C. W. McKENZIE & T. J. WEST.

STATION INDICATOR.

APPLICATION FILED JAN. 19, 1912.

1,067,617.

Patented July 15, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

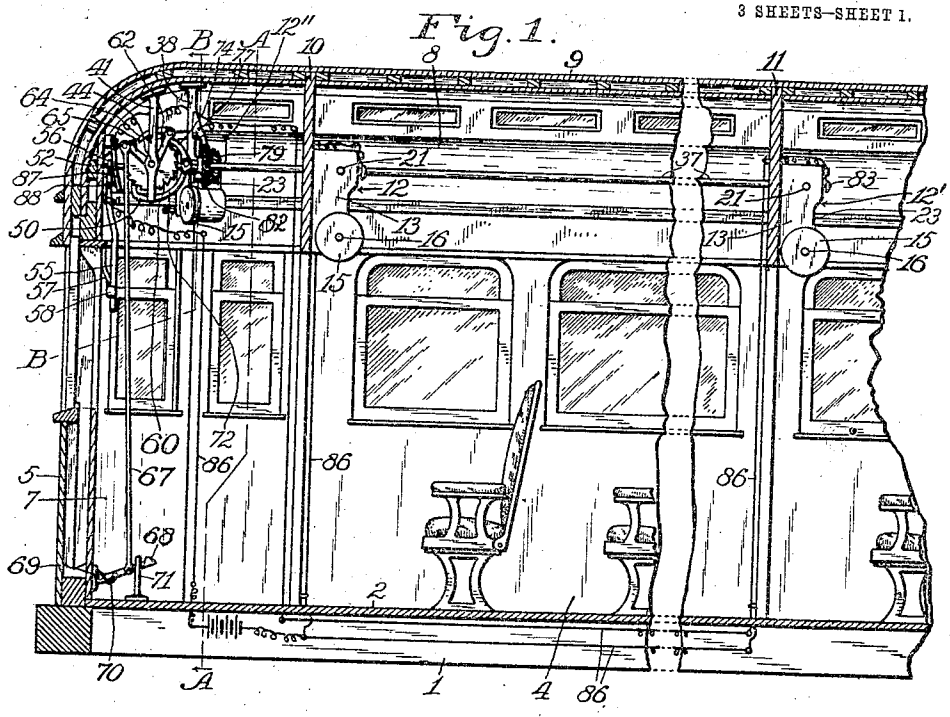


Fig. 2.

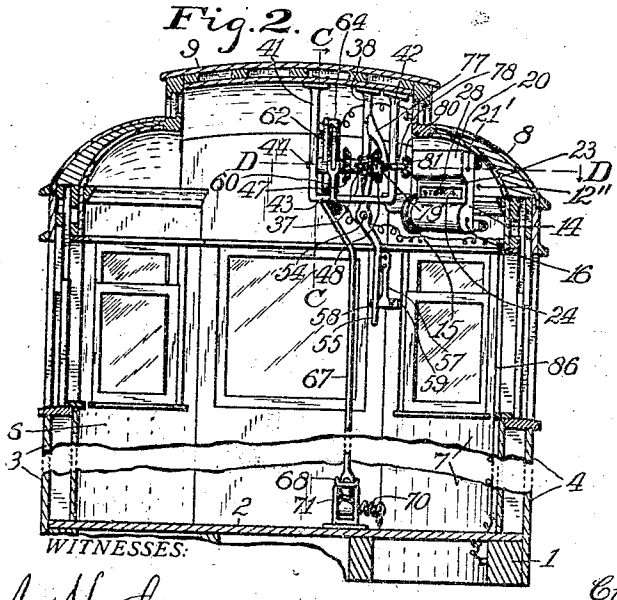
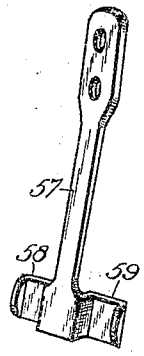


Fig. 3.



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3 SHEETS—SHEET 2.

Fig. 4.

