

H. McNICHOLAS.
STATION INDICATOR.

APPLICATION FILED JAN. 15, 1920. RENEWED JAN. 14, 1922.

1,425,879.

Patented Aug. 15, 1922.

2 SHEETS—SHEET 1.

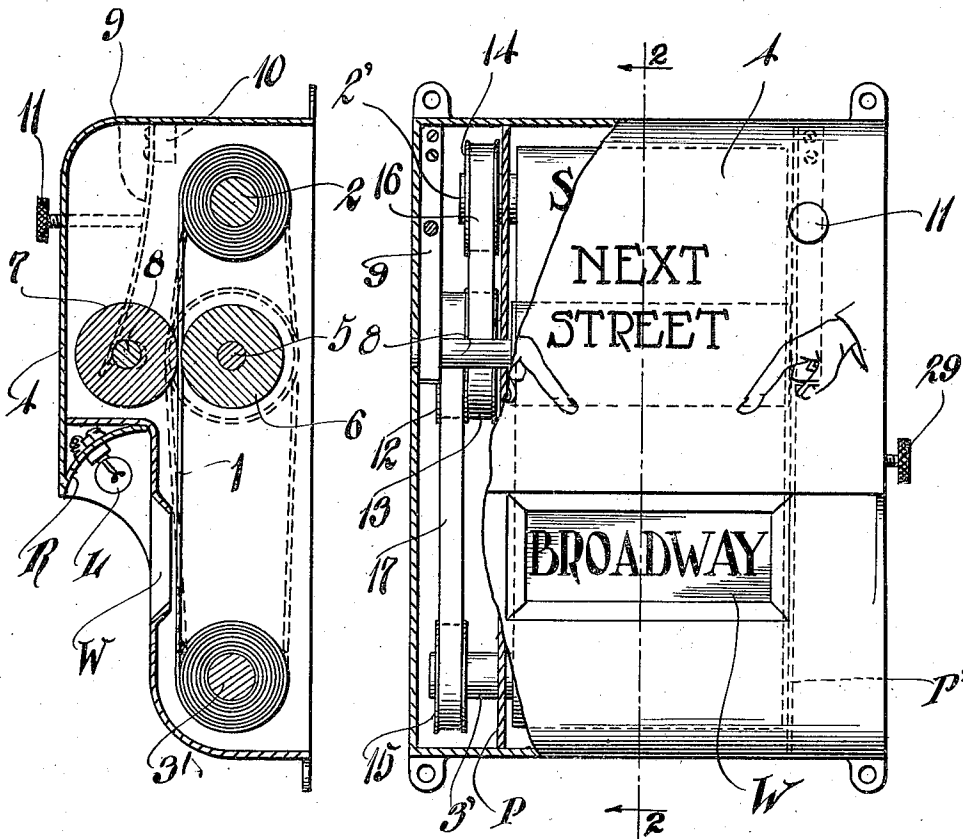


Fig. 2

Fig. 1

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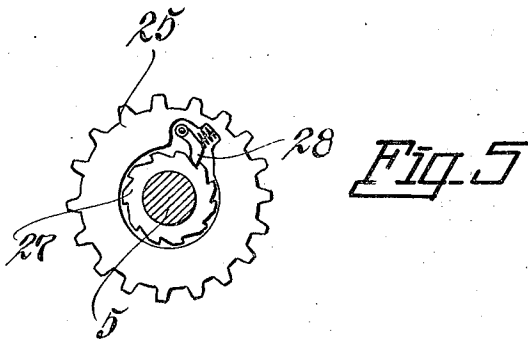
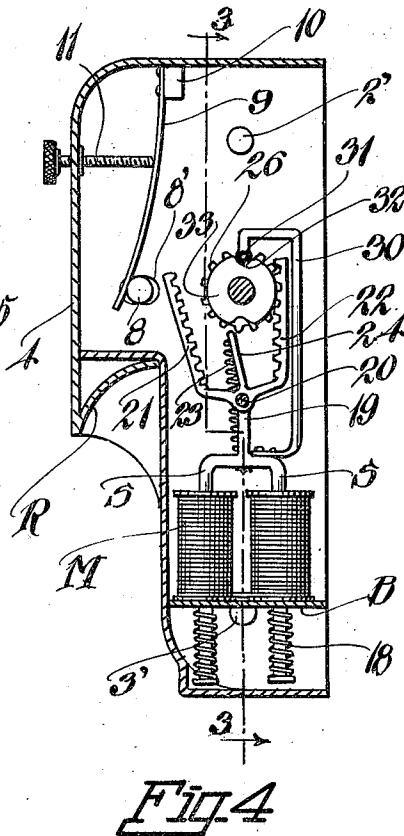
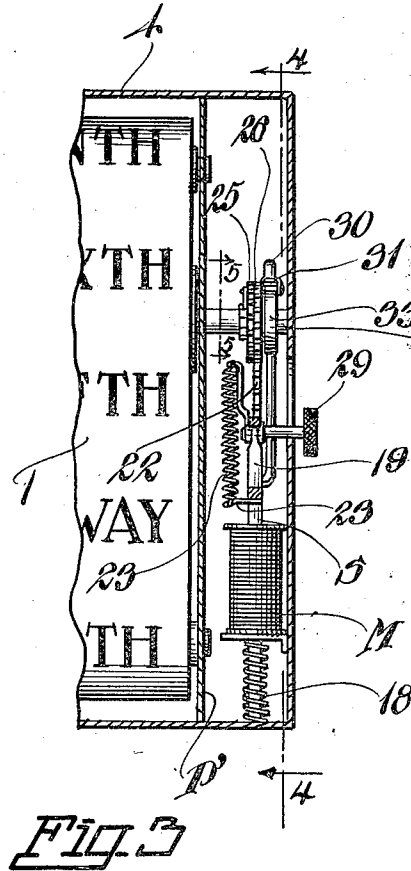
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UNITED STATES PATENT OFFICE.

