(No Model.) 4 Sheets—Sheet 1.

S. D. LAKE & J. D. HAINES.

REGISTER FOR FARES.

No. 345,151. Patented July 6, 1886.

Fig. 1.

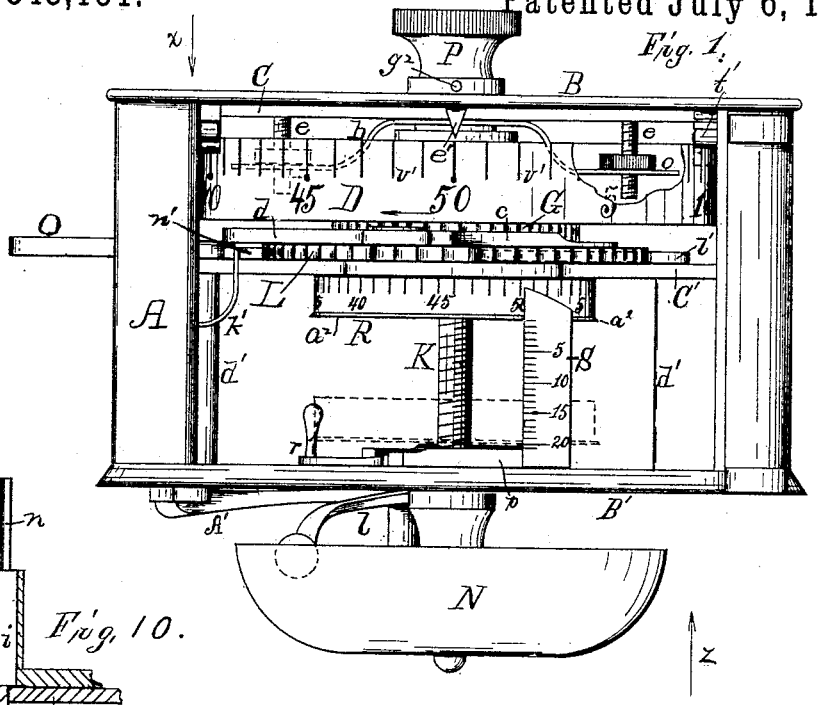

Fig. 10.

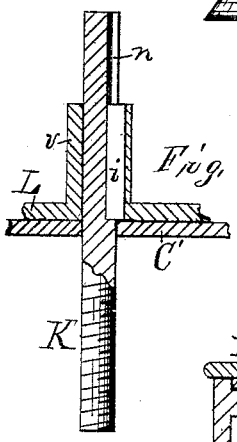

Fig. 2.

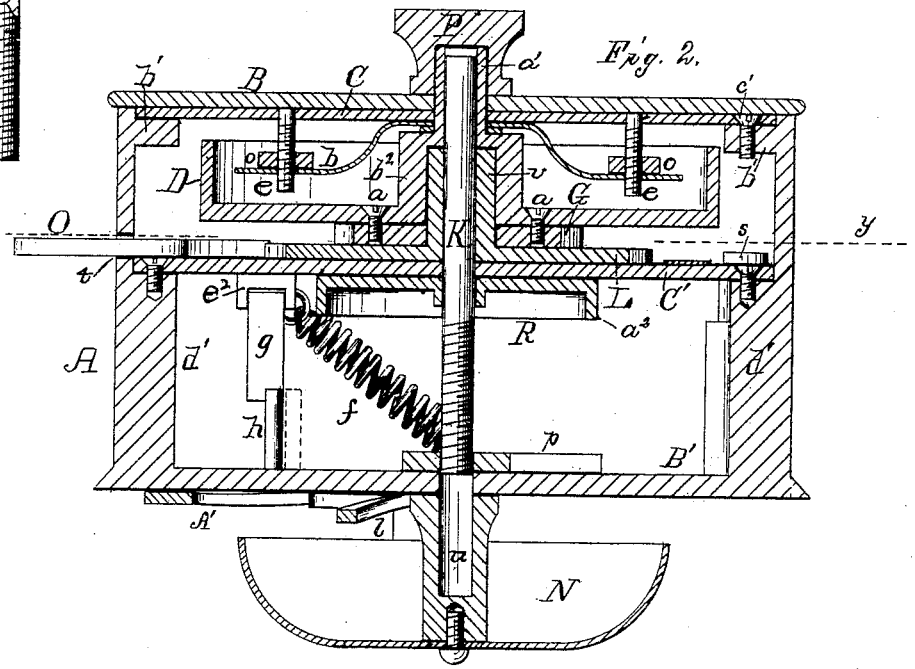

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Fig. 3.