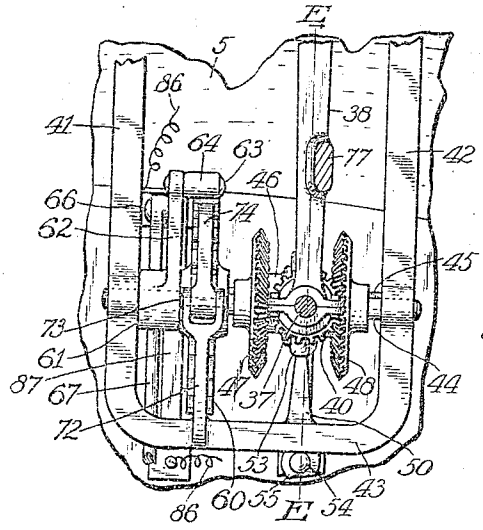


Fig. 5.

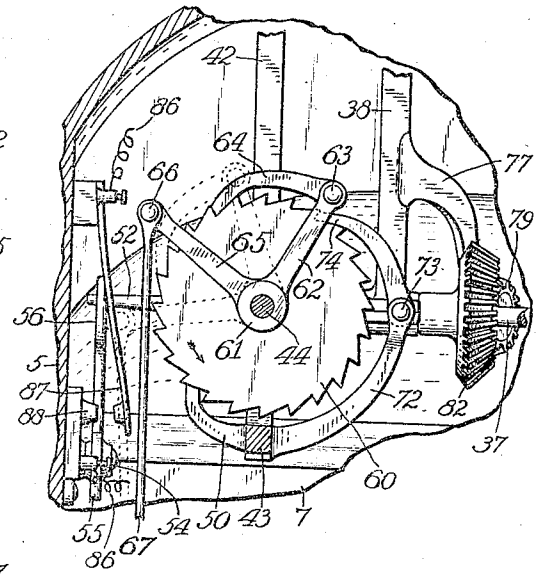


Fig. 6.

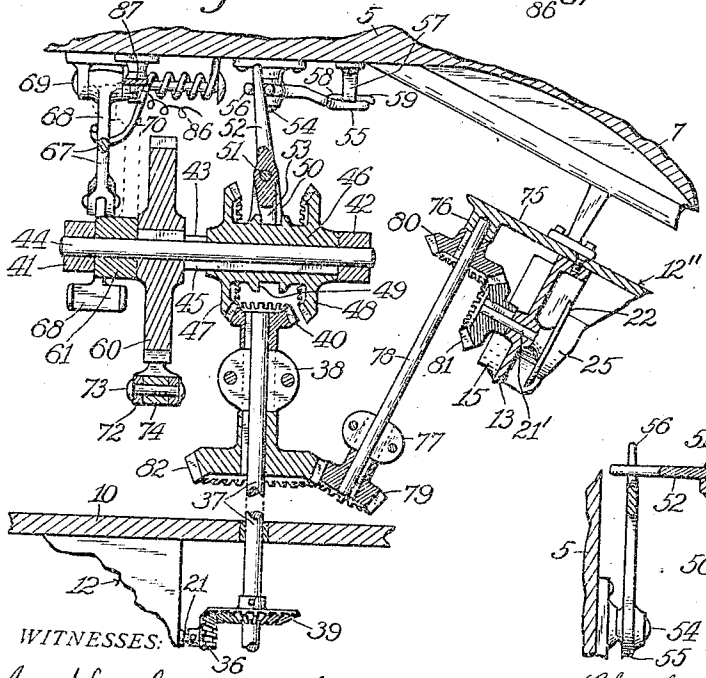
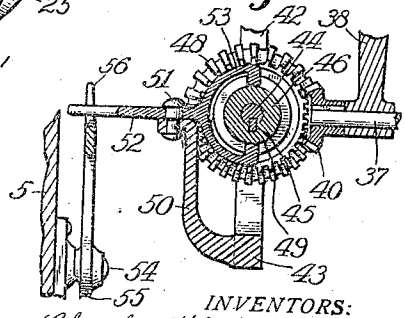


Fig. 7.



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3 SHEETS—SHEET 3.

Fig. 8.

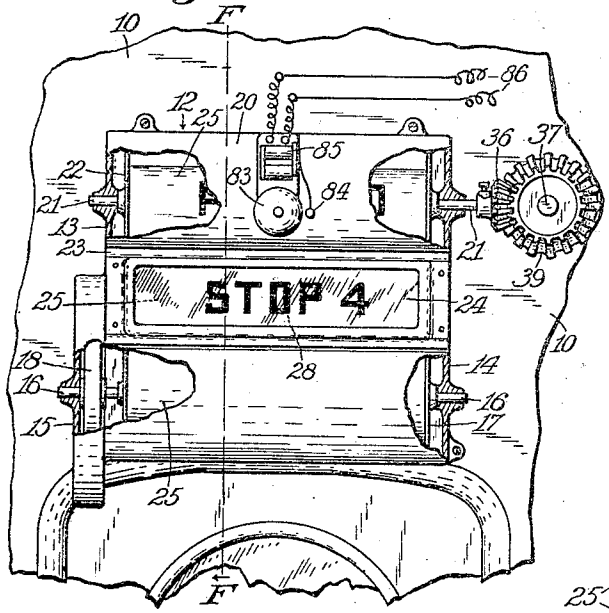


Fig. 9.

