

No. 748,163.

PATENTED DEC. 29, 1903.

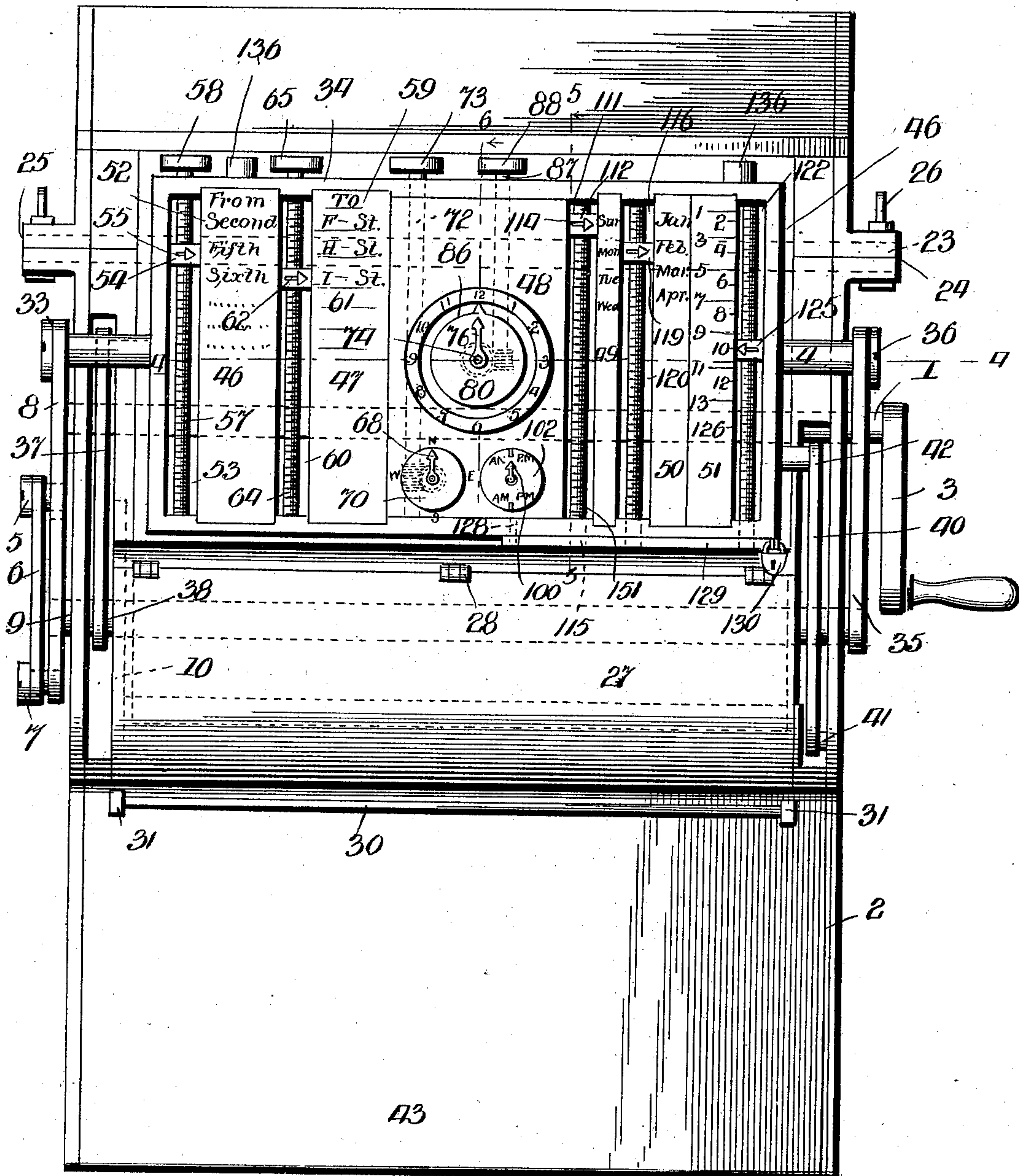
E. B. CLARK.
TICKET PRINTING MACHINE.

