B. HAMILTON & C. C. TIMMONS.

STREET INDICATOR FOR CARS.

APPLICATION FILED MAR. 16, 1910.

1,086,527.

Patented Feb. 10, 1914.

3 SHEETS—SHEET 1.

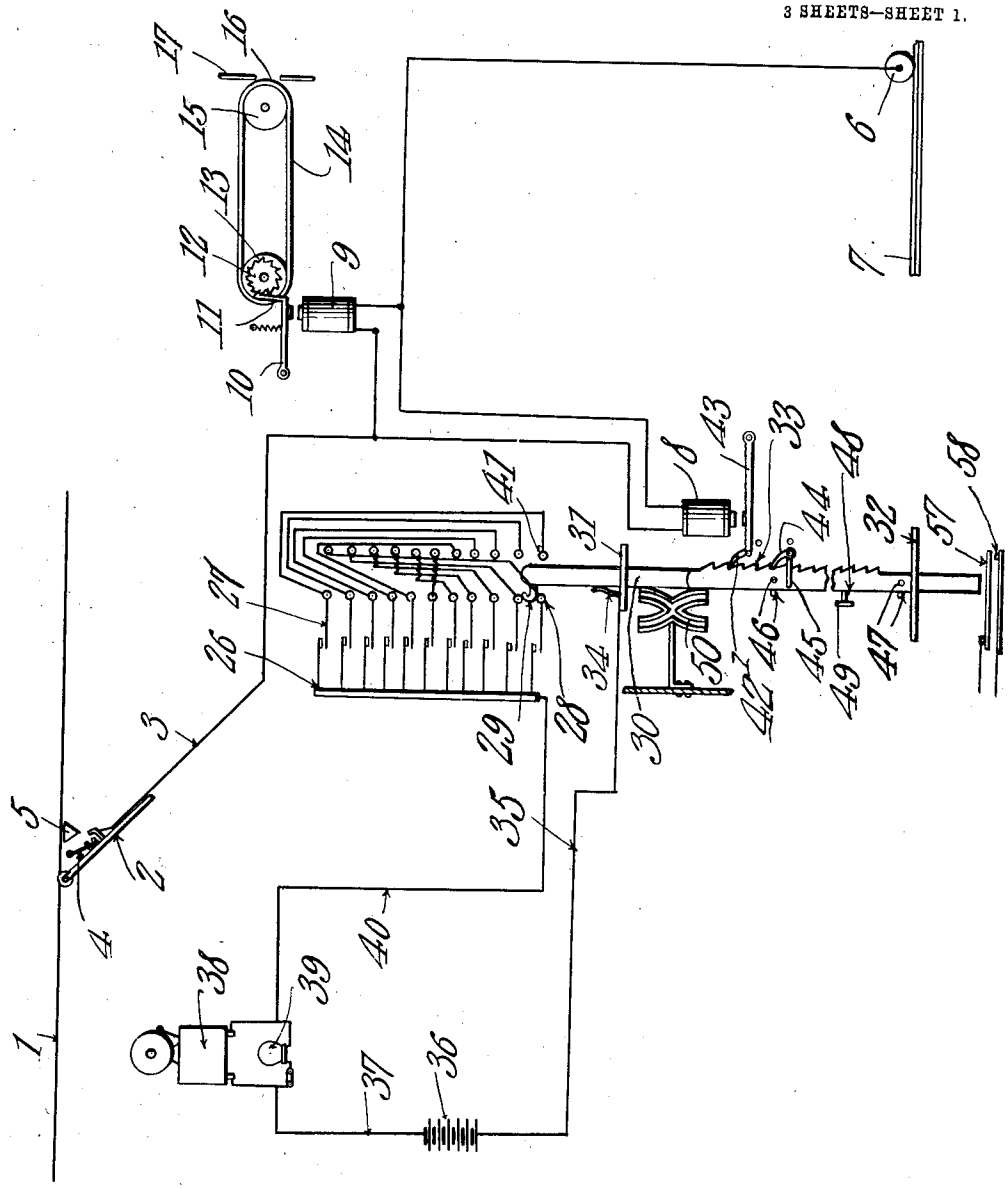


Fig. 1.

