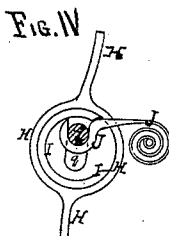
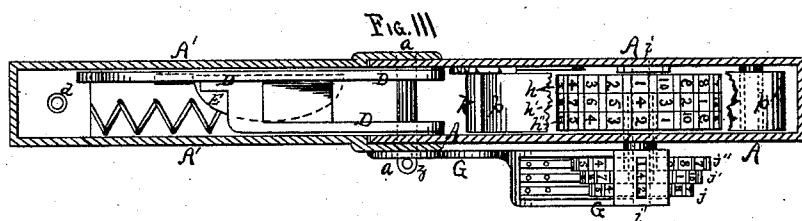
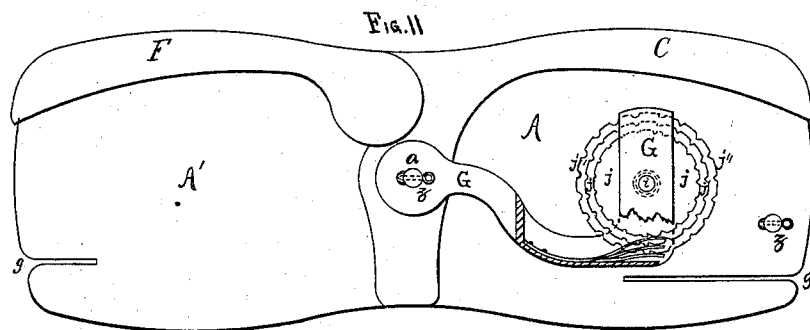
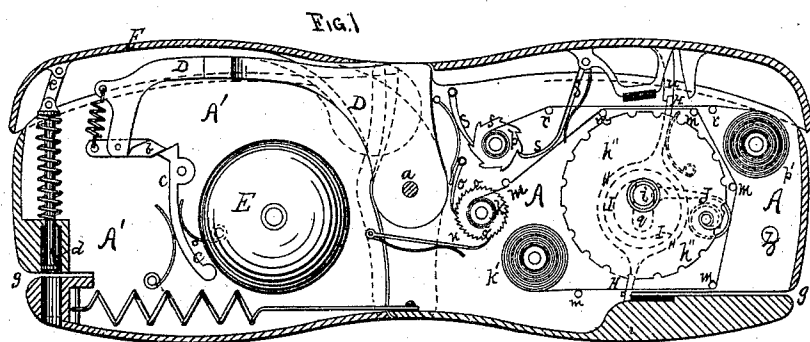


G. J. HILL & A. RUGER.

CONDUCTORS' PUNCH, ALARM AND REGISTERING IMPLEMENT.

No. 170,170.

Patented Nov. 23, 1875.



WITNESSES.

