

E. K. HARRIS.
STATION INDICATOR.
APPLICATION FILED FEB. 13, 1909.

953,528.

Patented Mar. 29, 1910.

3 SHEETS—SHEET 1.

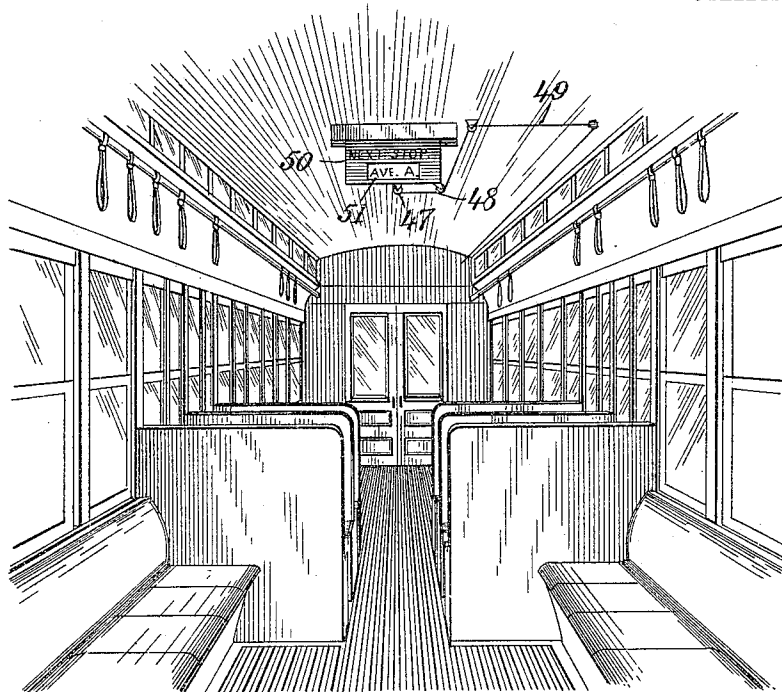


Fig. 1.

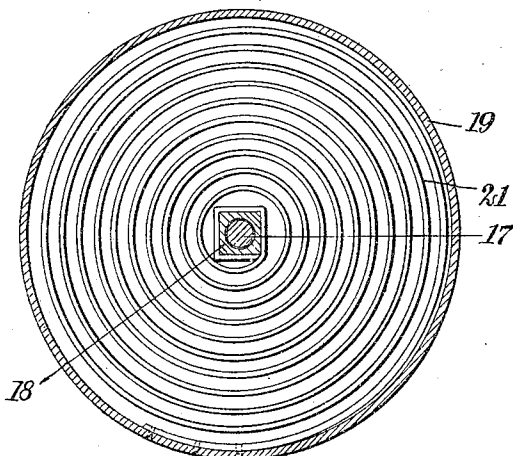


Fig. 4.

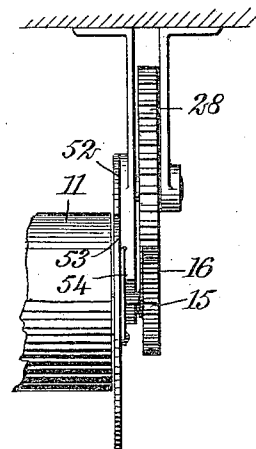


Fig. 5.