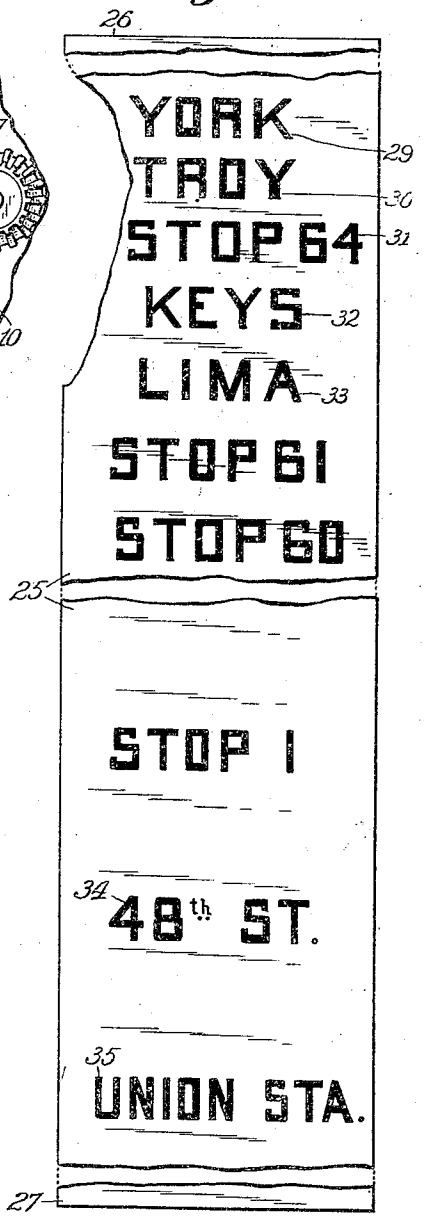
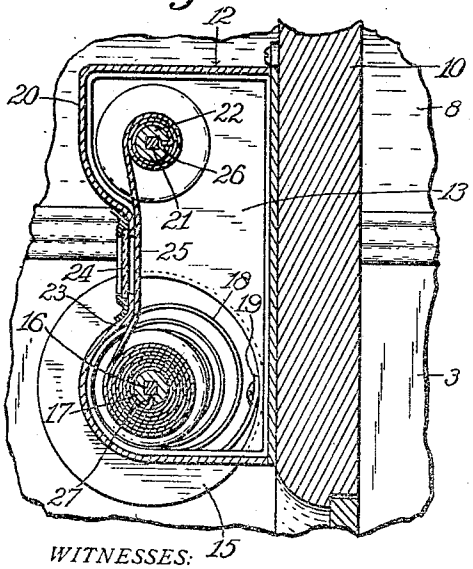


Fig. 10.



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UNITED STATES PATENT OFFICE.

CHARLES W. McKENZIE, OF CENTER TOWNSHIP, HANCOCK COUNTY, AND THOMAS J. WEST, OF GREENFIELD, INDIANA.

STATION-INDICATOR.

1,667,617. Specification of Letters Patent. Patented July 15, 1913.

Application filed January 19, 1912. Serial No. 672,170.

To all whom it may concern:

Be it known that we, CHARLES W. McKENZIE and THOMAS J. WEST, citizens of the United States, residing in Center township and at Greenfield, respectively, in the county of Hancock and State of Indiana, have invented a new and useful Station-Indicator, of which the following is a specification, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

This invention relates to station indicators of the type that may be employed most advantageously in electric cars, especially in those used in interurban passenger traffic, the invention having reference more particularly to manually operated series of station indicating apparatus especially adapted to be controlled and operated by the motorman of the car.

The object of the invention is to provide a simplified and improved station indicator of multiplex type that shall be so constructed as to permit of convenient operation by a man at the forward end of the car, a further object being to provide station indicating apparatus that will not be liable to become disarranged nor to confuse or mislead passengers on the cars and which will be durable and economical in use.

