2 Sheets—Sheet 1.

E. A. BERESFORD.

Step or Platform Register.

No. 239,641. **Patented April 5, 1881.**

FIG. 2.

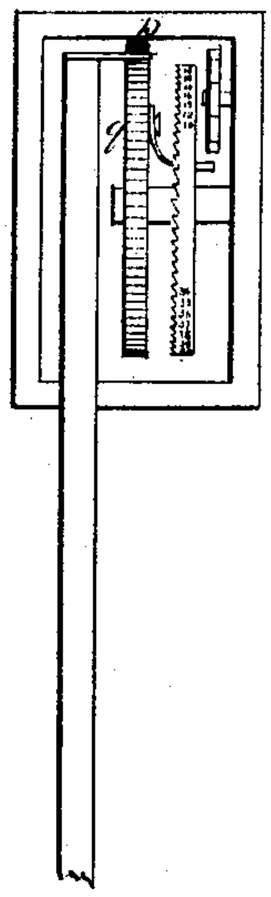
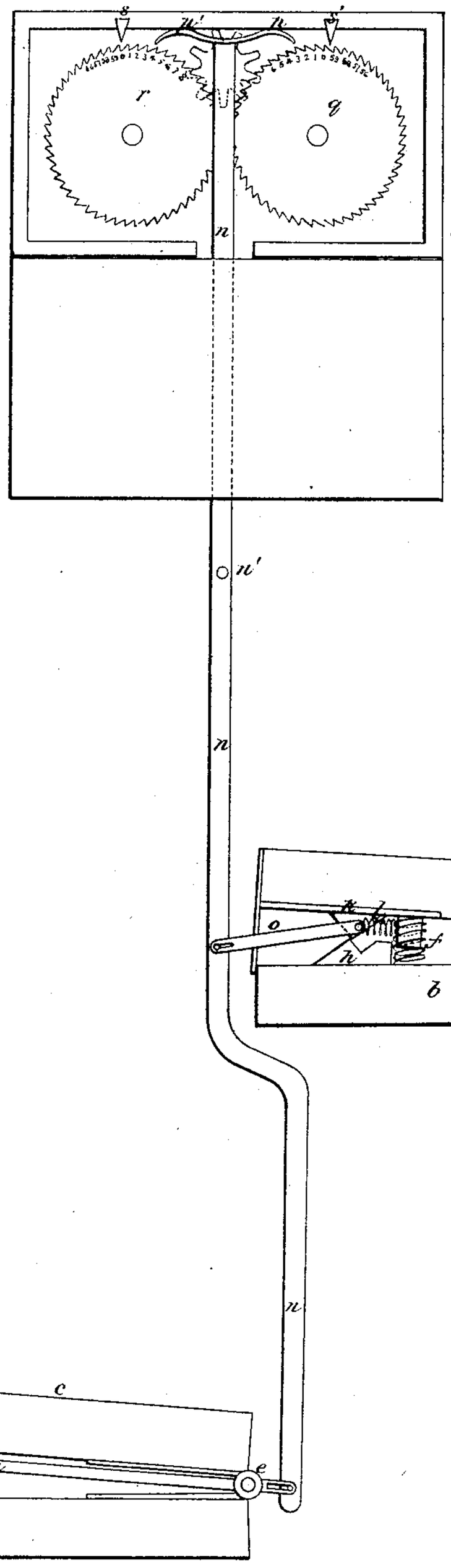


FIG. 1.



Witnesses
W. E. Waddaw
C. Wetter

Inventor.
Edward Aden Beresford.

