

(No Model.)

3 Sheets—Sheet 1.

J. D. KEEN & J. J. ROBERTS.
STATION INDICATOR.

No. 576,854.

Patented Feb. 9, 1897.

Fig. 1.

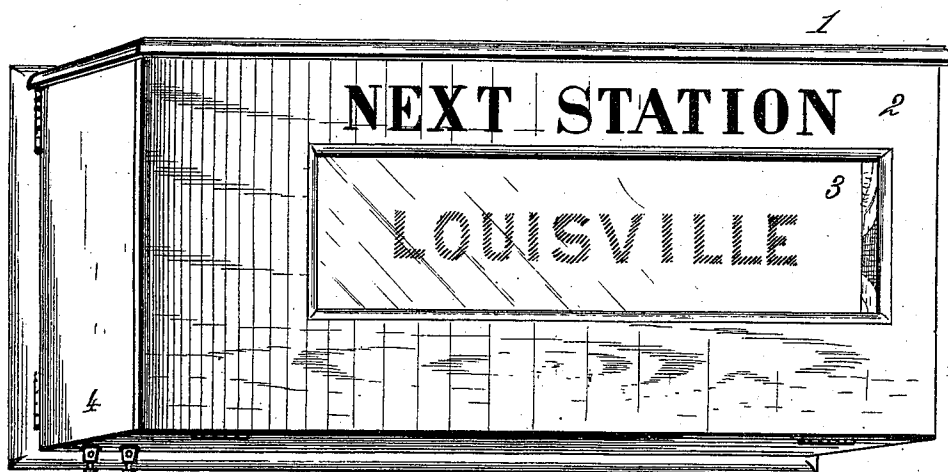
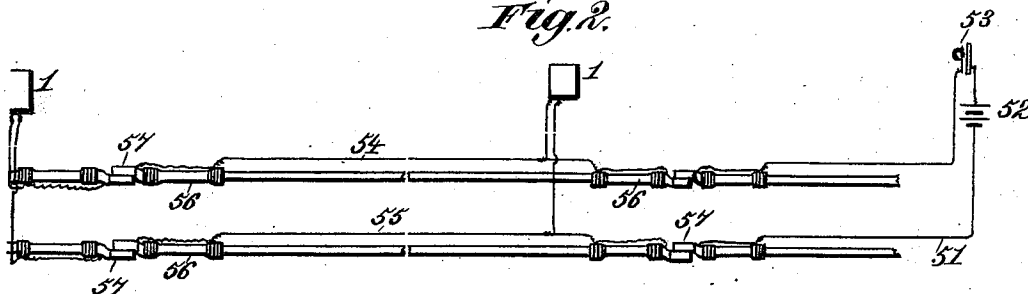


Fig. 2.



