(No Model.) 4 Sheets—Sheet 1.

F. C. HELLMUTH.

STATION INDICATOR.

No. 421,709. Patented Feb. 18, 1890.

Fig. 1.

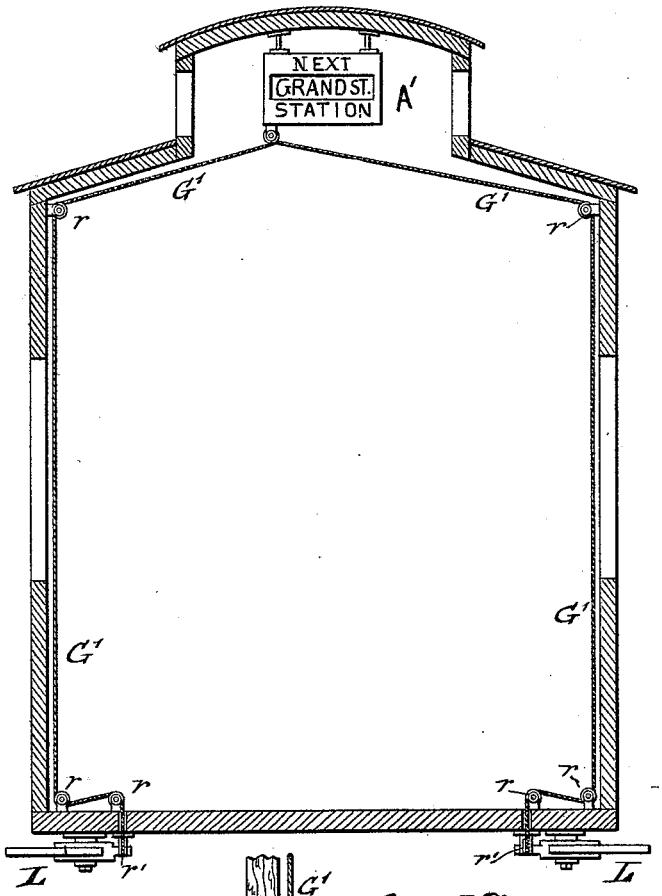

Fig. 1a.

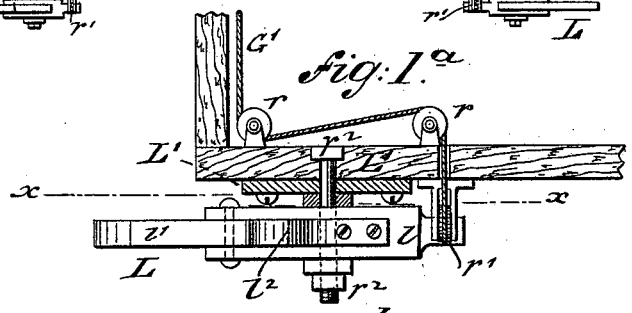

Fig. 1b.

