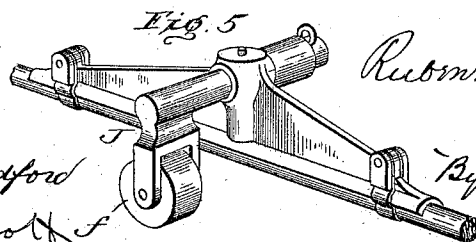
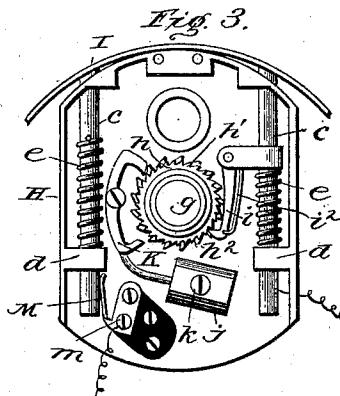
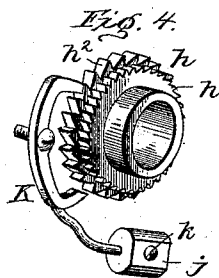
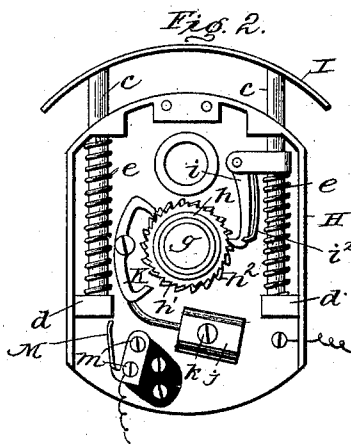
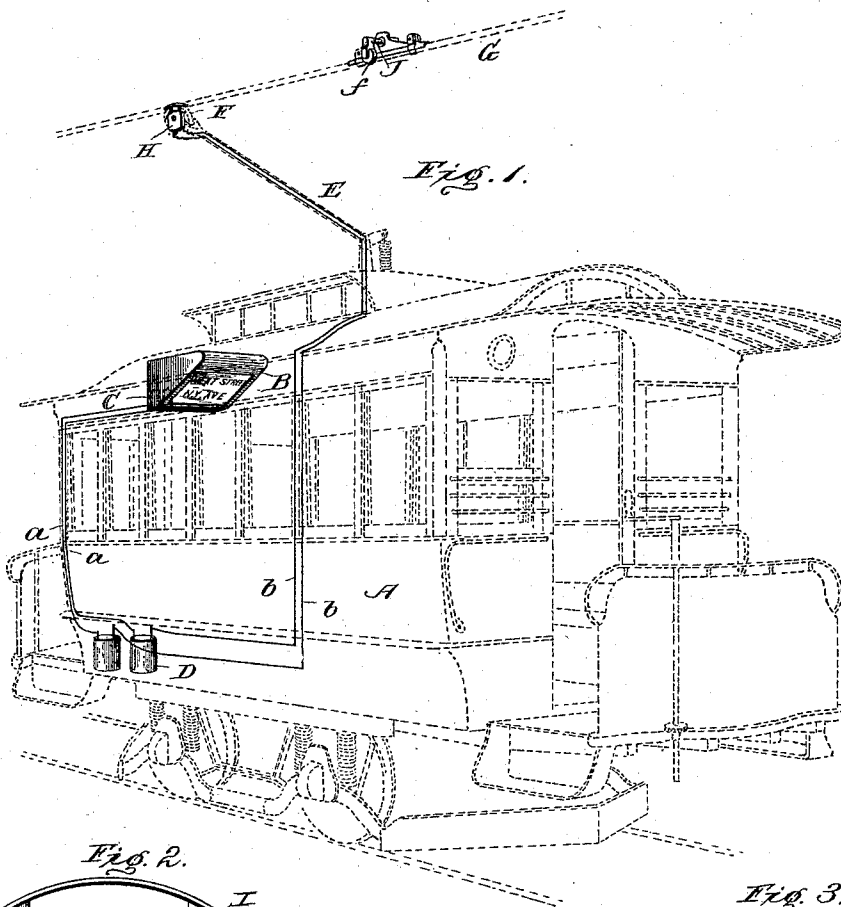


(No Model.)

R. B. AYRES.
MEANS FOR OPERATING STATION INDICATORS.

No. 488,415.