Witnesses

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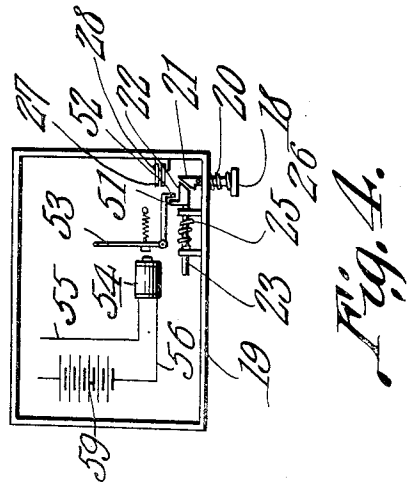


Fig. 4.

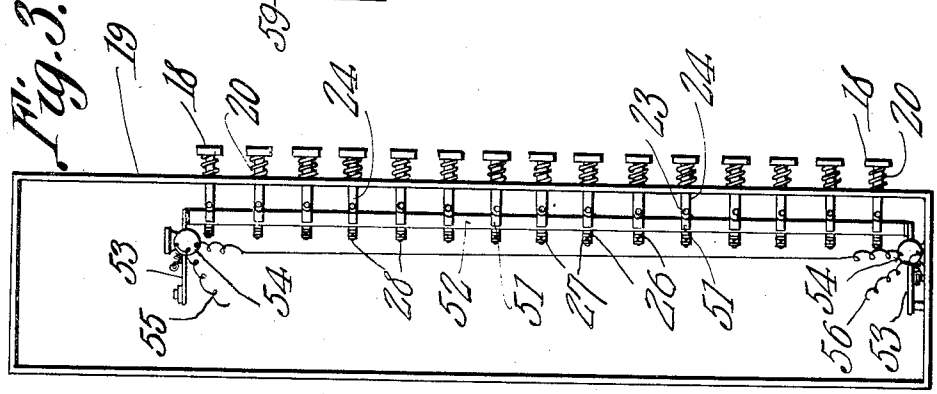


Fig. 3.

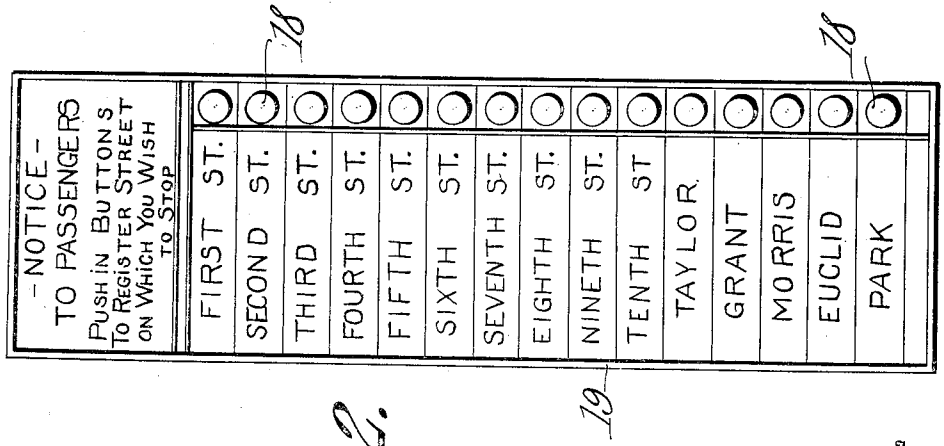


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 5.

