

No. 762,219.

PATENTED JUNE 7, 1904.

P. WHITING.
COMBINED CASH REGISTER, TICKET REGISTER, AND BELL TICKET PUNCH.

APPLICATION FILED JUNE 10, 1903.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.

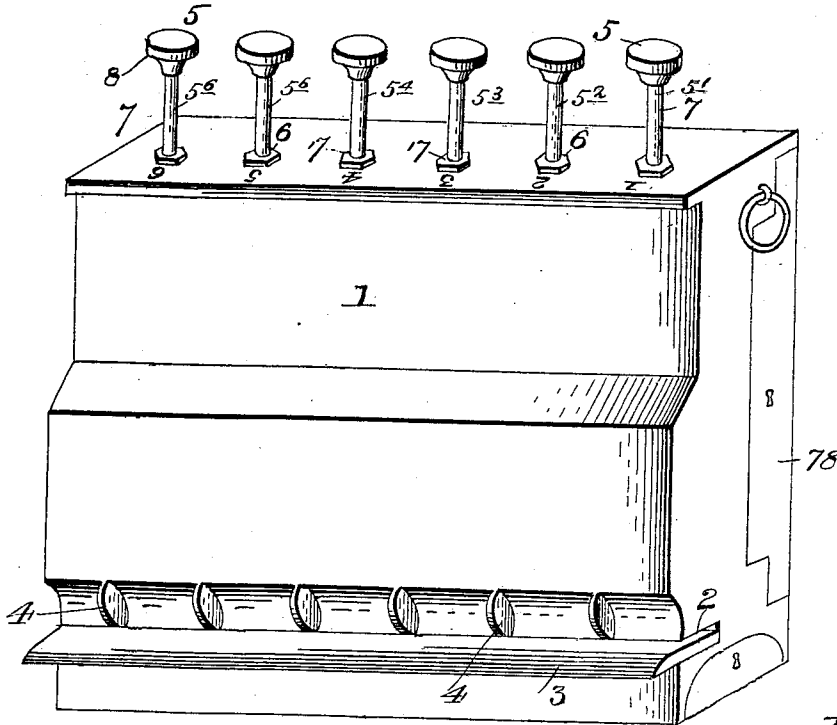
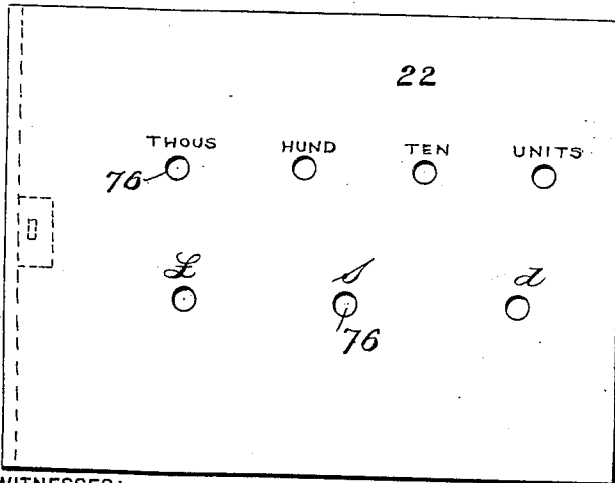


Fig. 14



WITNESSES:

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Fig. 12

Fig. 15

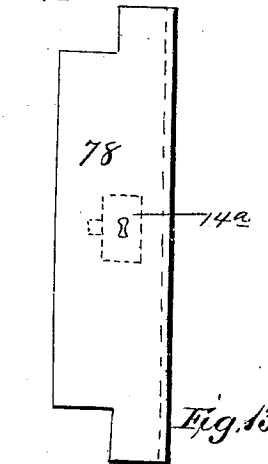


Fig. 13

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4 SHEETS—SHEET 2.