Patented Dec. 20, 1892.



Witnesses
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MEANS FOR OPERATING STATION-INDICATORS.

SPECIFICATION forming part of Letters Patent No. 488,415, dated December 20, 1892.

Application filed September 1, 1892. Serial No. 444,785. (No model.)

To all whom it may concern:

Be it known that I, RUBEN B. AYRES, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Means for Operating Station-Indicators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in means for operating station indicators of railway car systems; and it consists substantially in such features thereof as will hereinafter be more particularly described and claimed.

The object of the invention is to provide mechanical devices in connection with the trolley and trolley wire of electric railway systems which shall serve at regular or predetermined intervals to operate or set in motion an automatic signal or indicator within a car, through the agency of electro-motive power obtained or derived from a storage cell or battery also located within said car and being in electric communication with said mechanical devices through the employment of suitable electric contacts and conductors.

A further object of the invention is to provide automatic devices for regulating within certain limits the degree or length of time which the electric contacts shall remain together, so as to positively insure the operation of the signal or indicator within the car through the action of the current passing to said indicator over the intermediate conductors.

A still further object of the invention is to provide a very simple and comparatively inexpensive mechanical contrivance for effecting the electric contact or communication with the indicator within the car, all as will hereinafter be more fully understood when taken in connection with the accompanying drawings wherein

Figure 1 is a view in perspective of a car, trolley, and trolley-wire as when arranged in accordance with my improvement; the trolley-wire having thereon the stationary brackets by which the movable mechanical devices on the trolley are operated, and an indicator and

storage-battery being arranged within the car, so as to enable the general arrangement of the parts to be fully understood. Fig. 2 is an interior view of the mechanical devices carried by the trolley, showing the parts in their normal position and the electric contact unestablished, from which it will be understood a normally open electric circuit will be maintained. Fig. 3 is a similar view of such devices showing them as having been depressed by the action of the bracket on the trolley-wire, in which instance the electric contacts are brought together and the electric circuit closed. Fig. 4 is a view in perspective of the adjustable devices for regulating the return or restoration of the movable devices after the latter have been depressed; the action of such adjustable regulating devices being to cause the electrical contacts to remain together for a longer or shorter space of time for a purpose hereinafter more particularly explained. Fig. 5 is a view in perspective of the operating bracket detached from the trolley-wire.

In carrying my invention into effect I provide any preferred automatic signal or indicator within the car, designed to be set in operation by the employment of a suitable magnet, wire connections, and a storage battery located beneath the seat of the car and to which the wire connections lead. Similar wire connections also lead to said battery from devices carried by the trolley-arm, and whenever these devices are properly operated an electric current is established and the signal or indicator within the car is set into motion. The wires or conductors leading from the battery to the devices carried by the trolley may be passed along either within or on the outer side of the arm of the trolley, and they are in electrical connection with a contact which is operated as hereinafter explained to establish a closed electric circuit with the battery in the car. The electric contact is made by the action of a movable spring restored shelf which at certain intervals is depressed by coming into engagement with the brackets on the trolley-wire and on each depression thereof the electric circuit closed and the signal or indicator operated.

To obviate or correct any failure of the circuit being established due to insufficient con-

tact, I have provided regulating devices by which the restoration or return of the movable shelf is made to take place more or less slowly, and in this way no failure of the desired operation of parts can ever take place from the cause mentioned. Accordingly as the contact may be desired to last for a longer or shorter space of time (within reasonable limits of course) it is simply necessary to make proper adjustment of the regulating devices referred to.

Reference being had to the several parts of the drawings by the letters marked thereon A represents an ordinary car of a trolley-wire system; B an automatic indicator located in proper position therein and carrying a suitable electro-magnet C.

Beneath the seat of the car is a suitable storage-battery D having conductors *a a*, leading to said electro-magnet, and also leading from said battery are similar conductors *b b* which pass out through the top or side of the car up alongside of or through the trolley-arm E, which trolley-arm carries at its upper end the usual wheel F, which travels the trolley-wire, G in a manner well known so as to propel the car electrically by a current which is passed over said wire from a dynamo or similar generative source located at one end of the car line.

