(Model.) 2 Sheets—Sheet 1.

C. KORFHAGE.

FARE REGISTER.

No. 301,728. Patented July 8, 1884.

Fig. 3

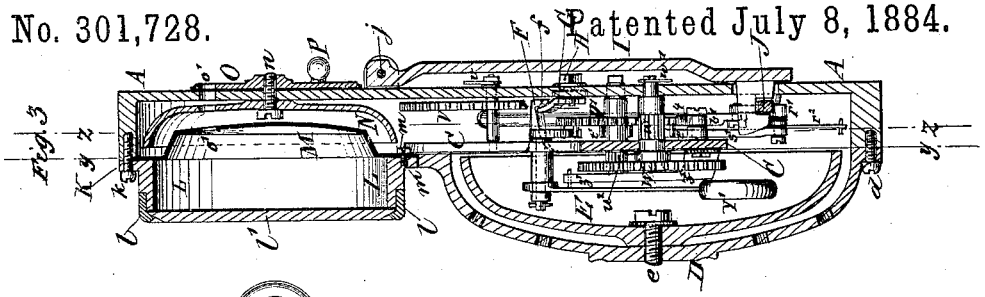


Fig. 2

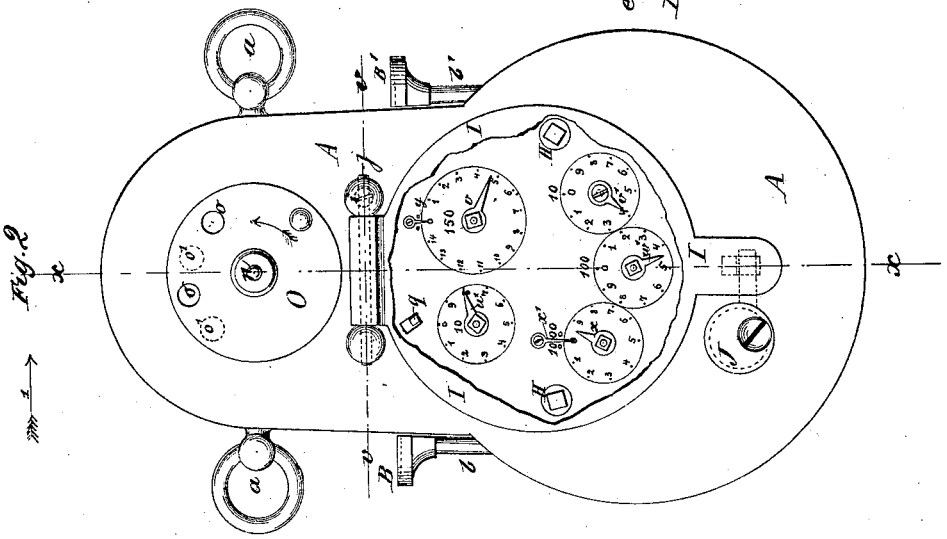
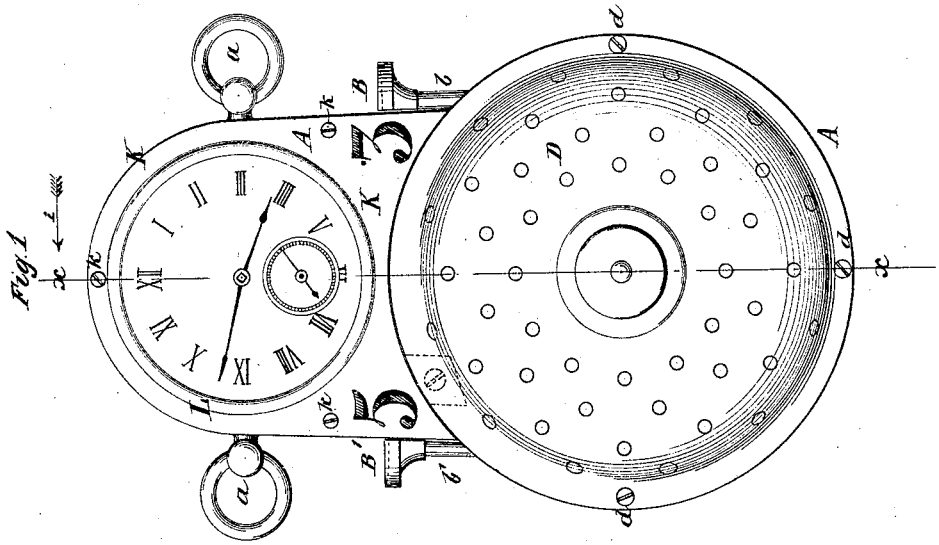


Fig. 1



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(Model.) 2 Sheets—Sheet 2.