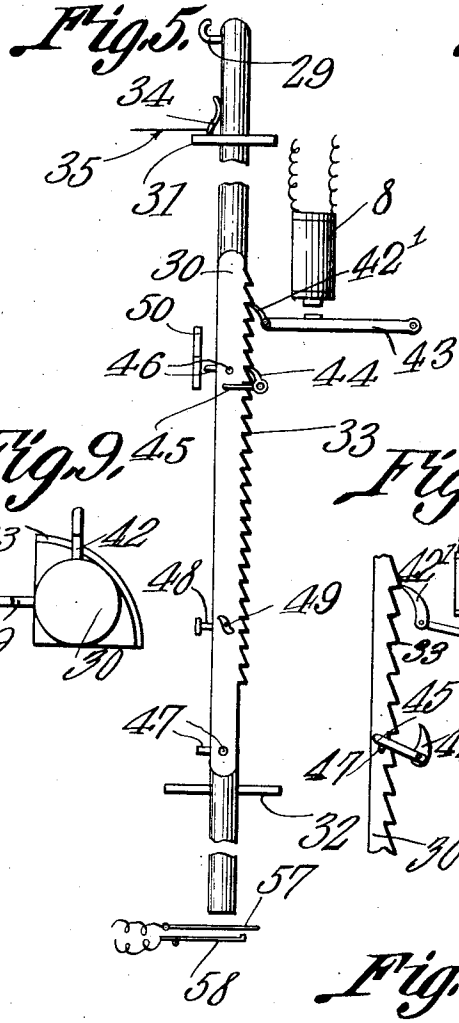


Fig. 6.

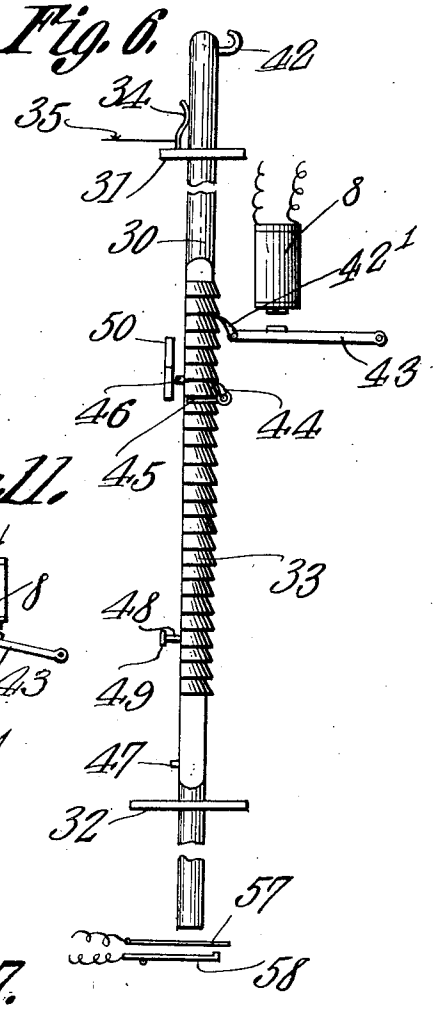


Fig. 9.

Fig. 11.

Fig. 7.



Fig. 8.

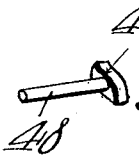
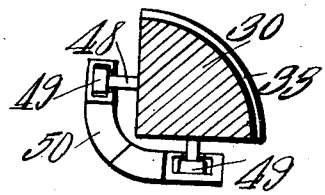


Fig. 10.



Witnesses

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UNITED STATES PATENT OFFICE.

BURNETT HAMILTON AND CYRUS C. TIMMONS, OF AMARILLO, TEXAS.

STREET-INDICATOR FOR CARS.

1,086,527. Specification of Letters Patent. Patented Feb. 10, 1914.

Application filed March 16, 1910. Serial No. 549,772.

To all whom it may concern:

Be it known that we, BURNETT HAMILTON and CYRUS C. TIMMONS, citizens of the United States, residing at Amarillo, in the county of Potter and State of Texas, have invented a new and useful Street-Indicator for Cars, of which the following is a specification.

This invention has reference to street indicators for cars and its object is to provide a means whereby streets being approached are being indicated in such manner as to be visible to passengers in the car and also provision is made whereby a passenger may indicate on entering the car or at any subsequent time the street at which it is desired the car should stop, the indication being so arranged as to become noticeable to the motorman or other authorized person at a suitable time before the car is to stop.