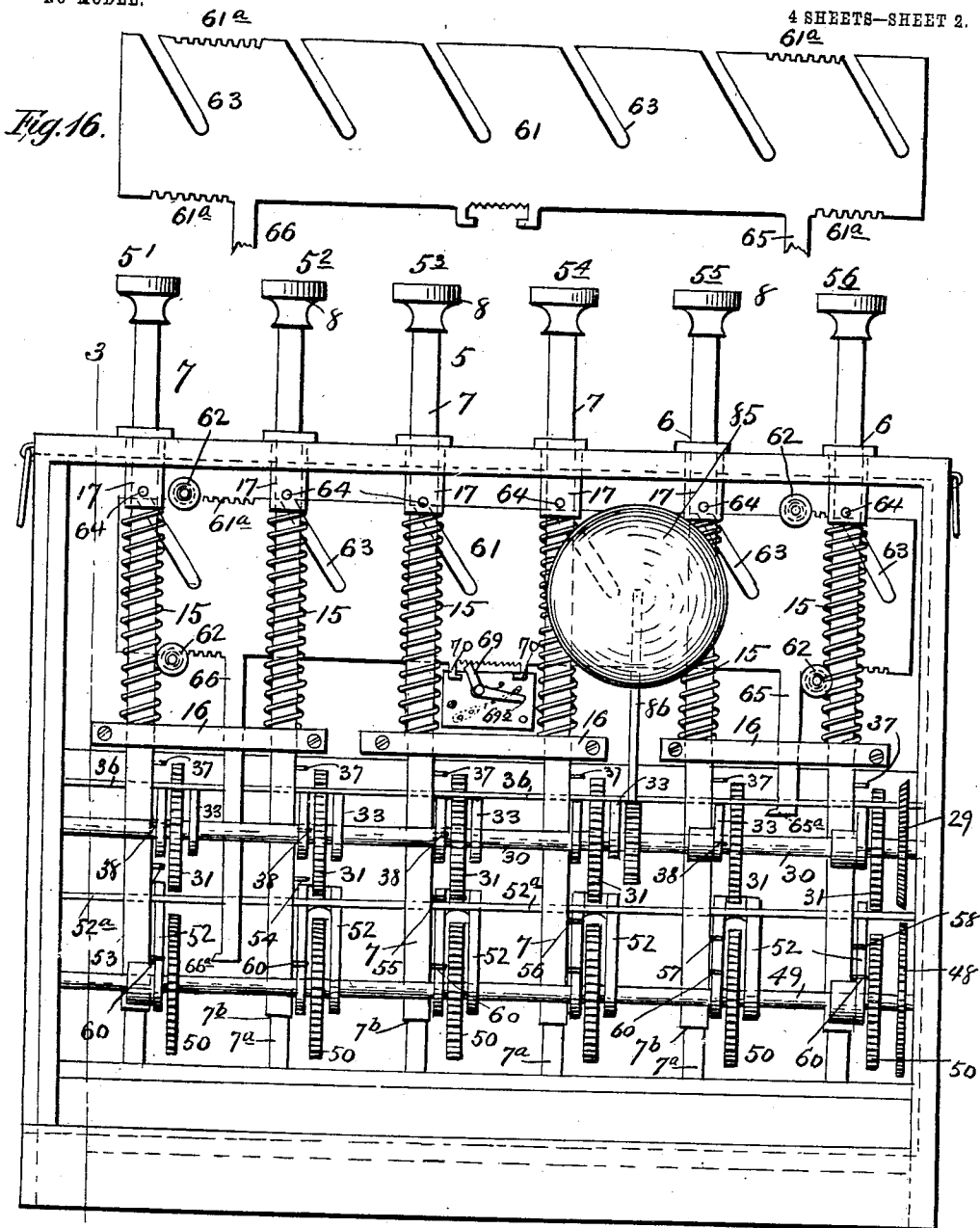


Fig. 2.

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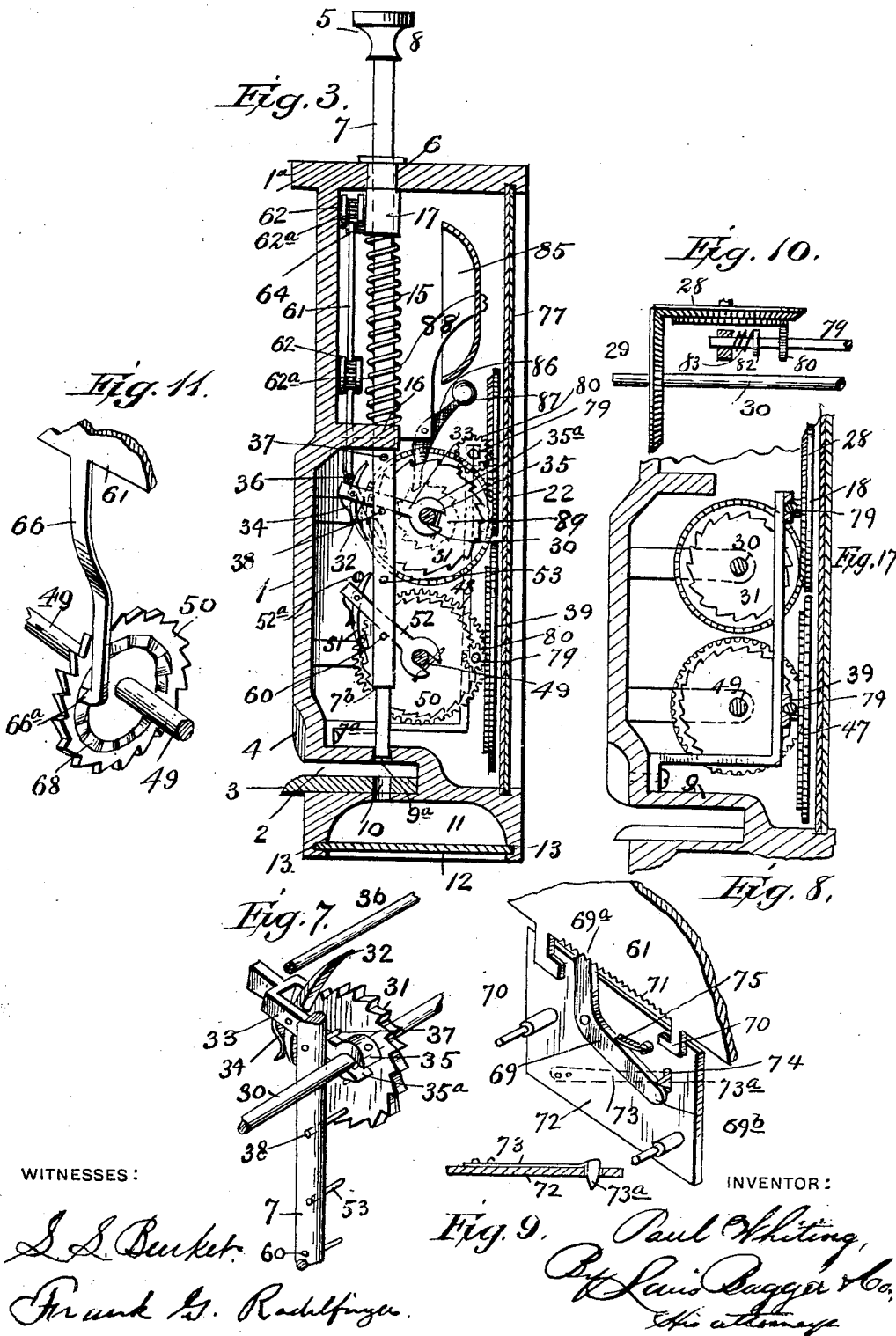
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4 SHEETS—SHEET 3.