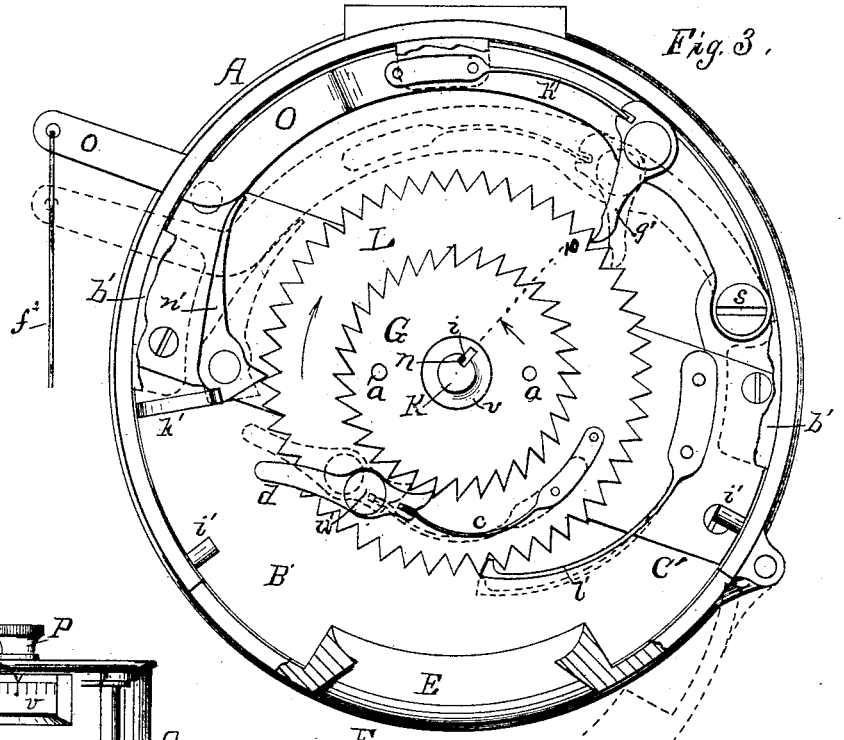


Fig. 7.

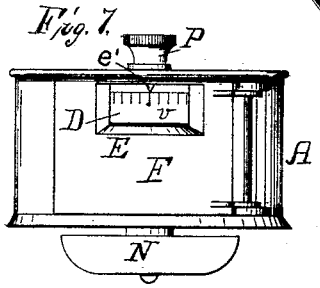
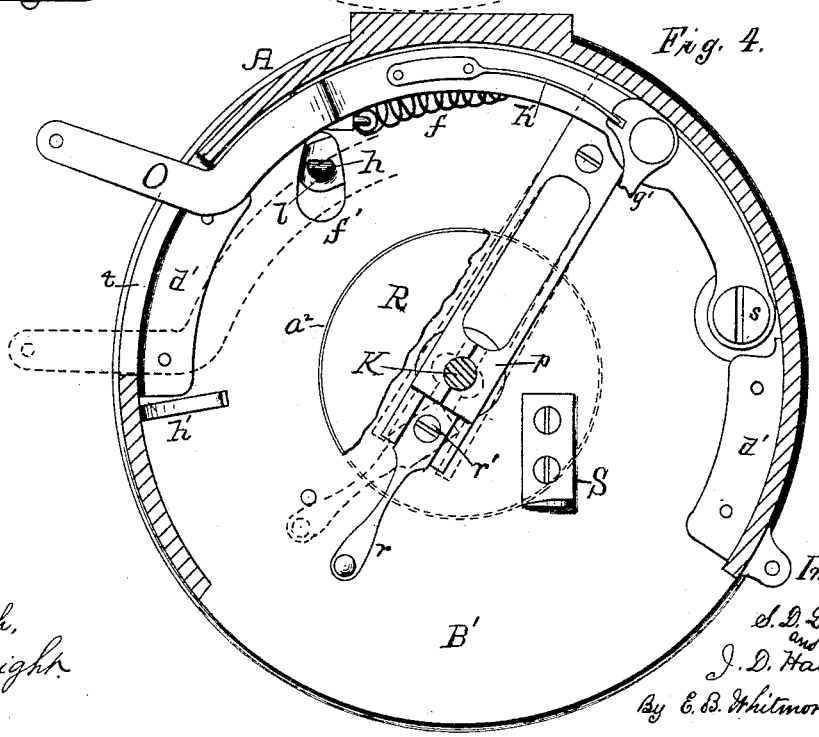