The invention will be best understood from a consideration of the following detail description taken in connection with the accompanying drawings forming a part of this specification, in which drawings,

Figure 1 is a diagram illustrating the apparatus for setting the signal means for subsequent operation, and also showing the means for indicating the street being approached. Fig. 2 is a front elevation of the signal setting apparatus. Fig. 3 is a side elevation of the structure of Fig. 2 with one side of the casing removed. Fig. 4 is a plan of the structure of Figs. 2 and 3 with the top of the casing removed. Figs. 5 and 6 are structural diagrams of the means for causing the actuation of signals. Figs. 7 and 8 are views of details of the structures of Figs. 5 and 6. Fig. 9 is a top plan of the circuit closer, showing the relative positions of the fingers thereon; Fig. 10 is a transverse section of the circuit closer, taken through its ratcheted portion; and Fig. 11 is a side elevation of the circuit closer and its attendant mechanism, the view showing the actuating and locking elements out of engagement with the circuit closer.

Referring to the drawings and especially to Fig. 1 there is shown a conductor 1 which may be considered as an overhead conductor in a railroad of the under-running trolley type, but this showing may be taken as typical only since it may be made to apply with equal facility to the sub-trolley type of electric railways. There is also shown a trolley arm 2 which may be taken as of the usual construction and this trolley arm carries a conductor 3 capable of being coupled to the conductor 1 by means of a switch 4 operable by a block or obstruction 5 so placed with relation to each street to be indicated that the block 5 will engage the switch 4 and close the circuit to the conductor 3 at a suitable time interval before the car will reach the street to be indicated. It will be understood that there is a block 5 in advance of each street to be indicated and this block may be supported by the trolley poles or any other suitable means of sustaining it may be employed. Usually the block 5 may be installed intermediate of two streets and may be of a double wedge or other suitable type so that the single block may actuate the switch 4 for either direction of travel of the car while the distance between the intermediate point between the two streets and the street being approached is customarily sufficient for the motorman to bring the car to a stop if he receives a signal to that effect. The conductor 3 is continued to the running gear of the car indicated diagrammatically by a wheel 6 engaging one of the traffic rails 7 and included in the conductor 3 is an electromagnet 8 and also another electro-magnet 9, the two electromagnets being preferably in multiple arc relation one to the other. By this arrangement every time the switch 4 is closed because of contact with the block 5 the two magnets 8 and 9 are energized.

Every time the magnet 9 is energized it attracts an armature 10 which in turn through a pawl 11 causes a corresponding movement of a ratchet wheel 12 fast on a drum 13 carrying an endless band 14 extending also around another drum 15 and this band is visible through an opening 16 in the suitable casing 17 which may be extensive enough to inclose the structure just described. The band 14 may have thereon the names of the streets crossed by the car line and the parts are so proportioned that

each time the magnet 9 is energized the band will be actuated a sufficient distance to display a new name at the opening 16. The illustration in Fig. 1 is diagrammatic but it will be understood that in practice the band is sufficiently long to contain the names of all the streets crossed by the car line, and if each car is designed to make both outgoing and return trips, then the band 14 will contain the names of the streets in both orders so that on the outgoing trip the names will be displayed in proper order and on the return trip the names will also be displayed in proper order and this may be accomplished without reversing the movement of the band 14. Of course other arrangements for displying the names of the streets automatically as the car progresses may be substituted for the arrangement indicated, the showing of the drawings being more or less typical.

Located at any convenient or appropriate point in the car is a series of push keys 18 which may be mounted in a casing 19, each push key having one end accessible and within easy reach of a passenger for manipulation by such passenger. Opposite each push key 18 is displayed the name of a street so that each push key is individual to a street name and appropriately displayed with relation to the push keys 18 there may be suitable directions instructing the passengers how to operate the push keys. Each key 18 is held normally in a projected position by a suitable spring 20 and within the casing 19 each key 18 is formed with a latch head 21 best shown in Fig. 4 where one of the keys 18 is shown separated from the series for purposes of illustration. The latch head 21 is in the form of a beveled boss and in the path of the beveled face of the head 21 is a beveled latch block 22 on one end of a stem 23 capable of longitudinal movement in suitable bearings 24 within the casing 19 and a spring 25 tends to force the block 22 toward the latch head 21. When a key 18 is pushed against the action of the spring 20 then the latch block 22 will move out of the path of the latch head 21 and ultimately snap behind said head thus holding the key 18 locked in the innermost position.

