L. EHRLICH.

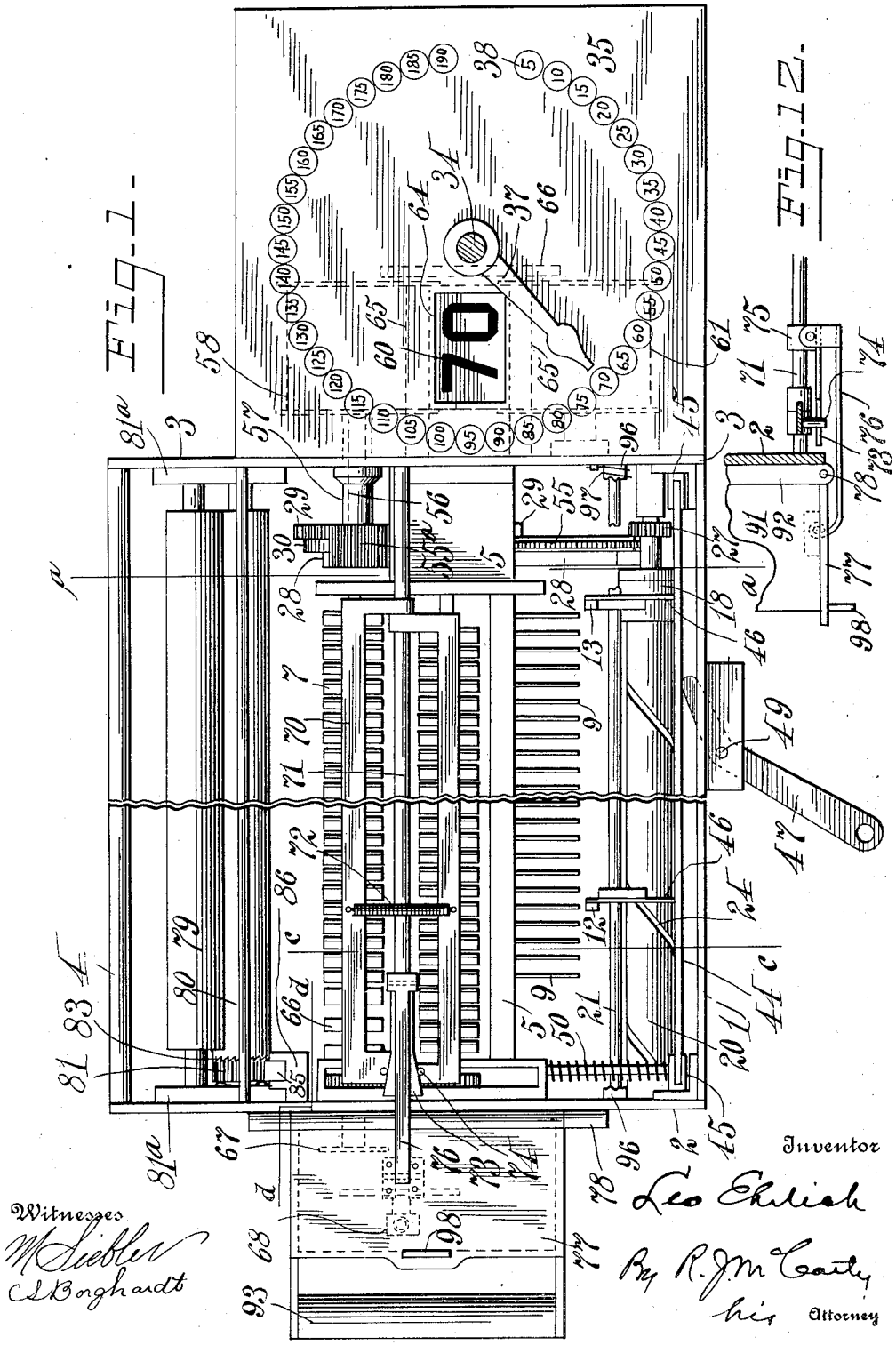
FARE REGISTER.

APPLICATION FILED JAN. 20, 1912.

1,066,264.

Patented July 1, 1913.

4 SHEETS—SHEET 1.



Witnesses

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4 SHEETS—SHEET 2.