Fig. 4.



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S. D. LAKE & J. D. HAINES.

REGISTER FOR FARES.

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Fig. 5.

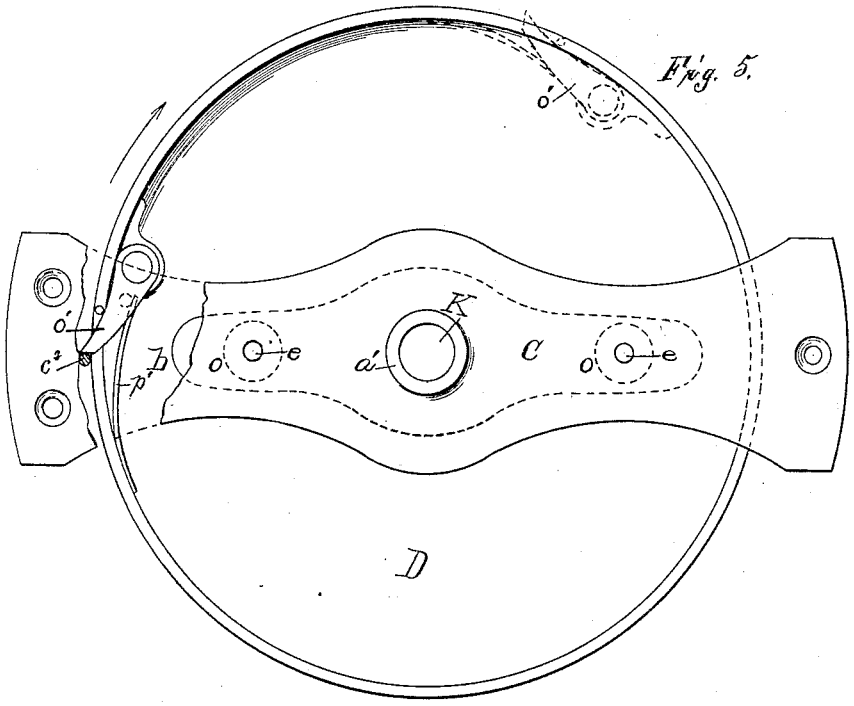
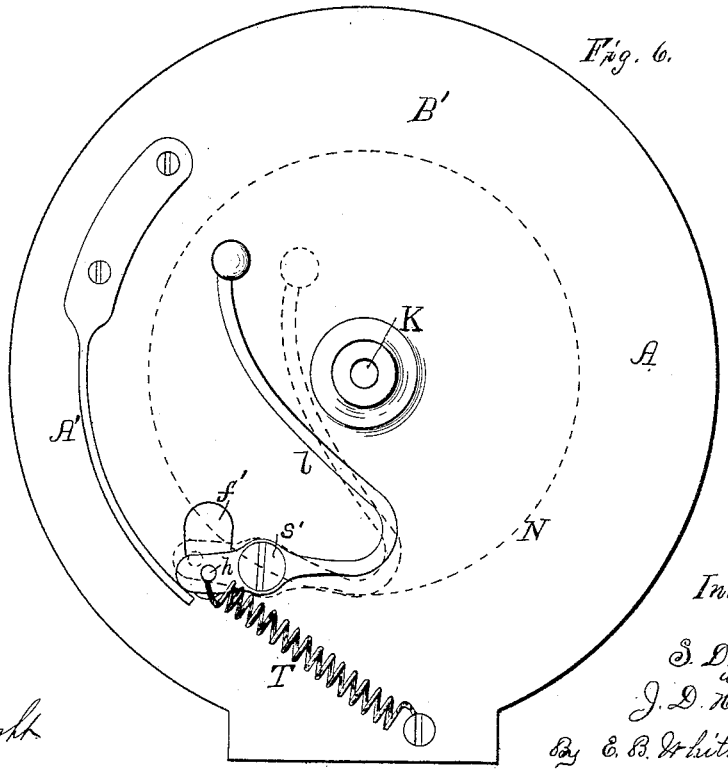