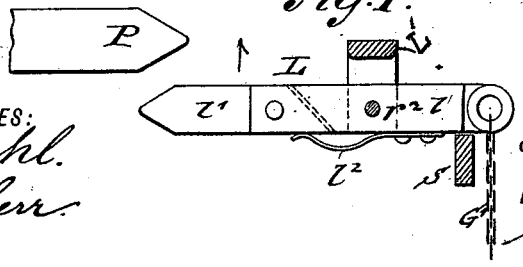

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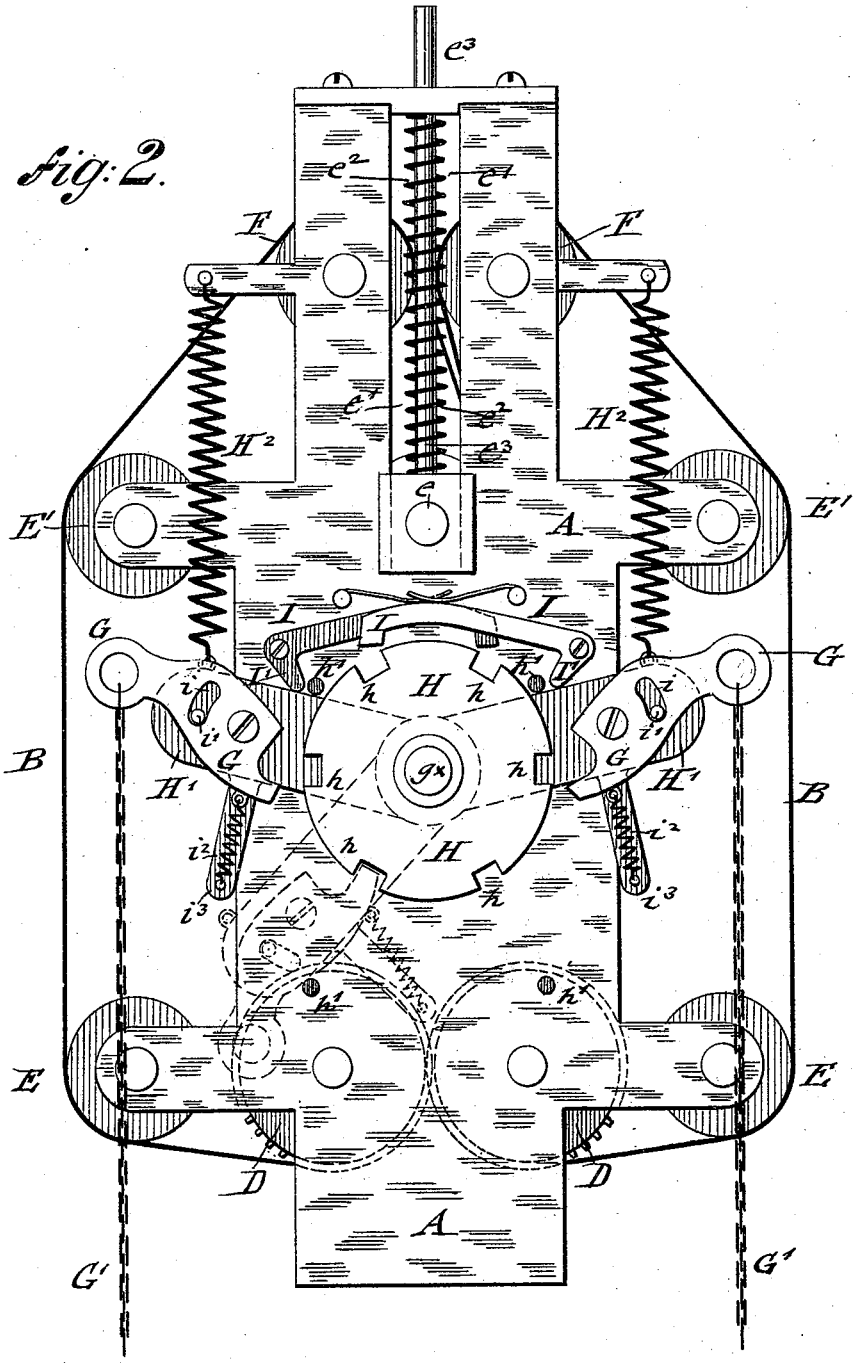
Fig. 2.



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STATION INDICATOR.