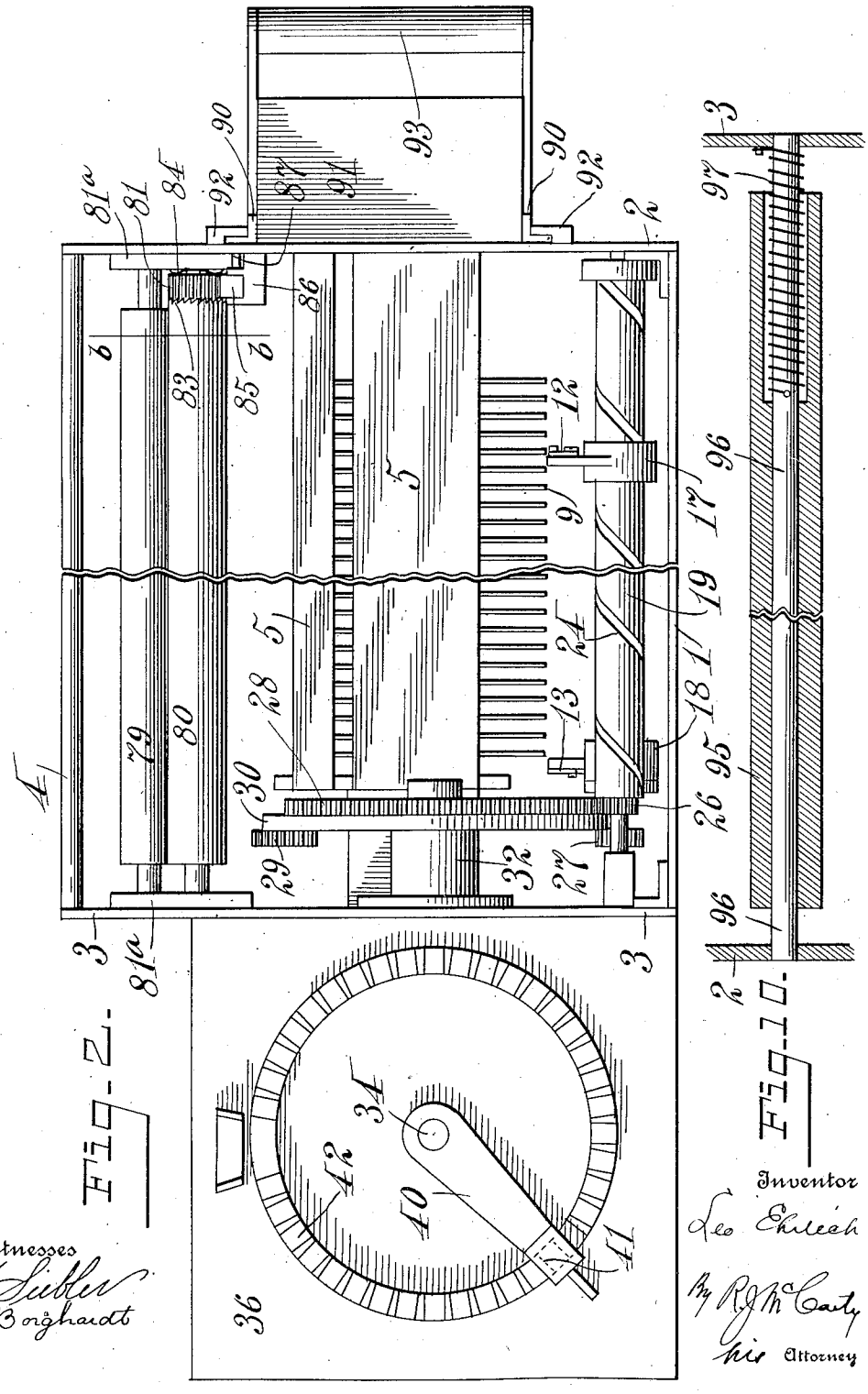


FIG. 2.

FIG. 1.

Witnesses

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4 SHEETS—SHEET 3.

Fig. 4.