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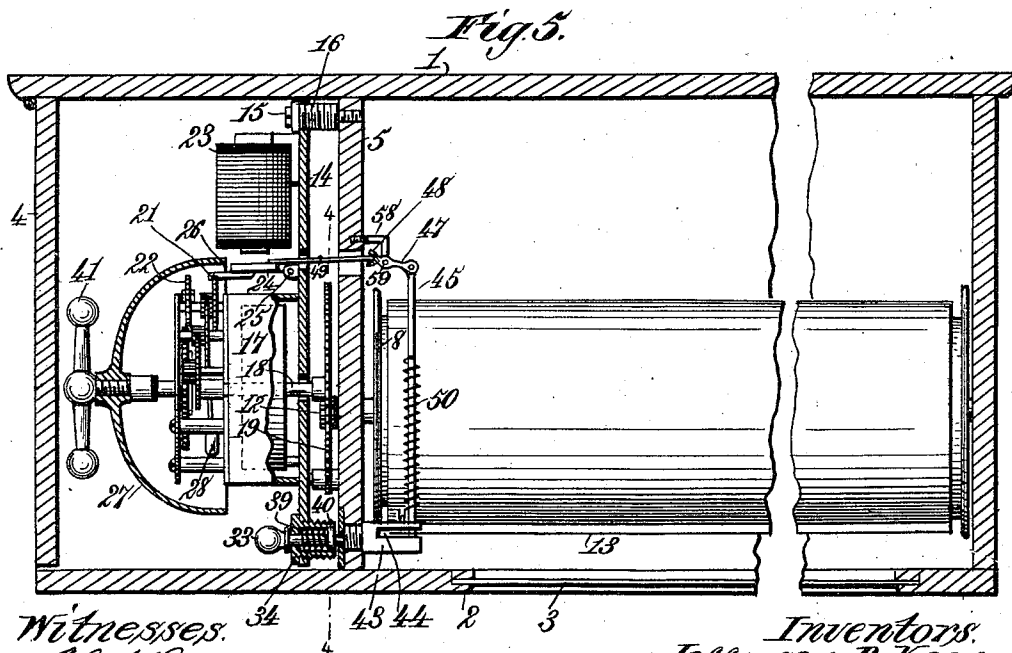
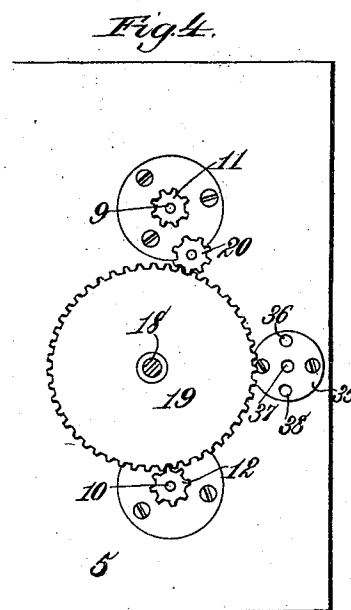
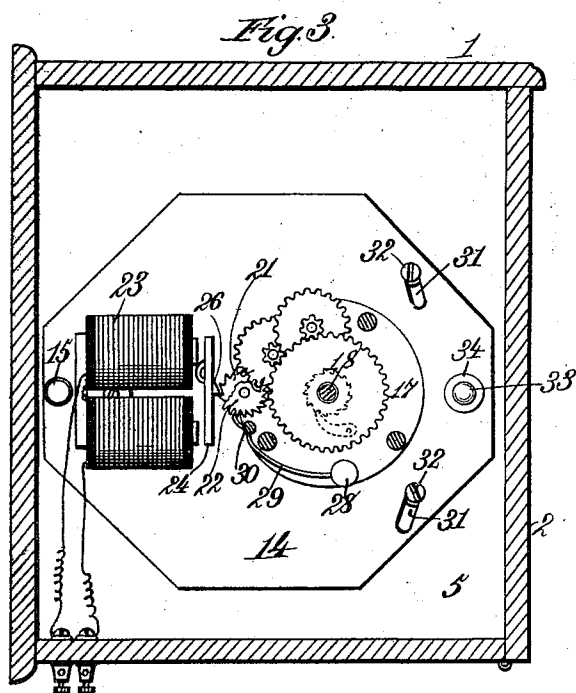
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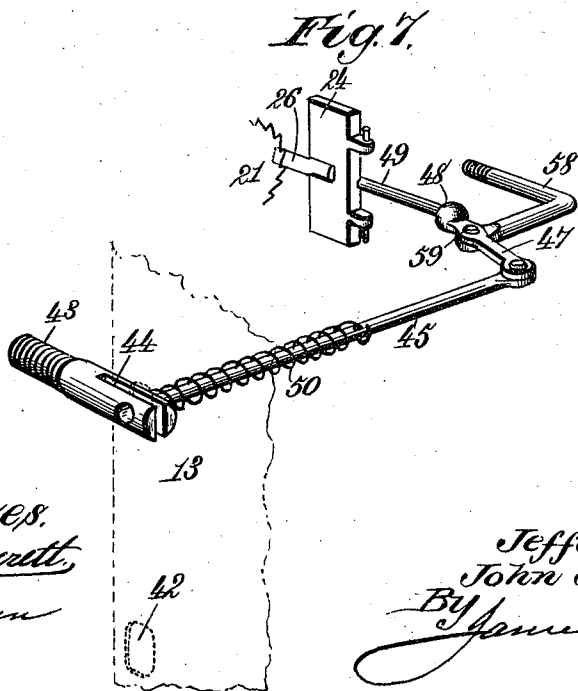
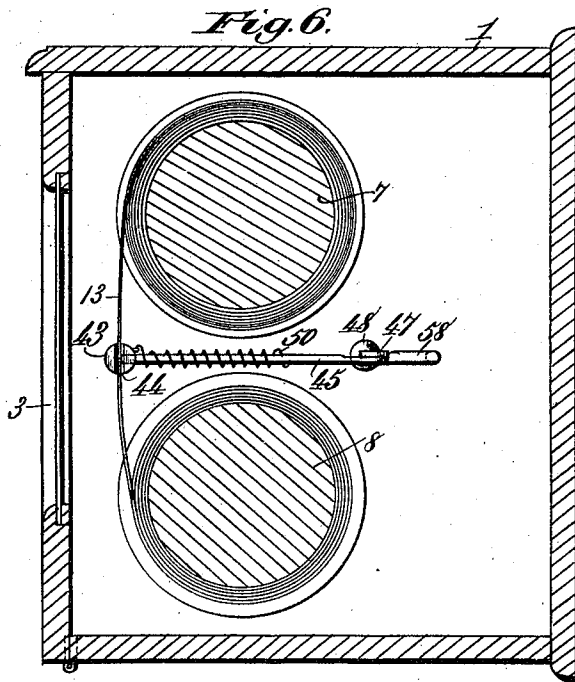
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STATION INDICATOR.

