lines intersect or are contigous as to location or direction there may be transfer points established.

Now it is essential that passengers be permitted valid access from one mode of transportation to another, while at the same time unrestricted access cannot be permitted, particularly if access is improperly sought. Furthermore, to prevent non-paying passengers from contending that they are entitled to use the transport line, transfers must be distributed to paid passengers. However, there must be a time limit imposed upon the passenger's right to use of the transfer, otherwise the system of transfers would be subject to abuse, resulting in substantial loss of revenue to the transportation system.

Therefore, and heretofore, employees have had to be stationed at various transfer points in the transportation system, on an around-the-clock basis, for the principal, if not sole, purpose of validating transfers or checking the transfers of passengers to see if they are valid. Needless to say, the cost of employing such personnel is exorbitant, and particularly during early morning hours and mid-afternoon hours, when traffic is reduced, the use of employees for such purposes is wholly uneconomical.

Thus, the principal object of this invention is to provide an automatic transfer checking device for transportation systems which will obviate the necessity of employing personnel for the purpose of checking and validating transport transfers.

Another object of this invention is to provide an automatic transfer checking machine for determining if transfers presented to it are valid within time limits selectively established for the transportation system.

A further object of this invention is to provide an automatic transfer validating machine for first determining if transfers presented to it are valid, and for then revalidating the transfer so that its bearer may use the transfer at another transfer point in the transportation system.

Still another object of this invention is to provide an automatic transfer checking machine for controlling an entrance gate at a transfer point in a transportation system, which transfer checking machine will first determine if a transfer presented to it is valid, and upon determining such validity will operate to permit entrance of the bearer past the normally closed entrance gate.

Further objects and advantages of this invention will become apparent as the following description proceeds, and the features of novelty which characterize this invention will be pointed out with particularlity in the claims annexed to and forming part of this specification.

A preferred embodiment of the invention is shown in the accompanying drawing, in which:

FIGURE 1 is an elevation view showing a transportation entrance gate, the opening of which is controlled by a transfer checking and validating machine as herein disclosed.

FIGURE 2 is an enlarged fragmentary side cross-sectional view through the transfer checking and validating machine shown in FIGURE 1.

FIGURE 3 illustrates a transportation transfer upon which time and date information may be punched, and shows a preferred type of transfer wherein information as to time and date is arranged in an improved manner for use with a transfer checking and validating machine of the type herein disclosed.

FIGURE 4 is an enlarged cross-section view of the ratchet-release control for the entrance gate of FIGURE 1.

FIGURE 5 is a view taken substantially on line 5—5 of FIGURE 4.

FIGURE 6 is a view taken substantially on line 6—6 of FIGURE 4.

FIGURE 7 is a reduced top plan view of the transfer checking and validating machine seen in FIGURES 1 and 2.

FIGURE 8 is a diagrammatic illustration showing certain details of the transfer reading and validating mechanism within the transfer checking machine shown in FIGURES 1, 2 and 7.

FIGURE 9 is a cross-section view showing certain typical details of the clock control mechanisms used in the system of FIGURE 8, and is taken substantially on line 9—9 of FIGURE 8.

The basic concept herein resides in providing a transfer whereon the date and time of initiation of a trip by a passenger is recorded, either manually or by machine, and the transfer checking and validating device herein disclosed then provides a scanner mechanism which determines whether or not the transfer is being presented to it within a pre-selected period of time from the time initially recorded on the transfer and also determines whether or not the transfer has been previously used in the transfer checking device, thereby preventing dual use of a single transfer, and if the transfer is approved by the checking machine, then it operates to automatically control an entrance gate associated with the checking machine to permit passage therethrough of the bearer of the transfer, and, furthermore, the transfer is automatically validated, by punching or the like, so that the validated transfer may not again be validly presented to an automatic transfer checking device as herein disclosed, but may be presented to an attendant for visual inspection and approval.

Referring now to the details of the system disclosed herein, attention is first directed to the type of transfer to be used, as shown in FIGURE 3. A transfer generally indicated at FIGURE 10 is shown having three portions, a central portion **10***a*, a map portion **10***b* and a grasping portion **10***c*. The data to be punched on the transfer is punched in the square area **10***a* and the provision of areas **10***b* and **10***c* permits of grasping of the transfer so as to manipulate it into the machine hereinafter described.