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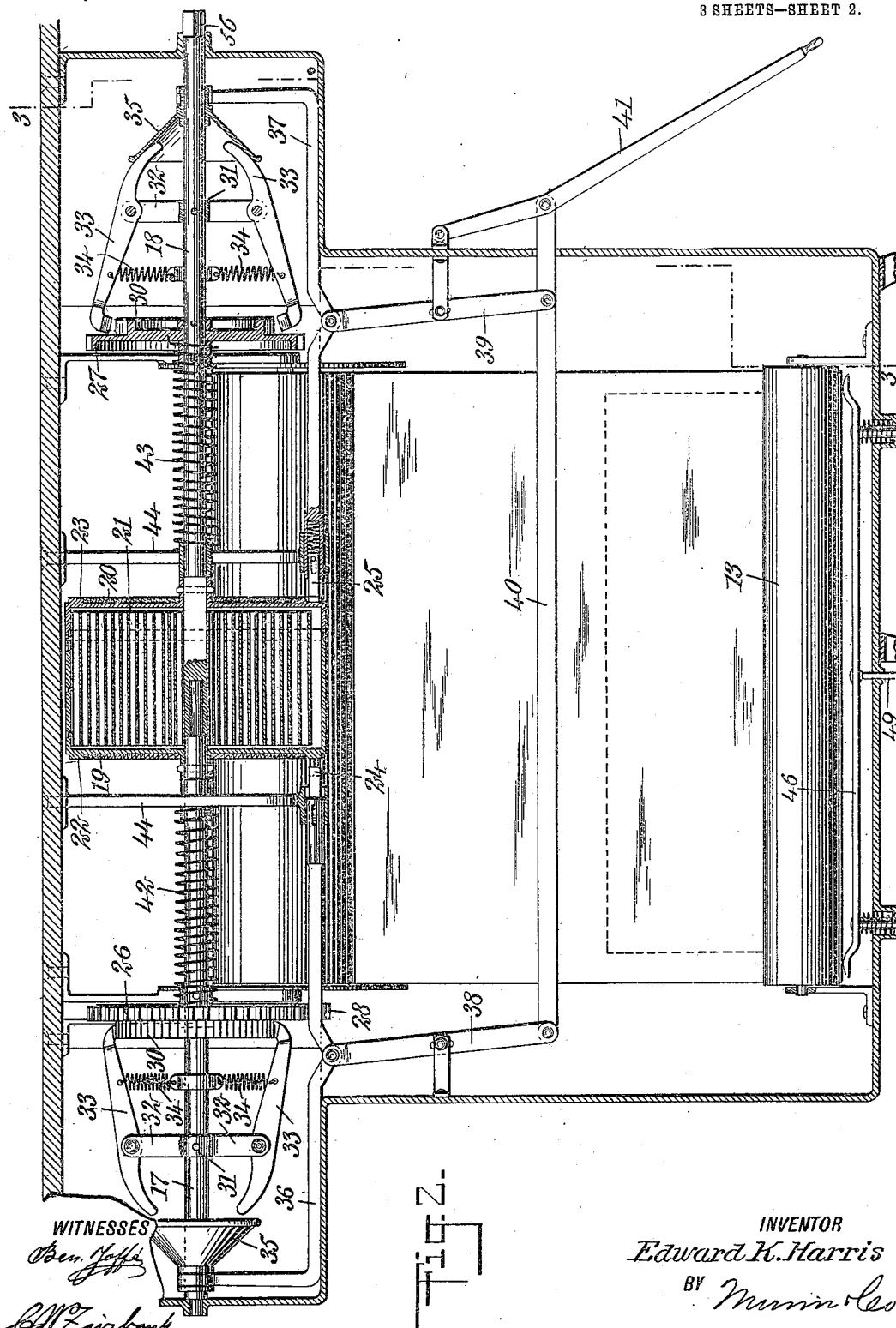


FIG. 2.