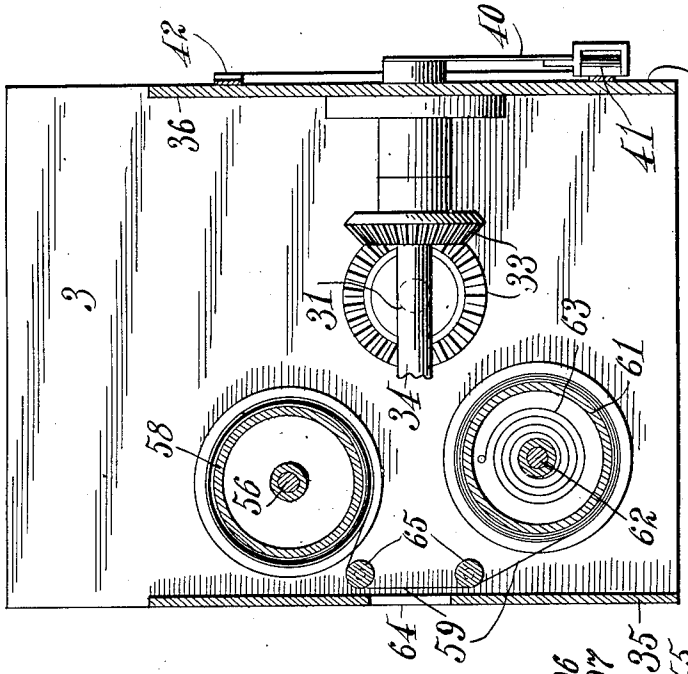
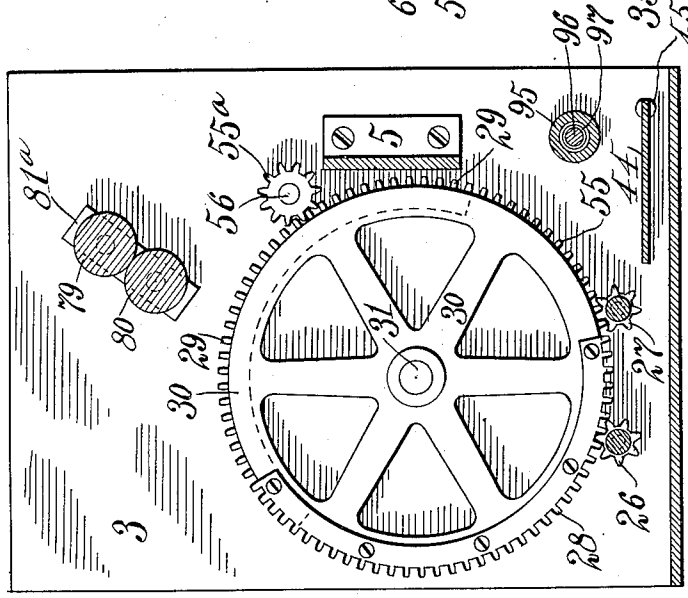


Fig. 3.



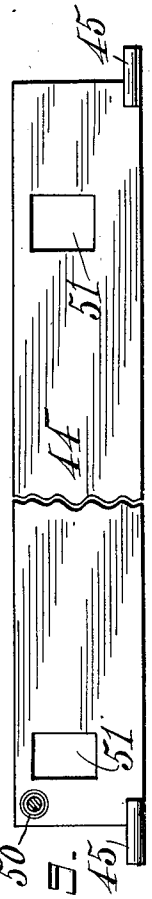


Fig. 5.

Witnesses

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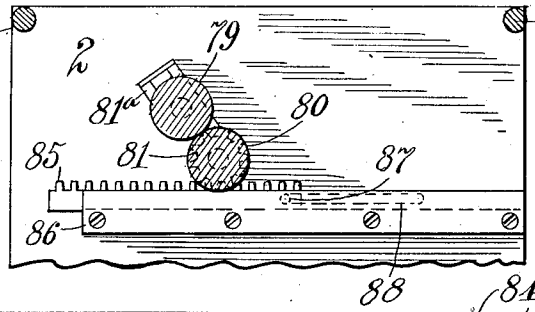
APPLICATION FILED JAN. 20, 1912.

1,066,264.

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4 SHEETS—SHEET 4.

Fig. 6.