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UNITED STATES PATENT OFFICE.

JEFFERSON D. KEEN AND JOHN J. ROBERTS, OF LOUISVILLE, KENTUCKY.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 576,854, dated February 9, 1897.

Application filed September 24, 1896. Serial No. 606,823. (No model.)

To all whom it may concern:

Be it known that we, JEFFERSON D. KEEN and JOHN J. ROBERTS, citizens of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented new and useful Improvements in Station-Indicators, of which the following is a specification.

This invention relates to station-indicators, and has for its object to provide an improved indicator of the nature described for use on railway-cars, street-cars, and the like for indicating the name of the next station or stopping-place, the indicator mechanism being positively operated by a motor controlled by an electric circuit and an apron or ribbon upon which the names of the stations are indicated, the operation being such that by closing the circuit the motor is released and moves the apron or ribbon to bring into view the name of the next station, and the motor is then automatically stopped, holding the apron stationary until it is again released by closing the circuit.

Our invention consists in the features and in the construction, arrangement, or combination of parts hereinafter described, and definitely pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a perspective view of one of our improved indicators as it appears in actual use. Fig. 2 is a diagrammatic view illustrating the manner of connecting up in series a number of indicators throughout a railway-train. Fig. 3 is an end elevation of the spring-motor and its controlling-magnet and armature, the bell and the end of the casing being removed. Fig. 4 is a sectional view taken on the line 4 4 of Fig. 5. Fig. 5 is a horizontal sectional view. Fig. 6 is a vertical sectional view illustrating the means for automatically stopping the motor, and Fig. 7 is a detail perspective view of the same.

Referring to the drawings, the numeral 1 indicates the casing containing the indicator mechanism, the hinged front 2 of which is provided with an aperture in which is inserted a pane of glass 3, through which the indicator-apron may be viewed. The casing 1 is

also preferably provided with a hinged end 4 to afford access to the motor when it becomes necessary to wind up the latter. The casing is provided with a vertical transverse partition 5, and in said partition and the end 6 of the casing are journaled two drums 7 and 8. The shafts 9 and 10 of said drums extend through the partition 5 and are respectively provided with pinions 11 and 12 of equal size. The drums are arranged one above the other, as shown in Fig. 6, and have wound upon them an apron or ribbon 13, upon which are printed or marked the names of the stations in their proper order, and which are adapted to be successively exposed to view through the window 3.

The mechanism for actuating the drums is constructed as follows: The numeral 14 indicates a plate forming a support for the motor and its controlling-magnet and armature. Said plate is pivoted at one side to the partition 5 by a bolt 15, which passes through a sleeve or bushing 16, attached to the plate, that serves to hold the plate a slight distance away from but parallel to the partition 5.