Fig. 6.



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S. D. LAKE & J. D. HAINES.

REGISTER FOR FARES.

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Fig. 8.

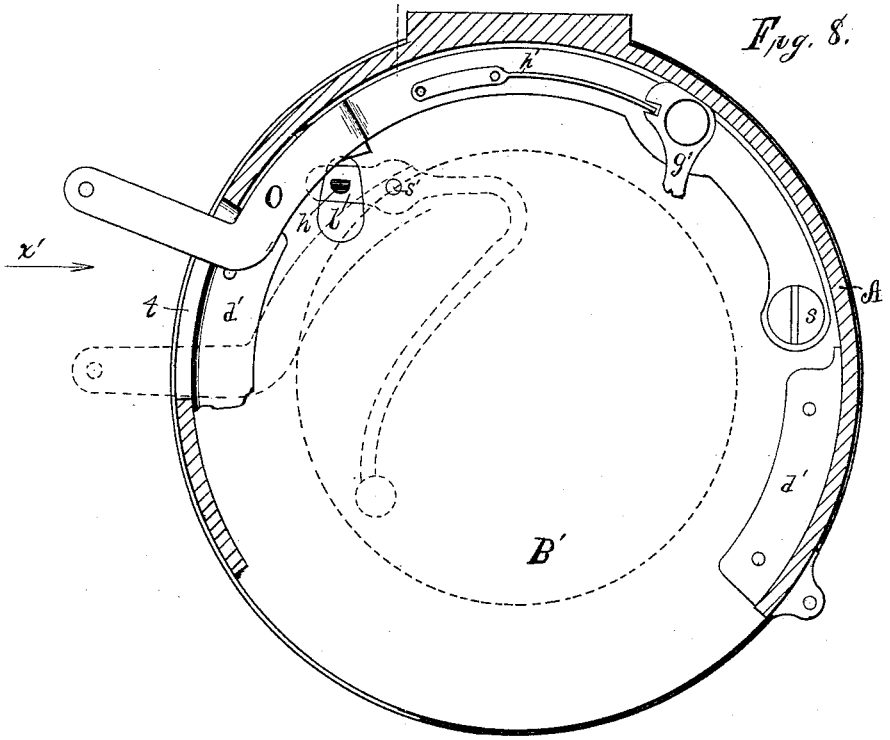
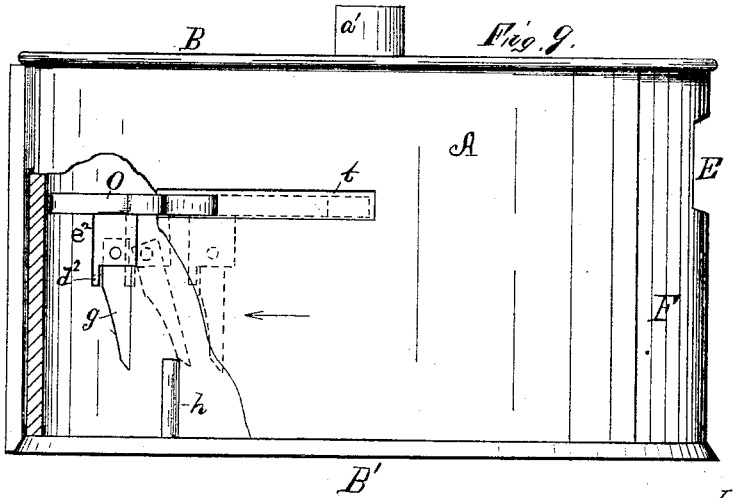


Fig. 9.