With the above mentioned and minor objects in view, the invention consists in a station indicator provided with a tell-tale or pilot indicator for the use of the operator, and the invention consists further in the novel parts, and in the combinations and arrangements of parts as hereinafter particularly described, and defined in the accompanying claims.

Referring to the drawings, Figure 1 is a fragmentary longitudinal central section of an interurban car body provided with the improved indicator and operating appliances; Fig. 2, a transverse section on the line A A in Fig. 1 partially broken away; Fig. 3, a perspective view of a latch comprising a part of the operating apparatus; Fig. 4, a fragmentary sectional elevation on the line B B in Fig. 1; Fig. 5, a fragmentary sectional elevation on the line C C in Fig. 2; Fig. 6, a fragmentary horizontal section on the line D D in Fig. 2; Fig. 7, a fragmentary section on the plane of the line E E in Fig. 4; Fig. 8, a front elevation of the indicator casing partially broken away and exposing mechanism therein; Fig. 9, a fragmentary plan view of an improved web containing the names of the stations, and Fig. 10, a section on the line F F in Fig. 8.

Similar reference characters throughout the drawings indicate corresponding elements or features of construction herein referred to.

The invention is illustrated in connection with a car body that comprises under framing 1, a floor 2, sides 3 and 4, a front comprising a center panel 5 and receding or rounded side panels 6 and 7, and a roof 8 having a ventilator deck 9, the interior of the car body having a partition 10 which divides off a space known as the vestibule for the use of the motorman, there being another partition 11 dividing the remaining portion of the interior into a main passenger compartment and a smokers' compartment, the latter adjoining the vestibule.

The car is provided with any desired number of indicators, preferably an indicator 12 mounted on the rearward side of the partition 10 in the smokers' compartment and a similar indicator 12′ on the rearward side of the partition 11 in the main compartment and so arranged as to be easily seen by the passengers facing forward, and a tell-tale or pilot indicator 12″ which is mounted in the vestibule where it may be seen by the motorman in order to determine what operations are required, the tell-tale indicator preferably being somewhat smaller but in other respects identically the same as the indicators provided for the information of the passengers, it being understood that the motorman is always aware as to the localities through which the car may be passing and the names of the various stations along the line of the rail road and, therefore, may unerringly inform the passengers of the names of stations approached.

Each indicator comprises a suitable casing which may be variously constructed and adapted to be secured uprightly in the car, the casing essentially having two sides 13 and 14, one side having a cylindrical or drum-like spring-casing 15 on its outer side, and a shaft 16 is rotatably mounted in the wall of the spring-casing and also in the opposite wall of the indicator casing, the shaft having a spool 17 thereon. A convolute spring 18 has one end 19 secured to the circumferential portion of the spring

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casing, the opposite lower inner end of the spring being suitably connected to the shaft 16, the arrangement being such that the spring normally rotates the shaft in one direction. The casing of the indicator has a suitable front 20 that is connected to the sides 13 and 14 and extends relatively close to the spool 17. At a suitable distance above the spool 17 a shaft 21 or 21′ is rotatably mounted in the sides 13 and 14 and has a spool 22 thereon which is adjacent to the front 20. The front 20 of the casing has a depressed portion 23 that extends vertically in the plane slightly forward of the two shafts and has a sight-glass 24 therein through which to observe the station names that are placed on the face of a web 25 that is secured at its ends 26 and 27 to the two spools respectively, the web being rolled from one spool on to the other one by intermittent movements and when stopped shows a station name 28 behind the sight-glass.

