

A. E. WATTS.

AUTOMATIC PASSENGER TRAIN ANNUNCIATOR AND ALARM.

No. 505,687.

Patented Sept. 26, 1893.

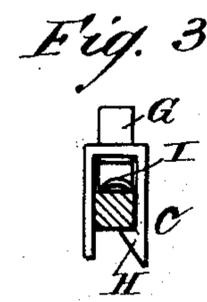
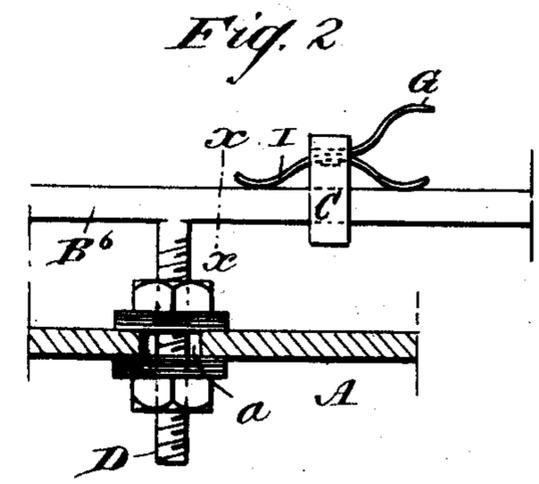
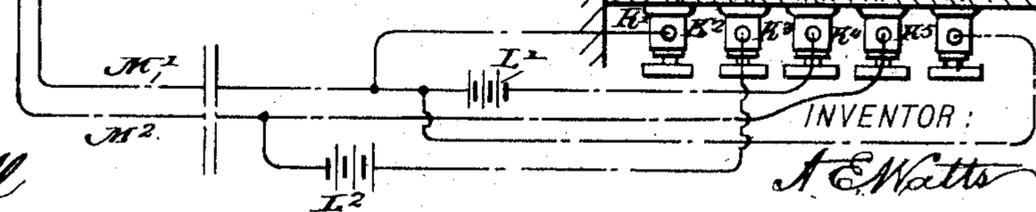
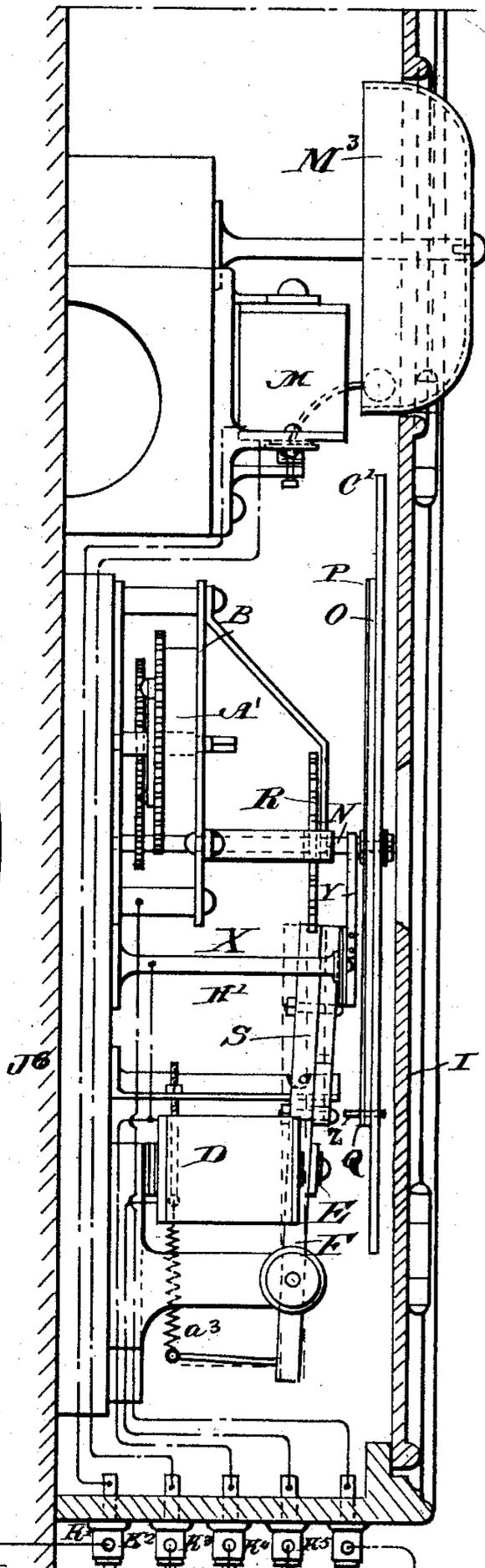
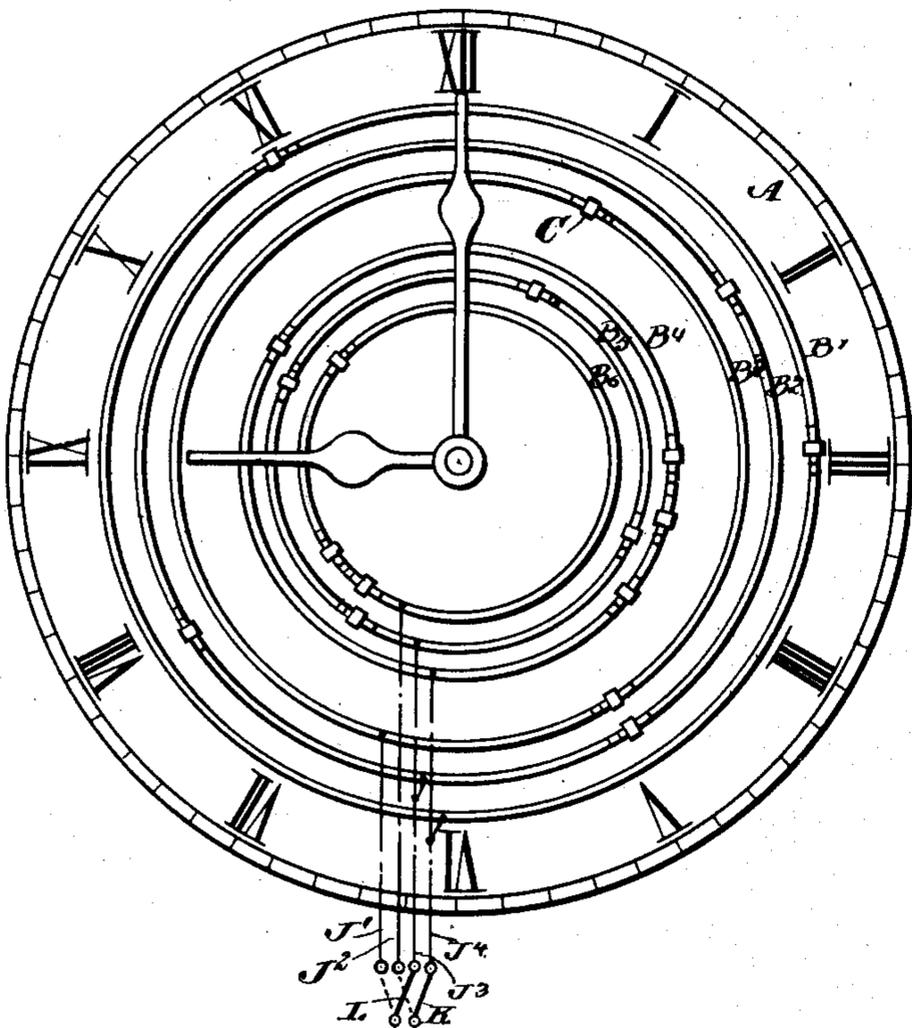