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NO MODEL.

4 SHEETS—SHEET 4.

Fig. 4.

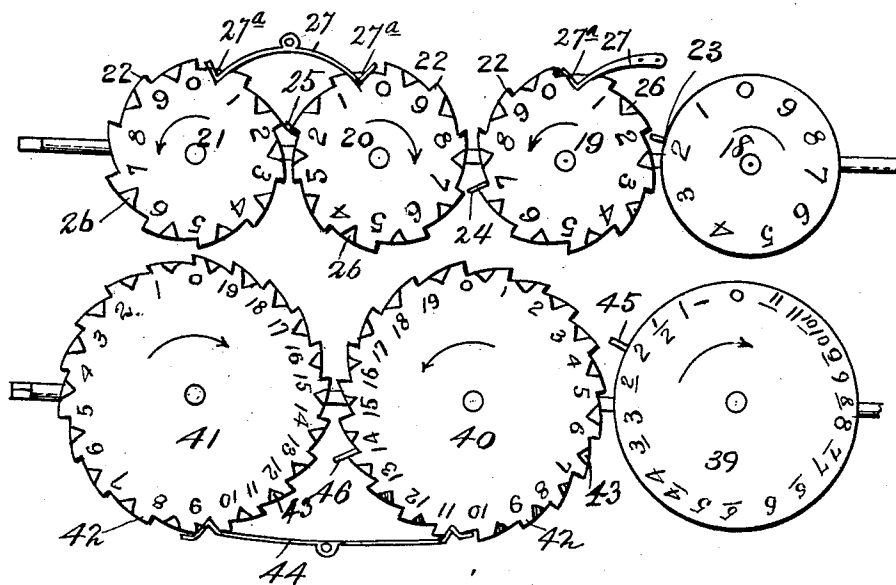
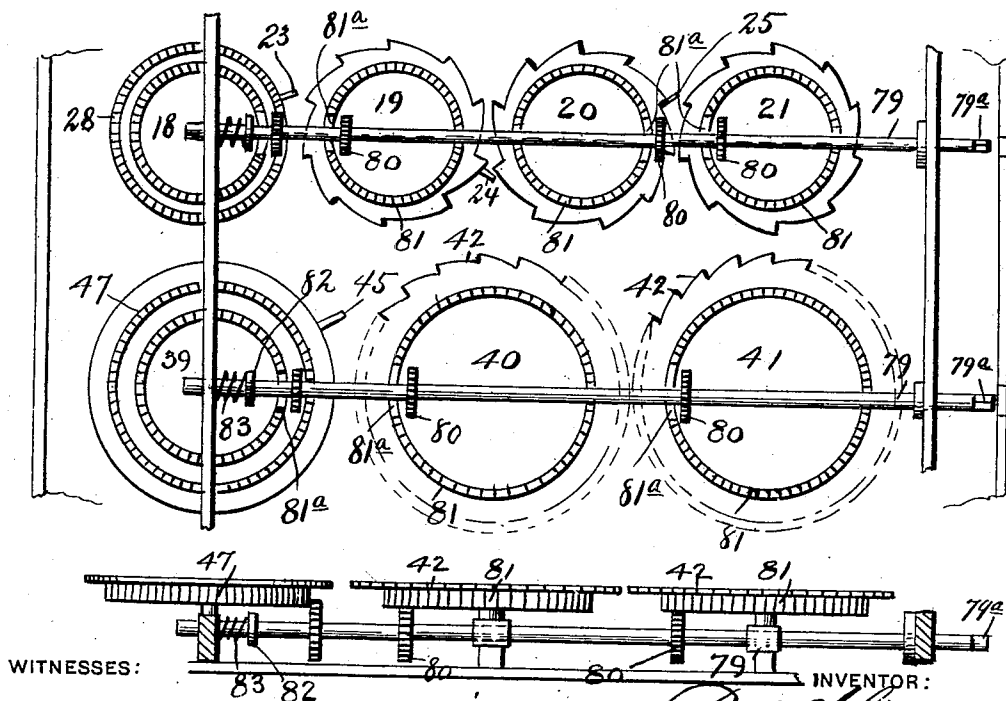