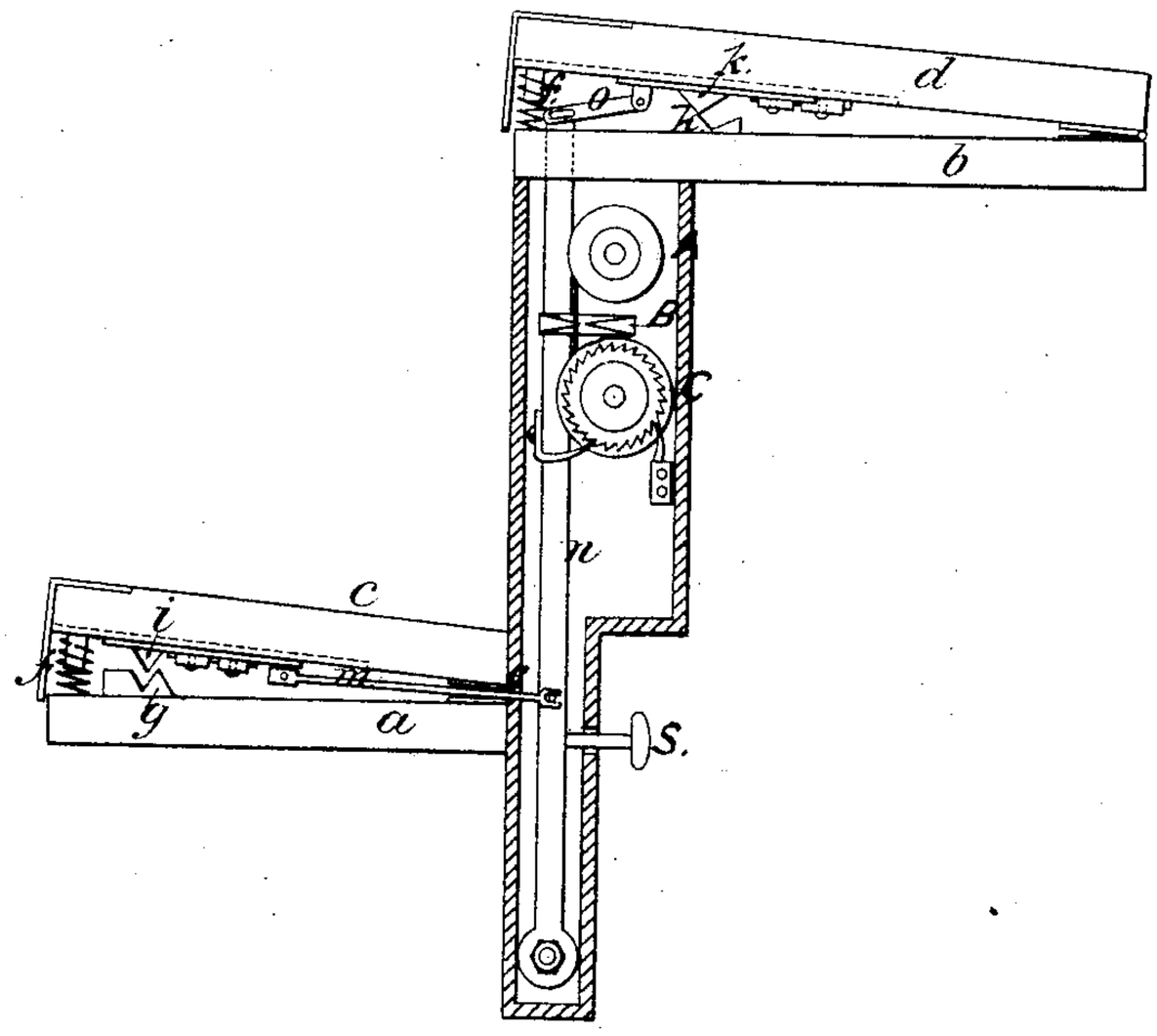
2 Sheets—Sheet 2.

E. A. BERESFORD.

Step or Platform Register.

No. 239,641. Patented April 5, 1881.

Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

EDWARD A. BERESFORD, OF LONDON, COUNTY OF MIDDLESEX, ENGLAND.

STEP OR PLATFORM REGISTER.

SPECIFICATION forming part of Letters Patent No. 239,641, dated April 5, 1881.

Application filed November 12, 1879. Patented in Great Britain March 17, 1879.