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UNITED STATES PATENT OFFICE.

STEPHEN D. LAKE, OF ROCHESTER, AND JOHN D. HAINES, OF SANDY HILL, NEW YORK.

REGISTER FOR FARES.

SPECIFICATION forming part of Letters Patent No. 345,151, dated July 6, 1886.

Application filed February 4, 1886. Serial No. 190,760. (No model.)

To all whom it may concern:

Be it known that we, STEPHEN D. LAKE, of Rochester, Monroe county, New York, and JOHN D. HAINES, of Sandy Hill, in the county of Washington and State of New York, have invented a new and useful Improvement in Passenger-Registers, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

The object of our invention is to produce an improved passenger-registering device by means of which a large number of consecutive registrations may be made by simple means and within a small compass without altering or resetting any parts of the same, except as to the primary registering-wheel, the invention being hereinbelow fully described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a front view of our registering device with the door of the case or inclosure removed to uncover the working parts within, a part of the primary registering-wheel being broken away to show one of the tension-spring regulators, the registering-disk being shown in two positions, or at the top and bottom of the vertical scale, in full and dotted lines; Fig. 2, a vertical central section, viewed from the same direction in which Fig. 1 is seen, drawn to show more fully the arrangement of the parts; Fig. 3, a plan of the parts seen when the cover of the case and primary registering-wheel are removed, excepting that the smaller ratchet, which is rigid with said registering-wheel, is shown as remaining with the other parts, parts being broken away and other parts shown in two positions by full and dotted lines, and a part of the door of the case being horizontally sectioned, the device being seen in the direction indicated by arrow *x* in Fig. 1; Fig. 4, a plan of the parts seen after removing the intermediate cross-bar of the frame or case and the parts thereabove, excepting the pawl-lever, the case being horizontally sectioned as upon the dotted line *y* in Fig. 2, the figure showing more particularly the divided spring-nut at the bottom of the case, the vertical scale, and the relative position of the secondary registering-wheel and said scale, parts being shown in two positions by full and dotted lines. Fig. 5 shows a plan of the primary registering-wheel with the upper cross bar of the frame, a part of the latter being broken away to uncover the stop-pawl of said wheel, the latter being shown in two positions by full and dotted lines; Fig. 6, a view of the case seen as indicated by arrow *z* in Fig. 1, drawn to show more clearly the hammer for the bell and parts connected therewith, the bell being represented by a dotted circle, and other parts represented in two positions by full and dotted lines; Fig. 7, a front elevation of the case, drawn to a much smaller scale, showing the opening through the door through which the primary registering-wheel is read; Fig. 8, a view of parts of the device similar to that shown in Fig. 4, drawn to more fully show the relative positions and movements of the pawl-lever and hammer; Fig. 9, a side elevation of case, viewed as indicated by arrow *x'* in Fig. 8, drawn to more clearly show the manner in which the pawl or actuating lever rings the gong, parts being shown in two positions by full and dotted lines, the case being sectioned in part and broken away; and Fig. 10, a central longitudinal section of a portion of the screw-shaft, the ratchet placed thereon, and the frame, the figure being drawn to more fully show the spline in the hub of the ratchet and the race in the screw-shaft for the spline, the parts being sectioned as on the dotted line 10 in Fig. 3, and viewed as indicated by the arrow pointed thereon.

Referring to the parts, A is the case or inclosure containing most of the working parts of the device; B, the cover thereof, and C and C' two parallel bars reaching diametrically across within the case at right angles to the axis of the latter, said bars forming a part of the frame-work supporting the interior parts of the device.

D is the primary registering-wheel, from which registrations of a low number are read through the opening E of the door F.

G is a ratchet secured rigidly to the under surface of the primary wheel D by simple means, as with clamping-screws *a*.

L is a ratchet of larger diameter beneath the ratchet G, and resting upon the bar C' of the frame.