In the central portion **10***a* there are provided a plurality of concentric sub-divided annular regions, the outermost ring being designated at **12**, the nevt ring being **14**, the third ring **16**, and the fourth, or innermost, ring **18**, and there being a central circular area **20**. These annular regions are sub-divided into arcuate sections which may be selectively punched to designate the numerical date of the month and the specific time when the transfer has been issued. The outer two annular areas **12** and **14** are spectively sub-divided into 16 and 15 segments each, thereby providing sufficient segments to accommodate the maximum number of days in a month. The third annular area **16** is sub-divided into 12 regions, each standing for the hours numbered 1 to 12. The innermost annular

region 18 is sub-divided into segments representing one-quarter hour sections.

Now, in addition to the areas located within the annular regions hereinabove described, there are provided in area 10*a*, between the borders of the area and the outermost region 12, three punch areas. Such punch areas are shown respectively at 21 for a.m., 22 for p.m., and 23 being a registering area, the purpose of which is to cooperate with a part of the transfer checking machine herein described to be sure that the transfer has been properly presented to, and is in register with, the machine.

The central area 20 is normally not punched prior to presentation to a transfer checking machine, but after a valid transfer has been presented to the transfer checking machine herein provided, then the machine operates to punch the central area 20 thereby validating the transfer 10 and at the same time providing a means for preventing the representation of the transfer to the same machine for the purpose of defrauding the transfer checking device. This will be described more fully hereinafter.

Referring now to FIGURE 1, there is shown a barrier means generally indicated at B which operates to separate the space outside of the barrier from the space inside the barrier, the latter space providing free access to the transportation system. The barrier means includes a gate generally indicated at 24 which is bounded by a pair of vertical frame members 26 and 28. The gate member 24 is rotatable and includes a center post 30 from whence project 4 sets of arms 32, each set of arms forming a grate work which prevents unauthorized entrance through the gate. As seen in FIGURE 1, the arms 32 are arranged to pass between another set of arms 34 carried by frame member 28.

The entrance gate region is bounded on the top by frame means generally indicated at 36, as best seen in FIGURES 1 and 4. In FIGURE 4, it is shown that the frame means 36 are recessed to define a space 38 which is normally covered by plate 40, and in the space 38 are located ratchet means for control of the gate. The upper end of the center post 30 is journaled in a bearing 42 supported in top frame means 36. Carried on center post 30 for rotation therewith is a star wheel, generally indicated at 44, which is best seen in detail in FIGURE 5. The star wheel 44 is formed with four teeth 45, each having an abutment face 45*a* facing in the direction of rotation of the star wheel 44, and an arcuate wall 45*b* leading from the outermost edge of one tooth 45 to the lowermost edge of the next tooth 45. A releasable latching dog 46 pivotally mounted on pin 48 is provided for cooperation with the star wheel 44. The dog 46 is adapted to be actuated to the dashed-line position of FIGURE 5 by a solenoid 50. The dog 46 is normally biased to the full line position shown in FIGURE 5 by means of a spring (not shown), and when in the full line position it will be seen that the tooth engages the flat abutment 45*a* of a tooth 45 thereby preventing rotation of the star wheel and the gate 24 to which the star wheel connects. There is provided a latch member 52 adjacent each tooth 45 on the star wheel and each latch member is pivotally mounted on a pin 53 and includes a pair of projections 54 and 55. The latch member 52 is normally biased to the position shown in FIGURE 5 by spring means (not shown). When in that position the projection 55 engages a stop pin 56 carried on the wheel 44, and the other projection 54 extends across the path of swing of the extended end of dog 46.

When the latch-releasing solenoid 50 is energized to pull the dog 46 to the dash-line position shown in FIGURE 5, the dog 46 operates to pivoted latch member 52 away from the normal position shown in FIGURE 5, and since the latch member is pivotally mounted on pin 53 the arrangement permits of a one-quarter turn of the gate 24, an amount sufficient to permit entrance of a single person through the gate 24. As the star wheel 44 advances past dog 46, the latch member 52 pivots to permit passage thereof past dog 46, but the relative movement between wheel 44 and dog 46 then operates to cause dog 46 to engage the next tooth 45 thereby preventing further rotation until the solenoid is again energized.

