

F. HEDLEY & J. S. DOYLE.
 PORTABLE TOTAL CURRENT REGISTERING MECHANISM.
 APPLICATION FILED JAN. 5, 1911.

1,004,648.

Patented Oct. 3, 1911.

2 SHEETS-SHEET 1.

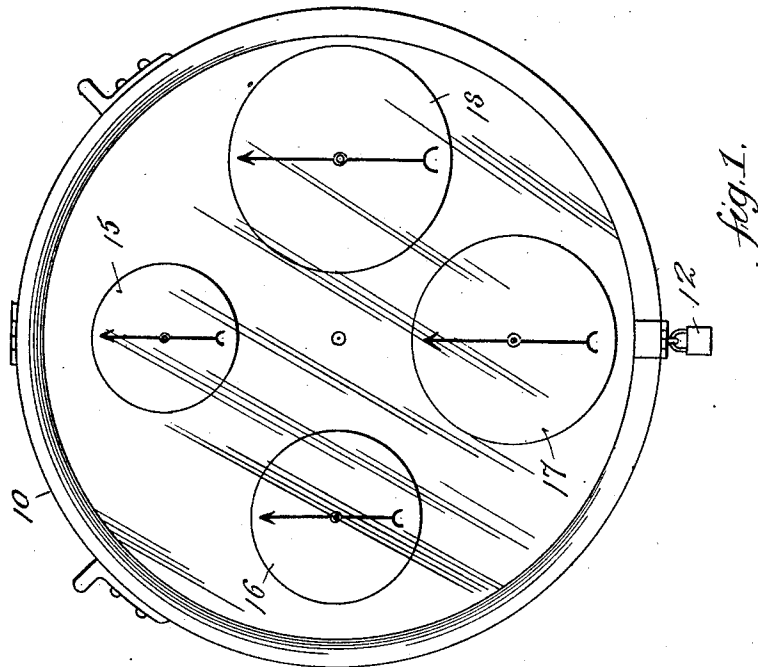


fig. 1.

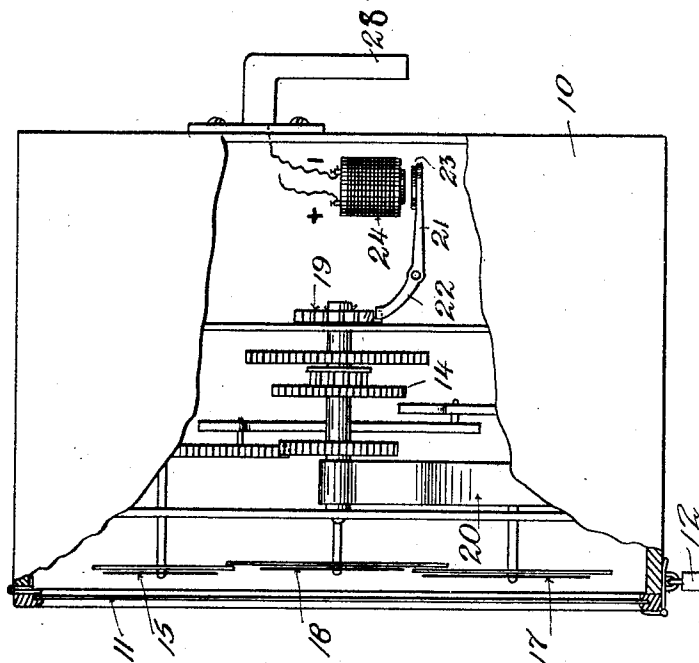


fig. 2.