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Fig. 6

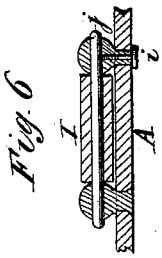


Fig. 5

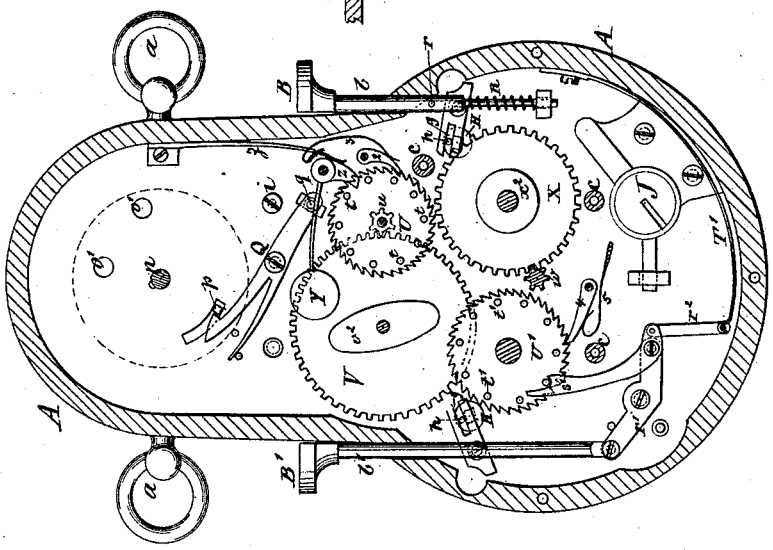
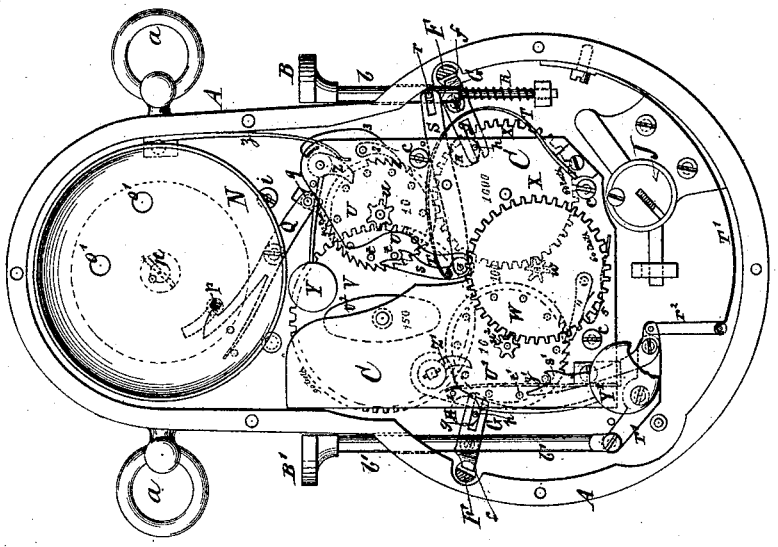


Fig. 4



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UNITED STATES PATENT OFFICE.

CHARLES KORFHAGE, OF BROOKLYN, NEW YORK, ASSIGNOR TO WILLIAM J. RICHARDSON, OF SAME PLACE.

FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 301,728, dated July 8, 1884.

Application filed September 21, 1881. (Model.)

To all whom it may concern:

Be it known that I, CHARLES KORFHAGE, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Fare-Registers, of which the following is a specification.

My invention has for its object to provide an improved portable register for indicating the number of fares received during one day from the passengers by the conductor of a railroad-car, who, on the receipt of each fare, has to press a knob, which sounds a bell and indicates a unit on the index-wheel.

The invention consists in the construction and combination of the various parts, as hereinafter described and claimed, whereby, in sounding gongs of different sound for half and full fares, the respective unit-indices will invariably have completed the movement of the space of one unit on their respective dials for each stroke of the bell or gong, so that no indication can occur without sounding the gong, and no sound of the latter without corresponding indication, and whereby the gearing and dials are rendered invisible and inaccessible to the conductor, and suitable devices are provided to receive and retain compactly within the register-casing a watch or time-piece, and to protect the winding and setting of the same from improper interference, while allowing of removing and replacing the watch-receptacle independently of all parts of the register.