O is a pawl-lever, pivoted at *s* to an inward projection of the case, so as to swing in a plane parallel with the base of the case, being pro-

vided with a pawl, g', to engage the teeth of the ratchet L. All the working parts of the device are operated by the lever O by means of said pawl g' turning the ratchet L as said lever is moved backward and forward upon its pivot.

K is a vertical threaded spindle or shaft occupying the axis of the case, around and with which all of the rotating parts of the device turn.

R is a secondary disk secured rigidly to the screw-shaft K.

p is a divided screw-nut for the threaded shaft K, secured against the inner surface of the bottom plate, B′, of the case, and when the screw-shaft is turned upon its axis by means of the actuating-lever O it will be carried downward through the nut.

The ratchet L is formed with a long hub or sleeve, v, which is provided with a longitudinal spline, i, Figs. 3 and 10, and the screw-shaft K is formed with a longitudinal race, n, in which to receive said spline, by means of which construction the shaft is permitted to slide longitudinally through the ratchet, but caused to turn at all times with the latter. As the screw-shaft is slowly turned by the operation of the actuating-lever O, it is carried downward through the nut p, there being a space, u, below its lower end in the stem of the bell, in which to receive it. The disk R, being rigid with the shaft, moves with the latter downward along the scale S, secured to the plate B′ of the case.

r is a lever held to turn upon a pivot, r', entering the plate B′ of the case, the head of said lever being inserted between the branches of the divided nut p in such manner that when the lever is turned upon its pivot, as indicated in dotted lines in Fig. 4, the divided nut will be opened to release the screw-shaft, so that the latter may be moved vertically in its bearings, for the purpose of bringing the disk R to any position required with reference to the scale S.

g is an arm pending from the lever O, it being pivoted at its upper end to a downward-projecting part, e^2, of said lever, so that it may swing in a vertical plane toward the observer, as seen in Fig. 2, but is prevented from swinging in the opposite direction farther than to a vertical position.

h is a stud secured rigidly to the end of the hammer l, in front of the arm g, so that when the lever O is drawn forward said stud will be encountered by the arm g, causing the hammer to be pressed back to the position shown by dotted lines in Fig. 6, ready to deliver a stroke upon the bell. The hammer is pivoted to the plate B′ at s', and the lever O is pivoted at s distant from the point s', on account of which the motions of said hammer and lever are eccentric, causing the pin h to trip or slide sidewise off the arm g, as the latter is moved forward by means of the lever O in the act of registering the entrance of a passenger. After the hammer is carried back from the bell and released, as above described, it is drawn forward to strike the bell by a spiral spring, T, attached thereto and to the plate B′ of the case. After the lever O has been drawn forward by the attendant to register the entrance of a passenger and released, it is returned to its normal position by a spiral spring, f, secured thereto and to the case or frame of the device. When the lever O moves back to its normal position, the pendent swinging arm g swings over or past the pin h, as indicated in Fig. 9, into position to again carry said pin forward at the next advance movement of the lever O. The arm g is prevented from swinging back farther than to a vertical position by means of a stop, d^2, back of it.

The actuating-lever O is preferably curved to correspond substantially with the interior of the case, having its free end turned abruptly out of the case through a horizontal slot, t. At the outer end of the arm there is attached a cord or wire, f^2, by means of which said lever is pulled forward by the person making the registrations. There are as many peripheral teeth formed in the ratchet L as there are division-marks V′ upon the periphery of the primary registering-wheel D, so that a new mark is brought accurately under the pointer e' every time the actuating-lever is pulled forward by the attendant, the pawl g' covering but one tooth of the ratchet at each movement of said lever. A spring, k', bearing against said pawl, as shown, holds the pawl against the teeth of the ratchet. The pointer e' is stationary, being secured to the inner surface of the cover B of the case near the periphery of the wheel D, said cover being secured to the case by means of downwardly-projecting hooks formed in position to catch under studs t', projecting inwardly from the wall of the case.