HIRAM McNICHOLAS, OF CONNELL, WASHINGTON.

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To all whom it may concern:

Be it known that I, HIRAM McNICHOLAS, a citizen of the United States, residing at Connell, in Franklin County and State of Washington, have invented certain new and useful Improvements in Station Indicators, of which the following is a specification.

The present invention relates to improvements in station indicators or annunciators, electrically operated at successive intervals for causing movement of a web or belt in order to change the sign or street name that is visible on the web, as usual in street railway cars, and the primary object of the invention is the provision of novel actuating means, electrically operated, and also novel operating mechanism for the display web or belt carrying the street signs or designations.

To this end the invention contemplates the usual housing or casing, with a window or glass covered opening, in which, is inclosed a web supported on spaced winding rolls or rollers that are directly revolved to wind and unwind the web through the instrumentality of an intermediate driving shaft, in combination with a friction roller on the shaft co-acting with a complementary idle friction roller between which the web is passed, and further the invention involves reversible actuating mechanism operated electrically and intermittently from a solenoid magnet included in a properly opened and closed electric circuit, all as will be hereinafter described and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention constructed and arranged according to the best mode I have so far devised for the practical application of the principles of my invention.

Figure 1 is a front view of the indicator embodying the present invention, a portion of the housing being broken away for convenience of illustration.

Figure 2 is a vertical central sectional view at line 2—2 of Figure 1.

Figure 3 is a front view in elevation of a portion of the operating mechanism and indicator web, the housing being shown in section to disclose the interior thereof, at line 3—3, in Figure 4.

Figure 4 is a vertical sectional view of

the housing, at line 4—4 of Figure 3 showing the actuating mechanism in elevation.

Figure 5 is an enlarged detail view of one of the rack wheels and its rack pinion and pawl engaging device.

In the preferred form of the invention shown in the drawings the web 1 is of usual material and suitable length and width for the purpose of accommodating the street indicators or signs, and the web is capable of being rolled and unrolled, in reverse directions, on the two spaced rollers 2 and 3 that gave their pintles or shafts 2' 3' journaled in the housing or casing 4 and a partition or wall P, vertically arranged in the housing. The street indications or signs are visible through the window W or glass covered opening in the front of the housing, and located preferably a little below the vertical center of the housing, the web of course being reversible at the end of a trip so that the successive signs on the web may be drawn downwardly on the "out" run and drawn upwardly on the "in" run of the trip of the street railway car, the signs being stopped and held in position back of the glass closure or window. The housing or casing is suitably attached to the car where it is readily visible, and located so that the web is positioned in a vertical plane and suspended or supported with its ends secured to the respective rollers 2 and 3, and a drive shaft 5 is journaled in the housing and passes through the partition P, intermediate of the rollers 2 and 3 with which it is parallel as shown.

The drive shaft has a roller 6 fixed thereon, in front of which the web passes, and at the opposite side of the web, directly in front of and parallel with the drive roller is an idler or friction roller 7 co-acting with the drive roller and parallel therewith. The idler or friction roller is fixed on the shaft 8 loosely journaled in the horizontal slots 8' in the partition P and one of the outer walls of the casing, or in a second partition P' within the casing, and a pair of flat springs 9 bear on the shaft at the ends of the roller, to hold the friction roller, resiliently, in contact with the web as it passes between the driving roller and this friction roller. These two rollers form the feeding device for the web and by their frictional contact with the web, as they revolve, draw the web

down from the roller 2, or pull it up from the roll 3, as readily understood, each revolving movement of the driving or feed roller being sufficient to move the web the required distance to withdraw one street sign from view and display the next succeeding sign on the web back of the window W.

In addition to the two springs 9, which are attached to the inner side of the top of the casing by a block or lug 10, an adjusting screw 11 is provided, threaded through the front wall of the housing, and the inner end of each screw engages a spring, as shown in Figure 4 in order that, by turning the screw by hand from the outside of the casing, the tension of the spring against the journal or shaft of the friction roller, may be adjusted, thus varying the frictional contact between the driving roller and the friction roller and web.