Fig. 1.



WITNESSES:
Dann Twitchell
G. Sedgwick

INVENTOR:
A. E. Watts
 BY
Munn & Co
 ATTORNEYS

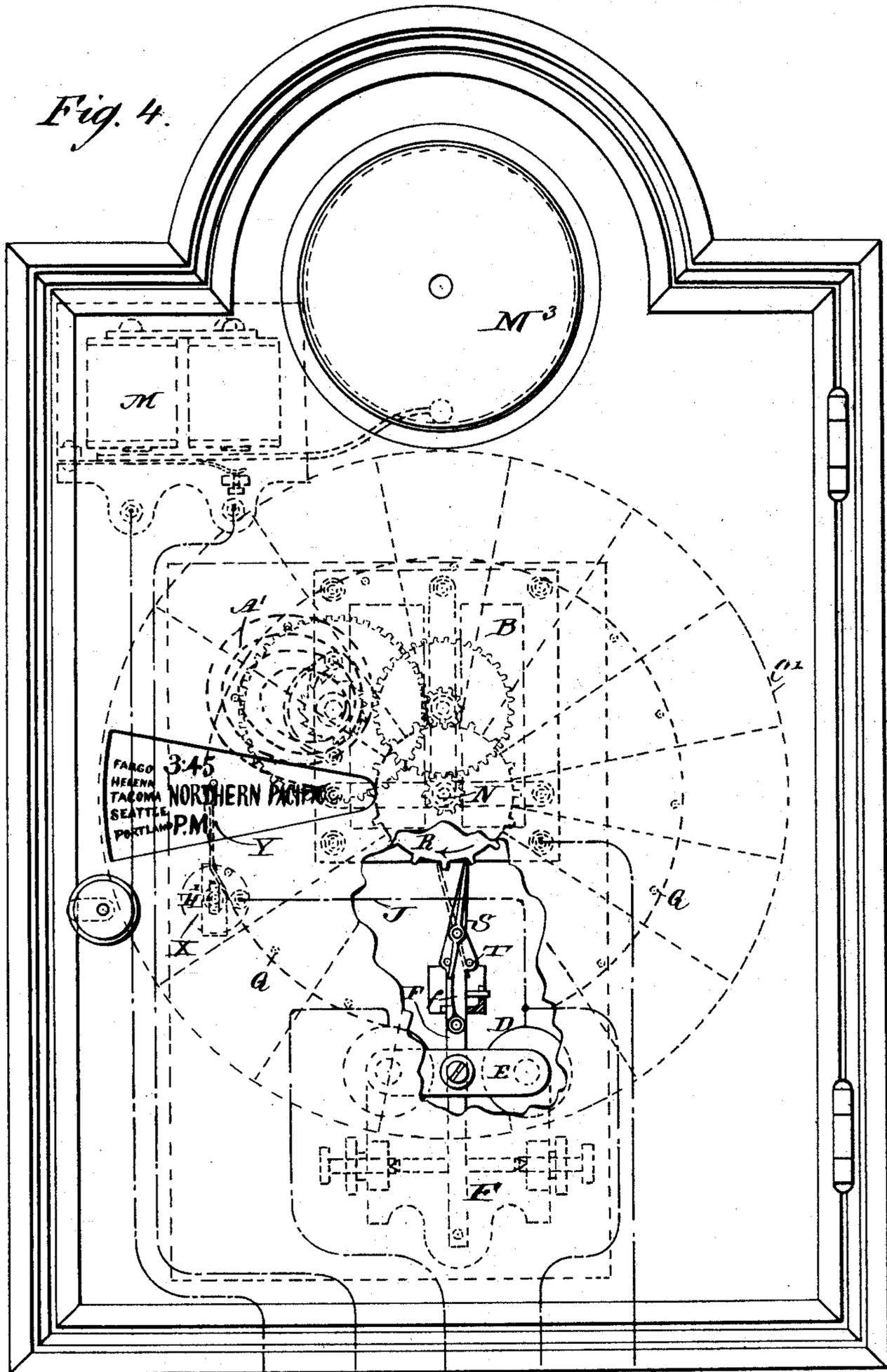
A. E. WATTS.

AUTOMATIC PASSENGER TRAIN ANNUNCIATOR AND ALARM.