In order to insure that the gate will rotate in only one direction so as to permit a person to move only from the outside to the inside of the barrier means, the center post 30 of the gate 24 carries thereon a ratchet generally indicated at 58 and shown in detail in FIGURE 6. The ratchet is provided with a large plurality of teeth 60 all of which face in the direction opposite to the normal direction of rotation of the ratchet wheel 58. A dog 62 is provided pivotally mounted on pin 64 and biased to the position shown by spring means (not shown). From the foregoing it will be understood that the cooperation of dog 62 and ratchet 58 permits rotation of the gate in only one direction, namely clockwise looking at FIGURE 6.

Now, in order to read the punched transfer of FIGURE 3 so as to permit unlatching of the gate 24 to permit entrance of a single person through said gate means when a valid transfer is presented, there is provided, adjacent the gas means 24, a transfer reading and validating mechanism generally indicated at R as seen in FIGURE 1, and including a cabinet 70 housing the device hereinafter described and which is shown in detail in FIGURES 2, 7, 8 and 9. The cabinet 70 is provided with a top 72 for enclosing the operating mechanism and the top 72 is provided with a plurality of apertures or windows which may be illuminated in response to the presentation of a transfer to the machine, so that a condition is signaled to the person presenting the transfer to the reader R. The cabinet 70 is shaped to provide a transfer-receiving portion, generally indicated at 74, having a top guide 76 spaced from a support shelf 78, thereby defining a horizontal slot through which the transfer is introduced edgewise, with the printed portion of the transfer in an upward facing position, in the manner as indicated in FIGURE 7. Generally, the transfer-receiving portion 74 is coordinated in size and shape with the punch portion 10*a* of the transfer, so that a person may grasp portions 10*b* and 10*c* of the transfer while presenting portion 10*a* of the transfer into the transfer-receiving slot defined by transfer-receiving portion 74.

The conditions indicated on the top 72 of cabinet 70, area, as seen in FIGURE 7, the legends "In," "Reg." and "Void." It is planned that if the transfer is properly presented to the transfer-receiving portion 74, then the message "Reg." will be illuminated, and if the transfer happens to be void then the legend "Void" will be illuminated, and if the transfer is valid and operates the machine to permit entrance of the individual then the legend "In" will be illuminated. The legends are generally printed on glass plates 80, 82 and 84 carried in the top 72 of the cabinet 70, and are illuminated by lights 86 positioned therebelow.

The support shelf 78 of the transfer-receiving portion 74 has a very sensitive micro-movement switch 88 positioned thereon adapted to be engaged and actuated by the transfer 10 that is introduced thereover, and upon depression and actuation of the switch 88, in response to the transfer, the viewing and checking of the transfer by the machine begins.

Reference is now had to FIGURE 8 which shows a pair of electric lines 90 and 92, the line 90 being the high and the line 92 being to ground. The transfer responsive switch 88, when closed, energizes a plurality of lights 94, 96, 98 and 100 which are respectively aligned with photoelectric cells 95, 97, 99 and 101. The lights and the photoelectric cells are positioned on opposite sides of the slot into which the transfer 10 is introduced, but the respective lights and photoelectric cells are in vertical alignment and are in alignment with certain portions of the transfer, so that when the appropriate portion of the transfer is punched out, the proper photoelectric cell "sees" the light to which it is to be responsive,

and when it sees the light it generates a signal, which signal is utilized to provide the information required by the circuitry shown in FIGURE 8.

The lights 94, 96, 98 and 100 are arranged to be respectively aligned with the punched areas 21, 22, 23 and 20. Since the first thing to determine after the transfer is presented is whether the transfer is in registration with the mechanism in the cabinet 70, let us look at what happens when the transfer is in proper register. The signal from light 98 energizes cell 99 which generates a signal carried by lead 102 to solenoid 103, energization of which closes normally open switch 104 and the solenoid is grounded by leads 106, 108 and 110. When the switch 104 is closed there is established a circuit which includes switch 88, lead 112, light 86*a* (which illuminates glass 82), lead 114, switch 104 and leads 108 and 110.

Now let us next assume that the area 20 on the transfer is punched. In such event, the light 100 energizes the photoelectric cell 101 which sends out a signal through lead 116 to solenoid 118 which is grounded by leads 120, 108 and 110. The energization of solenoid 18 throws a double switch 122–124 to the full line position shown in FIGURE 8. This establishes a circuit which includes switch 88, lead 126, void light 86*b* (which illuminates glass 84), lead 128, switch 122, leads 130 and 132, switch 104, and leads 108 and 110 to ground. It will be seen that the "Void" signal will not be given until the machine notes that the transfer is properly registered, which had previously resulted in the closing of switch 104.

