J. W. FOWLER.

PASSENGER-REGISTER.

No. 185,740. Patented Dec. 26, 1876.

Fig. 1.

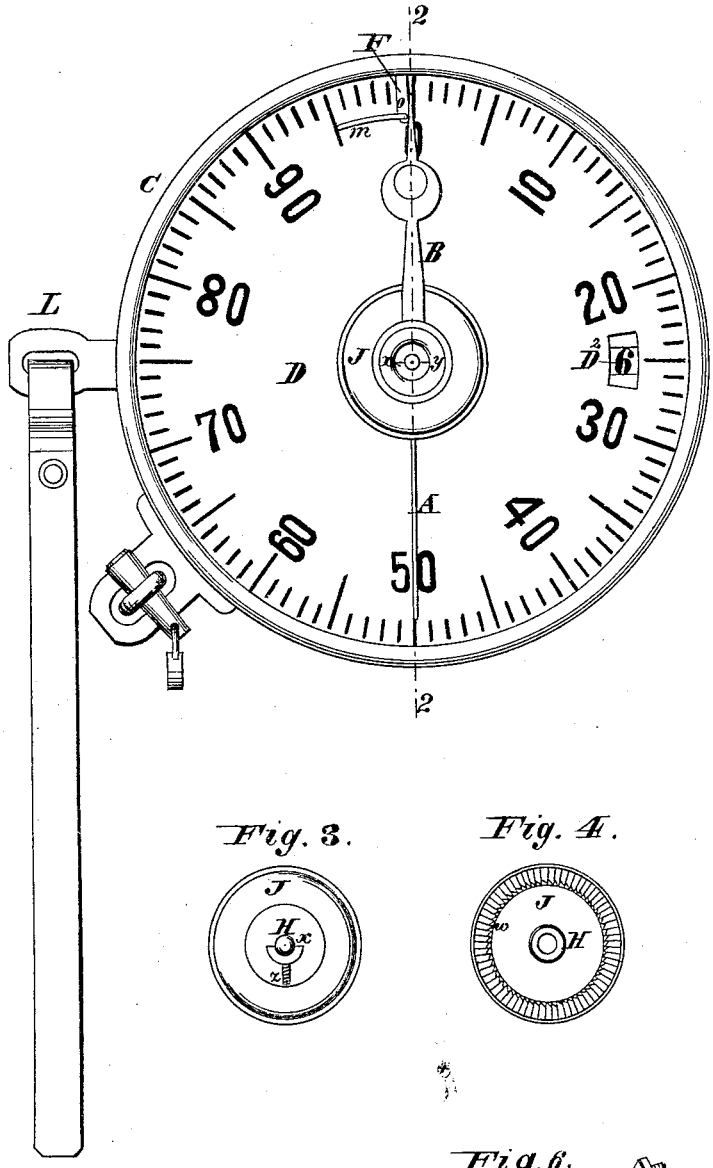


Fig. 2.

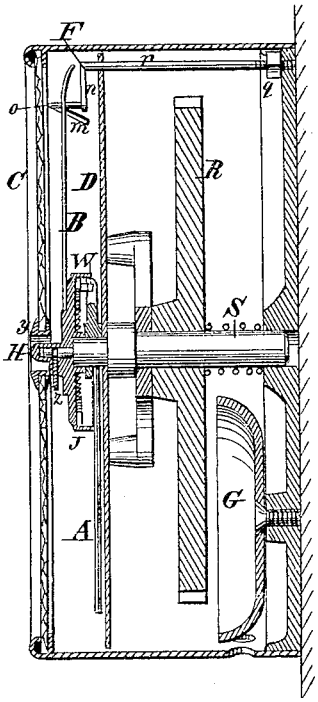


Fig. 3.

Fig. 4.

Fig. 5.

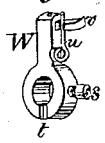
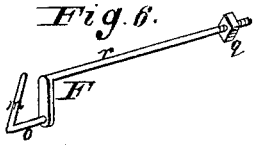


Fig. 6.



WITNESSES

Chas J. Gooch

A. H. Galt.

INVENTOR

John W. Fowler.

By Knight Bros Attorneys

THE GRAPHIC CO. N.Y.

UNITED STATES PATENT OFFICE.

JOHN W. FOWLER, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE BROOKLYN CITY RAILROAD COMPANY, OF SAME PLACE.