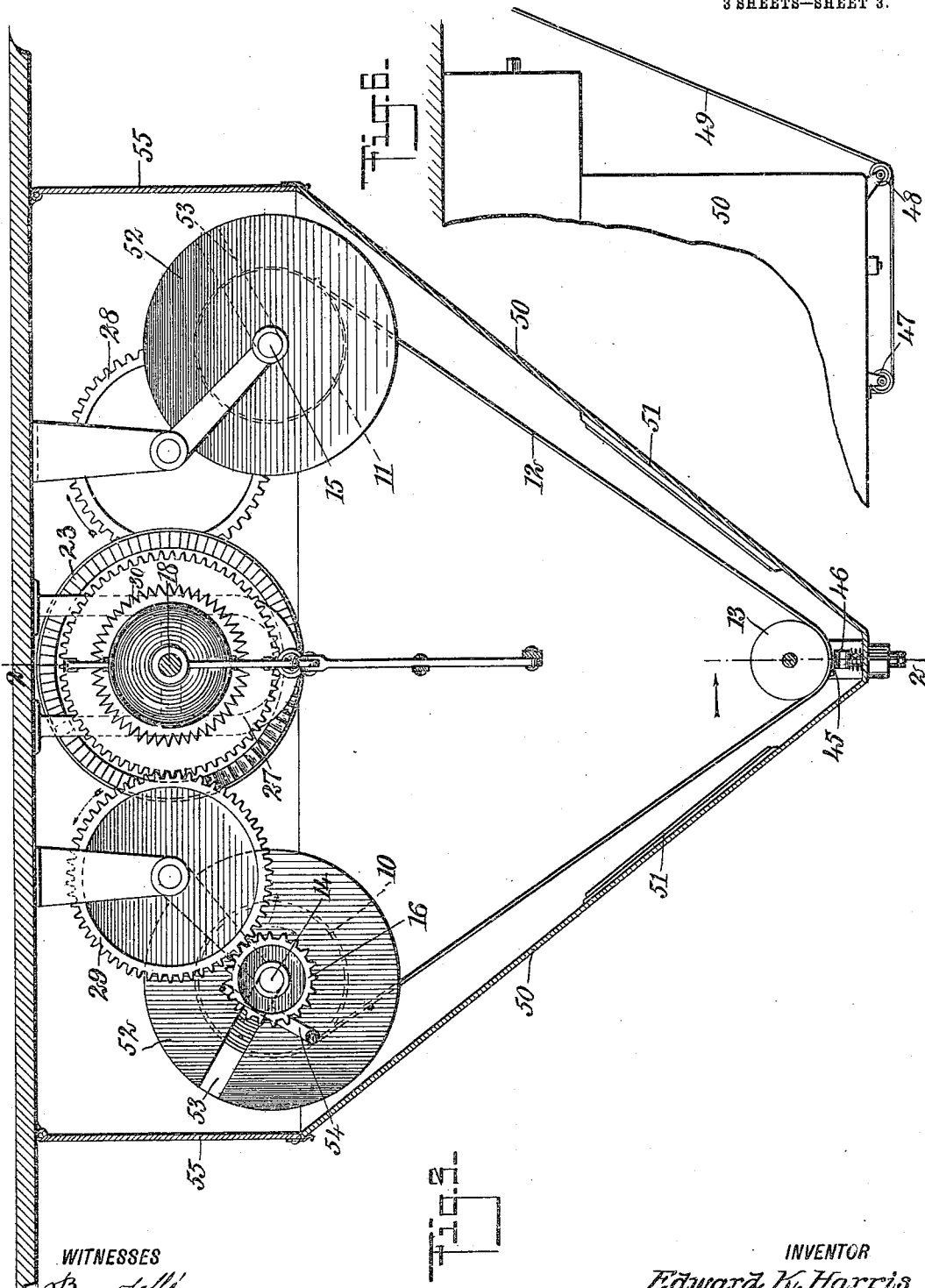
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

EDWARD KINSLEY HARRIS, OF CANANDAIGUA, NEW YORK.

STATION-INDICATOR.

953,528.

Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed February 13, 1909. Serial No. 477,520.

To all whom it may concern:

Be it known that I, EDWARD KINSLEY HARRIS, a citizen of the United States, and a resident of Canandaigua, in the county of Ontario and State of New York, have invented a new and Improved Station-Indicator, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in station indicators for use in passenger cars or other vehicles for indicating the next station at which the car or vehicle is to stop.

More particularly, the invention relates to that type of station indicator in which there is provided a long band or curtain bearing the names of the successive stations and movable to bring successive portions to view.

The invention consists in certain improvements in the mechanism for moving the band or curtain and controlling the direction and extent of movement.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a perspective view of a portion of a passenger car provided with an indicator constructed in accordance with my invention; Fig. 2 is a vertical longitudinal section through the indicator, said section being taken on the line 2—2 of Fig. 3; Fig. 3 is an end view of the indicator, the casing thereof being broken away on the line 3—3 of Fig. 2; Fig. 4 is a transverse section through the main spring and parts directly connected thereto; Fig. 5 is a detail side elevation showing the supporting mechanism for one end of one curtain roller and the driving mechanism for the latter; and Fig. 6 is a side elevation showing somewhat diagrammatically the connections for releasing the indicator and permitting it to operate.