No. 505,687.

Patented Sept. 26, 1893.

Fig. 4.



WITNESSES:

Donn Twitchell W²
W. Badgwick W²

INVENTOR:

A. E. Watts
 BY *Munn & Co*

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALFRED E. WATTS, OF DULUTH, MINNESOTA.

AUTOMATIC PASSENGER-TRAIN ANNUNCIATOR AND ALARM.

SPECIFICATION forming part of Letters Patent No. 505,687, dated September 26, 1893.

Application filed January 18, 1892. Serial No. 418,499. (No model.)

To all whom it may concern:

Be it known that I, ALFRED E. WATTS, of Duluth, in the county of St. Louis and State of Minnesota, have invented a new and Improved Automatic Passenger-Train Annunciator and Alarm, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

10 Figure 1 is a front elevation of the clock dial mechanism, and a side sectional elevation of the annunciator, showing a diagram of the electric circuits. Fig. 2 is an enlarged detail view of the contact spring, and devices
15 for supporting the same. Fig. 3 is a vertical transverse section taken on line $x-x$ in Fig. 2. Fig. 4 is a front elevation of the annunciator, with portions broken away to show the internal construction. Fig. 5 is a detail perspective rear view of the escapement and
20 contact spring; and Fig. 6 is a detail elevation of the contact spring.

Similar letters of reference indicate corresponding parts in all the views.

25 The object of my invention is to provide simple and effective mechanism for indicating the departure or arrival of passenger trains from or at a station, for the convenience of passengers, the annunciator and alarm being arranged at the station and at the house
30 or office of the passenger, to give warning of the approach or departure of a train a few minutes in advance.

My invention consists in a clock provided
35 with a series of electrical contacts, an annunciator provided with an electric bell, and a rotating electric disk upon which are placed the names of stations, the name of the road, and the hour of the departure or arrival of a
40 train, the said annunciator being operated by an electric circuit under the control of the clock, all as will be hereinafter more fully described.

45 Where there is but one line of railroad entering a station, and all the trains thereon are operated by one company, the electric bell only is used to announce the departure or arrival of the train. Where there are several roads entering a station, and the trains thereon are operated by several different companies,
50 the annunciator disk is used in addition to the alarm bell. The said disk exposes to

the view of intending passengers or others, in good readable type, the name of the train, or the name of the company operating it, together with a list of the principal stations to which the train is bound, or from which it is to arrive, and the time of its departure or arrival.

My improvements may be used by suburban residents to announce the departure or arrival of short line trains to or from the city; by union depot companies, to announce the departure or arrival of through and short line trains, showing what train is about to depart or arrive, and where it is bound or from whence it comes; by post offices to announce the time for closing the mails, or the arrival of mail trains at the station; by livery stable companies and hotels, and in many other ways which need not be mentioned here.

The clock which closes the circuit for operating the annunciator and alarm, is shown in Fig. 1. The dial A of the clock is furnished with two series of rings B^1, B^2, B^3 and B^4, B^5, B^6 , on which are fastened clips C, for forming electrical connections with the hands of the clock. In the dial A, are formed apertures a , for receiving the screw-threaded studs D attached to the rings $B^1, B^2, \&c.$ The studs D are provided with nuts on opposite sides of the dial, and where the dial is of insulating material, the nuts are screwed down upon the dial and upon washers placed between them and the dial; but where the dial is of conducting material, washers of insulating material such as rubber or vulcanized fiber are interposed between the nuts and the dial. By means of the nuts the studs D are moved in or out so as to arrange all of the rings $B^1, B^2, \&c.$, in the same plane, and the holes a in the dial are made larger than the studs to admit of adjusting the rings to make them truly concentric with the minute hand arbor.

The clips C are each furnished with one plain arm and one arm having a hook H formed thereon, so that when the clip C is slipped over one of the rings $B^1, \&c.$, it will be held upon the ring. In the clip is inserted a bow spring I, which bears upon the outer face of the ring and holds the clip firmly in the position of use. To the clip C is secured a curved contact spring G, which extends out-

wardly into the path of the clock hand. The clip C can be placed anywhere on the ring, and is held in position by the spring I, so that it is not moved by the hand of the clock when the electrical contact is made.