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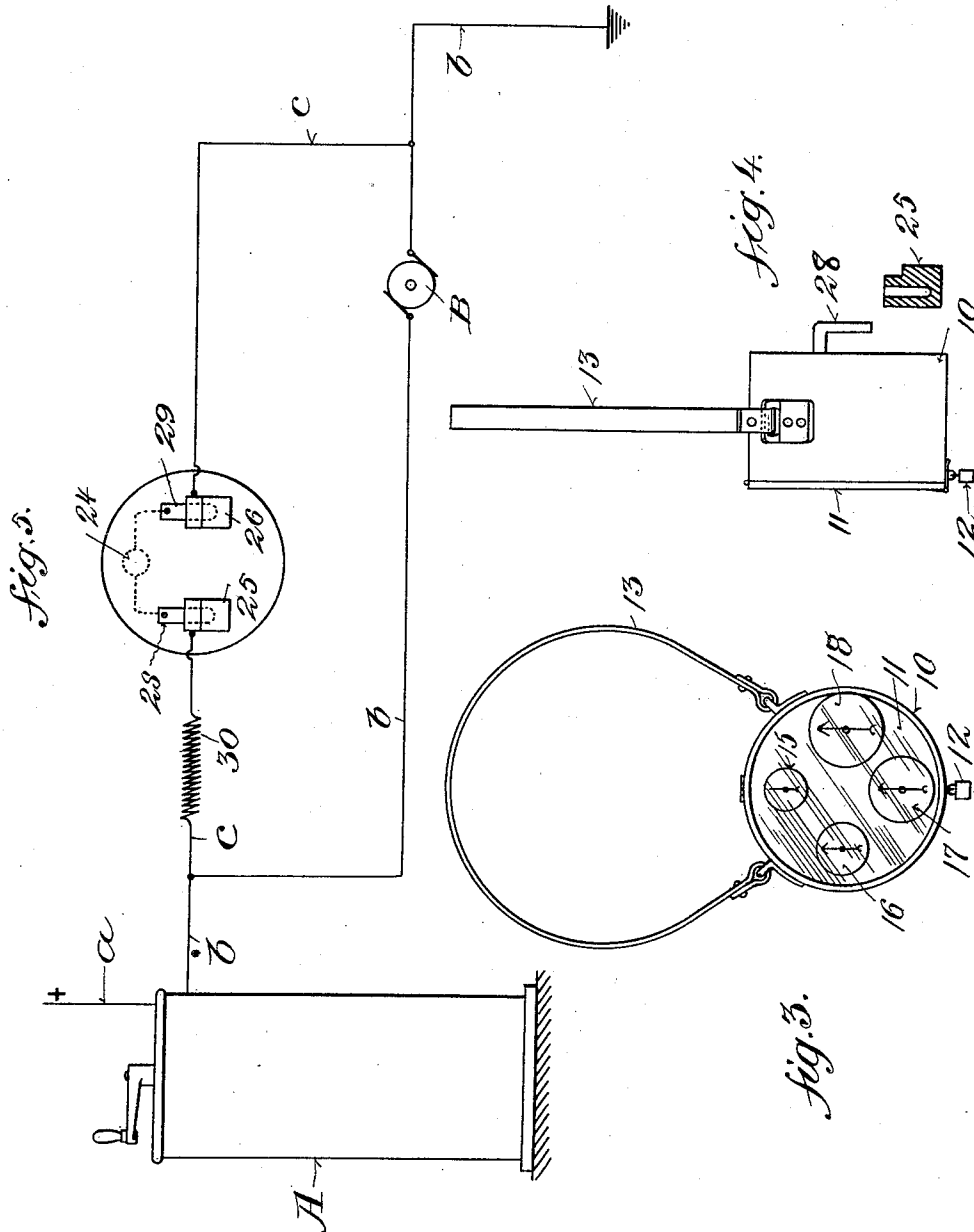
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANK HEDLEY, OF YONKERS, AND JAMES S. DOYLE, OF NEW YORK, N. Y.

PORTABLE TOTAL-CURRENT-REGISTERING MECHANISM.

1,004,648.

Specification of Letters Patent.

Patented Oct. 3, 1911.

Application filed January 5, 1911. Serial No. 601,043.

To all whom it may concern:

Be it known that we, FRANK HEDLEY and JAMES S. DOYLE, citizens of the United States, residing, respectively, at Yonkers, county of Westchester, State of New York, and in the city, county, and State of New York, have made a certain new and useful Invention in Portable Total-Current-Registering Mechanism, of which the following is a specification.

This invention relates to registering mechanism for registering the total current consumption required in the operation of cars or trains while under the control of individual motormen.

The object of the invention is to provide a portable mechanism of the character referred to which will register the amount of current employed to operate electric cars or trains while under the control of individual motormen, and whereby a record may be made of the total current consumption employed by each motorman for any desired period of time of train operation, as, for instance, an hour, a day, a week, or a month, thereby enabling an efficiency record to be kept for individual motormen.

A further object is to provide a mechanism of the character referred to which is portable and therefore capable of being transferred from one car or train to another, according as the individual motorman is transferred, thereby enabling each motorman to maintain his own record for the desired period of time whether he has control at various times during that period of one or of several different cars or trains.

A further object is to provide a total current consumption registering mechanism of the class referred to which is locked against the tampering of the motorman.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference signs appearing thereon, Figure 1 is a view in front elevation of a portable total current registering mechanism embodying the principles of our invention. Fig. 2 is a view in side elevation of the same, a part of the

inclosing casing being broken out, and parts in vertical section. Fig. 3 is a view similar to Fig. 1 on a somewhat reduced scale, and showing a carrying strap attached to the register case by which it may be readily transported by the motorman. Fig. 4 is a side view of the same. Fig. 5 is a diagram showing a circuit arrangement employed in connection with the register mechanism.