In the accompanying two sheets of drawings, Figure 1 represents an outside front view of my improved car-register. Fig. 2 is a side view of the same, the hinged and locked cover being partly broken away to show the dial and the button-studs for securing the front cover to the casing. Fig. 3 is a vertical central section taken on the line *x x* of Figs. 1 and 2, and seen in the direction of the arrows 1 in Figs. 1, 2, 4, and 5. Fig. 4 is a front view seen from the line *y y* of Fig. 3, the front covers of the watch-receptacle and register-gearing being removed. Fig. 5 is a front view of the same when seen from the section-line *z z* of Fig. 3, the half-fares gong-bell and the feed-pawl and lever of the half-fares unit-wheel being removed. Fig. 6 is a detail section through the line *v v* of Fig. 2 of the hinge of the dial-cover.

Like letters of reference indicate like parts in the several figures.

A designates the main casing, formed of cast metal, preferably in the shape and proportions shown in the drawings, and provided with side lugs or rings, *a*, for attaching a chain, by which, when in use, it is suspended from the neck and shoulders of the car-conductor. The lower portion of the hollow casting A is wider than the upper portion, as shown, and contains the gearing and gong-sounding machinery, the latter being operated by means of two knobs, B and B′, attached to rods *b b′*, which project upward from the enlarged portion of the casing, one on each side of the smaller portion, as shown in the drawings. The movable parts are pivoted to and between the closed back of the casing A, and a front plate, C, fastened at proper distance from the said back by screws to studs *c*, which latter are formed on or attached to the back of the casing A.

The lower and main portion of the casing A is covered in front by a flanged perforated convex plate, D, within which is fastened, by one central screw, *e*, the larger gong-bell, E, the sounding of which announces the registration of five-cent or full fares. The perforations in the cover D are made to allow free propagation of the sound of the gong-bells. The cover D is fastened to the casing A from the outside by the screws *d;* but, in order to prevent its being detached by the conductor, it has, in addition to the said screws *d*, two laterally-opposite studs, F, which are formed on or attached to the said cover D, and project inside to the back of the casing A. These studs F have toes *f* formed on their inner ends, and a button, G, pivoted to the inside of the back of the casing A, is made to engage with each toe *f*, and thus lock the cover D tightly to the front of the casing A. One end of each button G has a slot, *g*, in which engages a small pin, *h*, fastened eccentrically upon the inner end of a stud or larger pin, H, which latter is fitted to turn in the back of the casing A, and

projects outside of the latter, the outer end being provided with a flattened or square portion, as seen in Figs. 2 and 3, adapted to be grasped and turned with a small wrench or pair of pliers. The stud and pin H *h* thus form a crank, by turning which about one-fourth to one-half of one revolution the button G may be oscillated upon its pivot to engage with or discharge from the toe *f*, and thereby respectively fasten or unfasten the cover D. The square ends of the studs H, as well as the indices of the register and other parts desired to be protected against tampering, are concealed by a cover, I, hinged between lugs on the outside of the back of the casing A, said cover being secured by a lock, J, (preferably a "Yale" lock,) in the casing A, the key to which lock should be kept in the railroad-office.

To prevent detaching the cover I by removing its hinge-pin *j*, the latter is secured by a screw, *i*, entering it from the inside of the casing A through one of the hinge-lugs, as shown in Fig. 6.

The whole upper portion of the front of the casing A, above the cover D, is covered by one plate, K, fastened by screws *k*, on which plate are marked in large figures the numbers 3 and 5 adjacent to the knobs B and B′, respectively, the said numbers serving to indicate to the conductor which knob to press when registering a three-cent or half fare, or a five-cent or full fare, respectively. The plate K has a cylindrical central opening surrounded by a ring-flange, L, between which and a bezel, *l*, are held the edges of a watch-crystal or glass plate, *l′*, covering the front of said opening. The space within the ring-flange L is intended to receive a watch, which is then inclosed, from the back, by a suitably-shaped plate, M, secured by screws *m* to the back or inner side of the plate K. The ring L, glass plate *l′*, and back plate, M, thus form together a chamber in the plate K, in which chamber a watch, when inserted, is permanently inclosed and protected apart from the register-gearing and casing A, and will be removed from the latter without disturbing the lower front cover, D, or any other part of the casing, or of the register mechanism by the unfastening of the plate K.