Fig. 5.



WITNESSES:

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Fig. 6.

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UNITED STATES PATENT OFFICE.

PAUL WHITING, OF EAST LAS VEGAS, TERRITORY OF NEW MEXICO.

COMBINED CASH-REGISTER, TICKET-REGISTER, AND BELL TICKET-PUNCH.

SPECIFICATION forming part of Letters Patent No. 762,219, dated June 7, 1904.

Application filed June 10, 1903. Serial No. 160,955. (No model.)

To all whom it may concern:

Be it known that I, PAUL WHITING, a citizen of the United States, residing at East Las Vegas, in the county of San Miguel and Territory of New Mexico, have invented new and useful Improvements in a Combined Cash-Register, Ticket-Register, and Bell Ticket-Punch, of which the following is a specification.

My invention relates to a combined cash-register, ticket-register, and bell ticket-punch; and the object of the same is to construct a device of this character for use on tram-cars, busses, or other conveyances, to be carried by the conductors or other agents and used for punching and registering the tickets sold and registering the fares collected.

The simple and novel construction employed by me in carrying out my invention is fully described in this specification and claimed, and illustrated in the accompanying drawings, forming a part thereof, in which—

Figure 1 is a perspective of my device contained in its casing, which is closed. Fig. 2 is a rear elevation of my device with the back of the casing and registering-disks removed. Fig. 3 is a vertical transverse section taken on the line 3-3, Fig. 2. Fig. 4 is a front elevation of the registering-disks. Fig. 5 is a rear elevation of the registering-disks. Fig. 6 is a bottom plan of the registering-disks. Fig. 7 is a detail perspective of one of the feed-pawls and ratchet. Fig. 8 is a detail of the friction-clutch for the locking-plate. Fig. 9 is a detail side elevation of the detent. Fig. 10 is a detail of the bevel-gears connecting the ticket-registering disks with the upper ratchet-shaft. Fig. 11 is a detail perspective of one of the locking-arms and the gear engaged thereby. Fig. 12 is a plan view of the back slide. Fig. 13 is an end elevation of the same. Fig. 14 is an edge view of the bottom slide. Fig. 15 is an end elevation of the same. Fig. 16 is a detail of the locking-plate. Fig. 17 is a transverse section of my device with parts omitted.

Like numerals of reference designate like parts in the different views of the drawings.

The numeral 1 designates a metal casing of convenient size to be suspended from a

strap or belt and hung about the neck or waist. A slot 2 traverses the casing adjacent to the bottom and extends parallel therewith. A rounded shelf 3 is located just beneath the slot and projects beyond the face thereof to serve to guide a ticket and assist in inserting it in the slot. A series of thumb-stops 4 are located above the slot 2 with equal spaces between them and serve to enable the operator to determine the proper place to insert a ticket.

To enable the device to be operated by hand to register and punch tickets, a set of punches 5 (six are shown, but more or less may be used, as will appear) are slidably mounted in apertures 6, formed on the top of the casing 1. Each of the punches 5 comprises a uniform shank 7 and a head 8, formed on the upper end of the shank. The lower ends 7^a of the shank 7 fit guide-apertures 9^a in the floor 9 of the casing 1, which forms one wall of the ticket-slot 2. Apertures 10 are formed in the shelf, which apertures are located in alinement with apertures 9^a to enable the lower ends 7^a of the punches to pass thereinto when depressed and fit them snugly to punch the ticket placed on the shelf. The pieces punched out of the ticket will be pushed through the apertures 10 and will fall into a compartment 11, formed by hollowing out the bottom of the casing 1. The compartment 11 is closed by a slide 12, fitting guide-grooves 13 and having an upturned rim 14 on the end thereof, which serves to close the end of the compartment 11, and thereby form a drawer. A lock 14^a is seated in the rim 14 and is arranged to engage the casing to secure the drawer against opening. The key to the lock 14 would be kept at the office in order to have a check on the conductor.