The rings B', and B⁴ are electrically connected at the back of the dial by means of a wire J¹, soldered or otherwise fastened to the studs D, and the rings B², B⁵, are connected in the same manner by the wire J³. The rings B³ and B⁶ are used for the night circuit. Wires J', J² are connected with these rings. When thrown into the circuit the rings B', B⁴ are connected with one pole of the battery by the wires J⁴, M', and the rings B², B⁵ are connected with the other pole of the battery the circuit being through the wires J³, M², binding post K⁵, the wire extending from the said binding post to the annunciator magnet D, through the said magnet, binding post K⁴ and wire connected therewith.

The clips C are placed on the rings B', B², &c., in such a position as will allow the hands to come in contact with them at the time when the alarm is intended to be sounded. Where there are several alarms to be sounded during the day, the clips for the minute hand are placed alternately on the positive and negative wire rings B', B², and the clips for the hour hand are placed on the smaller rings B⁴, B⁵ in a similar way, so that if, (for example) an alarm is to be sounded at 7.25, another at 8.30 and another at 9.35, the clips which would come in contact with the minute hand at 7.25 and 9.35, would be placed on a ring connected with one pole of the battery, and the remaining one—that for 8.30—would be fastened to a ring connected with the opposite pole of the battery, so that should the hour hand reach its clip too soon, or remain after the minute hand has reached its next clip, no alarm would be sounded, as the minute and hour hands would both be connected with the same pole of the battery.

To use the night circuit it is only necessary to move the switch arms K, L, so that they will form an electrical connection with the ends of the wires J', J². The clips C are generally arranged so as to sound an alarm five minutes before the departure of all through trains.

The automatic electric passenger train annunciator which shows what train is about to depart from or arrive at a station, also whence it came and its destination, is shown in Figs. 1 and 4. The parts of the annunciator are mounted on the base J⁶. The train of gearing B, which operates the annunciator, is driven by a volute spring A'. The train of gearing communicates motion to the arbor N, which carries the disk C'. The said disk C' has printed on its outer surface in different segments marked thereon the names of the different trains departing from or arriving at a station,—a list of the principal stations to which the said trains are bound, and

the time at which they depart or arrive. In front of the disk C', is placed a shield I, with an opening formed therein for the display of the letters and figures contained in one section of the disk C', the other portions being obscured by the shield. On the rear surface of the disk C' is fastened a circular piece of rubber or leather O, which in turn is covered by a thin circular piece of metal P, of the same size, being secured to the disk C' by riveting or otherwise. A short distance from the outer edge of the disk C', in each space marked off for each train and the list of the principal stations, is drilled a small hole Q, extending through the disk C', the circular piece of rubber or leather O, and the circular piece of metal P. A circuit closing device H' is attached to the base J⁶ directly under the opening in the shield I. It consists of a metal column X, of a length sufficient to reach from the base J⁶ to a point near the rear surface of the circular piece of metal P, and carries an elastic spring Y, which extends into the path of the pin Z, inserted in one of the holes Q. Binding posts K', K², K³, K⁴ and K⁵ are inserted in the casing inclosing the annunciator mechanism. The binding post K' is connected with one terminal of the magnet M of the electric bell M³, the other terminal being connected with the binding post K². The binding post K³ is connected with one terminal of the annunciator magnet D, and the other terminal of the said magnet is connected with a wire J leading from the binding post K⁴ to the circuit closer H'. The binding post K⁵ is connected with the metallic frame of the gearing B. The wires M', M², extending to the circuit closing devices of the clock are connected with the binding posts K³, K⁴, a battery L' being inserted in the circuit of the wire M'. The binding posts K' and K⁵ are connected with the wire M' outside of the battery L'. The wire M² is connected with the binding post K⁴, also with the binding post K³, by a wire which includes the battery L². The bell M³ is of well known construction, and will therefore require no description.