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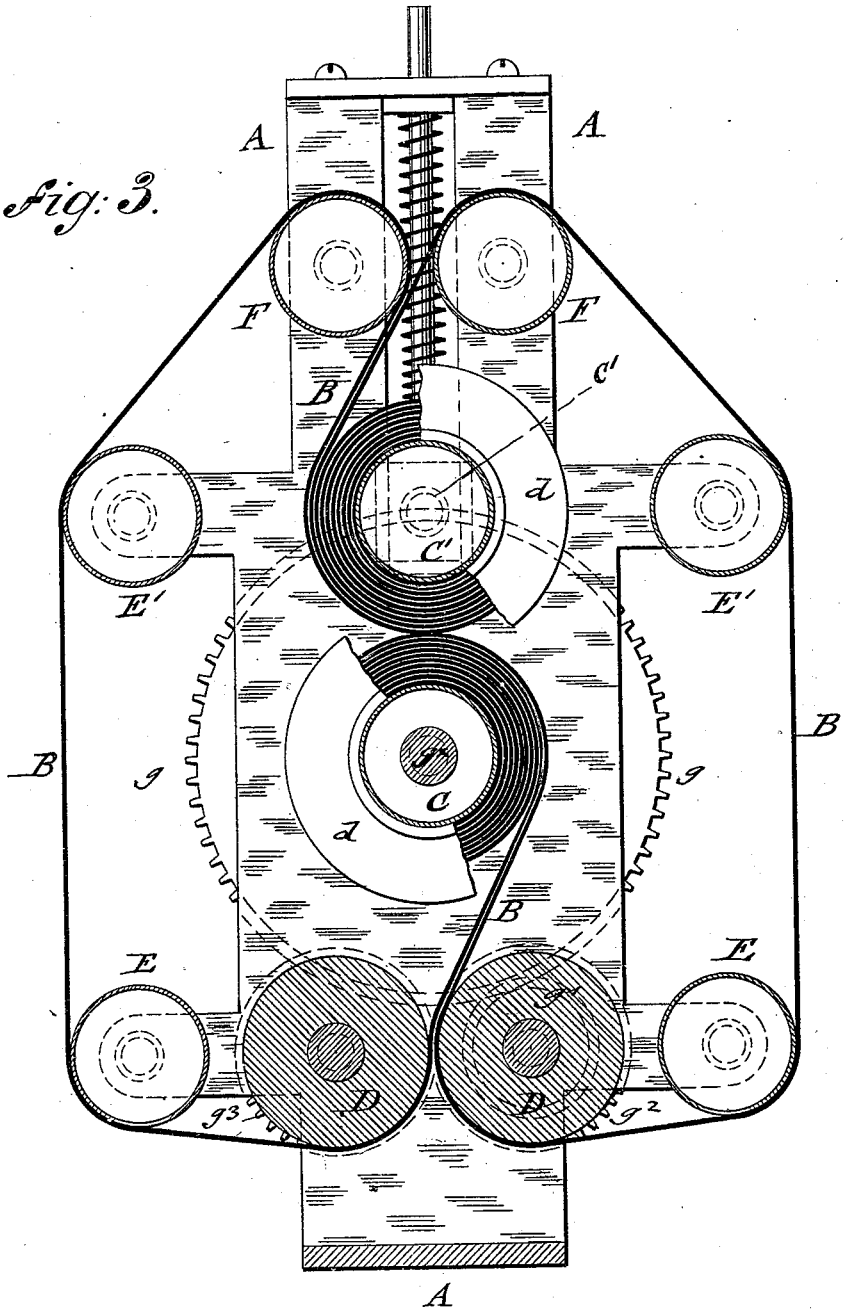
Fig. 3.



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STATION INDICATOR.