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FIG. 5

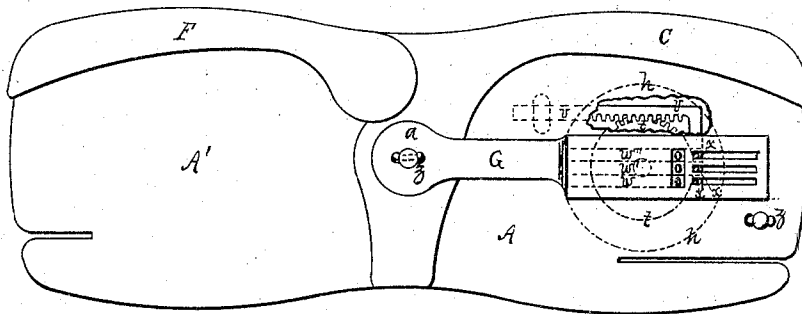


FIG. 6

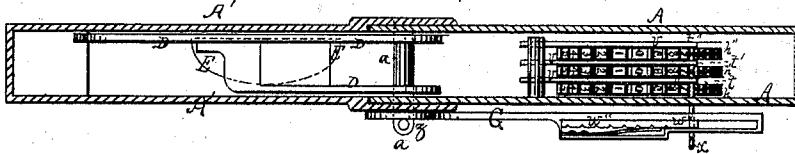
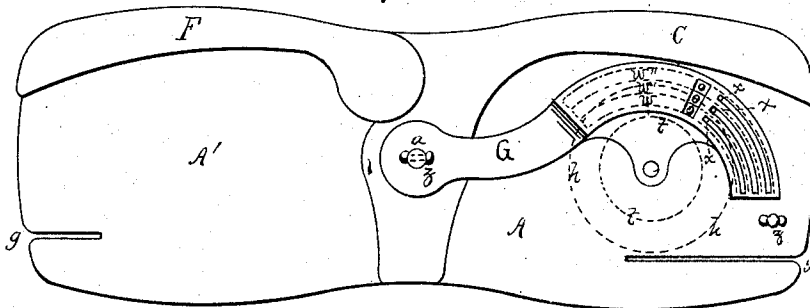


FIG. 7



Witnesses.

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UNITED STATES PATENT OFFICE

GEORGE J. HILL AND AUGUSTUS RUGER, OF BUFFALO, NEW YORK,
ASSIGNORS, OF PART OF THEIR RIGHT TO JAMES WALLACE RUGER,
OF SAME PLACE.

IMPROVEMENT IN CONDUCTORS' PUNCHES, ALARMS, AND REGISTERING IMPLEMENTS.

Specification forming part of Letters Patent No. **170,170**, dated November 23, 1875; application filed
June 26, 1875.

To all whom it may concern:

Be it known that we, GEORGE JAY HILL and AUGUSTUS RUGER, of Buffalo, in the county of Erie and State of New York, (assignors to ourselves and James Wallace Ruger, of same place,) have made certain Improvements in a Combined Duplex Fare-Register, Ticket-Printer, and Alarm, of which the following is a specification:

This invention combines in one device a duplex cash recorder or printer and an alarm; and it consists, more particularly, in a double working case or shell, having in one end an ordinary punch, and in the other end an arrangement of numbering-wheels, which are moved by duplicated wheels or slides on the outside of the case, whereby any amount desired may be set and printed inside, by means of an inking-ribbon or its equivalent, upon a ticket inserted in the jaws, and the same number or numbers be also printed upon a registering-strip of paper inside the case, so that every item of cash received by the user will be printed on the ticket, and also appear upon the strip inside the case. A bell is combined with the above, whereby an alarm is given after a ticket is printed. No alarm is given when the punch is used. It further consists in a peculiar lock or stop interposed in the jaw of the printing end of the device, which prevents operating the jaws unless a ticket is inserted in the slot to displace the stop. This invention furthermore consists in an arrangement of racks, pinions, and slides to take the place of the outside numbering-wheels, if desired, all as hereinafter set forth.

In the drawings, Figure 1 is a sectional side elevation with one side of the case removed. Fig. 2 is an outside elevation, showing an arrangement of outside setting-wheels. Fig. 3 is a plan view in section. Fig. 4 is a detail of the lock; Figs. 5 and 6, views showing a different arrangement for working the inside numbering-wheels by slides, &c.

A A' represent the two halves or portions of the case, which are pivoted together at *a*. Attached to the shell A', and running forward and above it, is a hooded lever or jaw, C, which fits partly down over the top and sides of the

shell A'. D is an arm or lever, which is attached to, or forms part of, the shell A, and runs backward between the sides of the shell, as shown, and ends in a pawl, *b*, for tripping the hammer *c* of the bell E. F is another hooded lever, similar to C, but which runs down in a slot in the lever-arm D, and is pivoted in the center by the pivot *a*, as shown. *h h' h''* are three wheels or disks, having figures on their peripheries from 1 to 0, and the same figures are also opposite each other on the same wheel, so that, whatever figure is uppermost, a similar figure will be directly opposite on its under side.