The smaller ratchet, G, which is rigid with the wheel D, rests upon the ratchet L, and a pawl, d, pivoted at w' to said ratchet L, is held in position to engage the teeth of the ratchet G by a spring, c, also secured to the ratchet L. The ratchet L is formed with a long sleeve or hub, v, through which the screw-shaft K passes. The ratchet G and hub b^2 of the wheel D are fitted to the exterior of said hub v, and the spring b exerts a pressure downward upon the hub b^2, so as to cause a friction between the ratchets G and L, which causes said former ratchet and wheel D to turn with the ratchet L as the latter is urged around by the lever O, as above described. The pawl d bears against the teeth of the ratchet G in such a manner as to prevent the wheel D from turning in the direction in which the ratchet L moves, excepting as said latter ratchet moves, the said ratchet and wheel D turning together. The pawl d thus prevents the wheel D from moving forward to register more passengers than would correspond with the movements of the lever O. The wheel D may, however, be turned in the opposite direction independ-

ent of the ratchet L, which has to be frequently done to bring the zero-mark of the wheel to the pointer e', for the purpose of beginning a new count of passengers. Said wheel is provided with a sleeve, a', formed to fit the shaft K, and made to pierce the bar C and cover B, to receive a milled knob or handle, P, outside the case, to which knob it is rigidly secured by some simple means, as with a pin or screw, g^2. By seizing this knob the wheel D may be at any time brought back to zero by the attendant, when it is wished to commence a new count.

The tension of the spring b, or the pressure that it exerts upon the wheel D, is regulated by means of screw-studs e, each provided with a milled screw-nut, o, bearing upon the spring, said studs e being secured rigid with the cross-bar C.

l' is a tension spring or detent secured to the cross-bar C', formed with a point to engage the teeth of the ratchet L, which serves by means of the ratchet G to hold the wheel D steady and keep a division-mark thereof exactly under the pointer e'.

n' is a detent, also, for the ratchet L, the point of which is held against the teeth by a spring, k', secured to the inner surface of the case. This detent is formed with an extended part bearing against the lever O, so that when the latter is drawn forward to turn the ratchet L the point of said detent is drawn out of the notch of said ratchet. This detent is in position to prevent the ratchet L from being turned in the direction indicated by the arrow, excepting when the lever O is brought forward for that purpose. The pawl g' is made a little short, so that it does not bear against the tooth of the ratchet L, nor commence to carry said ratchet around, until the lever O has moved sufficiently far to lift the point of the detent n' out of the teeth of said ratchet, as above described.

The detents l' and n' prevent the ratchet L from being turned in either direction by the jarring of the car or vehicle to which the registering device may be attached, which uncertain movements of the ratchet resulting from jarring might at times lead to erroneous indications of the number of passengers registered.

The shaft K is fitted to slide longitudinally through the ratchet L and the sleeve a', said shaft also piercing the lower cross-bar, C', and the secondary registering-wheel R, secured to the shaft, is formed with an edge, a^2, for the purpose of more exactly defining its position with reference to the marks of the scale S in its vertical movements.

The lead of the thread upon the shaft K corresponds exactly with the spaces formed by the division-marks upon the scale, so that one rotation of said shaft moves the wheel R downward from one line of the scale to the next, according to which construction each space upon the scale represents all the spaces upon the primary registering-wheel. The division-marks upon the secondary registering-wheel are made to correspond in number with those on the primary wheel, so that every registration upon the latter is also made upon the secondary wheel, which latter, however, continues its motion always in one direction. If, for instance, there are fifty spaces marked off upon the respective peripheries of the wheels D and R, and both are started at zero, the numbers indicated on both will correspond; but if, after twenty-five registrations have been made, the primary wheel is brought back to zero by the means above described, to start again, and one passenger, for instance, is registered upon the primary wheel, there would be twenty-six shown upon the secondary wheel as having been registered altogether, and when the primary wheel reaches twenty-five the secondary wheel will have made a complete rotation and arrived again at zero, having registered its full count of fifty upon the vertical scale by moving one space down the same. Every registration upon the primary wheel is simultaneously shown upon the secondary wheel; but the latter, combined with the vertical scale, registers all the passenger-entries in regular order, showing at any time the whole number of passengers registered, while the primary wheel is turned back to start again with unity at the end of every run of the car, or otherwise, as may be required. The wheel R, having a rotary motion, and its shaft a longitudinal motion, admits of a large number of registrations within small limits, and by simple means. Every space on the vertical scale represents the number (as fifty) shown upon the wheel R, and in reading the total registrations at any given time the number of full spaces upon the scale above the edge a^2 of the wheel is to be multiplied by the total number of spaces on said wheel, the number corresponding to the fraction of a space being found upon the wheel itself. The sharp edge of the scale S nearest the wheel serves as a pointer for the divisions upon the wheel R.