To restore the punches 5 to their initial raised positions, coiled springs 15 are provided, which surround the shanks 7 thereof and bear at their lower ends on guides 16 and at their upper ends on collars 17, rigidly secured on the stems.

The means for registering the whole number of tickets punched by all of the punches 5 comprises four registering-disks 18, 19, 20, and 21, mounted in a horizontal row and par-

allel to and facing the back 22 of the casing 1. The disk 18 is the units-disk. It is truly circular and has a series of ten equidistant radial graduations thereon numbered from "0" to "9" to adapt it to register the units. The disk 19 is graduated to register the tens and is numbered from "0" to "9," while the disks 20 and 21 are similarly graduated and numbered and are designed to register the hundreds and thousands, respectively. The disks 19, 20, and 21 each have beveled teeth 22 thereon corresponding to the graduations and numbers. To enable the disk 18 to turn the disk 19 one graduation every revolution, a pin 23 is mounted thereon and projects far enough beyond the periphery to engage one of the beveled teeth 22 as the disk 18 revolves. The disk 19 carries a pin 24, arranged to engage the disk 20 and turn it one graduation, while the disk 20 carries a radial pin 25, which engages the teeth on the disk 21. To prevent the overthrow of the disks and render their movements positive, a series of V-shaped notches 26, corresponding in number to the teeth 22, are formed in each of the disks 19, 20, and 21, and spring-detents 27, having V-shaped heads 27^a thereon, engage said notches.

A circular series of beveled teeth 28 are formed on the back of the disk 18 adjacent to the periphery and mesh with teeth on a beveled gear 29, keyed on a shaft 30, extending longitudinally the casing 1 and journaled in bearings formed in the ends of the casing. Keyed on the shaft 30 and located adjacent to each of the punches 5 are ratchets 31. Pawls 32, which mesh with the ratchets, are carried by arms 33, pivoted to the shaft 30 by means of heads 35, having jaws 35^a, which embrace the shaft 30. The arms 33 are prolonged beyond the pawls, and springs 34 are seated therein and bear on the heads of the pawls to hold them in engagement with the ratchets 31. The pawls 32 extend upwardly beyond their pivots and are rounded off on the back to adapt them to be engaged by a rod 36, extending parallel to the shaft 30 and located to engage and thereby limit the upward movement of the arms 33 and to engage the back of the pawls 32 to operate said pawls and disengage them from the ratchets 31. A pin 37 is mounted in each of the punches 5 in position to engage the arm 33 as the punch 5 is depressed, and thereby operates the ratchet 31 to move the units-registering disk 18. Shoulders 7^a are formed on each of the punches 5 to limit their downward movement, so that the disk 18 will be turned but one graduation, and thereby make registration of the fact that a single ticket has been punched, no matter which key is depressed. Pins 38 are mounted in the punches 5 below the arms 33 to serve to engage the under side thereof and restore them to their initial position.

To enable my punch to simultaneously register the aggregate value of the tickets

punched, a second set of registering-disks, similar to the ticket-registering disks, is mounted in the back of the casing just below the said disks and are designated 39, 40, and 41. The disk 39 is circular and has twenty-four graduations thereon, numbered by units and half-units from "0" to "12" to adapt it to register pence and halfpence of English money. It is obvious that it could be graduated like the disk 18 and similarly numbered to register cents of United States money or centimes of French money or pfennigs of German, all of which will be readily understood without further explanation. The disk 40 is graduated and numbered from "0" to "19" to adapt it to register shillings, and the disk 41 is similarly graduated and numbered to adapt it to register pounds up to twenty; but this number may be increased or diminished, as desired. The disks 40 and 41 have beveled teeth 42 on their peripheries corresponding with the graduations thereon and also have correspondingly V-shaped notches 43, engaged by spring-detents 44, similar to those on the disks 19, 20, and 21, to prevent overthrow. A radial pin 45 is carried by the disk 39 to mesh with the teeth 42 on the disk 40, and a radially-extending pin 46 is carried by the disk 40 to engage the teeth 42 on the disk 41. By this arrangement the one revolution of the disk 39 turns the disk 40 one graduation and one revolution of 40 turns the disk 41 one graduation.