IMPROVEMENT IN PASSENGER-REGISTERS.

Specification forming part of Letters Patent No. **185,740**, dated December 26, 1876; application filed November 25, 1876.

To all whom it may concern:

Be it known that I, JOHN WRIGHT FOWLER, of the city of Brooklyn and county of Kings, in the State of New York, have invented a new and useful Improvement in Passenger Registers and Indicators, of which the following is a specification:

This invention consists in certain attachments which have been applied to, and are primarily intended for, those passenger registers and indicators known as "Towles' Monitor Registers." Each of these instruments has a permanent continuous register and an alarm-bell actuated simultaneously therewith, and also means for showing separately the number of fares taken each trip, the latter consisting of a trip-hand in combination with the main dial. This trip-hand is movable independently to any point on the dial by means of a key introduced through a central opening in the glass cover of the face, which key is supposed to be in the hands only of the registrar, whose duty is to note the number registered for each trip, and then to turn the trip-hand to zero by means of his key.

The method of successfully tampering with such registers, as heretofore practiced by certain dishonest street-car conductors, has been as follows: Upon a car starting from a terminus of a road, or previous to starting, the trip-hand is set ahead by the aid of a duplicate or improvised key, say ten points. The conductor has, at the time of starting, say twenty passengers on his car. He registers ten fares, and the instrument then indicates the total number of passengers. During the balance of the trip he gets, say, twenty more fares, each of which is registered and indicated. The trip-hand will now show that forty passengers have been carried, and their fares or tickets received this trip, while the continuous or permanent register only shows a registration of thirty for the trip. To make the two agree, the conductor, before reaching the other terminus of the road, steps inside the car, and, by the aid of the key, turns the trip-hand back ten points, and abstracts from his receipts the equivalent in cash, and thereby defrauds his employers out of this amount with little danger of detection, and none so far as the registering instrument or machine is concerned.

The object of the said attachments is to prevent any such fraudulent manipulation of the trip-hand, and thus to insure a correct registry of fares and full returns; and this is successfully accomplished without interfering with the setting of the trip-hand at zero for each trip, and without complication or difficult alteration of the machine or instrument, as hereinafter set forth.

Figure 1 is a face view of a monitor register provided with attachments illustrating this invention. Fig. 2 represents a section on the line 2 2, Fig. 1. Figs. 3 and 4 are top and bottom views of a ratchet-disk, to which the trip-hand is attached in the illustration. Fig. 5 is a perspective view of a spring-pawl attachment for the shaft. Fig. 6 is a perspective view of the zero-guard.

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

An ordinary Towles' monitor register complete in all its parts is shown in Figs. 1 and 2. This register has a circular case, C, composed of a cylindrical wall of sheet metal, and a face plate of glass. Within this case the registering and indicating devices are inclosed, and the case is attached, by screws, to the back plate of the mechanism, the latter having an orifice to receive a horn on which the instrument is suspended, and a hasp which engages with a screw-eye, to which a padlock is applied to secure the instrument in position, as shown in Fig. 1. The time which would be required to take the instrument down and apart is sufficient guard against any attempt to tamper with it in this way. A lever, L, Fig. 1, projects through the wall of the case, and carries within the latter a propelling-pawl meshing with a ratchet-wheel, R, of one hundred teeth, which is securely fixed on an axial shaft, S. A circular dial, D, of one hundred divisions covers the ratchet-wheel R, and the shaft S projects through this dial, and has an index-hand, A, rigidly secured thereto outside of the same. A rotary disk, D^2, Fig. 1, is geared to the shaft S

behind an index-orifice in the dial D, so as to register the complete rotations of the shaft, and an alarm-gong, G, Fig. 2, is struck by its hammer each time the shaft moves. A continuous permanent register of the movements of the lever L is thus effected, and this has been rendered reliable. The shaft S is extended beyond the point where the hand A is affixed, and is contracted and furnished with a circumferential groove to receive a rotary hub, H, and a retaining-screw, *z*, inserted laterally therethrough. A trip-hand, B, attached to this hub advances simultaneously with the permanent register when the shaft S is actuated; but provision is made for moving the hand independently, in order to provide for setting it at zero at the beginning of each trip.