Now, assuming that the center area 20 of the transfer has not been punched, the cell 101 is not energized and the double switch 122–124 is normally in its other position, under the bias of spring 134, at which time a circuit is established including switch 88, lead 126, lead 136, solenoid 138, a time-delay means 140, switch 124, leads 142 and 132, switch 104, and leads 108, 110 to ground. Such a circuit energizes solenoid 138. Since switch 124 is normally in closed position under the bias of spring 134, a time-delay is imposed in the circuit to prevent immediate energization until the machine has had a chance to determine whether the transfer is void. There is just a few milliseconds delay from the time-delay 140 and if the transfer is not void then the solenoid 138 operates to close switch 144.

The closing of switch 144 completes a circuit which energizes a motor M and this circuit includes lead 146, switch 144, lead 148, motor 150, and lead 152 to ground. The motor 150, which is also seen in FIGURE 2, operates to drive a gear train including gears 154, 156, 158, 159 and 160. The motor 150 is arranged to operate over a fixed period of time sufficient to rotate the gear 160 but a single revolution, for reasons that will become apparent as this description proceeds. The gear 160 carries thereon frame means 162 upon which are supported five energizing lights for other photoelectric cells. The lights are indicated at 164, 166, 168, 170 and 100. The lights 164, 166, 168 and 170 are so arranged that they will project their beams through the annular areas 12, 14, 16 and 18 respectively seen on transfer 10. Positioned below the shelf 78, which is preferably of glass or some other transparent substance, are a plurality of light-responsive elements, or cells, which are so disposed and arranged as to be energized in response to the light signal received from lights 164, 166, 168, 170 and 100. It will be understood that there is provided one light-responsive element, or cell, for registering with each of the subdivided areas in the four annular rings on the transfer 10, so that as the frame 162 carrying the cell-energizing lights 164, 166, 168 and 170 are rotated, and as punched areas become interposed between the lights and the cells, the various cells, upon being energized will send their signals to certain circuits, hereinafter described, the operation of which interprets whether or not the transfer is properly punched for the particular day and time at which it is being presented to the machine.

As seen in the upper left-hand corner of FIGURE 8, in a fragmentary view, the outermost annular ring includes 16 photo cells 165; the second ring includes 15 photo cells 167; the third ring includes 12 photo cells 169; and the fourth ring includes 4 photo cells 171; the rings being respectively vertically aligned with the lights 164, 166, 168 and 170. Each of the cells 165, 167, 169 and 171 have a lead extending therefrom for carrying a signal from the cell to an appropriate contact.

Now, there are provided three clock-work mechanisms for cooperation with the signals from the various cells. The first clock, generally indicated at A, includes 31 conducting segments, each insulated from the others, and with one segment connected to each one of the cells 165 and 167. Since a total of 31 such cells is provided in the two outer annular rings, there are 31 corresponding conductor segments shown arranged in an annular ring in clock-mechanism A, and each corresponding segment in clock mechanism A is connected to receive a signal from its corresponding cell 165 and 167. A second clock-mechanism B is divided into 12 conductor segments, each insulated from the others, and each segment corresponding to, and connected to, one of the cells 169 and arranged to receive a signal from that cell. A third clock-mechanism C is divided into four conductor segments, insulated from each other, and located in an annular ring, with each segment corresponding with one of the cells 171 and arranged to receive a signal from that cell.

It will be understood that a clock-work mechanism can be arranged to move at any pre-selected rate of speed and therefore the central shaft of clock A can be arranged to advance one thirty-first part of a complete rotation over a 24-hour period, while in clock B the central shaft rotates completely in a period of 12 hours, and in clock C the central shaft rotates completely in a one-hour period. The advancing shafts of the clocks A, B and C each carries a pair of conductors or sensors. One of the conductors is disposed above the plane in which the ring of conductor segments are disposed while the other conductor is disposed below the plane in which the ring of conductor segments are disposed. One of the conductors is adapted to indicate when the signal received from the photo cells 165, 167, 169 and 171 corresponds with the time measured by the clocks A, B and C. The other conductor is for the purpose of receiving and noting when a signal comes from a photo cell which does not correspond with the time established by the clocks A, B and C. Thus, the clock mechanisms are designed to receive two types of signals; one type of signal determines that the punched areas in the transfer correspond with the time and date upon which the transfer is being presented, and therefore such signals are valid. The second set of signals indicates that certain areas of the transfer are punched or opened which do not correspond with the time and date at which the transfer is being presented and therefore the transfer has been improperly punched. The purpose of the mechanism thus described is to discern whether the transfer is validly punched for the time and date at which it is presented, and if so to permit the carrier of the transfer to obtain access to the transportation system. If the transfer has been tampered with, so that there are improper punches or apertures therein, and even though a proper combination of date and time has been punched on the transfer, the purpose of the mechanism is to prevent access with such a transfer.

