

Jan. 3, 1956

S. A. R. OLSSON
INDICATOR AND THE LIKE APPARATUS
WITH A MOVABLE FOIL WEB

2,729,006

Filed Sept. 5, 1951

2 Sheets-Sheet 1

Fig. 1.

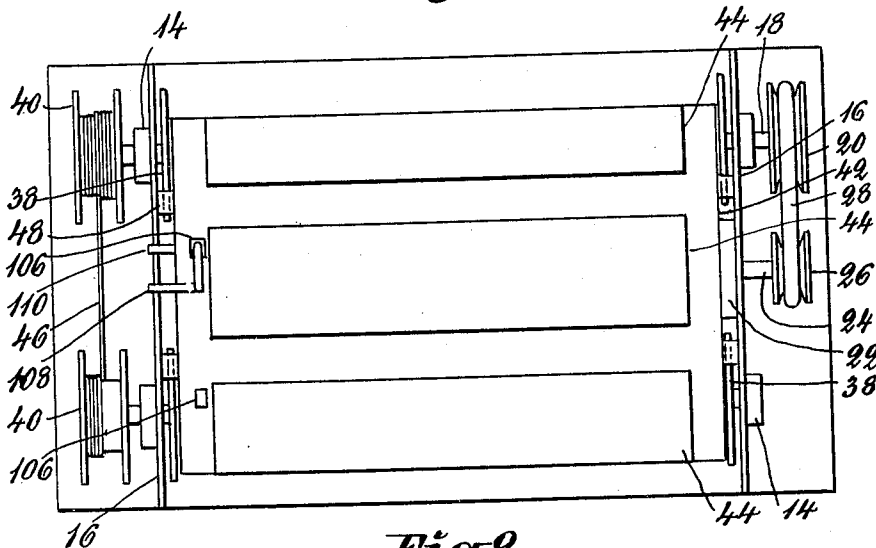
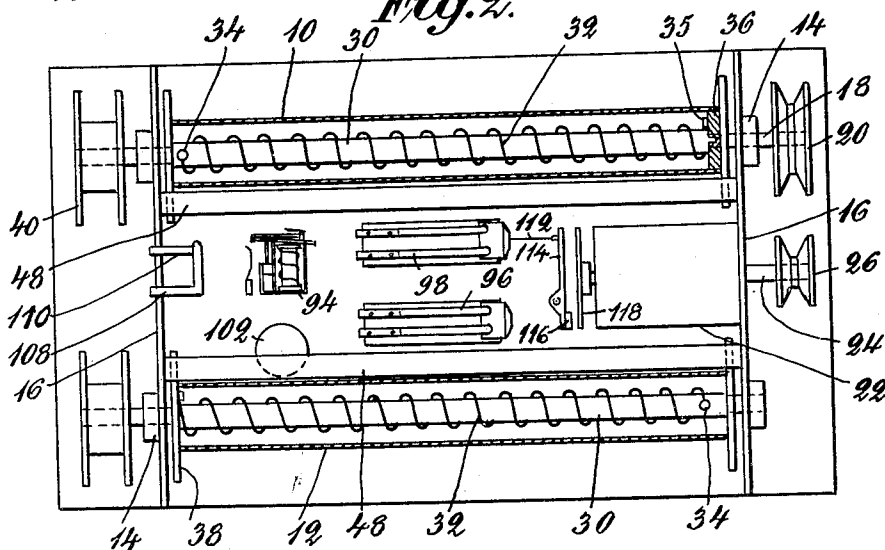


Fig. 2.



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Fig. 3.

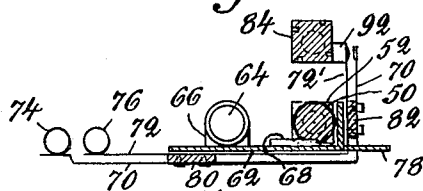


Fig. 4.

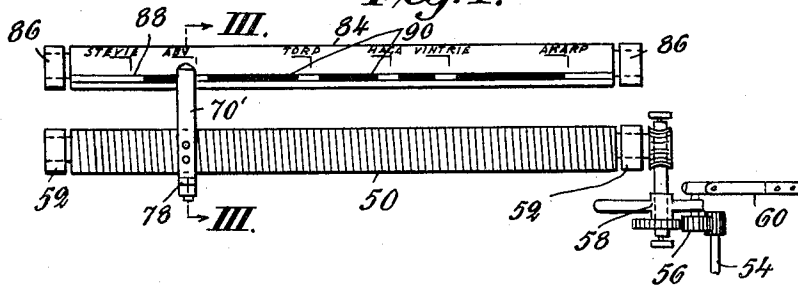
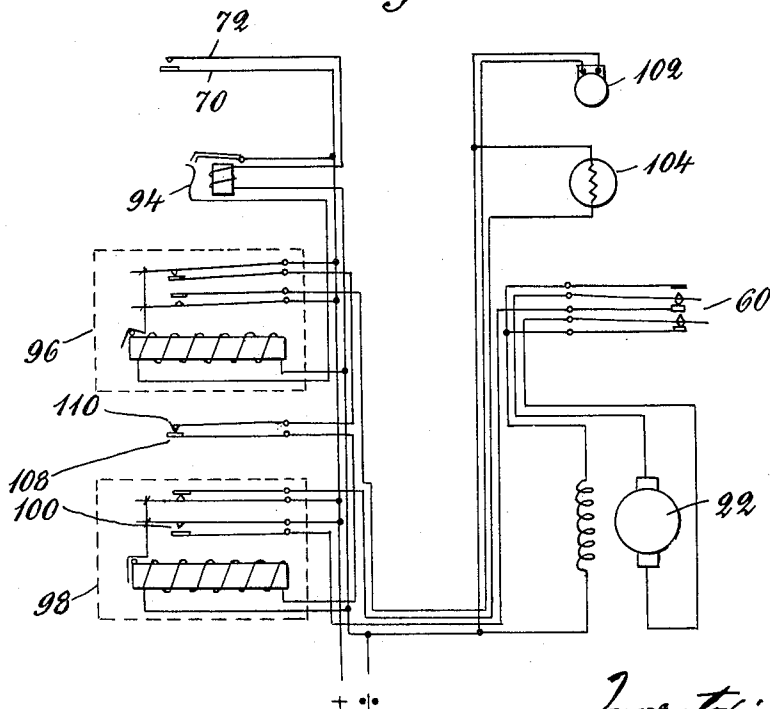