APPLICATION FILED SEPT. 6, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

E. R. Ruff
E. R. Ruff

INVENTOR

E. B. Clark
BY *Wm L. Pierce*
Attorney

No. 748,163.

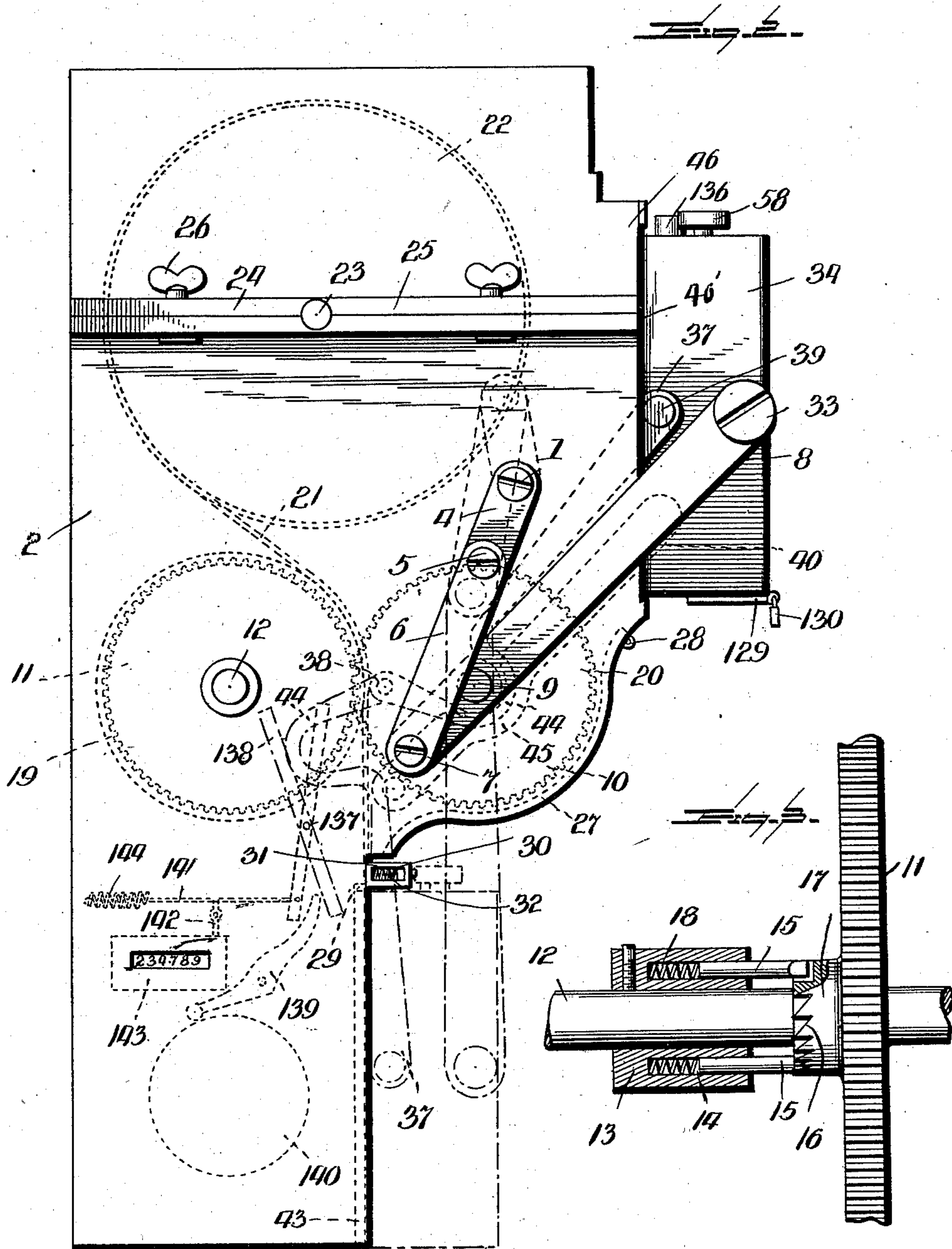
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3 SHEETS—SHEET 2.