The escape mechanism governing the revolution of the disk C' will be described in connection with the operation of the machine, which is as follows: When the volute spring A' is wound up it tends to revolve the disk C', but is prevented from doing so by the armature lever F striking against one of the teeth of the scape wheel R. At a certain number of minutes prior to the departure or arrival of a train from or at the station, the circuit is closed through the hands of the clock, the springs G carried by the clips C, the rings B', B², &c., the wires J³, J⁴, the switch arms K, L, the wires M', M², the battery L', the binding posts K³, K⁴, through the connecting wires to the electro-magnets D, and through the binding posts and wires connected with the magnet M. The armature E

is drawn toward the cores of the electro magnet D, and the armature lever F is moved inward toward the base of the annunciator, thereby bringing the arm S pivoted to the armature lever into contact with one of the teeth of the scape wheel R. The pivoted arm S is forced over by scape wheel until its shorter arm strikes the limit pin T and slots. This allows the disk C' to revolve the distance of one space, when stopped by virtue of the engagement of the lever S with one of the teeth of the scape wheel R, and the name of the train which is about to depart or arrive, will be displayed in the opening of the shield. When the circuit is again opened, the armature E, being released, the armature lever F and the pivoted arm S will be returned to their original positions by the retractile springs *f* and *a*³. The disk C' will remain in this position until the circuit is again closed, when it will again revolve the distance of one space as before. If there are any blank spaces on the disk C', or if on certain days, as on Sunday, it is desired to omit the announcement of certain trains, the pin Z is inserted in one of the holes Q, opposite the space to be omitted. The spring Y extends into the path of the said pin Z, which extends through the disk C', the circular piece of rubber or leather O, and the circular piece of metal P. When the blank space, or the space in which is printed the name of the train or trains which it is desired shall not be announced, comes opposite the opening in the shield I, the pin Z comes in contact with the elastic spring Y of the circuit closing device H', and closes the circuit through the pin, the circular piece of metal P, the train of gearing and its framework, the binding post K⁵, the battery L', the binding post K³, one terminal of the electro magnet D, through the circuit closing device H', to the other terminal. The magnet D will be again energized, thus working the escapement when the disk C' will again revolve the distance of one space, when it stops, unless the elastic spring Y comes in contact with another pin Z, when the operation just described will be repeated.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. In an automatic passenger train annunciator and alarm, a current controller formed of a clock provided with two series of rings B', B², B³ and B⁴, B⁵, B⁶, attached to the clock dial but insulated therefrom, two series of contact pieces carried by the rings, and projecting into the paths of the hour and minute hands of the clock, the electrical connections J', J², J³, J⁴, terminating in switch contact points, the switch arms K, L, and the electrical connections, substantially as described.

2. In an automatic passenger train annunciator and alarm, the combination of a time electric circuit controller, an annunciator disk C' provided with perforations Q', the pins Z for insertion in the apertures Q', the contact spring Y, and the electrical connections, substantially as specified.

3. In an automatic passenger train annunciator and alarm, the combination of a spring-actuated annunciator disk, an electrically operated escapement for controlling the movement of the disk, a time electric circuit controller provided with adjustable electric contacts, and arranged to close the circuit on the annunciator at the prescribed hour and minute, substantially as specified.

4. In an automatic passenger train annunciator and alarm, the combination, with the annunciator disk C', provided with the holes Q, the actuating spring A', and electric escapement, consisting of the armature lever F, the spring-pressed pivoted arm S, and the actuating magnet D, of one or more pins Z inserted in the holes Q, and a contact spring Y for intermitting the electric escapement, substantially as specified.

5. The combination, with the annunciator disk C', of the scape wheel R secured to the arbor of the annunciator disk, the electro-magnet D, and the armature lever F, provided with the armature E and spring-pressed pivoted arm S, substantially as specified.

ALFRED E. WATTS.

Witnesses:

W. B. CROSS,
F. W. MERRITT.