To all whom it may concern:

Be it known that I, EDWARD ADEN BERESFORD, of London, in the county of Middlesex, Kingdom of Great Britain, have invented a new and useful Improvement in Fare-Registering Apparatus, which is fully set forth and described in the following specification.

This invention has for its object an improved machine or apparatus for registering or checking the returns of fares made by the conductors or other officials in charge of omnibuses, tramway-cars, or other vehicles used in common by the public, for the benefit of those entitled to such fares, and showing such persons what the true returns should be. For this purpose I apply to the vehicle a pendulous or pivoted lever, which I connect with appliances in connection with movable or hinged steps, such appliances being so contrived that whenever a person ascends or descends the steps to enter or to leave the vehicle motion is imparted to the pendulous or pivoted lever; but this motion takes place in different directions, according as the lower tread of the steps is first depressed, and then the upper, as in ascending to enter the vehicle; or, on the contrary, as in descending to leave the vehicle, the depression of the upper tread takes place prior to that of the lower. The pendulous or pivoted lever actuates recording wheels or instruments which keep separate registers of the movements in either direction, or, in other words, of the number of persons entering and leaving the vehicle.

The mechanism is illustrated by the annexed drawings, Sheets I and II, like letters indicating like parts.

Figure 1 is a sectional elevation.

a is the lower, and *b* the upper, of two fixed steps, corresponding to those ordinarily fitted to omnibuses and like vehicles. To each of these steps there is hinged a movable step. These latter are on the drawings marked *c* and *d*, respectively, and the hinges *e*. The movable steps are, when no weight is upon them, supported in raised positions, in which they are represented in the drawings by springs *f f*. Upon the steps *a* and *b* the incline blocks (marked respectively *g* and *h*) are fixed, and the movable steps carry upon their under sides bolts which are capable of sliding in guides in directions to and from the hinges *e e*. These bolts have incline blocks (marked respectively *i* and *k*) formed upon them, and they are provided with springs *l*, which, in the case of the bolt on the lower step, tends to draw it outward or away from the hinge at *e*, while in the case of the bolt upon the upper step its spring *l* tends to draw it inward or toward the hinge *e*, by which this step is connected with the fixed step *b*. The lower bolt, carrying the incline *i*, is connected, by the link *m*, with the pendulous or pivoted lever *n*, and the bolt upon the upper step, carrying the incline *k*, is similarly connected with the pendulous or pivoted lever by a link, *o*. These links are slotted in the joints which connect them with the lever *n*, as the drawings indicate.

The lever *n*, at its upper end, carries two springs, *p* and *p'*, a side view of which is shown in Fig. 2, which serve, respectively, to propel the ratchet-wheels *q* and *r*. When the steps are free, and the lever *n* in the position indicated in the drawings, the springs *p* and *p'* stand clear of the teeth of the ratchet-wheels; but the movement of the lever to either side brings one of these driving-springs into position to engage with the teeth of the corresponding ratchet-wheel, and then the further movement of the pendulous lever *n* in the same direction to the end of the swing permitted to it propels the ratchet-wheel the distance of one tooth.

On a person entering the vehicle, when the foot is placed on the lower movable step, *c*, the step descends until the inclined block *i* reaches the bottom of the notch formed to receive it in the block *g*. The bolt being thus caused to slide in its guides, the link *m* moves the pendulous lever *n* in such manner that its upper end goes to the right a sufficient distance to cause the driving-spring *p* to approach the teeth of the ratchet-wheel *q*, but without imparting motion to the wheel. This movement of the lever *n*, however, causes the bolt, on which is the incline block *k*, to be drawn by the link *o* into such a position that when the foot is placed on the upper movable step, *d*, the block *k* passes down the incline on the outer end of the block *h* fixed upon the step *b*, thereby causing the bolt to traverse in its guides a distance sufficient to produce a further movement of the pendulous lever *n* in the same direction as the first, sufficient to move the ratchet-