To enable the disk 39 to be turned by depressing the punches 5, gear-teeth 47 are formed on the back thereof, which teeth mesh with those on a gear 48, keyed on a shaft 49, extending parallel to the shaft 30. Ratchets 50 are keyed on the shaft 49 and located adjacent to the punches 5 and are engaged by pawls 51, carried by arms 52, pivoted on the shaft 49. A rod 52^a extends parallel to the shaft 49 and is located to limit the upward movement of the arms 52 and to engage the rounded backs of the pawls 51 to disengage them from the ratchets when the punches 5 are in their normal raised positions. A pin 53 is mounted in the punch 5 farthest to the left, which I will designate 5', and is located to engage the corresponding arm 52 to revolve the ratchet 50 and shaft 49 far enough to revolve the disk 39 a distance of one graduation or one-half a unit, corresponding to a halfpenny-ticket. A pin 54 is mounted in the next punch 5 to the right (designated 5²) and far enough below the pin 53 to cause the disk 39 to be rotated two graduations when this key 5 is depressed, which corresponds to a one-penny ticket. The key 5³ has a pin 55 mounted therein located to throw the disk 39 three graduations, and so on down to the last key 56, which has a pin 58 mounted therein and located below all of the others in position to engage the arm 52 and turn the disk 39 six graduations, corresponding to a three-penny

ticket. It is obvious that more punches 5 could be used, if desired, and the values of the graduations could be varied by renumbering the disks.

5 To restore the arms 52 to their initial positions, pins 60 are mounted in all of the keys 5 below the arms and on the same level to engage the under sides of the arms 52 as the keys are raised by the springs 15.

10 To prevent overthrow of the shafts 30 and 49 and effectively bring them to a stop at the end of the downward movement of each key, a locking device is provided and comprises a rectangular plate 61, mounted in the front of the casing just back of the keys 5 and is held by guide-sheaves 62, journaled on stub-shafts and having grooves 62^a therein, which are engaged by the edges of the plate 61 and have teeth therein which mesh with racks 61^a in the edges of the plate 61. Diagonally-extending slots 63, one for each key 5, traverse the plate 61 about one-half its width, and pins 64 are seated in the keys 5 just above the mouths of the slots 63 and in position to engage said slots 62 to actuate said plate 61 when any one of the keys 5 is depressed. Downwardly-extending arms 65 and 66 are carried by the lower edge of the locking-plate 61 and have beveled rigid pawls 65^a and 66^a, respectively, thereon, which are located in position to engage ratchet-teeth 68, formed on the faces of the ratchets 31 and 50, respectively. Any one of the ratchets 31 and 50 would do if provided with a rack; but one near the end of the shaft is to be preferred in order to form a balance.

To render the movement of the plate 61 more positive and to prevent lost motion, a friction clutch or lock is provided, the essential features of which are an elbow-lever 69, having beveled serrated head 69^a, which engages a serrated portion 71 of the lower edge of the plate 61. L-shaped lugs 70 are located at the ends of the serrated portion 71 in position to engage the head 69^a. The lever 69 is fulcrumed on a base-plate 72, and a spring-detent 73 is mounted on the back of said plate and has a conical head 73^a, which projects through an aperture 74 in the plate 72 in the path of the free arm 69^b of the lever 69. A spring 75 bears on the arm 69^b and tends to push it away from the edge of the plate 61, thereby holding the head 69^a in contact therewith. The operation of my locking-plate 61 is as follows:

When one of the keys 5 is depressed, the pin 64 therein will engage the corresponding diagonal slot 63, thereby forcing the plate to the left, as viewed in Fig. 2, and bringing the pawls 65^a and 66^a into engagement with the catches 76 and 68, respectively, on the wheels 31 and 50, respectively, thereby locking the shafts 30 and 49. It should be noted that as soon as one key 5 is depressed the mouths of the slots 63 pass beyond the pins 64 in the

other keys 5, thereby preventing any of these keys from being depressed. As the plate 61 is forced to the left by the key its movement will be retarded by the serrated head 69^a of the lever 69 until the L-shaped lug 70 on the right engages the head 69^a and swings it downwardly, thereby bringing the arm 69^b against the head 73^a of the detent 73, depressing it and forcing the arm 69^b to ride over the head. The head 73^a will retain the arm 69^b in this position disengaged from the plate 61 and leave the plate free to return. When the key 5 is forced up by the spring 15, the lug 70 on the left will engage the head 69^a of the lever and swing it around, thereby forcing the arm 69^b to ride over the head 73^a, and thereby bring the head 69^a into engagement with the serrated edge of the plate 61.

Sight-openings 76 are formed in the back of the casing corresponding to the numbers on the ticket and cash registering disks. A slide 77, fitting guide-groove 77^a in the casing, covers the sight-openings 76, thereby concealing the record from the conductor. A flange 78 is formed on the slide, and a lock is seated therein to enable the slide to be locked against opening.