WITNESSES:

Wm F. Doyle
E. R. Ruppert

INVENTOR

E. B. Clark
BY *Wm L. Pierce*
Attorney

No. 748,163.

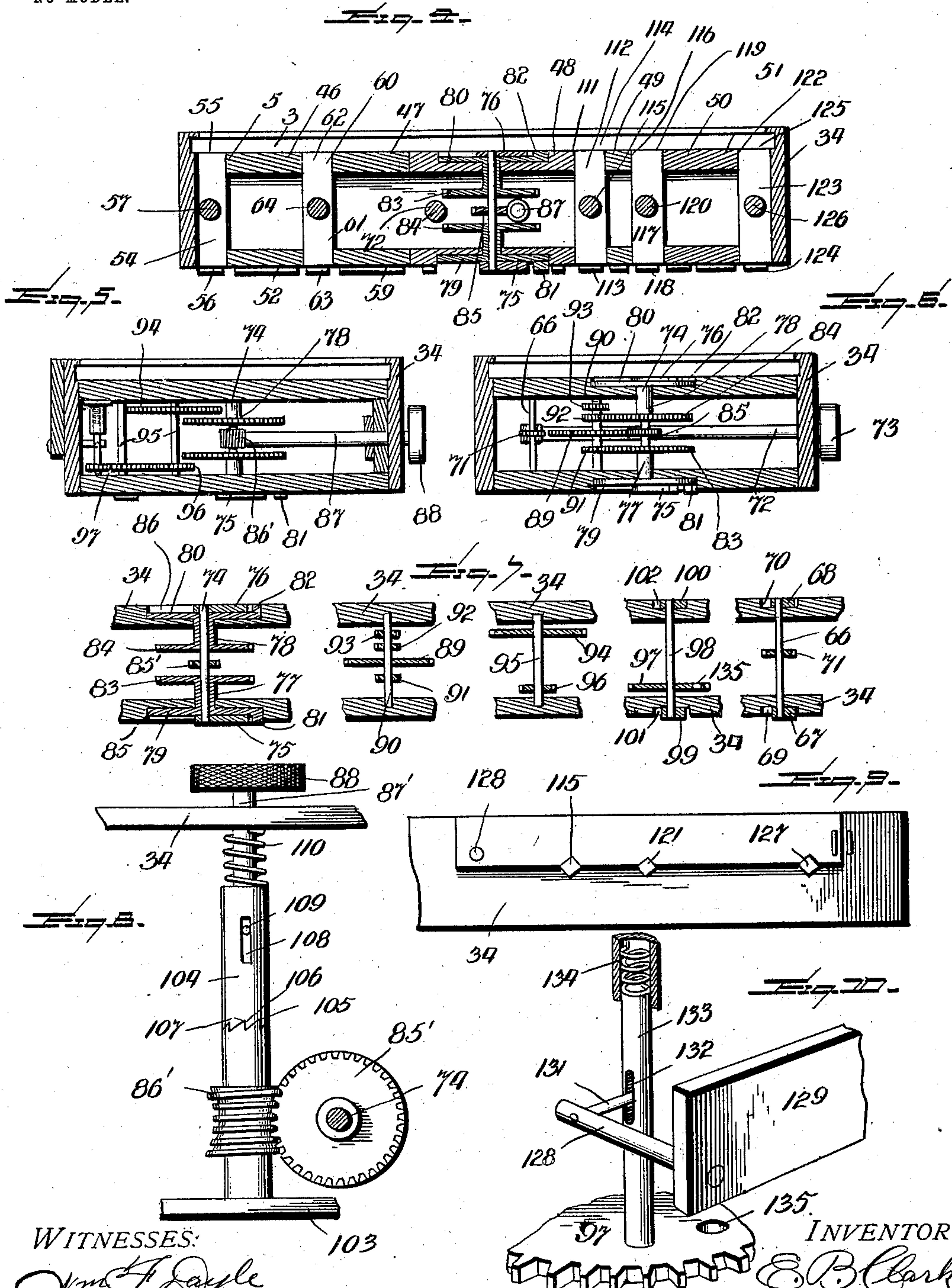
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3 SHEETS—SHEET 3.