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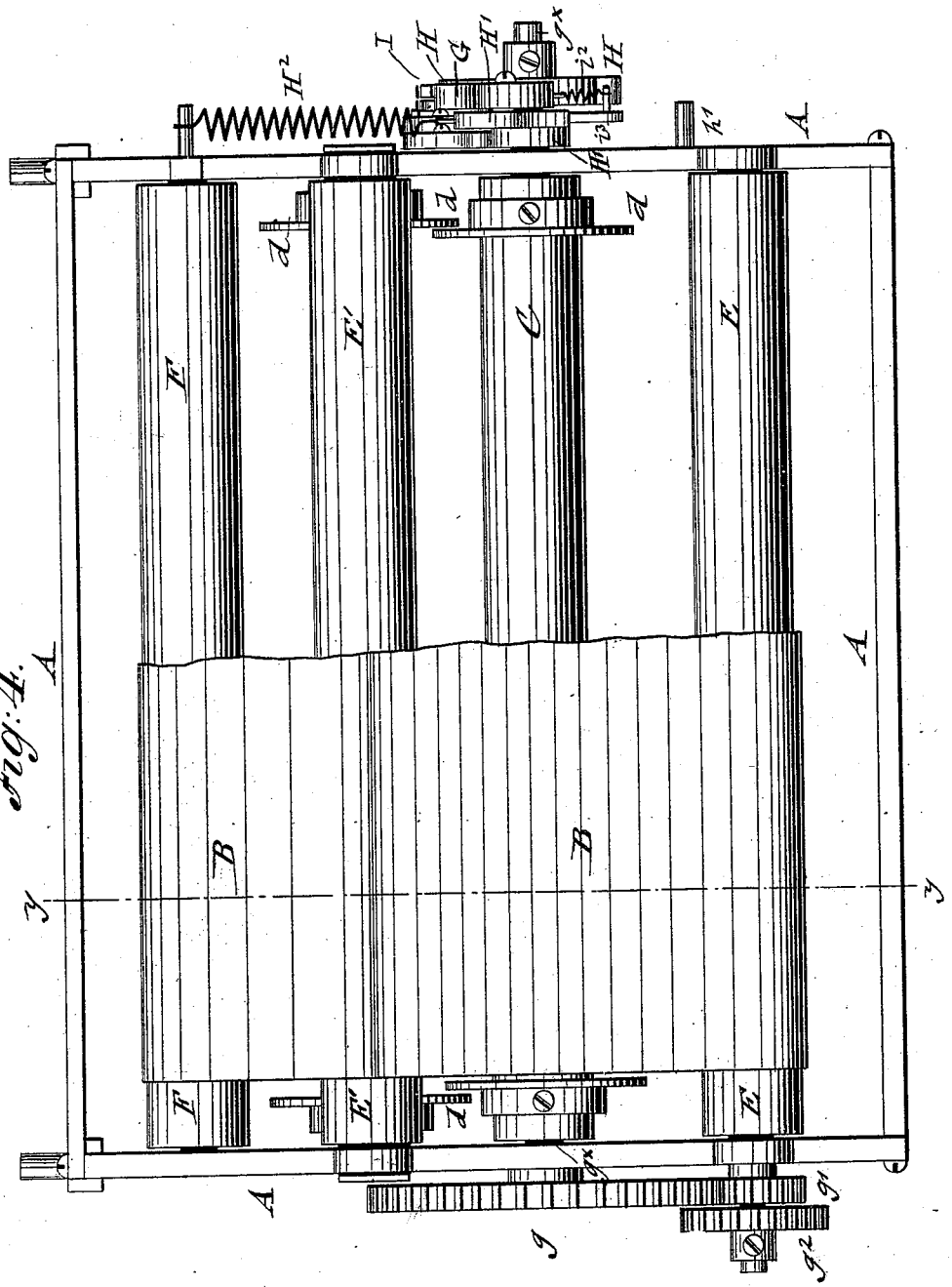

Fig. 4.

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UNITED STATES PATENT OFFICE.

FREDERICK C. HELLMUTH, OF BROOKLYN, NEW YORK.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 421,709, dated February 18, 1890.

Application filed July 26, 1889. Serial No. 318,747. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK C. HELLMUTH, of Brooklyn, in the county of Kings and State of New York, a citizen of the United States, have invented certain new and useful Improvements in Station-Indicators, of which the following is a specification.

This invention relates to an improved station-indicator of that class in which the names of the stations are printed on two webs that are guided in opposite direction over suitable guide-rollers, so as to display simultaneously the name of a station at opposite sides of the indicator and permit the same to be read from both ends of the car.

The invention consists of a station-indicator which is operated either automatically in connection with fixed projections along the track or by the conductor of the car, said indicator being supported transversely to the axis of the car at the central top part of the same and provided with two independent webs, which are attached at their ends to two main rollers and stretched over drive-rollers and over guide-rollers at both sides of the main rollers. The webs are moved by a pawl-and-ratchet mechanism applied to the shaft of one of the main rollers. The pawls are pivoted to oscillating arms placed loosely on the shaft of one of the web-carrying main rollers, and are adapted to engage recesses of the ratchet-wheel. Suitable check-pawls lock the ratchet-wheel in position when it is turned for the distance required by the webs. A suitable lever mechanism is arranged at the bottom of the car and connected by chains or cords with the actuating-pawls, said lever mechanism being operated by contact with fixed projections along the track, so as to operate thereby the indicator and display successively the names of the stations on both webs and at opposite sides of the indicator.