The wheel *h* is mounted upon a shaft, *i*, which runs through the side of the shell A, and is provided with another wheel, *j*, upon the outside. (See Fig. 2.) The second wheel *h'* is mounted upon a loose sleeve, which fits over the shaft *i*, and also passes through the shell A, and ends in a second disk, *j'*, just inside of the first wheel *j*, but a trifle larger than it, while the third wheel *h''* is mounted upon a second sleeve, which fits over the first sleeve and shaft *i*, and, passing out through the side of the shell, ends in a third wheel, *j''*, which is a trifle larger than the second wheel *j'*. These outer wheels *j j' j''* are mounted in a frame, G, by a hanger, which runs back, and is pivoted to the center of the shell by the pin *a*. The opening or slot *q* in the side of the shell A, through which the shaft *i* and the sleeves of the disks *h* and *j* pass, will be elongated to allow a little play up and down, for the object hereinafter described. One-half the surface of these outside wheels will be numbered from 1 to 0, to correspond with the numbers on the interior wheels *h h' h''*; the other half of each wheel is provided with teeth, as will be presently explained. *k k'* are two drums or rollers, upon which an inking-ribbon is wound, and which passes outside of the wheels *h h' h''*, and is prevented from touching them at any point by pins *m m*. One of these drums will be provided with a ratchet and pawl, *n o*, the back end of the pawl being attached to the shell A, so that when the lever C is operated the pawl will act upon the drum and wind up a portion of the ribbon, so as to present a

fresh portion to the wheels at each time of printing. $p p'$ are two other drums, similar to $k k'$, upon which a paper strip or ribbon is wound, as shown. This strip passes over the outside of pins $r r'$, which prevent its touching the inking-ribbon, which runs between it and the wheels. The drum p also has a ratchet and pawl, s , the latter being fastened to the inside of the lever C , so that every time the lever is forced down the pawl will take up one tooth of the ratchet, and thus move the paper along the length of one figure, and give a fresh space above the wheels upon which to print the next amount, as clearly shown in Fig. 1. A locking device is placed in the printing end of the recorder or case A , which prevents the jaws being operated except when a ticket is inserted in the slit or opening g' to unlock it. This consists of a vertical bolt or bar, H , the lower end obstructing the back of the slit g' . It is pivoted in the center around a stationary circular plate, I , and continued upward until the top rests against a stop, u . This center plate I has within it a spring-hanger, J , which supports the shaft i of the wheels $h h' h''$, and returns them upward when forced down for printing by the lever C .

When in its ordinary or vertical position the bar H locks the jaw-lever C , and prevents it being pushed down, or, in other words, the printing end of the device from being operated. It does not, however, interfere with the punching end, as the punching-lever F works independently of all the other parts, as before explained. We are acquainted with inventions for locking the jaws of ticket-punches, &c., but not for printing tickets, for which our invention is solely intended.

The operation of the whole is as follows: When a passenger pays a cash fare the conductor turns the outside wheels $j j' j''$, or draws the slides, as shown in Fig. 5, until the right amount paid appears through the opening in the case G , (the wheels turn either way,) which, at the same time, will bring the same numbers (both above and below) on the printing-wheels $h h' h''$, the lower portion or half of the wheels $j j' j''$ being provided with ratchet-teeth, in which springs or stops $v v v$ fit, to prevent their being too easily turned or accidentally displaced. The operator or conductor then inserts a cash-fare ticket in the slit g' , which pushes the lock-bar H back until it is thrown from the stop u , when the lever C may be forced downward by the pressure of the hand, which brings a rubber cushion, attached to the under side of the lever, down upon the paper strip, and then upon the inking-ribbon and numbering-wheels, when the number will be printed by this means upon the paper strip. The same pressure upon the lever forces the wheels $h h' h''$ down until they come in contact with the ticket, when the same number will be printed simultaneously upon the ticket by means of the interposed inking-ribbon. This ticket is then withdrawn

and given to the passenger as a receipt for his fare, and is taken up and punched afterward, if desired, by the conductor. The lever C , being fastened to, and forming part of, the shell A , will, of course, cause the shell to rise and fall with it, and open and close at the point w , and thus cause the pawl n to act upon the ink-ribbon drum, as before explained. This rising and falling of the shell will also cause the bell E to be sounded by tripping the hammer c by the pawl or trip b , but not until after the printing is done. The printing mechanism may also be operated by pushing down the lever or hood F until it strikes the arm D , which will then be carried down with it, and, consequently, raise the shell upward, and thus cause the printing to be done in the same manner as before.