WITNESSES:

Wm. F. Doyle
E. R. Ruppert

INVENTOR

E. B. Clark

BY *Wm. L. Pierce*

Attorney

UNITED STATES PATENT OFFICE.

EDWARD B. CLARK, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF THREE-FOURTHS TO THE PITTSBURGH BLUE PRINT COMPANY, A CORPORATION OF PENNSYLVANIA.

TICKET-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 748,163, dated December 29, 1903.

Application filed September 6, 1902. Serial No. 122,423. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. CLARK, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered new and useful Improvements in Ticket-Printing Machines, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a front view of my invention. Fig. 2 is a side view of the same; Fig. 3, a view of the pawl-and-ratchet roll-feeding mechanism; Fig. 4, a horizontal section on the line 4 4 of Fig. 3; Fig. 5, a vertical section on the line 5 5 of Fig. 1; Fig. 6, a vertical section on line 6 6 of Fig. 1; Fig. 7, a fragmentary view of detached sections of the time gearing and indicating mechanism; Fig. 8, a detail of the means for operating the time mechanism; Fig. 9, a bottom view of the means for locking the dating mechanism, and Fig. 10 a perspective view showing the means for locking the time-gearing.

1 designates a shaft having bearings in opposite ends of the casing 2. On one end of the shaft 1 is keyed the crank-handle 3 and on the other end the short arm 4. The outer end of the arm 4 is pivotally connected at 5 to one end of the link 6, whose other end is pivoted at 7 to the short arm of the lever 8, keyed to shaft 9, which is supported in opposite ends of the casing 2.

Rigid on the shaft 9 is the spur-wheel 10, which meshes with the spur-wheel 11, loose on the shaft 12, having bearings in opposite ends of the casing. Fixed on the shaft 12 is the collar 13, provided with holes 14, in which are slidable dogs or pawls 15, normally thrust outwardly and kept in engagement with ratchet-teeth 16 on the end of the hub 17 of the spur-wheel 11 by the expansion-springs 18. The teeth are so made that when the wheel 11 has a left-hand movement the shaft 12 will remain stationary. On the shaft 12 is fastened the feed-roll 19, between which and the roll 20, loose on the shaft 9, the paper strip 21 is fed from the supply-roll 22, loose on the shaft 23.

The top of the casing 2 is divided on the horizontal line 24, which includes the ends of the shaft 23. The ends of the casing have above and below the line 24 registering flanges 25, through holes in which the bolts 26 are passed for securing the two sections of the casing together. The casing is divided on this line in order that when the paper-roll becomes exhausted or the paper becomes clogged the top section may be removed. A new roll may then be supplied, or the roll already in may be removed, thus permitting the paper to be guided by hand between the rolls 19 and 20 or the clogged paper to be removed or guided forward.

A door 27, hinged at 28, is placed opposite the roll 20, so that when it is swung open the hand may be introduced into the casing for the purpose of guiding the paper between knife 29, fixed to the casing, and the movable knife 30, having its ends held in the outer or front ends of the slots 31 by means of the springs 32 under the ends thereof.

The long or forward end of lever 8 is pivoted on the pin 33 to the casing 34, containing the type and characters which are to be printed on the strip 21. On the end of the shaft 9 opposite that on which arm 8 is secured is keyed one end of the arm 35, whose other end is pivotally secured on pin 36 on the casing 34, the pins 33 and 36 being in horizontal alinement.

A link 37 is pivotally secured at 38 to one end of the casing 2 and at 39 to the casing 34, and a link 40 is pivotally secured at 41 to the other end of the casing 2 and at 42 to the casing 34. The arms 8 and 35 and the links 37 and 40 are so proportioned that when the arm 8 moves the casing 34 downwardly the rear or type face of the casing will, in the dotted position shown in Figs. 1 and 2, exactly contact with the rubber impression-face 43 at the front of the lower part of the casing 2. The links 37 and 40 have bends 44 and 45, respectively, that they may avoid the shaft 9.