The two web rollers 2 and 3 which are alternately the winding and unwinding rollers for the web are positively and directly revolved from the driving shaft by means of the drive pulleys 12 and 13 fixed thereon, the respective rollers 2 and 3 being provided with pulleys 14 and 15 of less diameter than the drive pulleys and the pulleys are connected by slip belts 16 and 17 as shown. Thus assuming the intermediate driving roller 6 to be revolving clockwise, the upper end of the web is wound upon the roller 2 and the lower end of the web is being unwound from the roller 3, all parts being moved in synchronism, and although the rollers 2 and 3 turn at a greater circumferential speed than the intermediate roller, the difference in movement is compensated for by the slip pulleys and the belts, thus maintaining the web taut and taking up any slack that might otherwise occur in the web.

The prime mover for the web operating mechanism thus described is the solenoid magnet M rigidly secured in the lower part of the housing as shown, the complementary cores or solenoids S S of the magnet forming plungers with cushion spring 18, 18 at their lower free ends, which pass through a bracket B in the casing. A rigid stem 19 rises vertically and centrally of the two solenoid-plungers and forms a pivotal support at 20 for a yoke fashioned with a pair of rack arms 21 22 whose teeth are complementary and are located on the inner faces of the arms of the yoke, and a spring 23 with its lower end attached at 23' to the yoke and its upper end attached at the free end of a bracket arm 24, above the yoke pivot 20, is adapted to hold the selected rack arm of the yoke in operative position, and the other arm in inoperative position in well known manner.

These opposed arms of the yoke are de-

signed to co-act with a pair of oppositely working rack wheels 25, 26 adapted to be clutched with the driving shaft 5 through the instrumentality of a rack pinion 27 fixed on the shaft and a spring pressed pawl pivoted on the rack wheel, one of these clutch devices being provided for each rack wheel, and as before stated, the working strokes of the rack wheels are in reverse directions, while each rack wheel is free to turn in reverse direction. Thus if the rack arm of the yoke is equal to the width of the two rack wheels, the rack arm will drive the shaft through one rack wheel and the other wheel will turn loosely on the shaft. It will readily be seen that the yoke may be turned on its pivot, from outside the housing by turning the knob 29 of the pivot until the bracket arm 24, to which the upper end of the spring 23 is attached, passes across and to one side of the vertical plane in which the pivot 20 and point of attachment 23' of the spring lie, and the spring then holds the yoke in this selected position with the rack bar in engagement with the rack wheels as shown and described.

A detent arm or bracket 30 is fixed to the plungers and passes upwardly within the casing above the shaft 5, and is then bent over with a downward extension upon which a friction roller 31 is carried, and this roller is adapted to engage one of the complementary notches 32 on the circular disk 33 fixed on the shaft 5 adjacent the rack wheels. The function of the roller is to engage in one of these notches or recesses in the periphery of the disk and hold the parts, including the drive shaft and roller in rigid and fixed position when not in operation, to maintain the web stationary between streets. When the magnet is energized, the initial movement of the solenoid lifts the roller from the notch in the disk and the upward movement of the rack bar 22 of the yoke in Figure 4 will revolve the shaft 5 through the rack wheel whose clutch is in engagement with the shaft, as before described.

A hood and reflector R are fashioned in the housing, just above the window, and an electric lamp L is provided to illuminate the window and street sign at night.

From the above description it will be apparent that when the magnet is energized by a suitable electric current, the action of the solenoids lifts the plungers against the tension of the cushion springs 18 below the magnets, and the upstroke of the rack bar is the working stroke which co-acts with the rack wheel, turning the shaft one half revolution, the return or retracted stroke of the rack bar being an idle stroke and its rack wheel turns loosely on its shaft. In this manner the successive movements of the web are accomplished, displaying succeeding street signs until the end of the run is

reached, then the yoke is turned on its pivot as described, and the reverse movement of the web is attained.

Having thus fully described my invention, what I claim is—

1. The combination with an inclosing casing with a web and supporting rollers, of an intermediate driving shaft and a drive roller thereon and an idle friction roller, said casing having bearing slots and a shaft for the friction roller journaled in said slots, an adjustable spring bearing against said latter shaft to cause engagement of the web between the driving roller and friction roller, pulleys fixed on the intermediate shaft and complementary pulleys on the supporting rollers and slip belts connecting said pulleys, for the purpose described.

2. The combination with a web and its supporting rollers and means for actuating the web, of magnetic means for reversing

the movement of the web including a plunger and its stem, a reversible yoke pivoted on said stem and having rack arms, a driving shaft included in the actuating means for the web, a pair of oppositely working selective rack wheels on said shaft, and said rack arms adapted to co-act with said rack wheels as described.

3. The combination with a web and its supporting rollers, and means including a driving shaft for actuating the web, magnetic means for reversing the movement of the web including a plunger and its stem, a reversible yoke having rack arms and pivoted on said stem, selective rack wheels on said shaft for said arms, a detent carried by said stem, a notched disk on the driving shaft, and said disk adapted to be engaged by the detent, for the purpose described.

In testimony whereof I affix my signature.
HIRAM McNICHOLAS.