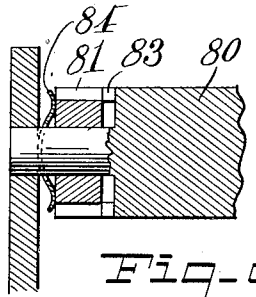


Fig. 8.

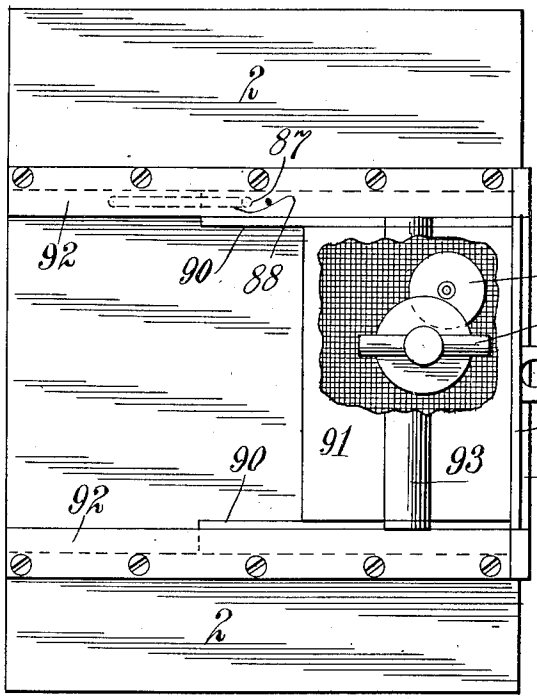


Fig. 5.

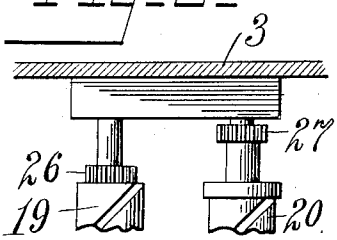


Fig. 11.

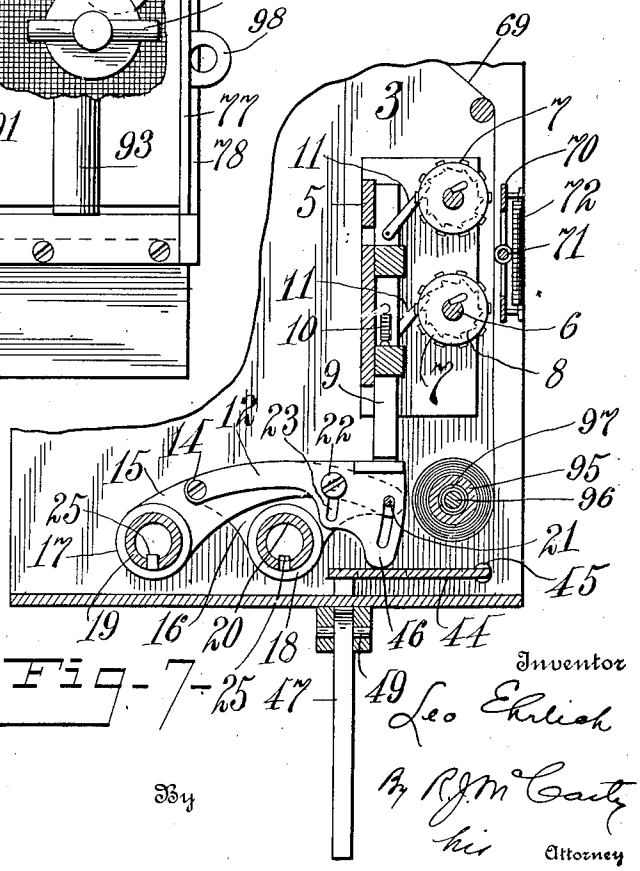


Fig. 7.

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FARE-REGISTER.

1,066,264. Specification of Letters Patent. Patented July 1, 1913.

Application filed January 20, 1912. Serial No. 672,391.

To all whom it may concern:

Be it known that I, LEO EHRLICH, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Fare-Registers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in fare registers.