46' is an ink-pad against which the type in the casing 34 normally rests, as shown in Figs. 1 and 2.

The front and rear faces of the casing 34

are substantially duplicates, except that the rear face is provided with type and adjustable characters constituting a printing-surface, while the front surface is not adapted to serve as a printing-surface. The said two surfaces of the casing 34 have each six sections—46, 47, 48, 49, 50, and 51.

Section 46 contains the names 52 of the streets on which the car from which transfers are issued is running. In the slot 53, by the side of the section 46, is a block 54, carrying at opposite ends the pointers 55 and 56. The block 54 has a screw-threaded opening in which the screw 57, having bearings in the top and bottom of the casing, operates. The screw is turned by means of the head 58.

Section 47 contains the names 59 of the streets on which the transfers are good. In the slot 60 is the block 61, carrying the pointers 62 and 63, similar to the pointers 55 and 56. The block 61 is operated by the screw 64, having the head 65.

Section 48 is provided with the shaft 66, having at opposite ends the pointers 67 and 68, which lie in the circular countersunk holes 69 and 70 in the sides of the casing. The holes have the letters "N," "E," "S," and "W" arranged around them to indicate the direction in which the transfer is good. The shaft 66 is provided with the worm-wheel 71, which is operated by a worm on the shaft 72, having the head 73. Section 48 is further provided with the shaft 74, having the pointers 75 and 76. The shaft 74 is provided with two sleeves 77 and 78, on whose outer ends are the disks 79 and 80, provided with the pointers 81 and 82, respectively, and on whose inner ends are the spur-wheels 83 and 84. Disks 79 and 80 lie in the bottom of the circular holes 85 and 86, while the pointers 81 and 82 lie upon said disks and in the outer parts of the holes. The disks have outwardly-extending lugs constituting the pointers 81 and 82, which rotate beyond the outer ends of the pointers 75 and 76 and are flush therewith. The shaft 74 is provided with the worm-wheel 85', with which the worm 86' on the shaft 87 meshes. The shaft 87 has the operating-head 88. The worm-wheel 85' also meshes with the gear-wheel 89 on the shaft 90, which has two pinions 91 and 92, gearing with spur-wheels 83 and 84, respectively. The gearing is proportioned so that a whole rotation of the short pointer 75 or 76 rotates the long pointer 81 or 82 one-twelfth of a rotation. The margins of the holes in which the pointers rotate are surrounded with the numerals "1" to "12" arranged as on a clock-face. The pointers 75, 76, 81, and 82 are moved so as to indicate the time when the transfers are issued or before which they must be presented for cancellation.

The shaft 90 is provided with the pinion 93, which gears with the wheel 94 on the shaft 95, the latter having the pinion 96 gearing with the wheel 97 on the shaft 98. On the ends of the shaft 98 are the pointers 99 and

100, rotatable in the circular holes 101 and 102 in the casing 34. The gearing is so proportioned that pointers 99 and 100 turn a half-revolution, while the long pointers 81 and 82 turn a whole revolution. At diametrically opposite points of the said holes 101 and 102 are the abbreviations "A. M." and "P. M." The abbreviation "A. M." is on the left-hand side, indicating that the pointers 99 and 100 must be on that side during the forenoon, and the abbreviation "P. M." is on the right-hand side, indicating that the said pointers must be on that side during the afternoon.

The shaft 87 may be made up of sections, as shown in Fig. 2, in which stem 87' is shown provided with the worm-sleeve 86', loose on the stem and gearing with worm-wheel 85'. A collar 103, keyed to the stem, supports the lower end of the sleeve 86'. A second sleeve 104 is on said stem above the other sleeve, the two sleeves having their opposite ends provided with interlocking teeth 105, so constructed that the rotation of sleeve 104 in one direction will rotate sleeve 86'; but the rotation of sleeve 104 in the other direction will not rotate it. This is accomplished as follows: The teeth 105 have interlocking walls 106, which are parallel with the stem. The other walls 107 of the teeth are cam-shaped or inclined. The sleeve 104 has a sliding connection with the stem, owing to the slot 108 in the sleeve and the pin 109 on the stem. The spring 110, seated between the sleeve and the casing 34, tends to keep the teeth 105 in mutual engagement. When the head 88 is turned, so as to move the hands 75, 76, 81, and 82 forward, the two sleeves will be interlocked by the walls 106, but when the head is rotated oppositely the sleeve 104 will slide up and down on the stem 87' without affecting the worm 86'. This is to prevent post-dating the transfers.