In order to bring the station names accurately at the sight-glass without requiring complicated or troublesome operating mechanism the station names are placed at different distances apart on the web so that as will be seen in Fig. 9, a name 29 at one end of the web is on a portion of the web that lies closely to the spool, and as the web is wound on the spool the diameter of the roll gradually increases and therefore the succeeding names 30, 31, 32, 33, etc., are spaced increasingly farther apart toward the opposite end of the web, the two names 34 and 35 as will be seen are much farther apart at the opposite end of the web than are the names 32 and 33 for instance, and it is designed to simply rotate the controlling shaft 21 or 21′ a certain fraction of a revolution at each movement. When the web is rolled on to the spool 22 with the end portion 27 on the outer side of the roll of the webbing, it will be understood that with the limited movement of the spool 22 the portions of the web at the circumference of the roll will travel through a greater distance than the under portions of the web that are nearer to the surface of the spool. When the spool 22 is permitted to turn to unwind the web therefrom the spring 18 turns the spool 17 to wind the web thereon, and thus the web is at all times kept in taut condition and the station names are brought fairly into view notwithstanding the varying diameter of the roll on which it is wound. Each shaft 21 is provided with a bevel gear-wheel 36 so that the controlling shafts of all the indicators may be operated and controlled by means of a single main shaft 37 which is rotatably supported in the several partitions of the car and also in a hanger 38 which is secured to the under side of the roof of the car. A suitable number of bevel gear-wheels 39 are secured to the main shaft and in mesh with the gear-wheels 36 of the several indicators respectively, the main shaft being provided on its end that terminates in the vestibule of the car with a bevel pinion 40. A drop hanger is provided which comprises two side bars 41 and 42 which are secured to the under side of the roof and a cross bar 43 connected to the side bars. A driving shaft 44 is rotatably mounted in the side bars of the hanger and it is provided with a spline 45. A sleeve 46 is arranged slidingly on the driving shaft and is rotated thereby by means of the spline, the sleeve having two bevel gear-wheels 47 and 48 thereon that are at opposite sides of the pinion 40 for rotating the pinion and the main shaft in either direction, one gear-wheel being disconnected when the opposite gear-wheel is connected with the pinion. The sleeve has a groove 49 in its periphery for shifting the sleeve and the gear-wheels thereon. The cross bar 43 of the hanger has an arm 50 thereon provided with a pivot 51 to which is connected a shifter arm 52 provided with a fork 53 that extends into the groove.

A pivot 54 is supported on the front portion 5 of the car body and supports a shifter lever 55 having a bifurcated end 56 receiving the end portion of the arm 52. A latch bar 57 is mounted on the front portion of the car body and has two latching recesses 58 and 59 adapted to receive the lever 55 when moved thereto whereby to secure the lever against accidental movement. A ratchet wheel 60 is secured to the driving shaft 44 and adjacently thereto a hub 61 is rotatably mounted on the shaft and has an arm 62 thereon provided with a pivot 63 to which a pawl 64 is connected so as to engage the teeth of the ratchet wheel, said hub having also another arm 65 thereon provided with a pivot 66 to which a reach rod 67 is connected, the reach rod extending downwardly nearly to the floor 2 of the car, and it is connected to a foot lever 68 which has one end connected to a pivot 69 supported by the car body which supports also a spring 70, arranged in connection with the foot-lever so as to normally force the foot-lever upward against a suitable stop-loop 71 which is secured to the floor, the foot-lever being stopped in its downward movement in contact with the lowermost portion of the loop. The extent of movement of the foot-lever being limited, it is evident that the movement of the devices connected therewith are also limited in extent so that the controlling spool 22 can move only a certain proportion of a revolution with each downward movement of the foot-lever. In order to prevent the spring 18 from reversing the motion of the mechanism while the pawl 64 is being retracted, the cross bar 43 is provided with an arm 72

that supports a pivot 73 to which a dog 74 is connected so as to ride on the teeth of the ratchet wheel 60 and prevent backward movement of the wheel.

In order to so place the pilot indicator in the vestibule of the car where it can be conveniently observed by the motorman, it is supported on the side portion 7 of the front of the vestibule and its controlling shaft 21′ extends through the side 13 of the indicator casing and toward the driving mechanism, the indicator casing being provided with a projecting arm 75 provided with a journal box 76, and the hanger 38 is provided with an arm 77 which together with the journal box 76 rotatably supports a countershaft 78, the arrangement being such that the countershaft is in the horizontal plane of the main shaft 37 and extends in a vertical plane that is oblique to the vertical plane of the shaft 37. The end portion of the shaft 78 that is near the shaft 37 has a bevel gear-wheel 79 secured thereto, and the opposite end portion has a bevel gear-wheel 80 secured thereto which is in mesh with a bevel gear-wheel 81 that is secured to the shaft 21′ of the indicator. A bevel gear-wheel 82 is secured to the shaft 37 in mesh with the wheel 79, so that the pilot indicator is operated in unison with the indicators in the several compartments of the car.

The front of each indicator in the car compartments occupied by passengers has a signal-bell 83 mounted thereon provided with a hammer 84 operated by suitable electro-magnets 85, and electric current conducted by circuit wires 86 leading into connection with a circuit closer 87 that is movable into connection with a contact device 88 suitably connected with the circuit wire, the arrangement being such that when the arm 65 is moved downward to operate the webs the arm slides against the circuit closer and forces it into contact with the contact device 88, the circuit closer automatically breaking the circuit when released.