It will thus be seen that the purpose of the photoelectric cells is to determine what areas of the transfer are punched and to transmit such information to certain timing devices or clocks identified as clocks A, B and C herein, and if the clocks A, B and C are properly pre-set for approval of particular days and times, and for receiving and accepting transfers punched at a particular hour, which pre-set information can either be advanced or retarded on the clocks, as desired, then the mechanism can be made to transmit the information discerned to appropriate switches

for the purpose of either approving or disapproving the transfer that has been presented.

Now, where valid signals have been received by the clocks A, B and C, those signals must be utilized to effect closure of certain switches, while if invalid signals have been received, such invalid signals must be utilized to prevent entrance with the use of the transfer that has been presented. Assuming that an appropriate valid signal is received by the clock A, that signal is transmitted from the appropriate conductor segment **172** through a conductor arm **174** to a lead **176**, solenoid **178**, and leads **180**, **152** to ground. If a valid signal is received by conductor segment **182** of clock B, it is transmitted by conductor arm **184** to lead **186**, solenoid **188**, and leads **190**, **180** and **152** to ground. If a valid signal is received by conductor segment **192** of clock C, it is transmitted through conductor arm **194** to solenoid **196**, and leads **200**, **180** and **152** to ground. Each of the solenoids **178**, **188** and **198** when energized operates to close a double switch. One switch of each double switch is used in a holding circuit to maintain the solenoids energized until the completion of the reading operation. Such a holding circuit is shown as including lead **202**, switch **204**, lead **206** and switches **208**, **210** and **212** which are arranged in parallel with regard to lead **206**. The holding circuit for solenoid **198** is completed by lead **214** connecting switch **208** and solenoid **198**, and similarly lead **216** completes the holding circuit between switch **210** and solenoid **188**, and similarly lead **218** completes the holding circuit from switch **212** to solenoid **178**, it being understood that since the solenoids are grounded through lead **180**, that that completes the holding circuits.

Now, assuming that the solenoids **178**, **188** and **198** have respectively closed the switches **220**, **222** and **224**, there is then established a circuit including lead **146**, switch **144**, lead **148**, lead **226** to light **86***c* (for illuminating glass **80**), lead **228**, switches **220**, **222** and **224**, and normally closed switch **230** to lead **152** to ground. In addition to the "In" light **86***c* being energized, parallel circuits are arranged to operate certain solenoids; a first circuit including lead **232**, solenoid **50** (see FIGURE 5), and lead **234**; and a second circuit including lead **236**, solenoid **238** and lead **240**. The operation of solenoid **50** has heretofore been described. The solenoid **238** operates to move a cylindrical punch **242** which is aligned with the center area **20** of the transfer **10**, so that when the machine has determined that the transfer is valid, it automatically operates to punch the central area **20** of the transfer. Because of the fact that the punch **242** is aligned with the central area **20** on the transfer, the light **100** is mounted within the tubular punch **242** and moves therewith, because both must be aligned with the central area **20** on the transfer. A chute **243** (FIGURE 2) receives the punchings from the machine.

It will be seen that the energizing circuit for both the solenoids **50** and **238** includes a normally closed switch **230**, and that switch moves with a second switch **204**, and they are normally biased to closed position by means of a spring **246**. Now, in the event that the wrong area **21** or **22** on the transfer has been perforated, it is desired to prevent the actuation of the machine, and for that purpose there is provided a solenoid at **248** which operates against the bias of the spring **246** to break the circuits through switches **230** and **204** in the event that either of the areas **21** or **22** is improperly punched. To determine this latter question, the signals from lights **94** and **96** energize respectively the photo cells **95** and **97** which send their signals through leads **250** and **252** to semi-circular conductor segments **254** and **256** of a clock mechanism generally indiacted at D. The rate of advance of the central shaft of clock mechanism D is one complete revolution each day. In this arrangement, there are two conductors **258** and **260** positioned 180° apart and each adapted to contact one of the conductors **258** or **260** during only a 12-hour period of each day. During the other 12-hour period, each conductor **258** and **260** is not in engagement with any conductor. Thus, when one of the areas **21** or **22** of the transfer is improperly punched, the signal will be conducted from the appropriate conductor segment **254** or **256** through a conductor arm **258** or **260**, through a lead **262** or **264**, to the solenoid **248**, and through leads **266** and **152** to ground, thereby energizing solenoid **248** and breaking the circuits through switches **204** and **230** and preventing validation of the transfer or energization of the gate-opening solenoid **50**. If the proper area **21** or **22** is punched and if only one such area is punched, then no signal will be transmitted to the solenoid **248**.