Section 49 contains the days of the week, as shown in Fig. 1. In a slot 111 travels the block 112, having pointers 113 and 114. This block is driven by the screw 115', having the lower square end 115, so that it may be turned by a key fitted thereon.

Section 50 contains the months, arranged as shown. In the slot 116 travels the block 117, provided with the pointers 118 and 119 and driven by the screw 120, having the square end 121.

Section 51 contains numerals representing the days of the month. In the slot 122 travels the block 123, provided with the pointers 124 and 125 and driven by the screw 126, having the square end 127.

Pivoted on the vertical pin 128 below the shaft 98 is a horizontally-swinging bar 129, having rabbets adapted normally to pass over the square ends 115, 121, and 127 of the screws 115, 120, and 126 and lock the latter from rotation. The bar 129 is locked by means of the lock 130. The pin 128 has at its upper end the bit 131, which lies in the notch 132 in the sliding locking-pin 133, normally pressed by the

spring 134 against the side of the wheel 97. The wheel 97 has the hole 135 so positioned that when the pointers 99 and 100 have been turned a whole revolution from their midnight position (shown in Fig. 1) the hole and the pin 133 will register. The pin 133 will at such registry be forced by the spring 134 into the hole 135, whereupon the connected train of gearing will all be locked and cannot again be turned by head 88 until the bar 129 has been unlocked and swung outwardly. The swinging of the bar causes the bit 131 to pull the locking-pin 133 out of the hole 135 of the wheel 97. The head 88 is then turned, causing the hole 135 in the disk 97 to pass from under the pin 133, whereupon the said train of gearing may be turned until the pointers indicate the termination of twenty-four hours or another midnight. The pin 133 will not be prevented from dropping into the hole 135 when the hole is again opposite the same, because the slot 132 is longer than the thickness of the bit 131 and the bit travels down away from the top of the slot when the bar is swung back to its normal or locked position.

The casing 34 has two lugs 136, which strike the top of the knife 30 and pushes the same past the knife 29, when the casing moves to printing position. (Shown in dotted lines in Fig. 2.)

Pivoted at 137 within the casing 2 is a lever 138, whose upper end is engaged and swung by the bend 44 of link 37, as shown in dotted lines on Fig. 2. The lower end of the lever 138 operates the clapper 139 of the bell 140 and is connected by cord 141 to the operating-lever 142 of a registering mechanism 143 of any approved type. The spring 144 returns the lever 138 and 142 to their normal positions.

The names of the streets on the sections 46 and 47, the dials for the several pointers on the section 48, and the names of the days of the week, the names of the months, and the numerals of the days of the month on the sections 49, 50, and 51, together with such other words or numerals as may be required, are electrotyped, and the electrotypes are secured in the positions shown in the casing 34 in any approved manner. Preferably the section 46 will have the word "From" and the section 47 the word "To" at the top. The section 48 may have the name of the railway-company using the machines and the number of the machine.

The pointers and dials at the back of the casing 34 are the height of the type above the back plate, so that when impressions of the words and numeral are made on the ticket-strip 21 impressions also of the pointers and dials will be made thereon.

The machine may be carried by the conductor or fastened at some convenient place within the car, so that the face of the casing 34 will be in view of the passengers.