In the accompanying drawings, Figure 1 represents a vertical transverse section of a car, showing my improved station-indicator attached to the upper center part of the same, and also the mechanism for operating the same automatically from fixed projections or stops along the track. Fig. 1^a is a side elevation of the mechanism for automatically actuating the indicator, drawn on a larger scale. Fig. 1^b is a top view of the operating-lever and fixed stop, drawn on a section-line x x, Fig. 1^a. Fig. 2 represents an end elevation of the station-indicator, showing the operating pawl-and-ratchet device. Fig. 3 is a vertical transverse section of the indicator on line y y, Fig. 4, parts being broken away; and Fig. 4 is a side elevation of the same with one of the webs partly removed, so as to show the relative position of the main and guide rollers and their actuating mechanisms.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the supporting-frame of my improved station-indicator, which frame is suspended by suitable hangers from the central top part of the car. The frame A is inclosed by a suitable casing A′, which is provided with openings in its side walls, so as to display through said openings successively the names of the stations, which are printed or otherwise arranged on two webs B B of stout paper or other suitable material. Both webs B B are attached at one end to a lower winding-roller C and at the opposite end to the upper winding-roller C′. The webs B B are conducted from the lower roller C between rubber-covered feed-rollers D D, below the winding-rollers, thence outward from said drive-rollers to opposite sides of the case, over guide-rollers E E at the lower part thereof, over guide-rollers E′ at the top of the case, and over two top guide-rollers F F, supported above the winding-rollers, to the upper winding-roller C′, as shown clearly in Fig. 3. The webs B B overlap each other when they are wound up on the winding-rollers, but separate below the feed-rollers D, and pass in opposite direction over guide-rollers E and F, and come together again when winding around the winding-rollers C C′. Both webs B B wind up on one roller while unwinding from the other roller. The winding-rollers C C′ are provided near their ends with flanged heads d d, by which the webs are guided onto the rollers, so as to be wound up uniformly on the same. The shaft of the lower winding-roller C is supported in stationary bearings, while the shaft of the upper winding-roller C′ is supported in bearings e, which are guided in slots e' at the upper part of the supporting-

frame A, said bearings being cushioned by spiral springs e^2, which are placed on guide-rods e^3 between said bearings and cross-pieces at the top part of the frame A, as shown clearly in Fig. 2. By the spring-cushioning bearings *e e* the webs wound up on the upper winding-roller C′ are always held in contact with the webs wound up on the lower winding-roller C, so that the tight winding of both webs on the rollers C C′ is secured in a reliable manner. To the shaft $g^\times$ of the lower winding-roller C is applied a gear-wheel g, which meshes with a pinion g' on the shaft of one of the lower feed-rollers D D, so as to impart rotary motion to said roller. A gear-wheel g^2 on the shaft of the last-mentioned roller D meshes with a gear-wheel g^3 on the shaft of the other feed-roller D and transmits rotary motion to said roller, but in opposite direction to the first roller D.