The objects of the invention are several: First, to provide a compact fare selecting device for a fare register having a large number of individual counters, whereby a fare register of large capacity may be constructed which occupies a minimum amount of space. Second, to provide an improved form of fare indicator which is capable of exhibiting a large number of fares, and each indication of which is of a large size, thereby enabling the indication to be easily viewable from all parts of the car. And third, to provide an improved form of actuating means for the platen and paper feeding mechanism, whereby the date wheels cannot be set, and the counters be reset to zero without actuating the platen and feeding the paper.

Referring to the accompanying drawings, Figure 1 is a front elevation of the machine with the intermediate portion broken away and the casing removed; Fig. 2 is a similar rear view of the machine; Fig. 3 is a section on the line *a*—*a* of Fig. 1; Fig. 4 is an elevation of the right end viewing the machine in Fig. 1, and with parts shown in section; Fig. 5 is a view of the left end of the machine, with parts broken away; Fig. 6 is a section on the line *b*—*b* of Fig. 2; Fig. 7 is a section on the line *c*—*c* of Fig. 1; Fig. 8 is a detail sectional view of the ratchet for the paper rolls; Fig. 9 is a plan view of the main actuator; Fig. 10 is a detail sectional view of the paper roll; Fig. 11 is a plan view of the rear ends of the setting shafts; and Fig. 12 is a plan view on the line *d*—*d* of Fig. 1, showing the actuating device for the platen.

In the detail description of the invention and in the drawings, similar reference characters indicate the same parts.

Referring more particularly to the drawings, 1 represents a base plate upon which is mounted end plates 2 and 3, which are connected at the top by rods 4. Mounted on the inner sides of the end plates 2 and 3 is a frame 5 provided with shafts 6. Mounted on the shafts 6 is a plurality of counters 7 which may be of any well known type. In the present case, each counter consists of two counter wheels and the unit wheel of each counter is provided with a ratchet 8. There are two banks of counters, one bank on each shaft 6, and the counters 7 are arranged in staggered positions. Each counter 7 is provided with a vertically movable individual actuator 9 mounted in the frame 5. Each actuator 9 is held in a normal position by a spring 10 and is provided with a pawl 11 adapted to engage the ratchet 8 of its respective counter. The pawls 11 are placed alternately, so that alternate actuators 9 are for the counters of one bank, and intermediate actuators are for the counters in the other bank. The individual actuators 9 are adapted to be elevated by common actuators 12 and 13, one of the common actuators 12 being common to the individual actuators 9 of one of the banks of counters 7, and the other actuator 13 being common to the individual actuators 9 of the other bank of counters.

The common actuators 12 and 13 are moved horizontally to be placed in operative relation with one of the individual actuators 9, as follows: The common actuators 12 and 13 are pivoted at 14 to plates 15 and 16, which extend from sleeves 17 and 18 mounted on setting shafts 19 and 20 respectively. The plates 15 and 16 are carried by the shafts 19 and 20 and the free ends are guided by a rod 21 mounted in the side plates 2 and 3. Each of the plates 15 and 16 carries a screw 22 which screws are received by a slot 23 in each of the common actuators 12 and 13, and which act as guides for said actuators. The shafts 19 and 20 are provided