Before the car makes its first trip each day the pointers 75, 76, 81, and 82 are turned to

indicate twelve o'clock, the bar 129 is unlocked and swung out, so as to expose the square ends 115, 121, and 127 of the screws 115', 120, and 126, whereupon a key is applied to said square ends and the said screws turned so that the pointers 113, 114, 118, 119, 124, and 125 indicate the correct day, month, and day of the month on the sections 49, 50, and 51. The swinging out of the bar 129 has withdrawn the pin 133 from the hole 135, as above explained. When the head 88 has been turned so as to remove the hole 135 from beneath the pin 133, the bar 129 is swung back and locked by the lock 130. The key of this lock is kept at the office, so that the transfers cannot be wrongly dated by the conductor. The head 73 is turned so that the pointers 67 and 68 will indicate on the dial the initial of word standing for the direction in which the car is to go or is going.

When a new roll of paper is needed, the bolts 26 are removed, the top of the casing 2 taken off, a strip of paper 21 is directed between the rolls 19 and 20, the paper-roll 22 on the shaft 23 placed in the casing, and the top of the casing put on and fastened by the bolts 26. The door 27 is then opened and the hand inserted in the casing to direct the strip 21 down over the rubber impression-surface 43 and between the knives 29 and 30.

When a transfer is to be printed, the conductor turns the head 58 so that the pointers 55 and 56 indicate the line or street the car is on. The head 65 is turned so that the pointers 62 and 63 indicate the line or street to which the transfer is issued or on which it is good and the head 88 turned so that the long hands 81 and 82 indicate the hour and the short hands 75 and 76 indicate the minutes. The handle 3 is now given a full revolution, causing the shaft 1 to pull up the arm 4 and link 6, which in turn rocks the lever 8 on the shaft 9. The rocking of the lever 8 brings the casing 34 from its upper position, where the printing characters are resting on the ink-pad 46', to its lower position, where strip 21 is stamped or printed with such characters. When the casing reaches its lower position, the lugs 136 thereon have forced the knife 30 to shear off the transfer, which when the casing 34 returns to its normal position drops into conductor's hand or into a receptacle provided for the purpose. While the casing 34 is passing to its lower position, the wheels 10 and 11 do not rotate the feed-roll 19, as the teeth 16 on the hub 17 of the wheel 11 pass the pawls 15, the latter sliding in the holes 14 of the collar 13 on the shaft 12; but when casing 34 moves upwardly the teeth 16 and pawls 15 interlock, and the shaft 12 is turned so as to feed strip 21 down for another transfer. The handle 3 is rotated once for the issuing of each transfer. When the handle is turned, the bend 44 on the link 37 swings the lever 137, which causes the bell 140 to ring and the register 143 to indicate and record the number of transfers issued.

When the head 88 has been turned so that the hands of the clock-dial have turned twice around or, in other words, so that the said hands have passed from "12" (indicating midnight) to "12," (indicating another midnight,) the pointer 99 and 100 will have completed a whole revolution, and the pin 133 will have entered the hole 135, whereupon the hour, minute, and forenoon and afternoon indicating mechanism will be locked, as before explained. It is thus seen that the conductor cannot change the pointers for the days, months, and days of the month; that he can change the hour and minute pointers only in a forward direction, so that he cannot antedate a transfer and then turn the pointers back to present the correct hour and minute; that he cannot antedate a ticket and then turn the pointers ahead more than once to indicate the correct hour and minute, since the wheel 97 would become locked by the pin 133, and if he does turn the pointers forward, which he could only do in the forenoon, the pointers would point to "P. M.," and he could only indicate the hours and minutes for the remainder of the two revolutions allowed to the hour-pointers, and that he can set the direction-pointers 67 and 68 and the street-pointers 55, 56, 62, and 63 at will; but these pointers are in full view of the passengers, who would readily notice whether these were properly set.

While I have shown the shorter hand as the minute-hand, it is seen that by changing the gearing the larger hand may be used for that purpose.

Many other changes may be made in my invention, still employing the principles thereof. I do not, therefore, desire to be limited to the precise construction shown and described.

Having described my invention, what I claim is—

1. A printing-form having on two of its faces duplicate sets of fixed and adjustable characters, one set forming a printing-surface, and the other set, a representation for verification of the matter to be printed, a platen, an inking device, means for causing successive contact of the printing-form and inking device and of the printing-form and the paper on the platen and means for feeding the paper in one of the directions in which the movable contacting means travels.