Attached to the plate 14 is a spring-motor 17 of ordinary and well-known construction, being merely a spring-driven train of gearing similar to a clock-movement. Upon the shaft 18 of the spring-motor is fixed a gear-wheel 19, that is adapted to gear with the pinion 12 on the shaft of the drum 8 when the plate 14 is in one position and also gears with a pinion 20, journaled on said plate 14, and the pinion 20, when the plate 14 is in its elevated position, gears with the pinion 11 on the shaft of the drum 7, as will more fully hereinafter be explained.

The spring-motor actuates two ratchet-wheels 21 and 22, the teeth of said ratchet-wheels being arranged in opposite directions, as shown. An electromagnet 23 is fixed on the plate 14 and controls an armature 24, that is pivoted in bearings 25 on the plate and is provided with a detent 26, that is adapted to engage the teeth of the ratchet-wheel 21, and thus arrest the movement of the spring-motor. A bell 27 is fixed on the shaft 18, and a bell-hammer 28 is fixed on one end of an arm 29, that is pivoted at 30 to the plate of the motor-drum, the other end of

said arm engaging the teeth of the ratchet-wheel 22, whereby, when said ratchet-wheel is rotated, the arm is vibrated and the bell-hammer thus caused to strike the bell and sound the alarm. The electromagnet 23 is included in an electric circuit, which also includes a battery or other suitable source of electricity and a push-button or circuit-closer of any preferred construction, whereby the magnet is caused to attract the armature 24, when the circuit is closed, and release the spring-motor, as will be hereinafter more fully described.

The plate 14, carrying the motor and its electric controlling device, is pivoted at one side in the manner before described and is provided with two arc-shaped slots 31, through which pass guide screws or bolts 32, that operate to hold the plate in parallelism with the partition 5. In order to maintain the plate 14 in its adjusted position, we provide a bolt 33, that is fitted to move longitudinally in a sleeve 34, fixed in the side of the plate opposite to the pivot 15 and which is adapted to engage any one of three perforations formed in a socket-plate 35, attached to the partition 5, said perforations being respectively numbered 36, 37, and 38. A coiled spring 39 is arranged in the sleeve 34 and encircles the bolt 33 and at one end bears against a collar 40, formed on said bolt. Said spring operates to force the bolt into engagement with the perforations 36, 37, and 38. Upon the shaft 18 of the spring-motor is fixed a handle 41, by means of which the shaft may be rotated to wind up the spring that actuates the motor. The apron 13, upon which the names of the stations are indicated, is provided along one edge with a series of perforations 42, there being one such perforation for each station indicated.

Attached to the partition 5 and projecting into the path of travel of the apron 13 is an arm 43, which is longitudinally slotted, as at 44, to permit of the passage of the edge of the apron therethrough. The arm 43 is transversely perforated, (see Fig. 7,) and in such perforation is arranged a push-pin 45, that bears against the apron 13 and is adapted to successively project through the perforations 42 in the latter. The other end of the push-pin 45 is flat and hinged to the lever 47, which is recessed at the other end, as at 48, and pivoted at 59 to the elbowed post 58. The recess 48 is engaged by the end of an arm 49, fixed on the armature 24. A contractile spring 50 is attached at one end to said push-pin 45 and at its opposite end is attached to the arm 43. The spring 50 operates to draw the push-pin 45 in the proper direction to maintain it in contact with the apron 13 and to cause the same to protrude through the perforations 42 as the latter come opposite the end of the push-pin. When the push-pin is projected through any one of said perforations, the armature is moved away from its magnet and the detent 26 forced into engagement with one

of the teeth of the ratchet-wheel 21, and the movement of the spring-motor is thus arrested.

In Fig. 2 we have shown in diagram the manner in which the indicators are connected in a railway-train. In such case there will be one or more indicators arranged in each car, and all the indicators will be connected in multiple arc in an electric circuit, (indicated by the numeral 51,) which is energized by a battery 52 or other suitable source of electricity. A push-button 53 or other suitable form of circuit-closer is arranged in the engine-cab or other suitable place and included in the circuit, whereby, when the circuit is closed, all the spring-motors will be simultaneously released and the indicators actuated in unison. In order to render the operation of coupling together the indicators automatic, we attach two conductors 54 and 55 to the under side of each car, and the terminals of said conductors are connected to the flexible ends 56 of the usual air-pipes, the extreme ends of the conductors being fixed to the metallic members of the hose-pipe couplings 57.