In the path of the head 21 is a switch member 26 which may be in the form of an elastic blade or in any other form, and in the path of the free end of the blade 26 is a fixed switch member 27, although the member 27 may be somewhat elastic to improve electrical contact when the switch member 26 is brought into engagement therewith. Each switch member 27 may also carry or be connected to a contact 28.

The contacts 28 may be so arranged as to all be in the path of a contact finger 29 on one end of a sliding bar 30, which latter as well as the switch members 26 and 27 may be housed in the casing 19. The bar 30 is mounted for longitudinal movement in suitable bearings 31, 32 and formed on the bar 30 or attached thereto is a longitudinal series of ratchet teeth 33 extending laterally about the bar to a sufficient extent to permit a partial rotation of the bar without bringing the ratchet teeth out of operative engagement with certain members to be described.

The bearing 31 of the bar 30 may carry a contact finger 34 maintaining constant electrical engagement with the bar whether the latter be partially rotated or moved longitudinally, the said bar being capable of both movements for a purpose which will presently appear. The finger 34 is connected by a conductor 35 to one side of a battery 36 or other suitable source of electric current, and the other side of the battery 36 is connected by a conductor 37 to one side of a bell 38 or other suitable audible signal and also to one side of a lamp 39 or other suitable visual signal. The other side of the bell 38 and the other side of the lamp 39, the two signals being in multiple with the battery are connected by a conductor 40 to all the switch blades 26 in multiple.

In addition to the series of contacts 28 there is another like series of contacts 41 connected in reverse order to the contacts 28 and on the bar 30 is a finger 42 adapted under circumstances to be hereinafter referred to, to move across the contacts 41 into engagement therewith successively as the bar 30 moves longitudinally. Longitudinal movement is imparted to the bar 30 by a pawl 42′ on the free end of an armature lever 43 controlled by the magnet 8 and the bar 30 is held against movement except in the direction caused by the action of the pawl 42′, by a back stop pawl 44 provided with a pin or projection 45 for a purpose which will presently appear.

Projecting from the bar 30 at right angles one to the other are pins 46 and also projecting from the bar 30 at right angles one to the other are other pins 47. The bar 30 also carries between the pins 46 and 47 another pair of pins 48 also projecting from the bar 30 at right angles one to the other. The pins 48 each carry at the outer end a guide head 49 adapted to traverse crossed guides 50 in their paths at one limit of the travel of the bar 30.

When a passenger enters the car, such passenger may actuate the push key 18 opposite the name of the street it is desirable the car should stop so that the passenger may then leave the car. In this manner several of the push keys 18 may have been depressed or pushed in by the passengers long before the car reaches the street thus indicated. As the car progresses the switch 4 is closed momentarily each time the car is about midway between two cross streets, and every time the switch 4 is closed, both