wheel *q* the space of a tooth, and so the entry of the person into the vehicle is registered. The slot in the link *m* permits of the further movement, referred to above, of the lever *n*, notwithstanding that the lower movable step, *c*, remains depressed. Similarly a person leaving the vehicle, treading first upon the upper movable step, *d*, the incline-block *k* on the sliding bolt enters the notch in the block *h* on the step *b*, thereby causing a partial movement of the lever *n* sufficient to place the incline block *i* on the sliding bolt of the lower step, *c*, in such a position that on this step being, in turn, depressed, the block *i* slides down the incline on the inner end of the block *g*, and so completes the movement of the lever *n*, causing it, by means of the spring *p'*, to propel the ratchet-wheel *r* forward the space of a tooth. The wheels *q* and *r* also serve as dials. They are figured on the face, and pointers are provided at *s* and *s'*. The figures on the wheel *q*, as they come to the pointer, indicate the number of entrances into the vehicle since the wheel was last set to zero. Similarly the figures on the wheel *r*, as they come to the pointer, indicate the number of exits since this wheel was set to zero. If desired, counting-wheels may be provided in connection with each of the wheels *q* and *r*, as indicated in Fig. 2, to keep a continuous register of the entrances and exits, notwithstanding the movement of the wheels *q* and *r* to zero as often as may be convenient.

The recording part of the apparatus is contained in a locked box, and when the machine is in use its indications are noted at the end of each stage of the journey. The movable steps are each provided on three sides with a flange or lip projecting downward and inclosing the mechanism between the movable and the fixed step.

The pendulous lever *n*, in place of operating ratchet-wheels, may be caused to give motion to markers, and bring them into contact with a paper drum or drums, revolving continuously by connection with the wheels of the vehicle, or otherwise revolved by the lever *n*. In either case I obtain, by means of my mechanism, a record of the number of entries and exits at each stage of the journey.

Fig. 3, Sheet II, shows a modification of my invention, the lever *n* being pivoted, as shown, in lieu of being pendulous, and made to actuate pointers B, which prick or mark a paper band rolled on A as it passes, and is drawn on to a roller, C, which latter is furnished with a spring-motor, and is allowed to rotate and move the paper band by the movement and consequent disengagement of the detent fixed to the pivoted lever *n*, as shown.

S is a rod connected with the lever *n* for use by the conductor, and whereby he can mark the completion of the stage or journey. The other parts have been already described.

The fares should be so arranged that a sum is charged for each stage or section, into which the entire journey is divided; nevertheless, if desired, a further sum may be charged for the first stage traveled by any passenger. Then, from the indications of the machine, the calculation at the end of the journey of the amount which should have been received in fares is easy. The total of the entries during an entire journey being known, this number multiplied by the highest possible fare would be the sum of the fares if every passenger had made the entire journey; but from this there has to be deducted the amount, so to speak, lost by passengers entering, not at the first stage, but at some subsequent stage of the journey, and, also, there has to be deducted the amount, so to speak, lost by passengers having left the vehicle before the final stage of the journey. Both of these sums are readily deducted from the record. The residue is the sum for which the conductor of the vehicle shall account.

I claim—

1. The combination, with the steps by which passengers enter and leave a vehicle, of movable treads *c* and *d*, inclined planes *i* and *k*, a pendulous or pivoted actuating-lever, *n*, and links *m* and *o*, substantially as described.

2. In fare-registering apparatus of vehicles, the combination of a pendulous or pivoted lever, *n*, automatically actuated by the person entering or leaving the vehicle, with springs *p* and *p'* and ratchet-wheels *q* and *r*, substantially as described.

3. The combination, substantially as hereinbefore set forth, with the movable platform of a car or vehicle-step having inclines on the under side thereof, of a pendulous or vibrating lever and connections for operating a registering or recording mechanism, and separately indicating the entrance or exit of passengers.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDWARD ADEN BERESFORD.

Witnesses:

H. I. HADDAN,

C. WETTER.