It will be manifest that when the hose-pipe couplings are jointed together in making up the train the indicators will at the same time be electrically connected in multiple arc.

The operation of our improved indicators is as follows: Let it be assumed that the indicators are arranged throughout a railway-train and connected together in the manner shown in Fig. 2, and let it also be assumed that the train is about to depart from a station. The engineer then by pushing the push-button and thus closing the circuit attracts the armature of each indicator to its magnet and thus retracts the detent 26 from the ratchet-wheel 21 and thereby releases the spring-motor. The spring-motor when released operates to rotate one of the drums 7 or 8 and wind the apron thereon to bring into view the name of the station which the train is approaching. When the name of the station is brought into view, its corresponding perforation 42 registers with the push-pin 45, and the latter is projected through said perforation by the spring 50, which movement, through the medium of the lever 47 and arm 49, moves the armature away from the magnet and causes the detent 26 to engage the ratchet-wheel 21 and stop the motor, thus holding the indicator-apron stationary until the circuit is again closed. While the motor is operating to actuate the apron, the bell is sounded by the mechanism heretofore described to attract the attention of the passengers to the name of the station being approached.

In Fig. 4 we have shown the parts in proper position for rotating the drum 8, that is to say, the gear-wheel 19, driven by the motor, is in gear with the pinion 12 on the shaft of the drum 8. The pivoted plate 14 is then in its lowermost position, and is held fixed in such position by the bolt 33, resting in the

perforation 38. When the train is traveling in the opposite direction, it is necessary to wind the apron about the drum 7, and this is accomplished by releasing the bolt 33 and raising the plate 14 on its pivot until the bolt 33 engages the perforation 36, in which position the wheel 19 is out of engagement with the pinion 12, while the pinion 20, driven by the wheel 19, is in engagement with the pinion 11 on the shaft of the drum 7, whereby said drum is rotated in the opposite direction to that in which the drum 8 was previously rotated.

By moving the plate 14 to position intermediate the positions above referred to the bolt 33 engages the perforation 37, in which position the pinion 12 is out of engagement with the wheel 19, and the pinion is also out of engagement with the pinion 11, and hence neither of the drums will be operated by the motor.

From the foregoing description it will be manifest that it is merely necessary to touch the push-button to cause the indicators throughout the entire train to indicate the name of the station being approached, the indicators being automatically operated and stopped by the mechanism and in the manner described.

We have described the electric circuit as being energized by a battery, but it will be understood that on electrical railways the circuit may be fed from the line conductor that furnishes the energy for propelling the cars in a well-known manner.

Having described our invention, what we claim is—

1. In a station-indicator, the combination with a spring-motor, of drums having wound thereon a perforated apron, pinions fixed on the shafts of said drums, a gear-wheel driven by said motor, means for causing said gear-wheel to rotate said pinions and their drums alternately in opposite directions, a ratchet-wheel driven by the motor, an armature carrying a detent adapted to engage the ratchet-wheel to stop the motor, an electromagnet operating to withdraw the armature to release the ratchet-wheel, a push-pin arranged in contact with the apron, a spring for causing said push-pin to project through the perforations in the apron, and connections between the push-pin and armature for moving said armature away from the magnet when the push-pin enters one of the perforations and cause the detent to engage the ratchet-wheel and stop the motor, substantially as described.

2. In a station-indicator, the combination with a spring-motor, of drums having wound thereon a perforated apron, pinions fixed on the shafts of said drums, a gear-wheel driven by said motor, means for causing said gear-wheel to rotate said pinions and their drums alternately in opposite directions, a ratchet-wheel driven by the motor, an armature carrying a detent adapted to engage the ratchet-

wheel to stop the motor, an electromagnet operating to withdraw the armature to release the ratchet-wheel, a push-pin arranged to contact with the apron, a spring for causing said push-pin to project through the perforations in the apron, connections between the push-pin and armature for moving said armature away from the magnet when the push-pin enters one of the perforations and cause the detent to engage the ratchet-wheel and stop the motor, a bell and bell-ringing mechanism actuated by the motor, substantially as described.