FIGURE 9 illustrates some typical construction features of the clocks shown herein. Considering FIGURE 9 as being a cross-section through clock A of FIGURE 8, it will be seen that conductor **174** engages the top surface of conductor **172** and also engages a slip ring **300**, carried on central shaft **302**, and from whence contact may be made to lead **176**. A second conductor **304** carried by shaft **302** engages slip ring **306** spaced by insulator **308** from slip ring **300**. The second conductor **304** is arranged to engage all conductors **172** other than the valid one which engages conductor arm **174**, so that all invalid signals are conveyed through conductor **304** to lead **310** to solenoid **248**. Clock B carries a second conductor **312** which engages all segments **182** other than the one receiving the valid signal, and all invalid signals received by conductor **312** are transmitted to leads **314** and **310** to solenoid **248**. Clock C likewise carries a second conductor **316** which engages other conductor segments **192** for transmitting invalid signals through leads **318** and **310** to solenoid **248**.

The spacing of the edges of the second conductors on clocks A, B and C from the valid signal conductors of those machines is such that there is no overlapping of situations when both conductors engage a single conductor segment of the clock.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is intended in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. A transportation transfer control system comprising, in combination, barrier means including a rotary gate separating an outside area from an inside area and for permitting selective entrance from the outside to the inside only through said gate, releasable latch means operatively associated with said gate and normally operative to prevent movement of said gate to permit a person to move from the outside to the insire, latch-releasing means operatively associated with said latch means and adapted when actuated to release said latch means to permit rotary movement of said gate means an amount sufficient to permit movement of a single person from the outside to the inside, a transfer reading machine having a transfer receiving portion which determines when a transfer is properly presented thereto, a first sensing means operative after a transfer is properly presented to said transfer receiving portion to determine if the transfer is presented timely, a second sensing means for determining if the transfer has been previously presented to a transfer reading machine, and relay means for actuating the latch-releasing means only when it is determined that the transfer is both timely and valid.

2. A transportation transfer control system comprising, in combination, barrier means including a rotary gate separating an outside area from an inside area and for permitting selective entrance from the outside to the inside only through said gate, releasable latch means operatively associated with said gate and normally opera-

tive to prevent movement of said gate to permit a person to move from the outside to the inside, latch-releasing means operatively associated with said latch means and adapted when actuated to release said latch means to permit rotary movement of said gate means an amount sufficient to permit movement of a single person from the outside to the inside, a transfer reading machine having a transfer receiving portion which determines when a transfer is properly presented thereto, a first sensing means operative after a transfer is properly presented to said transfer receiving portion to determine if the transfer is presented timely, a second sensing means for determining if the transfer has been previously presented to a transfer reading machine, relay means for actuating the latch-releasing means only when it is determined that the transfer is both timely and valid, and ratchet means operatively associated with said gate for permitting rotation of said gate only in one direction to permit movement of a person only from the outside to the inside through said gate.

3. A transportation transfer control system comprising, in combination, barrier means including a rotary gate separating an outside area from an inside area and for permitting selective entrance from the outside to the inside only through said gate, releasable latch means operatively associated with said gate and normally operative to prevent movement of said gate to permit a person to move from the outside to the inside, latch-releasing means operatively associated with said latch means and adapted when actuated to release said latch means to permit rotary movement of said gate means an amount sufficient to permit movement of a single person from the outside to the inside, a transfer reading machine having a transfer receiving portion which determines when a transfer is properly presented thereto, a first sensing means operative after a transfer is properly presented to said transfer receiving portion to determine if the transfer is presented timely, a second sensing means for determing if the transfer has been previously presented to a transfer reading machine, relay means for actuating the latch-releasing means only when it is determined that the transfer is both timely and valid, and means for insuring that the latch-releasing means permits of only predetermined movement of said gate means in response to said relay means.