The same part is designated by the same reference character wherever it occurs throughout the several views.

In the economical operation of electric street or other cars, trains, or similar or other devices, it is desirable to minimize the current consumption, and to avoid unnecessary waste of current energy, since any unnecessary waste of current increases the cost of operation of the street or other car system, and where many cars or trains are operated over the system the waste of current on individual cars or trains aggregates to a large amount and contributes largely to the cost of operation of the system. This element of expense and cost of operation of street or other car systems is largely a factor which varies with individual motormen who control the supply of current to the cars or trains. Some are economical in the use of current while others may be more or less careless in this connection.

It is among the special purposes of our present invention to provide means for securing systematically a total register of the current consumption controlled by each individual motorman during any desired period of time and whether the motorman operates the same or different cars during the period. The current consumption may be determined and reckoned from any one or more of several factors which enter into the computation. Thus the desired result may be ascertained from a computation of the total time, in a given period, during which current is turned on to the car or train operating motor or motors, or from the total "coasting" periods of the train or car, that is, the periods of time or distance traveled by the car or train while the current is shut off from the motor or motors, or from the total "braking" periods, that is, the time consumed or distance traveled during the time the brakes are applied. Perhaps other factors may also be chosen as the standard for the desired computation. While, therefore, we have shown our in-

vention applied to the registering of the total time during the specified period of observation in which current is turned onto the motor or motors, our invention, in its
 5 broadest scope, as defined in the claims, is not to be limited or restricted in this respect, or to the particular registration of current time.

In carrying out our invention we provide
 10 a time registering mechanism capable of registering the current-time for any desired period, say up to a month, and we make the device portable whereby each motorman may be supplied with a registering device and
 15 can transport the same from one car or train to another according as his duties, or the exigencies of the service, may require him to change from one to another car or train. We also propose to provide a regis-
 20 tering mechanism which is locked against unauthorized tampering so that the device may be properly set, or its record at the commencement of an observation period taken, at the office or by the car barn super-
 25 intendent or time keeper, and which can be turned in by the motorman at the end of the observation period, for the purpose of calculating his current-time during such period. In this way each motorman be-
 30 comes his own current time keeper, so to speak, but the calculation to make up his efficiency record during such observation period is made from the registering mecha-
 35 nism at the office, or car barn, by the proper official, using in connection with the regis-tered time indicated by the device, other necessary data which is usually kept, such, for instance as the known total distance
 40 traveled, the known total running time of the car or train, the known current strength and pressure supplied, and possibly other known information. We also propose, in one form of embodiment of our invention
 45 to so arrange the device as to put it in registering operation only while current is being supplied to the car or train motor, or motors, and to automatically arrest the operation thereof when the current is shut off from
 50 the motor or motors, and while the device is removed from its support in the car or the motorman's cab or wherever placed for operation.

In the drawing 10, designates a casing in which the registering mechanism is con-
 55 tained. This casing is provided with a hinged door 11, capable of being locked, as by means of a lock 12, to prevent unauthorized access to the registering mechanism. A carrying strap 13 is secured at its ends to
 60 the case 10 to afford easy means for transporting the device. The registering mechanism, indicated generally by reference sign 14, is arranged within the casing 10, and includes clock-work devices, the registering
 65 pointers and dials 15, 16, 17, 18, and the

escapement or other similar operating part 19. The particular construction of clock-work mechanism is immaterial, so far as our invention is concerned, so long as it is
 70 designed and arranged, when the clock spring 20, is properly wound up and re-leased, to operate the associated pointers and dials, to record totals of elapsed periods of time during which the clock-work mecha-
 75 nism is in operation. A convenient arrangement is to employ one pointer and dial to register a time period of one hour, another to register a total of twenty four hours, or, say a day, another to register a total of a week, and another a total of a
 80 month, but of course any other suitable time periods may be employed.

Reference numerals 15, 16, 17 and 18, designate respectively the hourly, the daily, the weekly and the monthly time period regis-
 85 tering dials and pointers.