3. In a station-indicator, the combination with two drums having wound thereon a perforated apron and pinions fixed on the shafts of said drums, of a pivoted plate, a spring-motor carried thereby, a gear-wheel driven by said motor and arranged to gear with one of said pinions to rotate one of the drums, a pinion driven by said gear-wheel and operating to drive the other pinion and its drum in the opposite direction, means for shifting said plate to rotate either of said drums at will, a ratchet-wheel driven by the motor, a detent adapted to engage said ratchet-wheel to stop the motor, electrical mechanism for releasing said detent, a push-pin arranged in contact with the apron, a spring for causing said push-pin to project through the perforations in the apron, and means connecting together said push-pin and detent, whereby when the push-pin enters one of said perforations the detent is thrown into engagement with the said ratchet-wheel and stops the motor, substantially as described.

4. In a station-indicator, the combination with two drums mounted in fixed bearings and arranged to rotate simultaneously in the same direction, an apron wound on the drums, and pinions fixed on the shafts of said drums, of a pivoted plate, a spring-motor carried thereby, a gear-wheel driven by said motor and arranged to gear with one of said pinions to rotate one of the drums, a pinion constantly in gear with said gear-wheel and operating to drive the other pinion and its drum in the opposite direction, means for shifting said plate to cause said gear-wheel to rotate either of said drums and for holding it intermediate the pinions to throw the gear-wheel out of engagement with both of said drums, and mechanism for stopping and starting the motor, substantially as described.

5. In a station-indicator, the combination with two drums having wound thereon an apron, of a pivoted plate, a spring-motor carried thereby, means for shifting said plate to cause said motor to rotate either of said drums at will, mechanism operated by the apron for stopping said motor to arrest the movement of the apron at predetermined points, electrically-controlled releasing mechanism for starting the motor, and electric conductors electrically connected with said electrically-controlled releasing mechanism and having their terminals electrically connected with

the members of the air-pipe couplings, whereby the indicator on each car is automatically connected up with the indicators on the adjacent cars when the train is made up, substantially as described.

6. In a station-indicator, the combination with two drums 7 and 8 having wound thereon a perforated apron 13 and pinions 11 and 12 fixed on the shafts of said drums, of a pivoted plate 14, a spring-motor 17 carried thereby, a gear-wheel 19 driven by the motor and arranged to gear with the pinion 12, a pinion 20 driven by the gear-wheel 19 and adapted to engage and drive the pinion 11, means for shifting the plate 14 to cause the motor to drive either of the pinions 11 or 12 at will, a ratchet-wheel 21 driven by the motor, a pivoted armature 24 carrying a detent 26 adapted to engage said ratchet-wheel and stop the motor, an electromagnet arranged to retract said armature and release the detent to start the motor, a slotted arm 43 through which the perforated edge of the apron travels, a push-pin 45 fitted to move in a transverse aperture formed in said slotted arm and to successively project through the said perforations, a lever 47 connected to said push-pin, an arm 49 attached at one end to the armature and at its other end engaging the lever 47, and a spring

50, operating, when the push-pin registers with one of the perforations, to move the armature away from its magnet and throw the detent into engagement with the ratchet-wheel and stop the motor, substantially as described.

7. In a station-indicator, the combination with two drums 7 and 8 having wound thereon an apron 13, of a pivoted plate 14, a spring-motor carried thereby, means for gearing said motor to drive either of said drums, a fixed plate 35 having a plurality of perforations, a bolt 33 carried by the plate 14 and adapted to engage any of said perforations to hold the spring-motor in operative engagement with either of the drums or out of engagement with both of said drums, a spring 34 operating to force the bolt into engagement with said perforations, and means for starting and stopping the motor, substantially as described.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JEFFERSON D. KEEN.
JOHN J. ROBERTS.

Witnesses:

L. M. PRICE,
JOS. PRYOR.