Intermittent rotary motion is imparted to the upper roller C′ by frictional contact with the lower roller C and to the lower winding-roller C, and thereby to the webs B B, by a pawl-and-ratchet mechanism, which is clearly shown in Fig. 2, and which is constructed in the following manner: To the shaft $g^\times$ of the lower winding-roller C is keyed at the end opposite to that on which the gear-wheel g is located a ratchet-wheel H, which is provided with a number of equidistant recesses *h h* in its circumference. Back of the ratchet-wheel H are arranged two arms H′, which are placed loosely on the shaft $g^\times$ and which are adapted to oscillate between stop-pins h' of the supporting-frame A. The arms H′ are held in a normal position of rest against the upper stop-pins h' by strong spiral springs H^2, which are attached to the outer ends of said arms and to fixed bracket-arms at the upper part of the frame A. To the ends of each oscillating arm H′ is pivoted a pawl G, the extent of swinging motion of which is controlled by an arc-shaped slot i and by a pin i' on the arm H′. To the outer ends of the pawl G are applied actuating chains or cords G′, which are either operated automatically by suitable actuating mechanism applied to the bottom of the car and operated by fixed projections P, arranged alongside of the track, or which may be operated intermittently by the conductor as the stations are approached by the car. The actuating chains or cords G′ are applied to eyes at the outer ends of the pawls G, while the inner ends of the same are acted upon by spiral springs i^2, which are attached to said pawls and to pins attached to projecting arms i^3 of the oscillating arms H′, as shown in Fig. 2. The spiral springs i^2 serve to retain the pawls G in their normal position of rest and to withdraw them from the recesses h of the ratchet-wheel H when the oscillating arms H′ are returned to their normal position of rest against the upper stop-pin h'. Above the ratchet-wheel H are arranged, one back of the other, two spring-actuated check-pawls I I, which partly overlap each other, and which are fulcrumed to pins of the supporting-frame A, one of said check-pawls engaging a recess h of the ratchet-wheel H when one or the other arm H′ is pulled in downward direction by its chain or cord G′, so as to prevent the ratchet-wheel H from turning for a greater distance than the distance between two adjoining recesses h. When the arm H′ arrives at its lowermost position, it is arrested by one of the lower stop-pins h'.

The check-pawls I are provided near their pivots with short heels or cams I′, which abut on the arms H′ when they are in their normal position of rest, and which serve to lift the ends of the check-pawls I out of engagement with the recesses h whenever the arms H′ are returned by their springs H^2 into contact with the upper stop-pins h'.

The oscillating arms H′ are actuated by chains or cords G′, which are conducted over suitable guide-pulleys to the ends of the car when they are to be operated by the conductor, or to the bottom of the car when the station-indicating apparatus is to be operated automatically by a suitable lever mechanism and fixed stops or projections arranged along the track, as shown in Fig. 1. One actuating chain or cord G′ serves to move the webs in one direction while the car is moving in one direction over the track, while the other actuating chain or cord G′ serves to move the webs in the opposite direction when the car is running in opposite direction over the track. By pulling one of the chains G′ the pawl G is first thrown into engagement with one of the recesses of the ratchet-wheel H. Its oscillating arm H′ is then moved in downward direction, during which motion the outer end of the check-pawl I rides on the circumference of the ratchet-wheel H until it drops into the next recess of the same and stops thereby the motion of the ratchet-wheel. At the same time the arm H′ is arrested by the lower stop-pin h', as indicated in dotted lines in Fig. 2. By the action of the pawl-and-ratchet mechanism described the shaft $g^\times$ is turned, and by the gear-wheels $g\ g'\ g^2\ g^3$ motion imparted to the feed-rollers D D, which cause the webs B B to be unwound from the lower winding-roller C and wound up to a corresponding degree on the other roller C′ by frictional contact with the roller C. The webs B B are thereby fed forward to such an extent that the name of the next station is displayed through the openings in the inclosing-casing of the indicator at opposite sides of the same, so that persons at opposite ends of the car may readily read the names of the stations which the train is approaching. When the car is moving in one direction, the chain and pawl at one side of the ratchet-wheel are used for operating the station-indicator, while when the car is moving in the opposite direction the chain and pawl at the opposite side of the ratchet-wheel are operated.