magnets 8 and 9 are energized. The magnet 9 will cause the display at the opening 16 of the name of the street being approached while the magnet 8 will attract the armature lever 43 and so cause the movement of the bar 30 commensurately. This movement is so related to the contacts 28 that the finger 29 will move from a position out of engagement with a contact 28 across the same and the bar 30 will come to rest with the finger 29 at the point between two contacts 28 having during its active movement traversed a contact 28. So long as the contacts 28 are not connected to the respective switch blades 26 the movement of the finger 29 over the contacts 28 is without effect. As soon as the finger 29 reaches a contact 28 coupled to a switch member 27 onto which a switch member 26 has been closed by the pushing in of the push key 18 corresponding thereto, there is established a circuit from the battery 36 through the bell 38 and lamp 39 thence by the conductor 40 to the switch member 26, thence to the switch member 27 and to the contact 28 and from the latter by the finger 29 to the bar 30, thence to the finger 34 and by the conductor 35 back to the battery. The result of this is that the bell will give an audible signal and the lamp 39 will flash. Of course in daylight the flashing of the lamp is not material and this lamp may be cut out of circuit by means of a suitable switch when the flashing of the lamp is not necessary but at night the flashing of the lamp may be effective and the bell may or may not be used as desired. The bell however will customarily be used as the signal means whether the lamp be used or not. Since the magnet 8 is energized when the car is in about a mid-block position and the bell or lamp or both will respond while the bar 30 is in motion, the signal is given to the motorman in ample time to stop the car at the next crossing.

The passenger has but to press a push key 18 when entering the car to agree with the street it is desirable the car should stop for the passenger to alight, and when the car is approaching such street, then the signal is automatically given to the motorman without further thought on the part of the passenger, and of course the passenger is assured that the proper street has been reached by the display of the name of the street at the opening 16.

In the drawings, the bar 30 is shown in an upright position so that it tends to move downward by gravity, but it will be understood that the bar may be otherwise placed and otherwise controlled. Ultimately the bar 30 reaches its highest position considering the showing of the drawings, and at the same time the appropriate pin 47 engages the extension 45 of the pawl 44 and moves the latter so as to be out of the path of the ratchet teeth 33. The pawl 42′ on the armature lever 43 is so secured and positioned with relation to this lever as to move out of the path of the ratchet teeth each time the lever 43 is completing its movement toward the magnet 8 so that when the bar 30 has reached its highest position and the back stop pawl 44 has been moved out of the path of the ratchet teeth, the bar will at once drop toward its initial position and while so dropping the head 49 of an appropriate pin 48 engages the proper section of the guide 50 so that the bar will be given a quarter turn. When the bar 30 reaches the initial position, the appropriate one of the pins 46 will engage the extension 45 and move the back stop pawl 44 again into engagement with the ratchet teeth which latter extend to a sufficient distance around the bar to still be engaged by the pawls 42 and 44 even though the bar 30 has been moved through a quarter turn on its longitudinal axis. While the guides 50 are shown displayed in the drawings, it will of course be understood that they are appropriately curved about the bar 30 to admit of the action described. The length of the guides 50 and their shape is such that when the bar 30 has completed the quarter turn the head 49 of the active pin 48 will escape from the guide member engaging it and the return movement of the bar 30 to its upper position will not cause the head 49 to again engage the member of the guide 50 to cause the rotative movement of the bar. Now when the bar is again moved actively as the car travels on the return run the finger 42 will be brought into engagement with the contacts 41 in series, but since these contacts are coupled up in reverse order to the contacts 28 the signals will be given in the proper order to agree with the movement of the car. When the car reaches the end of the return run the dropping of the bar 30 causes the other pin 48 to engage the other guide section of the guide 50 and so give a quarter turn to the bar to return it to its first position agreeable with the outgoing run of the car.

In order that all the push keys 18 may be returned to the inactive position at the end of each run, each head 22 is provided with a pin or stud 51 and all these pins or studs are in the path of a bar 52 connected to the armatures 53 of magnets 54 which latter are included in conductors 55, 56, connected to circuit terminals 57, 58 in the path of the bar 30 so that the circuit may be closed by the bar when it reaches its lowermost position. One of the conductors, say the conductor 56 may include a battery 59 or other suitable source of current. It will be understood of course that where the bar 52 is not too long a single magnet 54 will be

sufficient, but where the bar is quite long, then more than a single magnet is necessary. When the magnet or magnets 54 are energized then the bar 52 is moved in a direction to engage the pins 51 of the blocks 22 and withdraw the latter from engaging relation with the heads 21 of the push keys 18 so that all the push keys which have been locked after being pushed in are released and return to their normal positions under the action of their springs 20. Thus when the bar 30 is returned to normal position all the keys 18 which have been actuated are restored to their first positions, ready for subsequent operation.