My improved device may be so constructed that it may be used either at the end of a car or used intermediate the ends, so that the indicator may be read from opposite sides. The device may be used for other purposes than indicating the names of successive stations. For instance, it may be used for displaying advertisements or for announcing various events which are to take place in a predetermined order or sequence.

The specific form illustrated in the ac-

companying drawings, is especially designed for use on cars and is adapted to be secured to the ceiling of the car intermediate its ends, so that persons at opposite ends of the car may read the names displayed. The device includes two parallel drums or rollers 10 and 11, supported a short distance apart and having the opposite ends of a curtain or band 12 connected to the rollers, so that as the band is unrolled from one drum it may be wound up on the other drum. If the two drums are supported adjacent the ceiling of the car and at equal distances therefrom, I preferably employ a roller 13, over which the curtain or band passes in traveling from one drum to the other. The roller 13 may be removable and simply operate to conduct the curtain in substantially the form of a V, so that it may be seen from opposite sides. The two drums are mounted on suitable shafts 14 and 15 journaled in hangers secured to the ceiling of the car, and secured to these shafts are pinions 16, whereby the shafts may be rotated. Each shaft has one pinion, and the two pinions are mounted at opposite ends and are connected to the driving mechanism, whereby the two shafts and drums may be rotated in opposite directions. Intermediate the two shafts 14 and 15, I mount a central drive shaft formed of two sections 17 and 18 in direct alinement with each other. To hold the two shafts in alinement, the adjacent ends preferably telescope to a limited extent, as is indicated in Fig. 2. Encircling the adjacent ends of the two sections is a drum or casing also formed of two sections 19 and 20, each rigidly secured to its respective shaft section. Each casing section includes an end plate and a peripheral wall, so that the two casing sections together form a cylindrical inclosure. Within the casing or inclosure is a heavy spirally-coiled spring 21, one end of which is fixed to the square end of the shaft section 18 and the other end of which is fixed to the peripheral wall of the casing section 19. It will be noted that the spring 21 serves to connect one shaft to the casing section carried by the other shaft and that the spring when under tension tends to rotate the two shaft sections 17 and 18 in opposite directions. Means are provided whereby either shaft section may be locked against rotation and the movement of the other casing section utilized for

driving the band or curtain. My improved locking mechanism preferably includes annular rows of teeth 22 and 23 on the ends of the two casing sections 19 and 20, and adjacent these rows of teeth are mounted two pins 24 and 25, either of which may be moved longitudinally into engagement with its corresponding row of teeth.

For transmitting motion from the shaft sections to the separate shafts 14 and 15, I provide the two shaft sections with loose gear wheels 26 and 27, and means for locking either gear wheel to its corresponding shaft section. The gear wheel 26 carried by the shaft section 17 intermeshes with an intermediate gear 28, which latter intermeshes with the pinion 16 on the shaft 15. The gear wheel 27 carried by the shaft section 18, intermeshes with an intermediate gear 29, which latter intermeshes with the pinion 16 of the shaft 14. Each gear wheel 26 and 27 carries a corresponding ratchet wheel 30, and adjacent each ratchet wheel is rigidly secured to the shaft sections 17 and 18 a collar 31, having outwardly-extending arms 32. Pivoted to the outer ends of the arms are two levers 33, 33, normally drawn toward each other by springs 34, 34, and having operating ends adapted for engagement with the ratchet wheel. Adjacent the outer ends of the levers 33, 33, is an operating cone or disk 35, which when moved toward the levers draws together their outer ends and brings their opposite ends out of engagement with the ratchet wheel. The two operating cones or disks are connected together, so as to operate alternately and thus permit either gear wheel 26 or 27 to be locked to its corresponding shaft section, the other gear wheel being released and permitted to freely rotate.

The operating mechanism for the cones may include two slides 36 and 37, substantially in alinement with each other and having collars loosely encircling portions of the cones. To these slides may be connected the upper ends of levers 38 and 39, journaled intermediate their ends, and the lower ends of the levers may be connected by a link 40. The link may be moved longitudinally by a suitable handle 41. By moving the handle 41 the two slides 36 and 37 will be moved simultaneously in the same direction and one of the cones 35 will come into engagement with its corresponding levers 33 to operate the latter and liberate the corresponding ratchet wheel and gear wheel, while at the same time the other cone 35 will be moved out of engagement with its levers 33 and the latter will come into engagement with the corresponding ratchet wheel 30, to lock the latter to its shaft section.