When it is desired to operate the station-

indicator automatically, the following construction is preferably employed by me: The actuating chain or cord G′ is conducted over guide-pulleys r at the sides and bottom of the car and through openings in the latter over guide-pulleys r' to the ends of levers L, which are fulcrumed to pivots r^2 of plates L′, that are attached by screw-bolts to the under side of the car-bottom, as shown in Fig. 1ª. Each lever L is made of two parts—a forked main part l, which swings on the pivot-pin r^2, attached to the car-bottom, and of a part l', which is pivoted to the forked main part l and acted upon at one side by the free end of a flat spring l^2, which is attached at the other end to the main part l, as shown clearly in Figs. 1ª and 1ᵇ. The adjoining ends of the forked main part l and outer pivoted part l' are inclined, so that when the outer part l' is acted upon from one side it carries the main part l along, while when it is acted upon from the other side it will turn on its pivot against the tension of the spring l^2 without affecting the main part l, which latter abuts against a stop s. The fixed projections or stops P are arranged at a proper height on suitable supports along the track and are provided, like the pivoted parts l', with pointed ends, as shown in Fig. 1ᵇ. When the car moves in the direction indicated by the arrow in Fig. 1ᵇ, the end of the pivoted part l' moves over the pointed end of the fixed projection P, so as to operate thereby the lever L, causing it to swing on its fulcrum sufficiently to pull the actuating cord or chain G′ and operate thereby the webs of the indicator, so as to indicate the name of the next station on both webs. When the car is running in the opposite direction, the pivoted part l' is moved past the fixed projections P without actuating the lever L and the indicator, as the part l' yields sufficiently without affecting the lever L. The indicator is operated when the cars are running in opposite directions by the projections alongside of the return-track, which operate the lever L at the opposite side of the car and actuate thereby the indicator, so as to move the webs in a reverse direction and display thereby the names of the stations in their reverse order on both webs of the indicator.

The station-indicator described is of comparatively simple construction, and can be furnished at comparatively small expense, so as to overcome the objections of the railway companies to such indicators, which are mainly based on the complicated constructions and large expense connected with the introduction of such indicators.

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

1. The combination of two web-carrying winding-rollers, intermittently-rotated feed-rollers below the same, guide-rollers at opposite sides of the winding-rollers, and two webs having the names of the stations printed or otherwise applied thereto, both webs being attached at one end to one of the winding-rollers and at the opposite end to the other winding-roller, and wound up on one winding-roller while being unwound from the other winding-roller, said webs being exhibited at opposite sides of the case, substantially as set forth.

2. The combination of a supporting-frame having two web-carrying winding-rollers, feed-rollers below the same, guide-rollers at both sides of and above the winding-rollers, two webs having the names of the stations printed on the same, said webs being exhibited at opposite sides of the case and both attached at one end to one of the winding-rollers and at the opposite end to the other winding-roller, a pawl-and-ratchet mechanism applied to the shaft of one of the winding-rollers, actuating cords or chains for operating said pawl-and-ratchet mechanism, and transmitting-gearing by which the motion of the winding-roller is transmitted to the feed-rollers, so as to wind up both webs on one of the winding-rollers and unwind them from the other.

3. The combination of two station-indicating webs, winding-rollers therefor, feed-rollers and guide-rollers for exhibiting said webs at opposite sides of the case, a ratchet-wheel keyed to the shaft of one of the winding-rollers, two oscillating and spring-actuated arms loose on said shaft and extending in opposite directions therefrom, two pawls fulcrumed to said arms, respectively, separate actuating chains or cords applied to said pawls, stops for limiting the motion of the oscillating arms, and spring-actuated check-pawls adapted to engage the recesses of said ratchet-wheel for arresting the motion thereof, one of said pawls being engaged by one of said arms when the latter is moved in downward direction.

4. The combination of a winding-roller supported in fixed bearings, a second winding-roller supported in sliding and spring-actuated bearings, two station-indicating webs, which are both attached at one end to one winding-roller and at the other end to the other winding-roller, feed-rollers for moving the belts, guide-rollers at both sides of the winding and feed rollers exhibiting the webs at opposite sides of the case, a pawl-and-ratchet mechanism for imparting rotary motion to the stationary winding-rollers, transmitting-gearing between the shafts of said winding-rollers and the shafts of the feed-rollers, and actuating-chains for operating the pawl-and-ratchet mechanism in opposite directions, substantially as set forth.

5. The combination of a stationary and a spring-actuated winding-roller, two station-indicating webs, which are both attached at one end to one winding-roller and at the

other end to the other winding-roller, intermittently-rotated feed-rollers for moving the webs, and guide-rollers at both sides of the winding-rollers over which the webs are conducted from one winding-roller to the other and exhibited at opposite sides of the case, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

FREDK. C. HELLMUTH.

Witnesses:

PAUL GOEPEL,

JOHN ALONZO STRALEY.