The means by which this is accomplished are a central bushed orifice, *y*, in the glass front of the case, a key adapted to be inserted therethrough, and shoulders *x* on the hub H, corresponding with like shoulders on the key. This provision has been used for fraudulently manipulating the trip-hand, so as to provide for abstracting fares without detection.

To prevent any such fraudulent manipulation of the trip-hand B the hub H has been incorporated in a concavo-convex disk, J, Figs. 3 and 4, the hollow back of which is provided with crown ratchet-teeth *w* in a concentric annular series, and an arm, W, Fig. 5, is attached behind this disk to carry a pawl, *v*, meshing with said teeth. A spring, *u*, holds the pawl in mesh. The teeth and pawl are so constructed and arranged as to permit the trip-hand to be moved backward on the dial independently of the movement of the shaft S, and to prevent any forward movement of the hand besides that imparted by operating the lever L.

The ratchet-disk J is attached to the hub H, as before stated, and supported therewith. The hub of the arm W slips on the end of the shaft behind the hub H, and has a notch, *t*, to fit over the index-hand A, and a clamp-screw, *s*, by which it is tightened. No alteration of the shaft is required.

A third and last attachment consists of a zero-guard, F, Fig. 6, having a shank, *r*, which extends through the dial D, and is screwed into the back-plate of the register, and secured by a jam-nut, *q*.

The primary feature of the guard is an obstruction, *o*, located in the path of the trip-hand B at or immediately before the zero-point of the dial. The shank *r* is so located and bent as to support this obstruction outside of the path of the index-hand A, a passage-way, *n*, for the latter being formed behind the arm which supports the obstruction, as shown in Fig. 2.

To provide for registering more than one hundred fares in a trip, an incline, *m*, leads to the extremity of the obstructing projection *o*, to which it is attached, and passes the trip-hand freely over the obstruction, when the trip-hand is moved forward by the shaft.

The operation of the register, as provided with the attachments, is as follows: The trip-hand B, moving independently of the shaft S in one direction, is set at zero, as in the illustration, at the beginning of each trip, and when thus set cannot be moved either way by the key. The fares are registered by operating the lever L, and the hands advance together on the dial. The trip-hand B could now be set back to zero, or any intermediate point, but not beyond zero, owing to the presence of the guard F, and no gain to the conductor or loss to the road could result from such manipulation, as the actual forward movement would be shown by the permanent register. The latter is thus rendered an effective check, and the advantages of the trip-hand are retained without its disadvantages. If any attempt were made to force the trip-hand past the zero-guard one or both would be broken or bent, so as to insure detection.

The zero-guard F could obviously be constructed and supported in various ways, and the pawl-and-ratchet attachment could be modified by reversing its parts, and by varying their construction in matters of detail, or mechanical equivalents of the parts could be employed without affecting the result. All such modifications are intended to be included in the scope of this invention.

The attachments can also be applied to any register or indicator in which a trip-hand is or can be employed in connection with a permanent or continuous register.

The construction of the particular register herein shown and described, apart from the attachment, forms no part of this invention.

The following is claimed as new and of this invention, namely:

1. The combination, in a passenger-register or indicator, of a permanent continuous register, a trip-hand adapted to be set back to zero at will, actuating mechanism common to all, and a pawl and ratchet, to prevent the forward movement of the trip-hand, independently of the actuating mechanism, substantially as herein illustrated and described, for the purpose specified.

2. A zero-guard, forming an obstruction in the path of a reversible trip-hand, B, and constructed with a bent shank, *r*, forming a passage-way, *n*, for another index-hand, A, substantially as herein shown and described, for the purpose set forth.

3. The zero-guard F, constructed with the obstructing projection *o* and incline *m*, the latter serving to pass the trip-hand over the obstruction when the hand is moved forward to and beyond zero, in combination with said trip-hand, and a pawl and ratchet, prevent-

ing its independent forward movement, and a permanent register indicating the sum of the forward movements of the trip-hand, substantially as herein described.

4. The combination of a ratchet attachment, J, and a pawl attachment, W, applied to the trip-hand and shaft of the specific register or indicator herein described, or one substantially similar, and a zero-guard, F, forming an obstruction at or immediately before the zero-point of the dial of the same, for preventing the fraudulent manipulation of said trip-hand, in the manner herein set forth.

JOHN W. FOWLER.

Witnesses:

DANIEL F. LEWIS,

THOS. P. WRIGHT, Jr.