with helical grooves 24 which receive pins 25 extending from the inner side of the sleeves 17 and 18. When either one of the said shafts 19 or 20 is rotated, its respective plate 15 or 16 and common actuator 12 or 13 will be moved horizontally. The said shafts 19 and 20 are rotated independently as follows: They are provided with pinions 26 and 27 which are arranged out of alinement one with the other. The pinion 26 is in a position to be placed in mesh with a segment gear 28, and the pinion 27 is in a position to be placed in mesh with a segment gear 29. The segment gears 28 and 29 are attached to a wheel 30 mounted on a shaft 31 journaled in a bearing 32 attached to the end plate 3. The segment gears 28 and 29 are so placed on the wheel 30, that said wheel is only rotating one of the shafts 19 or 20 at a time. As shown in Fig. 4, the shaft 31 is rotated through miter gears 33 from a shaft 34 journaled in front and rear plates 35 and 36, which are attached to the end plate 3. The shaft 34 is the setting shaft and extends through the car upon which the register is placed, and may be provided with handles (not shown) by means of which it is rotated in setting or selecting fares to be registered. Said shaft 34 is provided with a pointer 37, which coöperates with indications 38 on the front plate 35. The arrangement is such that whenever the pointer 37 is opposite a particular indication 38, one of the common actuators 12 or 13 will be placed in operative relation with the individual actuator 9 of the counter corresponding to that particular indication. The setting means, thus constituted, is held in any one of its set positions, with one of the common actuators 12 and 13 in operative relation with one of the individual actuators, by a resilient arm 40, mounted on the shaft 34 and provided with a roller 41, shown in Fig. 4, and which is adapted to ride in and out of recesses 42 on the rear plate 36, there being a recess 42 for each counter. The segment gears 28 and 29 overlap as is shown at 43 in Fig. 3, which overlapping represents the distance between the two pinions 26 and 27. This arrangement obviates any idle movement of the wheel 30, as one of the pinions 26 or 27 will immediately begin to rotate as soon as the other is out of operative relation with its driving gear 28 or 29. The normal position of the actuator 13 and its sleeve 18 is at the left end of the shaft 20 as seen from Fig. 2, while the normal position of the common actuator 12 and its sleeve 17 is at the right end of the shaft 19. Whenever one of the common actuators is being shifted, the other common actuator will be in its normal position, where it will not interfere with the movement of the other. After the counter, whose fare it is desired shall be registered, has been selected, the common actuator 12 or 13 and the individual actuator are elevated by a main actuator 44. The main actuator 44 is provided with pivots 45 journaled in the end plates 2 and 3. The said main actuator 44 is adapted to engage projections 46 of the common actuators 12 and 13, and is elevated by a bell crank lever 47 pivoted at 49 to the base plate 1. The said actuator is depressed by a spring 50, and is provided with recesses 51 through which the projections 46 extend when the actuators 12 or 13 are in a normal position and the main actuator 44 is elevated. By thus constructing and arranging a registering mechanism, with the two independently movable setting members or shafts 19 and 20, the counters 7 may be arranged in a plurality of banks which allows the machine to be constructed in a compact form.

The indications 38, owing to their large number, are necessarily of a small size, which precludes the possibility of them being easily viewable from all parts of the car. To obviate this, and to provide an indicator having large readable characters, the following mechanism is provided: The wheel 30, in addition to the segment gears 28 and 29 is provided with gear teeth 55 thereby forming a continuous gear. The gear teeth 55 are adapted to pass between the pinions 26 and 27 and are not adapted to rotate the setting shafts 19 and 20. The continuous gear, thus constituted, is in mesh with a pinion 55^a, mounted on a shaft 56 journaled in a bearing 57 mounted on the end plate 3. The shaft 56 extends through the end plate 3, and on its outer end is provided with a spool 58. Attached to and surrounding the spool 58 is one end of a ribbon 59 provided with characters 60 corresponding to the denominations of the counters 7. The other end of the ribbon 59 is attached to and surrounds a spool 61 mounted on a stub shaft 62 extending from the end plate 3. The spool 61 is partially controlled by a spiral spring 63. When the spool 58 is rotated by the gear teeth on the wheel 30 to unwind the ribbon 59, the ribbon will be wound upon the spool 61 by the spring 63, and when the spool 58 is rotated in the opposite direction, the ribbon is unwound from the spool 61 and the spring 63 is wound up. The characters 60 are placed upon the ribbon 59 in such positions, that the respective indication 60 will be opposite a sight opening 64 in the plate 35, whenever the common actuator 12 or 13 is in operative relation with the respective individual actuator 9 of the corresponding counter 7. The ribbon 59 is guided before the sight opening 64 by rollers 65 mounted in the end plate 3 and a plate 66 attached to the front plate 35.

One of the shafts 6 may be provided, in addition to the counters 7, with wheels 66 which are adapted to indicate or print any

useful data, such as the date and time, and are set from a wheel 67 mounted on the outside of the end plate 2. The counters 7 may be reset to zero by the shafts 6, which are rotated by a hand piece 68 also mounted on the outside of the plate 2. The details of these setting and resetting mechanisms have not been illustrated, as they may be of any well known type, and are common expedients in fare registers.