4. A transportation transfer control system comprising, in combination, barrier means including a rotary gate separating an outiside area from an inside area and for permitting selective entrance from the outside to the inside only through said gate, releasable latch means operatively associated with said gate and normally operative to prevent movement of said gate to permit a person to move from the outside to the inside, latch-releasing means operatively associated with said latch means and adapted when actuated to release said latch means to permit rotary movement of said gate means an amount sufficient to permit movement of a single person from the outside to the inside, and transfer reading and validating means for actuating said latch-releasing means, said transfer reading and validating means including a transfer receiving portion which determines when a transfer is properly presented thereto, a first sensing means operative after a transfer is properly presented to said transfer receiving portion to determine if the transfer is presented timely, a second sensing means for determining if the transfer has been previously presented to a transfer reading machine, relay means for actuating the latch-releasing means only when it is determined that the transfer is both timely and valid, and means operable upon the transfer reading means determination, that the transfer presented in valid, for punching a valid transfer to indicate thereafter that it has been presented to and been approved by said transfer reading machine.

5. A transportation transfer control system comprising, in combination, barrier means including a rotary gate separating an outside area from an inside area and for permitting selective entrance from the outside to the inside only through said gate, releasable latch means operatively associated with said gate and normally operative to prevent movement of said gate to permit a person to move from the outside to the inside, latch-releasing means operatively associated with said latch means and adapted when actuated to release said latch means to permit rotary movement of said gate means an amount sufficient to permit movement of a single person from the outside to the inside, and transfer reading and validating means for actuating said latch-releasing means, said transfer reading and validating means including a transfer receiving portion which determines when a transfer is properly presented thereto, a first sensing means operative after a transfer is properly presented to said transfer receiving portion to determine if the transfer is presented timely, a second sensing means for determining if the transfer has been previously presented to a transfer reading machine, relay means for actuating the latch-releasing means only when it is determined that the transfer is both timely and valid, and means for advising when a void transfer is presented to said transfer reading and validating means.

6. A transportation transfer control system comprising, in combination, barrier means including a rotary gate separating an outside area from an inside area and for permitting selective entrance from the outside to the inside only through said gate, releasable latch means operatively associated with said gate and normally operative to prevent movement of said gate to permit a person to move from the outside to the inside, latch-releasing means operatively associated with said latch means and adapted when actuated to release said latch means to permit rotary movement of said gate means an amount sufficient to permit movement of a single person from the outside to the inside, ratchet means operatively associated with said gate for permitting rotation of said gate only in one direction, and transfer reading and validating means for actuating said latch-releasing means, said transfer reading and validating means including a transfer receiving portion which determines when a transfer is properly presented thereto, a first sensing means operative after a transfer is properly presented to said transfer receiving portion to determine if the transfer is presented timely, a second sensing means for determining if the transfer has been previously presented to a transfer reading machine, relay means for actuating the latch-releasing means only when it is determined that the transfer is both timely and valid, means for simultaneously punching the transfer to indicate that it has been presented to and been approved by said transfer reading machine, means for insuring that the latch-releasing means permits of only predetermined movement of said gate means after actuation of said relay means, and means for advising when a void transfer is presented to said transfer reading and validating means.

7. A punched-transfer reading device comprising, in combination, means responsive to presentation of a transfer to prepare a plurality of circuits; a first means adapted to cooperate with a first punched area in a transfer for determining when the transfer is in proper register with the reading device, other data-determining means including said plurality of prepared circuits and second and third means separate from said first means cooperating with second and third punched areas on said transfer for determining if said transfer had been previously accepted by a transfer reading device, and if said transfer had been issued in the a.m. or p.m. portion of the day validly related to the time at which the transfer is being presented; means including a rotatable scanner means cooperating with additional punched areas other than said first, second and third punched area of said transfer for determining if the additional punched areas are validly related to the specific hour of the day and date at which the transfer is being presented; and means, responsive to the reading device's determining that the transfer is valid, for operating an

entrance means to permit a single entry through said entrance means.