Mounted upon or supported by the shaft of the wheel F is a box or casing H in which is contained the mechanical devices which effect the electrical contact. These devices consist of a curved arm or shelf I working up and down by means of two rods *c, c*, passing through the top of the box and through two inner lugs *d, d*, formed with or projecting from the side of said box as shown, the said rods being provided with springs *e, e*, resting between the top of the lugs and the inner side of the box top, the purpose of said springs being to automatically restore the movable arm or shelf I each time the same is depressed by coming into contact with the stationary brackets J, a series of which latter being supposed to be arranged upon the trolley-wire at regular or predetermined distances apart. The said bracket carries a roller *f* under which passes the curved arm I, and thus depresses the latter, and as soon as the bracket is passed the said arm is restored to upward position by the reaction of springs *e, e*, and is thus in readiness to be struck by the next bracket, and so on.

Mounted centrally within the box, upon a suitable stud *g* is a double ratchet wheel *h*, which is movable upon the stud, and which is composed of or formed with a series of fine teeth *h'* and a series of coarser teeth *h''*, the series of finer teeth being normally engaged by a spring pressed pawl *i* supported upon or by one of the rods *c*, while the series of coarser teeth are engaged by a pivot and weighted lever escapement K, the weight *j* thereof being adjustable by means of a small set screw *k*, as shown. It is evident that by

moving said weight farther toward the end of said lever-escapement the greater the friction and more secure the engagement of the said escapement with the coarse teeth of the ratchet-wheel, consequently the greater will be the labor required of the said wheel in turning backward against its engagement with the escapement since it will require more power to lift the weight. It is by this arrangement that I adjust or regulate the return movement of the curved arm I, as will hereinafter more fully appear. The spring-pressed pawl *i* is arranged, as shown, to pass over the finer series of teeth *h'* on the downward movement of the rods *c, c*, but is caused to take into or engage such teeth on the return movement thereof by the action of its spring *i'*. On the return movement of said rods the pawl *i* rotates the ratchet wheel, and accordingly as the weight *j* has been adjusted farther from or nearer to the fulcrum of the escapement, the slower or faster will be the action of the rods with their arm or shelf I in returning, since as before stated such return will be regulated by the action or degree of effort which it will require of the coarser teeth of the wheel to pass the escapement.

M represents the electrical contact-spring which is secured in place by a binding screw *m* and projects upwardly, as shown, so as to be normally close to but free of the rod *c* opposite to the one latterly referred to, but as soon as the shelf or arm I is depressed this spring comes into contact with its said arm *c*, and thus an electric circuit will be established through the conductors *b, b*, hereinbefore referred to, one of which conductors being in connection with the binding screw *m* which holds the contact-spring M, while the other is connected at any point on or about on metal surface of the box or casing H. The circuit would then be braced through one of the rods *c* and its contact spring to one of the conductors *b* to the battery; and through the box H and the other conductor *b* to the battery; thence through conductors *a, a*, to the indicator. Immediately the arm or shelf I returns upwardly the circuit will be opened. It will of course, be understood that the general arrangement and construction of the parts described can be altered and changed within reasonable limits and I therefore do not wish to confine myself thereto in precise detail.

Having thus described my invention what I claim is—

1. In means for operating station indicators of railway car systems, the combination with the trolley wire and trolley, and an automatic indicator located within a car, of electric contacts carried by the trolley, movable devices for closing said contacts from the trolley wire mechanically, and a suitable battery and wire connections, substantially as described.

2. In means for operating station indicators of railway car systems, electrical contacts car-

ried by the trolley and movable mechanical devices for automatically closing said contact directly from the trolley wire, substantially as described.

5 3. In means for operating station indicators of railway carsystems, electrical contacts supported by the trolley, mechanical devices for acting upon or closing said contact, and means for operating said mechanical devices from
10 the trolley wire substantially as described.

4. In means for operating station indicators of railway car systems, electrical contacts supported by the trolley, and a movable spring restored arm the depression of which arm automatically closes said contact, substantially
15 as described.

5. The movable curved arm with its rods and springs, and the box or casing in which the same works, the contact spring working in connection with one of said rods, and the
20 spring-pressed pawl held by the other rod, the ratchet wheel formed with teeth of separate fineness, and the lever-escapement provided with an adjustable weight, the whole being
25 arranged and operating substantially as described and shown.

In testimony whereof I affix my signature in presence of two witnesses.

RUBEN B. AYRES.

Witnesses:

JAMES CAMPBELL,
W. F. REED.