The wheels of the counters 7 and the wheels 66 are printing wheels, and adapted to press a web of paper 69 against the type of the printing wheels are platens 70. The platens 70 are pivotally mounted on a rod 71 supported by the end plates 2 and 3, and are normally held away from the type wheels by a spring 72. The platens 70 are actuated by a sliding wedge shaped cam 73 which engages pins 74 on said platens. The wedge 73 is mounted on a block 75, slidingly mounted on the rod 71. See Fig. 12. Pivoted to the block 75, is one end of a connecting rod 76, the other end of which is pivoted to a door 77 hinged at 78 to the end plate 2. The door 77 is mounted adjacent to the setting and resetting devices; and is in such a position that the door must be opened before the setting and resetting devices may be actuated by the hand. When the door 77 is opened, the wedge member 73 will spread the pins 74 which will in turn actuate the platen 70.

The web of paper 69 passes from a roll of paper (not shown) through feeding rolls 79 and 80 journaled in blocks 81ª attached to the end plates 2 and 3. The lower roll 80 is the actuating roll and is driven from a pinion 81. The pinion 81 is connected to the roll 80 by means of a ratchet 83 controlled by a spring 84 as is shown in detail in Fig. 8. The ratchet 83 permits the pinion 81 to move in opposite directions, while the roll 80 moves only in one direction to feed the paper. The pinion 81 is in mesh with a rack 85 slidingly mounted in a guide 86 mounted on the inner side of the end plate 2. The rack 85 carries a pin 87 which extends through a slot 88 in the end plate 2. The pin 87 is engaged by the upper of two sliding members 90 to which a sliding housing 91 is attached. The sliding members 90 move in guides 92 attached to the outer side of the end plate 2. The housing 91 is provided with a handle 93 by means of which the said housing is reciprocated. When said housing is reciprocated, the pinion 81 will be rotated, and the feeding roll 80 will be actuated thereby. The housing 91, when in a normal position covers the setting and resetting devices 67 and 68, thereby making it necessary to reciprocate said housing to gain access to the setting and resetting devices. This device therefore compels the feeding of the paper before the wheels 66 are set and the counters reset to zero. The paper web 69 passes between the printing wheels and the platens 70, and the free end of the web is attached to a roller 95 mounted on a shaft 96 journaled in the end plates 2 and 3. The roller 95 is broken away in Fig. 1, but is shown in detail in Fig. 12. The roller 95 is controlled by a spring 99 which winds up the paper on the roll 95 when the paper is fed by the rollers 79 and 80, in a well known manner. The housing 91 is provided with an eyelet 98 which is received by the door 77 and which is adapted to receive the well known type of padlock.

Without limiting myself to the precise arrangement shown and described, which may be varied within the scope of the claims, I claim:

1. In a device of the type specified; a plurality of banks of counters; an individual actuator for each counter; a plurality of common actuators one for each bank of counters; a setting member for each common actuator; means for actuating said setting members independently; and a main actuator for said common actuators.

2. In a device of the type specified; a plurality of banks of counters; an individual actuator for each counter; a plurality of common actuators one for each bank of counters; a helical setting shaft for each common actuator; means for independently actuating said helical setting shafts; and a main actuator for said common actuators.

3. In a device of the type specified; a plurality of banks of counters; an individual actuator for each counter; a plurality of common actuators one for each bank of counters; a setting member for each common actuator; a segment gear in operative relation with said setting members; and adapted to actuate said setting members independently; and a main actuator for said common actuators.

4. In a device of the type specified; a plurality of banks of counters; an individual actuator for each counter; a plurality of common actuators one for each bank of counters; a helical setting shaft for each common actuator; a segment gear in operative relation with said helical shafts; and a main actuator for said common actuators.

5. In a device of the type specified; a plurality of banks of counters; an individual actuator for each counter; a plurality of common actuators one for each bank of counters; a helical setting shaft for each common actuator; a pinion mounted on each setting shaft, said pinions being out of alinement; segment gears adapted to be placed in mesh with said pinions and to rotate said setting shafts independently; and a main actuator for said common actuators.

6. In a device of the type specified; a plu-

rality of banks of counters; an individual actuator for each counter; a plurality of common actuators one for each bank of counters; a helical setting shaft for each common actuator; a pinion mounted on each setting shaft, said pinions being out of alinement; segment gears adapted to be placed in mesh with said pinions and to rotate said setting shafts independently; a wheel upon which said segment gears are mounted; means for rotating said wheel; and a main actuator for said common actuators.