What is claimed is:—

1. In a car, a signal circuit, separate sets of circuit terminals on the car, one set comprising coöperative pairs of terminals, means for causing the successive closing of the terminals of one set by the progression of the car, and means inside the car and under the direct manual control of passengers for closing any coöperative pair of the other set of terminals at will.

2. In a car, a signal circuit, a set of circuit terminals therefor on the car, a step by step circuit closer on the car and movable successively in a right line over the circuit terminals, another set of terminals for the signal circuit, means within the car and under direct control of the passengers for closing any one of the second set of circuit terminals onto one of the first set of circuit terminals, at will, and a releasable locking device engaging the circuit closer against retrograde movement.

3. In a car, a signal circuit, a set of circuit terminals therefor and located on the car, a circuit closer on the car for the said set of circuit terminals, the closer being movable over the same, means for causing a step by step movement of the said circuit closer with momentary contact with the said circuit terminals, other circuit terminals on the car, each individual to a corresponding one of the first named set of circuit terminals and movable manually at will to the closed circuit position, and means for locking the actuated ones of the second set of terminals in the closed circuit position.

4. In a car, a signal circuit, a series of contact terminals for said circuit and located on the car, a switch for each terminal, a series of push keys on the car, each key being individual to a switch and movable at will into switch engaging position, means for locking each key in the switch engaging position, and an automatic circuit closer on the car and included in the signal circuit and movable along the series of contact terminals into circuit closing relation thereto.

5. In a car, a signal circuit, a series of contact terminals for said circuit and located on the car, a switch on the car for each terminal, a series of push keys on the car, each key being individual to a switch and movable at will to engage a switch, means for locking each key in switch engaging position, a circuit closer on the car included in the signal circuit, and means for moving the circuit closer step by step along the series of contact terminals into circuit closing relation thereto.

6. In a car, a signal circuit, a series of contact terminals on the car for said circuit, a switch on the car for each terminal, a series of push keys on the car, each key being individual to a switch and movable at will to engage a switch, means for locking each key in the switch-engaging position, a circuit closer on the car and included in the signal circuit, means for moving the circuit closer step by step in a right line along the series of contact terminals into circuit closing relation thereto, and means for causing the return of the circuit closer to normal position after traversing the circuit terminals.

7. In a car, a signal circuit, a series of contact terminals, a switch for each terminal, a series of push keys, each key being individual to a switch and movable at will to engage a switch, means for locking each key in switch-engaging position, a circuit closer included in the signal circuit, means for moving the circuit closer step by step along the series of contact terminals into circuit closing relation thereto, means for causing the return of the circuit closer to normal position after traversing the circuit terminals, and means for causing the return of the actuated push keys to normal position on the return of the circuit closer to normal position.

8. In a car, a signal circuit, a series of contact terminals, a switch for each terminal, a series of push keys, each key being individual to a switch and movable at will to engage a switch, means for locking each key in the switch-engaging position, a circuit closer included in the signal circuit, means for causing the circuit closer to traverse the series of contact terminals into successive circuit closing relation at will, and means for causing the return of the actuated push keys to normal position simultaneously.

9. In a car, a signal circuit, a series of contact terminals therefor, means for closing the circuit at the circuit terminals in succession, other circuit terminals connected with the first named circuit terminals, means for closing the second named circuit terminals at will, means for holding the closed ones of the second series of circuit terminals in the closed position, and means for simultaneously releasing all the closed circuit terminals of the second named series simultaneously to return to normal position.

10. In a car, a signal circuit, two series of contact terminals in the signal circuit, a series of switches in the circuit, means for actuating each switch at will to hold the same in the closed circuit position, a circuit closer and means for causing the circuit closer after traversing one series of circuit terminals to return to normal position and then traverse the second series of circuit terminals.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

BURNETT HAMILTON.
CYRUS C. TIMMONS.

Witnesses:
M. H. HARDIN,
LOUIS S. TREMBLY.