Mechanism for setting the registering-disks of both sets to zero is provided in the shape of two shafts 79, (see Fig. 5,) having squared ends 79^a to accommodate keys or wrenches and bearing gears 80, keyed thereon, there being a gear corresponding to each of the registering-disks. Each of the registering-disks 18, 19, 20, 21, 39, 40, and 41 has an interrupted circular series of gear-teeth 81 in its front face, the interruption 81^a occurring opposite the zero-graduation on the rear face. The gears 80 are located to be normally out of mesh with the teeth 81; but the shafts 79 are journaled in bearings which permit them to be moved longitudinally to bring the gears 80 into mesh with the teeth 81. Collars 82 limit the movement of said shafts, and springs 83 bear on said collars to hold the gears 80 out of mesh. To set all of the registering-disks of one set to zero, a key is applied to the squared end 79^a of the corresponding shaft 79 and pushed strongly against the shaft to overcome the expansive force of the spring 83 and bring the gears 80 into mesh with the teeth 81, after which the key is turned to drive the registering-disks until the interrupted portion 81^a is reached, when the gear 80 will turn free of the teeth 81. The turning of the key is continued until all of the blank spaces line up, when the registering-disks will all be at zero. A bell 85 is mounted within the casing 1 and arranged to be sounded whenever one of the punches 5 is depressed by means of a bell-lever 86, fulcrumed intermediate its ends and bearing a hammer 87, one arm set to strike the bell 85, which is supported by an arm 88. The other arm of the lever 86 is beveled off to adapt it to

engage the teeth of a ratchet-wheel 89, keyed on the shaft 30. When one of the punches 5 is depressed and the shaft 30 turned, the ratchet 89 will be turned and will actuate the lever 86 to bring the hammer 87 in contact with the bell 85. The general operation of my device can now be described.

When a passenger pays his fare, the conductor takes a ticket and inserts it in the slot 2 beneath the punch 5 corresponding to the amount paid, which must lie between one halfpenny and three pennies if the punch is constructed as described and illustrated; but the number of punches employed may be changed and the numbering on the registering-disks made to correspond to any system of fares, as will be readily understood by any one skilled in the art. The point for inserting the ticket in order to get it beneath the proper punch 5 is ascertained by means of the corresponding projecting thumb-stops 4, against which the thumb is placed before pushing in the ticket.

The punch 5 is engaged by the thumb and forced down, the fingers grasping the flange 1^a on the front of the casing to furnish a purchase, when the pin 37 in the punch will engage the arm 32 and depress it, thereby bringing the pawl 32 into engagement with the ratchet 31 to turn it and operate the registering-disk 18. The shoulders 7^b on the punch 5 will limit its downward movement, so that the first registering-disk will be revolved but one graduation. Since all of the pins 37 are set at the same height, the disk 18 will be turned but one graduation by depressing any one of the keys. Simultaneously with the operation of the registering-disk 18 the disk 39 will also be operated by the punch 5 and revolved from one to six graduations, depending on which key is depressed, as was previously explained in detail, and the value of the ticket registered. When one of the punches 5 is depressed, the locking-plate 61 is also operated through the medium of the corresponding pin 64, which engages one of the slots 63, and shifted to the left. After one punch 5 has been depressed the others are held against movement by the upper edge of the disk 61, which will engage the pins 64 in the remaining punches should any attempt be made to depress them. Should the thumb slip off of the head 8 of the punch 5 before it had been forced down far enough to punch the ticket placed beneath it, the spring 15 could not return the punch to its initial position, for the locking-plate 61 would prevent this, since the head 69^a of the lever 69 holds this plate against returning until the lug 70 disengages it from the serrated edge 71. When the plate 61 reaches the limit of its travel, the pawls on the arms 65 and 66 will engage the ratchet 31 and 50 on the shaft 30 and 49, respectively, and securely lock them against spinning or accidental displacement.

I do not wish to be limited as to details of construction, as these may be modified in many particulars without departing from the spirit of my invention.

Having fully described my invention and in what manner it is to be performed, what I claim is—

1. In a cash and ticket register and punch, the combination of a casing, of a plurality of punches constructed to punch tickets, pawls operated by said punches, a shaft carrying ratchets located to be engaged by said pawls, a set of registering-disks, and a gear mounted on said shaft and arranged to operate said registering-disks, substantially as described.

2. In a cash and ticket register and ticket-punch, a set of ticket-registering disks, a set of cash-registering disks, and a set of punches, and means operated by said punches to operate said disks, substantially as described.

3. In a cash and ticket register, the combination of a set of ticket-punches, a set of ticket-registering disks, a set of cash-registering disks, and means operated by said punches to operate said registering-disks to register the kind of fare or tickets and the amounts of cash corresponding to the punches operated, substantially as described.

4. In a cash and ticket register and bell-punch, the combination of a casing, of a plurality of punches constructed to punch tickets, pawls operated by said punches, a shaft carrying ratchets located to be engaged by said pawls, a set of registering-disks, a gear mounted on said shaft and arranged to operate said registering-disks and a bell operated by said punches, substantially as described.

5. In a cash and ticket register and bell-punch, a set of cash-registering disks, a set of ticket-registering disks, a bell, and a set of ticket-punches arranged to operate said disks and said bell, substantially as described.