In the casing A, centrally behind the plate M, is arranged the smaller gong-bell, N, which is sounded to announce the registration of three-cent or half fares. The bell N is fastened in place by a screw, *n*, going through the back of the casing, and upon the outer end of the screw *n* is pivoted a circular disk, O, having a small knob or thumb-piece, P, by which it may be turned. Holes *o′* are bored simultaneously through the casing A, the bell N, and plate M in two places suitable to gain access to the winding and setting arbors of the watch, and these two holes are covered by the disk O, except when the latter is so turned that the two holes *o* made through it come directly opposite to the holes *o′*. Access to unfasten the disk O, in order to turn it into the said position, can be had only after first unlocking the hinged cover I, when the little pin *q* (see Figs. 2, 4, and 5) is pressed outward in its slot, while the disk O is turned by the knob P. This is effected in the following manner: The disk O has a little stop-pin, *p*, projecting inward through a slot in the casing, and held in the locked position by the hooked end of a spring-catch lever, Q, pivoted to the casing A, as shown in Figs. 4 and 5. The aforesaid pin *q* is fastened to the free end of the lever Q, so that when the said pin is pushed outward, as before said, the oscillation of the lever Q effected thereby will cause the catch to withdraw from the stop-pin *p* and allow of turning the disk O the proper distance, limited by the length of the slot in which the said stop-pin is working. To again lock the disk O it is only necessary to turn it in the opposite direction until the stop-pin *p* has sprung the lever Q back far enough for the said pin to pass over and again engage with the catch.

I will now describe how the fares are registered by depressing the knobs B B′, commencing with the three-cent or so-called "half" fares.

The inner end of the rod *b* is reduced in size, forming a shoulder at the upper end of the reduced portion, between which shoulder and a guide-lug (through which latter the lower end of the reduced shank slides) a spiral spring, R, surrounding the said shank, expands and raises the rod *b* to its normal position when the pressure is removed from the knob B. A small pin, *r*, upon the rod *b* engages in the slotted outer end of a pivoted lever, S, to whose inner end is pivoted a pawl, *s*, having a grooved working-surface at one side a little distance below its upper end, as shown in Fig. 4, with which working-surface it engages a pin, *t*, on the side of the ratchet-wheel U. A spring, T, attached with one end to the plate C and with the other end to a pin on the pawl *s*, a little above its pivot, keeps the pawl bearing against the pin *t* on the wheel U, the long toe-like projection of the pawl *s* above its grooved working-surface striking the next pin *t* as the pawl recedes from contact with the previous one, and thus preventing the pawl from slipping off the said next pin, and always insuring the proper working contact between the pawl and pin. The pins *t* are ten and the ratchet-teeth forty in number, thus making the ratchet-pawl 2, which is kept in working contact by the spring 3, pass four teeth, while the feed-pawl *s*, raised by the pressure on the knob B, pushes the wheel around through the space of one pin *t*.

On the arbor of the wheel U is a pinion, *u*, of six teeth, which meshes with a wheel, V, of ninety teeth, thus making the wheel U count up to ten and the wheel V to one hundred and fifty fares. On the outer ends of the arbors U V are indices *u′ v*, which, as they turn around,

point to figures on dials marked upon the outside of the casing A. The index w' is held by friction upon its arbor, and the index v is fast; but the wheel V is loose upon the arbor of the index v, and turns the said arbor by friction against a spring-plate, v^2, which is fast upon the arbor and presses upon the wheel. This construction allows of turning the indices back to zero after a day's work without turning the wheels with them.

Y is the bell-hammer whose pivoted shank-hub is provided with an arm or toe, Z, pressed by a spring, z, which keeps it in the normal position shown in Fig. 4, the hammer-shank bearing against a stop fastened to the plate C. The toe Z projects in between the pins t, and as the wheel U turns around through the space of one pin (or four teeth on the ratchet) the said pin strikes the toe Z, turning it on its pivot against the action of the spring z, and moving the hammer Y away from the bell N until, on the pawl Z engaging the fourth and last tooth of the throw, (the index on the wheel U having moved forward on the dial through a space corresponding to one fare,) the toe Z passed by the pin which temporarily engages it is left free to yield to the pressure of the spring z, and the hammer Y makes one stroke against the bell N.

As the number of fares received one day on any one car is never likely to exceed one hundred and fifty half-fares and one thousand full fares, the registers are constructed to count up only as high as to the said numbers.

The mechanism for registering the five-cent fares is very similar to that for registering the three-cent fares.