2. A printing-form, having on two of its faces duplicate sets of fixed and adjustable characters, one set forming a printing-surface and the other set, a representation for verification of the matter to be printed, an inking device, said printing-form and inking device being relatively reciprocable at each printing operation, and means for feeding the paper in one of the directions in which the reciprocation takes place.

3. A printing-form, having a section provided on two of its sides with duplicate sets of fixed and adjustable characters, the adjustable characters being connected so as to

point out simultaneously on both faces those of the fixed characters as are to have effect, one set forming a printing-surface and the other set, a representation for verification of the matter to be printed, an inking device, said printing-form and inking device being relatively reciprocable at each printing operation, and means for feeding the paper in one of the directions in which the reciprocation takes place.

4. A printing-form, having a section provided on two of its faces with duplicate sets of fixed and adjustable characters, the adjustable characters being connected so as to point out simultaneously on both faces those of the fixed characters as are to have effect, and means arranged to move the adjustable characters, one set forming a printing-surface and the other set, a representation for verification of the matter to be printed, an inking device, said printing-form and inking device being relatively reciprocable at each printing operation, and means for feeding the paper in one of the directions in which the reciprocation takes place.

5. A printing-form, having a section provided on two of its faces with duplicate sets of fixed and adjustable characters, the adjustable characters being connected so as to point out simultaneously on both faces those of the fixed characters as are to have effect, and a screw arranged to move the adjustable characters, one set forming a printing-surface and the other set, a representation for verification of the matter to be printed.

6. A printing-form, having a removable section provided on two of its faces with duplicate sets of fixed characters, a slot at the side of said section, a block slidable in said slot, pointers on said block arranged to point simultaneously to the same characters on both faces of the section and means for moving the block in the slot.

7. A printing-form, having a printing-surface consisting of a clock-dial, hour and minute pointers therefor, a forenoon and afternoon dial, and a pointer therefor, and means for automatically locking said pointers after a predetermined movement thereof.

8. A printing-form, having a printing-surface consisting of a clock-dial, hour and minute pointers therefor, a forenoon and afternoon dial, and a pointer therefor, and means comprising a perforated wheel and a pin automatically forced into the perforation in the wheel for locking said pointers after a predetermined movement thereof.

9. A printing-form, having a printing-surface indicating the time of day, a train of gearing for changing the indications on said surface, means for automatically locking said gearing after a predetermined movement of the indicating means, and means normally locked, but when unlocked capable of being moved so as to unlock said gearing.

10. A printing-form, having a section with a printing-surface and an adjustable charac-

ter, means for adjusting said character, means for automatically locking the same after a predetermined movement thereof, a second section with a printing-surface and an adjustable character, means for adjusting said character, means for locking said character when adjusted, and means cooperating with said last means for unlocking said first-named character.

10 11. A printing-form, having a printing-surface with adjustable characters and means independent of the control of the printer for locking the said characters after a predetermined movement thereof.

15 12. A printing-form, having fixed and adjustable characters, a screw for adjusting the latter having an angular end, a bar having a rabbet to receive the said end and prevent the rotation thereof, and means for locking
20 said bar when engaging the end of said screw.

13. A casing, means therein for supporting a roll of paper, a pair of rolls therein between which the paper is fed, and separate means permitting ready access to the interior of the
25 casing, one of said means being on each side

of the said pair of rolls; whereby the paper may be fed to and from said rolls and the feed adjusted or corrected.

14. A printing-form, a casing, an impression-surface thereon and an operating-shaft 30 mounted therein, a set of links connecting said form and casing, connections from said shaft to said form for moving the same against paper on the impression-surface, and an indicator, one of said links having means for 35 causing an indication to be made.

15. A printing-form, a casing, an impression-surface thereon and an operating-shaft mounted therein, links connecting said form and casing, a connection from said shaft to 40 said form, a register, an alarm, and a lever for actuating said register and alarm, one of said links being so constructed and arranged as to operate said lever.

Signed at Pittsburg this 2d day of Sep- 45
tember, 1902.

EDWARD B. CLARK.

Witnesses:

A. M. STEEN,
F. N. BARBER.