8. A punched-transfer reading device comprising, in combination, means responsive to presentation of a transfer to prepare a plurality of circuits; a first means adapted to cooperate with a first punched area in a transfer for determining when the transfer is in proper register with the reading device, other data-determining means including said plurality of prepared circuits and second and third means separate from said first means cooperating with second and third punched areas on said transfer for determining if said transfer had been previously accepted by a transfer reading device, and if said transfer had been issued in the a.m. or p.m. portion of the day validly related to the time at which the transfer is being presented; means including a rotatable scanner means cooperating with additional punched areas other than said first, second and third punched areas of said transfer for determining if the additional punched areas are validly related to the specific hour of the day and date at which the transfer is being presented; and means, responsive to the reading device's determining that the transfer is valid, for marking the transfer to prevent fraudulent re-presentation of the same transfer thereafter to a transfer reading device.

9. A punched-transfer reading device comprising, in combination, means responsive to presentation of a transfer to prepare a plurality of circuits; a first means adapted to cooperate with a first punched area in a transfer for determining when the transfer is in proper register with the reading device, other data-determining means including said plurality of prepared circuits and second and third means separate from said first means cooperating with second and third punched areas on said transfer for determining if said transfer had been previously accepted by a transfer reading device, and if said transfer had been issued in the a.m. or p.m. portion of the day validly related to the time at which the transfer is being presented; means including a rotatable scanner means cooperating with additional punched areas other than said first, second and third punched areas of said transfer for determining if the additional punched areas are validly related to the specific hour of the day and date at which the transfer is being presented; and means for determining if other punched areas of the transfer are invalidly related to the specific hour of the day and date at which the transfer is presented, to thereby frustrate fraudulent presentation of an invalid transfer.

10. A punched-transfer reading device comprising, in combination, means responsive to presentation of a transfer to prepare a plurality of circuits; a first means adapted to cooperate with a first punched area in a transfer for determining when the transfer is in proper register with the reading device, other data-determining means including said plurality of prepared circuits and second and third means separate from said first means cooperating with second and third punched areas on said transfer for determining if said transfer had been previously accepted by a transfer reading device, and if said transfer had been issued in the a.m. or p.m. portion of the day validly related to the time at which the transfer is being presented; means including a rotatable scanner means cooperating with additional punched areas other than said first, second and third punched areas of said transfer for determining if the additional punched areas are validly related to the specific hour of the day and date at which the transfer is being presented; and means responsive to the reading device's determining that the transfer is fraudulently punched for frustrating approval by the transfer reading device even though the punched areas on the transfer include a valid combination of punch areas.

11. A punched-transfer reading device comprising, in combination, means responsive to presentation of a transfer to prepare a plurality of circuits; a first means adapted to cooperate with a first punched area in a transfer for determining when the transfer is in proper register with the reading device, other data-determining means including said plurality of prepared circuits and second and third means separate from said first means cooperating with second and third punched areas on said transfer for determining if said transfer had been previously accepted by a transfer reading device, and if said transfer had been issued in the a.m. or p.m. portion of the day validly related to the time at which the transfer is being presented; means including a rotatable scanner means cooperating with additional punched areas other than said first, second and third punched areas of said transfer for determining if the additional punched areas are validly related to the specific hour of the day and date at which the transfer is being presented; means responsive to the reading device's determining that the transfer is valid for operating an entrance means to permit a single entry through said entrance means; and means, responsive to the reading device's determining that the transfer is valid, for marking the transfer to prevent fraudulent re-presentation of the same transfer thereafter to a transfer reading device.

12. A punched-transfer reading device comprising, in combination, means responsive to presentation of a transfer to prepare a plurality of circuits; a first means adapted to cooperate with a first punched area in a transfer for determining when the transfer is in proper register with the reading device, other data-determining means including said plurality of prepared circuits and second and third means separate from said first means cooperating with second and third punched areas on said transfer for determining if said transfer had been previously accepted by a transfer reading device, and if said transfer had been issued in the related a.m. or p.m. portion of the day validly related to the time at which the transfer is being presented; means including a rotatable scanner means cooperating with additional punched areas other than said first, second and third punched areas of said transfer for determining if the additional punched areas are validly related to the specific hour of the day and date at which the transfer is being presented; means for determining if other punched areas of the transfer are invalidly related to the specific hour of the day and date at which the transfer is presented, to thereby frustrate fraudulent presentation of an invalid transfer; and means responsive to the reading device's determining that the transfer is fraudulently punched for frustrating approval by the transfer reading device even though the punched areas on the transfer include a valid combination of punched areas.

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