In practical use, when the car is started toward a station the motorman places his foot upon the foot-lever 68 and forces it entirely down and then removes his foot to permit the spring 70 to retract the foot-lever and also the pawl 64, the downward movement of the foot-lever causing the pawl to move the ratchet wheel forward in the direction indicated by the arrow thereon in Fig. 5. It is obvious that the web has been previously wound so that it shall be moved in the proper direction in accordance with the direction the car is moving. The motorman can readily glance at the pilot indicator and thereby learn whether or not he may have failed to operate the indicators when he should have done so, so that any omission in the performance of his duty may be quickly rectified. After passing the station indicated the motorman again operates the foot-lever, and it will be understood that if the car is not scheduled to stop at the next station prescribed on the web, the webs are moved farther until the name of the station where the next stop is to be made is shown in the indicators. When the car is turned at the end of the line and is about to start on its return trip the motorman moves the lever 55 so as to shift the gear-wheels 47 and 48 to cause the main shaft 37 to be rotated in the opposite direction and thereby move the web in the opposite direction.

Other minor results of the operation of the mechanism will be clearly understood from the foregoing description of the construction and function of the various parts or elements of the apparatus, without further description in detail.

Having thus described the invention, what is claimed as new is—

1. Station indicating apparatus including a main shaft rotatably supported, two bevel gear-wheels secured to the shaft, a countershaft rotatably supported obliquely to the main shaft in one and the same horizontal plane therewith, a bevel gear-wheel secured to the countershaft and meshing with one of the two bevel gear-wheels, a second bevel gear-wheel secured to the countershaft, a plurality of supported casings, one of the casings facing on a plane at right angles and the remaining casing facing on a plane at oblique angles to the main shaft, each casing having a rotatable shaft, and a plurality of bevel gear-wheels secured respectively to the rotatable shafts and meshing respectively with the remaining one of the two bevel gear-wheels and the second gear wheel.

2. The combination with a car having an end wall and a partition opposite the wall, of a main shaft rotatably supported and extending through the partition, a station indicator supported on the end wall opposite the partition and operatively connected with the main shaft, a station indicator supported on the farther side of the partition from the wall and operatively connected with the main shaft, a bevel pinion secured to the main shaft between the wall and the partition, a driving shaft rotatably supported in proximity to the end wall and extending opposite the pinion, two bevel gear-wheels splined to the driving shaft and movable separately to or from the pinion, and means for moving and controlling the gear-wheels.

3. The combination with a car having an end wall and a partition opposite the wall, of a main shaft rotatably supported and extending horizontally through the partition, a countershaft rotatably supported at an oblique angle in one and the same horizontal plane with the main shaft and operatively connected therewith between the end wall

and the partition, a station indicator supported on the end wall and operatively connected with the countershaft, a station indicator supported on the farther side of the partition from the end wall and operatively connected with the main shaft, an operating lever pivotally supported at the end wall, a spring normally forcing the lever in one direction, a driving shaft, means for operatively connecting the driving shaft with the main shaft, ratchet-gearing mounted on the driving shaft for operation thereof, and a reach-rod connecting the lever with the ratchet-gearing.

4. The combination with a car having an end wall and a partition opposite the wall, of a main shaft rotatably supported and extending through the partition, a station indicator supported on the farther side of the partition from the wall and operatively connected with the main shaft, a bevel pinion secured to the main shaft between the end wall and the partition, a driving shaft rotatably supported in proximity to the end wall and extending opposite the pinion, a sleeve splined to the driving shaft, two bevel gear-wheels fixed on the sleeve at opposite sides of the pinion, a movably supported shifter connected with the sleeve, a latch supported on the end wall and engaged by the shifter, a ratchet wheel secured to the driving shaft, a pivotally supported dog engaging the ratchet wheel, a hub rotatably mounted on the driving shaft and having two arms thereon, a pawl pivoted to one of the arms and having contact with the ratchet wheel, a reach rod connected to the remaining one of the arms, a foot-lever pivotally supported at the end wall and connected to the rod, a spring normally forcing the foot-lever upward, and stops for limiting the movement of the foot-lever.

In testimony whereof, we affix our signatures in presence of two witnesses.

CHAS. W. McKENZIE.
THOMAS J. WEST.

Witnesses:
PAUL H. NEW,
A. NEWTON RHUE.