The primary registering-wheel D is provided with a spring-pawl, o', at its outer edge, which, when the wheel is turned back to bring the zero-mark opposite the pointer, meets a stud, c^2, rigid with the bar C. This prevents the wheel from being turned in a backward direction farther than to bring its zero-mark to coincide with the pointer.

The parts of the divided nut p are shown as being made elastic, so that they will return to clasp the screw from their own action as soon as the lever r is released after it has been turned to spread them.

A', Figs. 1 and 6, is a spring-buffer for the hammer of the bell, tending to hold the hammer slightly away from the bell, so as to not interfere with the clear tone thereof after the stroke, said buffer being secured to the plate B' of the case.

The bell, the hammer, and other parts there-

at outside of the case, as shown, are not held to be new, the novel features being those within the case, and above specified.

What we claim as our invention is—

1. In combination with the frame, central shaft, and pointer e' of a passenger-registering device, a registering-wheel, D, having numbered graduation-marks upon its periphery, a ratchet, G, secured rigidly to said wheel, a second ratchet formed with a hub or sleeve, through which said shaft is fitted to slide, said wheel and ratchet G having bearings upon said sleeve or hub, pawls for said ratchets, and an actuator for said parts, substantially as shown.

2. In combination with the frame and a longitudinally-moving threaded shaft of a passenger-registering device, a ratchet fitted loosely to said shaft, the latter being formed with a longitudinal groove, and the ratchet with a spline occupying said groove, a registering-wheel rigid with said shaft, a scale for said wheel and nut for the shaft secured to the frame, with means, substantially as shown, to turn said ratchet, as set forth.

3. In combination with the frame of a registering device, a ratchet formed with a hub provided with a spline, a threaded shaft held to slide through said hub formed with a groove to receive said spline, a threaded nut for the shaft, a registering-wheel rigid with the shaft, a scale for the wheel rigid with the frame, the wheel having a pointer-edge, a^2, and an actuator for the ratchet, substantially as set forth.

4. In combination with the frame of a passenger-registering device, a ratchet provided with a spline, a threaded shaft for said ratchet formed with a race for said spline, a threaded nut for the shaft, a registerng-wheel secured rigidly to the shaft, a scale for said wheel, and an actuating pawl-lever to turn said ratchet, substantially as described.

5. In combination with the case and bell of a passenger-registering device, an actuating-lever for the moving parts provided with a swinging pendent arm within the case, said arm being held rigid as it moves in one direction, but allowed to bend as it moves in the other, and a hammer for the bell without the case provided with a rigid stud reaching through an opening in said case to the interior of the latter, to be encountered by said pendent arm, substantially as shown and described.

6. A shaft which has endwise motion as it is turned, in combination with a primary registering-wheel and a secondary registering-wheel, both mounted on said shaft, and a graduated plate on which said secondary registering-wheel indicates the number of its revolutions, said primary registering-wheel being free to turn back to zero without moving said shaft or secondary registering-wheel and provided with a knob for that purpose, substantially as set forth.

7. In a registering device, a screw-threaded shaft, in combination with a ratchet-wheel splined thereon, so as to be movable back and forth on said shaft, though turning therewith, an actuating pawl-lever for said ratchet, and a stationary nut which engages with said shaft and causes its endwise motion when said ratchet is turned by said pawl-lever, substantially as set forth.

8. The divided stationary nut p, in combination with the spreader r, pivoted between its sections and acting against their inner faces, a screw-threaded endwise-movable shaft engaging with said nut, and the pawl-lever and ratchet-wheel whereby said shaft is turned, substantially as set forth.

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