The rod b' of the knob B' is connected with its lower end to one end of a pivoted lever, r', to the other end of which lever is pivoted the feed-pawl s', working in the pins t' of the ratchet-wheel U', exactly similar to the wheel U, the pawl s' and its action being also similar to the pawl s, with the exception that it is an elbow-lever pivoted at its elbow, and has a link, r^2, pendent from its shorter arm, which link has a pin attached to its lower end; and upon said pin rests the free end of a spring, T', fastened to the casing A, which spring by its tension keeps the feed-pawl s' in working contact with the pins t', and also causes the rod b' to rise and resume its normal position when the pressure is removed from the knob B'. The hammer Y' has an arm or toe, Z', upon the pivoted hub to which its shank is attached, and its stroke upon the bell E is produced in exactly the same manner as that of the hammer Y on the bell N, the spring z' (attached to the plate C) acting with its free end against the small pin 1 on the hammer-shank, and impelling the hammer Y' against the bell E, when the toe Z' is released from contact with the temporarily engaging pin t'. The ratchet-pawl 4 is held to its work by the spring 5.

On the arbor of the wheel U' is a pinion, u^2, of six teeth, which gears into the wheel W of sixty teeth, and on the arbor of the latter is a pinion, w, of six teeth, which gears into the wheel X, which latter has sixty teeth. Thus the indices v', w', and x, attached to the outer ends of the arbors of the wheels V', W, and X, respectively, will indicate on their respective dials in the proper proportion of 1, 10, 100; and when the index x has completed one turn on its dial and got back to zero the highest number, 1000, has then been reached. The index x is fast upon its arbor, and the motion is communicated by friction merely between the loose turning-wheel X and the friction disk or plate x^2, which latter is fast on the arbor. The other indices, v' and w', are held by friction merely upon their arbors, and thus all indices can be turned back to zero by hand without moving the wheels with them. When the highest number on the dials has been reached by the respective indices v and x, the latter are stopped on zero by little index-shaped stops y and x', which are pivoted to the back of the casing A, and are oscillable slightly between two little pins attached to the casing A, one on each side of each index-stop, to limit such movement, as shown in Fig. 2. The object of the said pins is to allow the stop-index to be moved just far enough on either side of the zero-line to enable the person who takes the index at the end of each day to turn the pointer (v or x) back exactly upon the zero-line, and to allow the pointer, after traversing the whole dial, to fully reach the zero-line from the other side of the stop-index before being stopped by the latter striking the opposite side pin.

If desired to expose the dials to view, the back cover, I, may be provided with an opening having a glass pane inserted from the inside. If desired to count up higher figures than shown on the dial, more wheels may be added for that purpose.

I am aware that pivoted stops have heretofore been used to limit the movement of dial-wheels; but such stops have been situated inside of a casing, and are not in plain view and adapted to be operated by direct contact of the indexes, as in my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a portable fare-register, the combination of the reciprocating push-rod b, carrying the pin r, with the lever S, having a forked end to engage with said pin r, the pawl s, the spring T, exerting its pressure both upon the pawl s and lever S, the ratchet-wheel U, provided with the pins t, and carrying the index w', and the spring bell-hammer Y, provided with an arm, Z, for engaging with the pins t, substantially as and for the purpose specified.

2. In a fare-register, the combination of the pressure-rod b', the pivoted lever r', the elbow-lever feed-pawl s', working in the teeth or pins t' on the disk of the ratchet-wheel U', and piv-

oted to the lever r', the link r^2, attached to the short arm of the elbow-lever r', and the spring T', all constructed and arranged substantially as specified.

3. In a portable fare-register, a casing carrying the registering and gong mechanism and provided with a glass-faced recess or chamber for receiving a watch, in combination with the perforations o', the perforated pivoted disk O, carrying the pin p, and the spring-catch Q, as and for the purpose specified.

4. In a fare-register, the front cover, D, provided with the studs F, and shoulders f upon the said studs, in combination with the buttons G and their operating devices H, the accessible ends of the latter being concealed by the hinged locking-cover I, substantially as specified.

5. In a fare-register, the combination of the glass-covered watch-receptacle formed of the ring L and back plate, M, the latter having holes o' for access to set and wind the watch, with the casing A and pivoted locking-disk O, having corresponding holes, o', and with the spring catch-lever Q, acting against a pin, p, going through a slot in the casing from the outside of the said disk, said lever Q having pin q projecting through a similar slot in the casing A, and concealed by the hinged locking-cover I, substantially as and for the purpose set forth.

6. In a fare-register, the combination, with the casing A, provided with the lower front cover, D, of a separately-detachable plate, K, covering the upper front portion of the casing A, and having a glass-covered watch-receptacle, M, substantially as shown, whereby the said receptacle and watch-works contained therein may be removed and replaced independently of all parts of the fare-register and its casing.

7. In a fare-register, the combination of the casing A, having hinge-lugs, the dial-lock cover I, having hinge-pin j entering holes in said lugs, and the screw i, entering the surface of the said pin j from the inside of the casing A, as and for the purpose set forth.

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