Figs. 5 and 6 show an arrangement for operating the inside numbering-wheels to take the place of the outside wheels, if desired. It consists of pinions $t t' t''$, attached to each of the wheels $h h' h''$, and provided with racks $y y' y''$, which are connected to strips or slides $w w' w''$ outside the case, as shown. These slides will be marked or stamped with figures to correspond with those on the inside printing-wheels, so that whatever figures show on the printing-wheels at the top and bottom, as before explained, will also appear on the strips, so that the person using the recorder may know and set what amount is to be printed. Ratchet-teeth and springs will be provided for the slides w , to hold them tightly enough to prevent their being moved, except when the pins $x x$ are pushed along, which operate the slides. This is a very simple and convenient method, and in most cases will be used instead of the wheels $j j' j''$. The racks $y y' y''$ and slides w may be made in the form of segments, as shown in Fig. 7, if desired, to occupy less room and not interfere with the ribbons and drums.

When the conductor simply desires to punch a ticket, it is placed in the slit g at that end of the device, and the lever F pushed down until it strikes the arm D , which is locked in place by the locking-bar H , and thus the bell is prevented from being sounded, except when a ticket is printed.

It is not important or desired that an alarm should be given when a ticket is merely punched.

By these simple arrangements a printed record is kept in the device of the amount of cash received from each and every passenger by the conductor, and, also, a receipt given to every passenger for the fare paid, and with the amount printed thereon. It may also be used, with slight variations, as a cash-recorder in business-houses, restaurants, steamboats, &c., as a check upon dishonest employés.

Extra numbering-wheels may be added to indicate days, months, years, &c., if desired. Their operation will be precisely the same as the others.

The inking-ribbon may be endless, and op-

erated by rubber friction - rollers, if desired, to keep up the necessary supply of ink.

One side of the printing part of the shell A is made removable, in order to see, at the end of a trip, or when the conductor hands in his account, exactly how much cash is registered on the paper slip. This strip is taken out, and as the figures are all printed under each other, they are easily added up; and the result is the total in cash fares for which the conductor is responsible. At each trip a new slip will be put in. This removable part is sealed at *zz*, so as to prevent tampering with the interior.

We do not claim as new anything in the punching device or the bell-alarm, only their combination with the printing-wheels, &c., in one apparatus. The punch and printing devices are entirely independent of each other. Neither do we claim, broadly, the locking-bar H, but only its application and use in combination with the printing devices, but not for the punch or alarm part, with which it has no connection.

This is not an "alarm-punch," as the bell is not, and cannot be, rung when the punch is used, and can only be sounded after a ticket is printed, which indicates that it is registered on the slip inside the case, and that a fraudulent ticket is not issued.

We claim—

1. The case A, provided with the slit *g*, in combination with lever C and spring-lock H I, all arranged and operating substantially as and for the purpose specified.

2. The combination, in this device, of drums K K' and drums *p p'*, and printing-wheels *h h'*, which operate in connection with a registering paper strip and inking-ribbon, substantially as hereinbefore specified.

3. The combination of the duplicate number-

wheels *h h' h''* and *j j' j''*—one series arranged inside, and the other outside, the case A—each corresponding wheel working on the same shaft or sleeve, whereby, by setting the outside series of wheels, the inside ones are correspondingly moved, so as to be in position to print, as hereinbefore fully explained.

4. The combination of the printing-wheels, having duplex numbers arranged on their periphery, so that the opposite numbers shall correspond, and outside setting wheels or slides, whereby the inside wheels may be set as desired, with the paper-strip-feeding mechanism, all as shown and described.

5. The combination of the ticket-fare-printing mechanism, the paper-strip-registering mechanism, and alarm-bell mechanism, all substantially as and for the purpose specified.

6. The combination, with the outside setting-wheels *j j' j''* and frame G, of the spring-stops *v v v*, as and for the purpose specified.

7. The spring-hanger J, in combination with the wheel-shaft *i* and center plate I, provided with slot *q*, for the purpose of returning the wheels to their original position after being operated, all arranged and operating substantially as hereinbefore specified.

8. In this device, the combination of the pinions *t t' t''*, attached to, or forming part of, the printing-wheels *h h' h''*, the racks *y y' y''*, and the indexed slides *w w' w''*, all arranged and operating as hereinbefore explained.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

GEO. J. HILL.
AUGUSTUS RUGER.

Witnesses:

T. H. PARSONS,
J. R. DRAKE.