The clock-work mechanism may be normally restrained from or held against operation while current is turned off, or while the device is removed from its proper position in the car, motorman's cab, or the like, in many different ways, we have shown a simple arrangement wherein a pivoted lever
 90 21, carries an arm 22, at one end arranged to coöperate with the clock-work escapement 19, or other suitable part of the clock-work mechanism to normally lock or hold said mechanism against operation when current
 95 is turned off from the car or train motor, and to release said mechanism for operation when current is turned on and the device is in proper position to perform its function. To operate the lever 21, according to the conditions referred to, said lever carries at
 100 its other end the armature 23, of a magnet 24, when the magnet is energized the armature is attracted and the arm 22 of lever 21 is withdrawn from the escapement or other part 19, to release the registering mecha-
 105 nism.

In Fig. 5 a convenient circuit diagram is shown. A is the motor controller, B the car or train motor, *a* the main current supply conductor to the controller, *b* the conductor from the controller to the motor B,
 110 and to ground or return in the usual or any desired manner or arrangement. Of course our invention is not to be limited or restricted in respect to the arrangement of motor circuit, or the construction or rela-
 115 tion of the controller. In shunt to the motor, in the particular arrangement shown, is a circuit *c*. Included in series in this circuit are supporting sockets, which in one form of embodiment of our inven-
 120 tion, comprise wall brackets or sockets 25, 26, adapted to be mounted at a convenient point on the car. These brackets are designed to receive supporting hook contact devices 28, 29, secured to, but insulated from
 125 130

the case 10, by which the case is supported. These parts 28, 29, are in electrical connection respectively with the terminals of the magnet 24, and they respectively complete electrical contact with the wall bracket sockets 25, 26, when inserted in said sockets, thereby completing therethrough the circuit of the magnet 24, and current flows through this circuit whenever the supporting contact hooks 28, 29, are inserted in the wall bracket sockets 25, 26, and current is turned on to the motor. It is obvious that many other specifically different forms of circuit completing plugs or contact devices may be employed without departure from the spirit and scope of our invention, as defined in the claims. The arrangement shown, however, is simple and affords an easy way for supporting the device, the wall socket brackets being secured to a convenient part of the wall of the motorman's cab and constituting a permanent fixture, if desired, in the car, and forming a support for the register device, the act of inserting the supporting hook contacts 28, 29, into the wall brackets serving to complete the circuit connections of the magnet 24.

If desired a suitable resistance 30, may be arranged in the circuit *c* to control the amount of current flowing therethrough when current is being supplied to the motor.

From the foregoing description it will be seen that we provide an exceedingly simple registering device for registering the total current-time for any desired period of time, a device which is portable, and which affords means for maintaining an efficiency record in current consumption of each individual motorman. By basing motormen's compensation upon their efficiency record thus determined, inducement is provided for securing the most economical service in the operation of the street or other car or train system.

Having now set forth the object and nature of our invention, and a construction embodying the principles thereof, and having described the same, its purpose, function, and mode of operation, what we claim as new and useful and of our own invention, and desire to secure by Letters Patent is,—

1. A portable total current-time registering device for street or other railway car motors, including, associated registering time period dials and pointers, a clock work mechanism for operating the same, a stop device for the clock-work mechanism, a

support for the registering device, and means made effective by imposing the registering device on its support for placing the same in condition to release the stop device when current is turned on the motor.

2. A portable total current-time registering device for street or other railway car motors, including a casing, associated registering time period dials and pointers and a clock-work mechanism for operating the same arranged within the casing, a stop device for the clock mechanism, a magnet for controlling the device, and a supporting contact device carried by the casing and connected to the terminals of the magnet.

3. A portable total current-time registering device for street or other railway car motors, including time period registering devices, a clock-work mechanism for operating the same, a stop device for controlling the clock work mechanism, a magnet for controlling the stop device, a casing inclosing all these parts, and supporting hooks for the casing, said hooks being insulated from each other, and respectively connected to the circuit terminals of the magnet.

4. The combination with a motor and its controller, and supporting wall brackets connected to the motor circuit, of a casing having supporting contact hooks adapted to be removably received in the supporting brackets, and respectively cooperating with the supporting brackets to complete an electric circuit, time period registering devices arranged in the casing, and a magnet for controlling the same, said magnet having its circuit terminals connected respectively to said supporting hooks.

5. The combination of a motor and its circuit controller, supporting wall brackets connected to the motor circuit, a portable casing having supporting hooks adapted to said brackets, time period registering devices arranged in the casing, a stop therefor, and a magnet for controlling the stop, the terminals of said magnet respectively connected to said supporting hooks.

In testimony whereof we have hereunto set our hands in the presence of the subscribing witnesses, on this 29th day of December A. D., 1910.

FRANK HEDLEY.
JAMES S. DOYLE.

Witnesses:

CLARENCE C. HUNICKE,
S. E. DARBY.