It is desired that the locking and releasing of the gear wheels 26 and 27 be accompanied by the locking and unlocking of the casing

sections 19 and 20. Preferably, the slides 36 and 37 extend toward each other beyond the links 38 and 39 and have resilient engagement with the pins 24 and 25. The relative movement of the slides and pins is preferably controlled by a slot-and-pin connection, as indicated in Fig. 2. The parts are preferably so proportioned that one of the pins 24 and 25 comes into operation before the other pin is moved out of operation. Thus, at no time will both of the casing sections 19 and 20 be free to rotate.

For holding the curtain or band taut during the winding of it in either direction, I preferably provide two springs 42 and 43, encircling the respective shaft sections 17 and 18, and each having one end connected to its corresponding stationary hanger 44. The tensions of the springs are such that they normally tend to rotate the two gear wheels 26 and 27 in opposite directions, but each spring is weaker than the main spring 21. The unwinding of the main spring tends to wind up one of the springs 42 and 43 and tends to unwind the other, so that when the band or curtain is in one limiting position, the spring 42 will be entirely unwound and the spring 43 will be wound up to the limiting extent, whereas, when the main spring is rewound and the device is reversed, the relative tensions of the springs 42 and 43 will be reversed during the reverse movement of the band or curtain.

For controlling the movement of the curtain or band, I preferably provide the latter with a plurality of projections or stops 45, and provide a controlling member 46 movable into or out of the path of said projections or stops. In the specific form shown, the mechanism of the indicator is inclosed within a casing, which latter adjacent the roller 13, carries the controlling member 46 in the form of a bar. The bar is pressed upwardly against the roller 13, and its opposite ends engage with the curtain to prevent further movement of the latter after one pair of stops or projections on the curtain comes into engagement with the ends of the bar 46. The bar is resiliently mounted so as to normally engage with the curtain, but is provided with means whereby it may be readily withdrawn out of engagement with the curtain and out of the path of the stops at will. As shown, the casing is provided with two rollers 47 and 48 upon its lower side, and over these rollers extends a cord 49, one end of which engages with the bar 46 intermediate the ends of the latter. The cord 49 may extend to any point desired and may be connected for operation by hand or by any automatic mechanism. It is only necessary that the cord be pulled each time a station is passed and the car approaches the next station. As the curtain passes from one drum over the roller 13 to the other

drum, and as the roller 13 is intermediate the two drums and below the same, it is evident that the curtain between the two drums follows a substantially V-shaped course and that the portions of the curtain adjacent the roller 13 are at an angle to the vertical. The casing is provided with walls 50, disposed substantially parallel to the curtain, and each of these walls is provided with a window or transparent section 51, whereby the curtain may be readily viewed from either end of the car.

In case it is desired to use the car on a different line, it is only necessary to change the curtain and the two rollers. To facilitate this, circular plates 52 are provided at each end of each of the shafts 14 and 15, and one of each pair of plates is provided with a radially-disposed slot 53, whereby one end of the shaft may be raised and the shaft and drum removed from their bearings. Each shaft is normally held at the end of its respective slot by any suitable locking means, as, for instance, a spring 54 pivoted adjacent the slot, as indicated in Figs. 3 and 5. To facilitate the removal of the drums, the casing is preferably provided with oppositely-disposed hinged side walls 55 normally locked in closed position but readily moved away from their respective drums. To rewind the main spring 21, one of the shaft sections, as, for instance, 18, is provided with a squared end 56 adapted to receive a crank or other turning mechanism. The rows of teeth 22 and 23 on the two casing sections are so disposed that either casing section may rotate in one direction but not in the other, thus, when it is desired to rewind the main spring, the reversing lever 41 is moved to such a position that both the pins 24 and 25 are in operative engagement. By connecting a crank to the end of the shaft section 18, this shaft section, the casing section 20 and the inner end of the main spring, will be rotated while the other casing section will be locked against rotation.