7. In a device of the type specified; a plurality of banks of counters; an individual actuator for each counter; a common actuator for each bank of counters; a setting shaft for each common actuator; a segment gear for each setting shaft; a wheel upon which said segment gears are mounted; said wheel being provided with gear teeth, which in connection with the segment gear forms a continuous gear; an indicator actuated by said continuous gear; and a main actuator for said common actuator.

8. In a device of the type specified; a plurality of banks of counters; an individual actuator for each counter; a common actuator for each bank of counters; a helical setting shaft for each common actuator; a pinion mounted on each helical setting shaft, said pinions being mounted out of alinement; a segment gear adapted to be placed in mesh with said pinions; a wheel upon which said segment gears are mounted, said wheel being provided with additional gear teeth thereby forming a continuous gear; a pinion in mesh with said continuous gear; an indicator actuated by said last named pinion; and a main actuator for said common actuator.

9. In a device of the type specified; printing wheels adapted to print on a strip of paper; means for feeding said paper strip; means for setting said printing wheels; and means controlling said setting means and adapted to actuate said feeding means.

10. In a device of the type specified; printing wheels adapted to print on a strip of paper; means for feeding said paper strip; means controlling said wheels; and means inclosing said controlling means and adapted to actuate said feeding means.

11. In a device of the type specified; a frame; printing wheels mounted in said frame and adapted to print on a strip of paper; means for feeding said paper strip; a reciprocating housing adapted to actuate said feeding means; and means controlling said printing wheels and inclosed by said housing when said housing is in a normal position.

12. In a device of the type specified; a frame; printing wheels mounted in said frame and adapted to print on a strip of paper; feeding means for said paper strip; setting means for said printing wheels; and a housing slidingly mounted on said frame, adapted to actuate said feeding means and inclosing said setting means when in a normal position.

13. In a device of the type specified; a frame; printing wheels mounted in said frame and adapted to print on a strip of paper; setting means for said printing wheels; feeding rollers for said paper strip; a ratchet adapted to actuate said feeding rollers; a housing slidingly mounted on said frame, adapted to actuate said ratchet, and inclosing said setting means when in a normal position.

14. In a device of the type specified; a frame; printing wheels mounted in said frame and adapted to print on a strip of paper; setting means for said printing wheels; feeding rollers for said paper strip; a ratchet controlling said feeding rollers; a pinion adapted to actuate said ratchet; a rack in mesh with said pinion; a housing slidingly mounted on said frame and connected to said rack, said housing inclosing said setting means when in a normal position.

15. In a device of the type specified; a frame; printing wheels mounted in said frame and adapted to print on a strip of paper; setting means for said wheels; a platen for said printing wheels; and a movable member mounted adjacent to said setting means and connected to said platen, said movable member being mounted in such a position that said member is moved out of the path of the hand when the setting means are actuated.

16. In a device of the type specified; a frame; printing wheels mounted in said frame and adapted to print on a strip of paper; setting means for said wheels; a platen for said printing wheels; a cam controlling said platen; and a movable member mounted adjacent to said setting means and connected to said cam, said movable member being mounted in such a position that said member is moved out of the path of the hand when the setting means are actuated.

17. In a device of the type specified; a frame; printing wheels mounted in said frame and adapted to print on a strip of paper; setting means for said wheels; a platen for said printing wheels; and a door hinged to said frame, adjacent to said setting means and connected to said platen, said door being mounted in such a position that said door is moved out of the path of the hand when the setting means are actuated.

18. In a device of the type specified; a frame; an upper and a lower series of printing wheels mounted in said frame and

adapted to print on a strip of paper; a pivotal platen for each series of printing wheels; a wedge shaped cam adapted to actuate said platens; setting means for said printing wheels; a door hinged to said frame adjacent to said setting means and connected to said cam, said door being mounted in such a position that said door is moved out of the path of the hand when the setting means are actuated.

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

LEO EHRLICH.

Witnesses:
R. J. McCarty,
Matthew Siebler.