6. In a cash and ticket register and punch, the combination of a plurality of slidingly-mounted ticket-punches, a shaft bearing ratchets corresponding to said punches, arms pivoted to said shaft and bearing pawls located to engage said ratchets, pins mounted in said punches and located to engage said arms, a series of registering-disks, and a gear mounted on said shaft and meshing with one of said registering-disks, substantially as described.

7. In a cash and ticket register and punch, the combination of a slidingly-mounted ticket-punch, a spring mounted to restore said punch to its initial position, a shaft bearing a ratchet rigidly mounted thereon, an arm pivoted to said shaft, a pawl pivoted to said arm, a spring carried by said arm and bearing on said pawl, a pin mounted in said punch and located to engage said arm to operate said ratchet, and a pin mounted in said punch and located beneath said arm to engage it to restore it to its initial position, and registering means operated by said shaft, substantially as described.

8. In a cash and ticket register and ticket-punch, the combination of a slidingly-mounted ticket-punch, having a pin mounted therein, a plate slidingly mounted in guides, and having a diagonal slot therein engaged by said pin, a shaft bearing a ratchet, an arm carried by said plate and bearing a pawl located to engage said ratchet to securely lock said shaft when said key is depressed to slide said plate, substantially as described.

9. In a cash and ticket register and punch, the combination of a shaft bearing a plurality of ratchets, arms pivoted to said shaft and carrying spring-actuated pawls, a plurality of spring-actuated punches arranged to punch tickets when depressed, pins mounted in said punches at graduated heights and located to engage said arms, and a rod mounted to engage the backs of said pawls to throw them out of engagement with said ratchet when said arms are in their initial position, substantially as described.

10. In a ticket-punch, a casing having a slot therein of sufficient length to accommodate a plurality of tickets, a plurality of punches mounted transversely said slot to serve to punch tickets inserted therein, a guide-shelf located in alinement with said slot, and having a series of apertures therein corresponding with a series of apertures in the top of a chamber below, and thumb-stops mounted on said casing above said slot and arranged to correspond to said keys to mark the point for inserting a ticket, substantially as described.

11. In a ticket-punch, cash and ticket register, the combination of a casing having a slot therein of sufficient length to accommodate a plurality of tickets, a shelf located below said slot, and having a series of apertures therein corresponding with a series of apertures in the top of a chamber below, thumb-stops located above said slot and projecting beyond the face of the casing to enable the conductor to locate the proper point to insert a ticket, and a plurality of punches mounted transversely said slot and corresponding to said thumb-stops, substantially as described.

12. In a combined ticket-punch, cash and ticket register, the combination of a slidingly-mounted punch bearing a pin, a set of registering-disks, a shaft bearing a gear arranged to drive said disks, a ratchet mounted on said shaft, a pawl mechanism arranged to be engaged by said pin to operate said shaft, a plate mounted in parallel guides and having a slot therein inclined to the direction of said guides, said slot being engaged by said pin, an arm formed on said plate and bearing a pawl located to engage said ratchet to lock said shaft, substantially as described.

13. In a combined ticket-punch, cash and ticket register, the combination of a registering-disk having a series of graduations thereon bearing members, said disk having teeth on its periphery corresponding to said graduations, and V-shaped notches in its periphery alternating with said teeth, and spring-detents having heads fitting said notches, substantially as described.

14. In a register of the character described, a punch bearing a pin, a series of registering-disks, a shaft bearing a gear arranged to actuate said disks, a pawl mechanism adapted to be engaged by said pin to actuate said shaft, a suitably-guided slide having a slot inclined to the direction of movement of, and adapted to be engaged by said pin, a spring-pressed angular lever normally having toothed engagement with the bottom edge of said slide and means for the retention of said lever in such position.

15. In a register of the character described, a punch-bearing pin, a series of registering-disks, a shaft bearing a gear arranged to actuate said disks, a pawl mechanism adapted to be engaged by said pin to actuate said shaft, a suitably-guided slide having a slot inclined to the direction of movement of, and adapted to be engaged by, said pin, a spring-pressed angular lever normally having toothed engagement with the bottom edge of said slide, said slide having depending therefrom fixed lugs, one adapted to disengage said lever from said slide, and means for retaining said lever in its disengaged position as relates to said slide.

16. In a register of the character described, a punch bearing a pin, a series of registering-disks, a shaft bearing a gear arranged to actuate said disks, a pawl mechanism adapted to be engaged by said pin to actuate said shaft, a suitably-guided slide having a slot inclined to the direction of movement of, and adapted to be engaged by, said pin, a spring-pressed angular lever normally having toothed engagement with the bottom edge of said slide, said slide having depending therefrom fixed lugs, one adapted to disengage said lever from said slide, and a spring-pressed detent adapted to retain said lever in its disengaged position as relates to said slide, the other of said lugs adapted to reengage said lever with said slide.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PAUL WHITING.

Witnesses:

FRANK G. RADELFINGER,
BENNETT S. JONES.