In the operation of the specific form of my improved device illustrated in the accompanying drawings, the lever 41 is moved to one limited position, as, for instance, that shown in Fig. 2, and the shaft section 18 will thus be locked against rotation and the gear wheel 26 will be locked to the shaft section 17. The main spring will tend to rotate the casing section 19, the shaft section 17, and the gear wheel 26. The latter transmits motion through the gear 28 and pinion 16 to the shaft 15, and the curtain is wound upon the drum 12 until the stops 45 engage with the controlling bar 46. There will now be exposed to view through the two windows 51, 51, the name of the next succeeding station. After that station is passed, the controlling bar 46 is depressed

either manually or automatically and the spring immediately continues the rotation of the drum 11 until the next stop on the curtain comes into contact with the controlling bar. The operation is repeated until the end of the line is reached. In case the train is an express train which does not stop at certain of the stations, the controller 46 may be held depressed for a greater length of time so that one or more of the projections of the curtain may pass without interruption, dependent upon the number of stations at which the train does not stop. In the meantime, the released gear wheel 27 will be rotated upon the shaft 18 and by the unrolling of the curtain from the drum 10, but this unrolling is resisted by the coiling of the spring during the rotation of said gear wheel 27, thus the curtain is kept taut at all times. In case the train goes only a portion of the length of the route, or when the train reaches the end of its journey, the lever 41 is thrown in the opposite direction and the inner end of the main spring then becomes directly connected to the drum 10 and the drum 11 is liberated, so that it may be rotated in the opposite direction by the pulling of the curtain, but this unwinding will be resisted by the spring 42 to such an extent as to hold the curtain taut.

Various changes may be made in the construction of my improved device and within the scope of the appended claims, without departing from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A device of the class described, comprising two shafts, a curtain having its opposite ends connected thereto, a coil spring, connections between one end of this spring and one shaft for moving the curtain in one direction, and connections between the opposite end of the spring and the other shaft for moving the curtain in the opposite direction.

2. A device of the class described, comprising two shafts, a curtain having its opposite ends connected thereto, a third shaft formed of two separate sections, gearing connecting one section with one of the first-mentioned shafts, gearing connecting the other section with the other of the first-mentioned shafts, and a spring having one end connected with one shaft section and the opposite end connected to the other shaft section.

3. A device of the class described, comprising two shafts, a curtain having one end connected to one of said shafts and having its opposite end connected to the other shaft, a coil spring, connections between one end of the spring and one of said shafts, connections between the opposite end of said

spring and the other shaft, and means for locking either of said shafts against movement.

4. A device of the class described, comprising two shafts, a curtain having one end thereof connected to one shaft and the opposite end connected to the other shaft, a coil spring, means for simultaneously locking one end of the spring against movement and operatively connecting the other end of the spring to one shaft, and means for simultaneously locking the last-mentioned end of the spring against movement and operatively connecting the first-mentioned end to the other shaft whereby either shaft may be positively rotated by said spring.

5. A device of the class described, including two shafts, a third shaft having two separate sections, a spring having one end connected to one section and the opposite end connected to the other section, gear wheels loosely mounted on said shaft sections, gearing connecting one of said gear wheels with one of the first-mentioned shafts, gearing connecting the other of said gear wheels with the other first-mentioned shaft, means for locking either gear wheel to its shaft section, and means for simultaneously locking the other shaft section against movement.

6. A device of the class described, including two shaft sections in alinement with each other, a coil spring having one end operatively connected to one shaft section and the opposite end connected to the other shaft

section, a gear wheel loosely mounted upon each of said shafts, and means for simultaneously locking either gear wheel to its shaft section and locking the other shaft section against rotation.

7. A device of the class described, including two shaft sections in alinement with each other, a casing section rigidly secured to each shaft section, a spring within the casing section and having one end connected to one shaft section and the opposite end connected to the other shaft section, a display curtain, means for connecting opposite ends of said curtain to said shaft sections, and means for simultaneously throwing either of said connecting means into operation and locking the casing section of the other shaft section against rotation.

8. A station indicator, including a longitudinally movable curtain bearing the names of the stations, means for moving said curtain, a controlling bar adjacent said curtain and extending transversely thereof and substantially parallel thereto, and means for moving said bar into or out of engagement with said curtain adjacent the edges of the latter to control the movement of said curtain.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD KINSLEY HARRIS.

Witnesses:

MARGARET H. BROWN,
H. G. HARRIS.