Fig. 5.



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INDICATOR AND THE LIKE APPARATUS WITH A MOVABLE FOIL WEB

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5 Claims. (Cl. 40—31)

My present invention relates to indicators and the like apparatus comprising a foil web which is wound at both ends onto rollers and adapted by rotation of the latter to be transferred from one roller to the other. The expression foil web is understood here to comprise a web adapted to be coiled about the two rollers without any limitation as to a certain small thickness or combination of materials of the web. Provided between the rollers is a portion of the web which is visible from one or both sides through windows. As an example of fields where the invention finds numerous applications might be mentioned so-called station indicators for vehicles where the sign is adapted automatically to show the name of the next station where the vehicle is to stop. The station indicator may also be used within railway station buildings to indicate the time of departure of various trains. Another field of application of the invention is that of advertising signs.

The primary object of my invention is to provide a simple and effective means for the stretching of the visible portion of the foil web.

Another object of my invention is to provide means adapted to have the visible portion of the foil web stretched by a force, which is constant or nearly constant, no matter how much of the web is coiled onto one or the other roller.

A further object of my invention is to provide means adapted to transfer the foil web from one roller onto the other without any particular shifting being required in reversing the direction of movement of the web.

A still further object of my invention is to provide simple and reliable means for an automatic feeding of the foil web, for instance to indicate the names of the stations passed by a vehicle in traffic.

Further objects and advantages of the invention will be apparent from the following description considered in connection with the accompanying drawings, which form a part of this specification, and of which:

Fig. 1 is a top view of a station indicator constructed according to the invention having an external protective hood removed therefrom.

Fig. 2 is a partially sectional corresponding view of the indicator having the foil web also removed.

Fig. 3 is a sectional view taken on the line III—III of Fig. 4 of a primary indicator for the indication of stations.

Fig. 4 is a side view of the indicator as shown in Fig. 3.

Fig. 5 shows a wiring diagram.

The station indicator illustrated in Figs. 1 and 2 comprises two rollers 10 and 12 mounted in bearings 14 supported by flanges 16. Arranged on a shaft 18 rigidly connected with the roller 10 is a belt sheave 20, a driving belt 28 extending between the same and a sheave 26 secured on the shaft 24 of a driving motor 22. Shafts are arranged in each of the rollers 10, 12, which have a cylindrical configuration, said shafts running freely relative to the respective rollers. A helical spring 32 is arranged about the shaft in the roller 10, said spring being rigidly connected by means of a screw 34 to the left end of the shaft and being connected by means of a screw 35 to a

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disc 36 rigidly connected to the roller 10 at the other end thereof. In the roller 12, conditions are the reverse, inasmuch as the right end of the spring 34 is in this case connected by means of the screw 34 to the shaft 30, while the left end of the spring is connected to a flange 38 on the roller 12. The two springs are wound in the same direction. The spring 32 in the roller 10 will thus be stressed, if the roller is turned in a clockwise direction, viewed from the left to the right in the figures of the drawing, whereas the spring of the roller 12 will be stressed by turning this roller in the opposite direction.

Wound about the rollers 10, 12 is a foil web 42 provided at regular intervals with fields 44 for text matter or simply with text matter, in the present case the names of stops. The foil web, which may be made of textile material, has a length considerably greater than that of the stretched portion between the rollers so as to provide space for the number of stations on a certain stretch of traffic.

The shafts 30 have an extension projecting from the rollers, said extension having a cable drum 40 secured thereon. Coiled about the cable drums is a wire 46 by a number of convolutions preferably greater than the number of convolutions of the foil web 42 on the rollers 10 and 12 respectively. The two ends of the wire 46 are rigidly connected with the respective cable drums. Furthermore, the wire 46 is wound in a direction opposed to that of the end portions of the foil web 42. Due to the fact that the wire is further wound by one or more convolutions onto a cable drum, after the free portion of the wire has been stretched, the springs 32 will be stressed in the two rollers 10, 12. It will be readily understood that the initial tension thus obtained results in the foil web, which is laterally guided by flanges 38 on both sides of the rollers, being kept under tension in the free portion thereof, which preferably slides on brightly polished round irons 48 secured into flanges 16 and ensuring that said portion will always lie in the same plane independently of how much of the web has been wound onto the one or the other roller. The initial tension remains constant or very nearly constant, especially when the springs 32 are of a great length, independently of the extent of rolling-up of the one or the other roller. As stated above, the station indicator is covered by a hood, so that only the middle portion of the plane roller track will be visible outwardly over a width corresponding approximately to that of a field 44.

The primary indicator shown in Figs. 3 and 4 comprises a screw 50 mounted in stationary bearings 52. The screw 50 is driven by means of a shaft 54 and a gearing 56 from the wheels of the vehicle, for instance from those of an omnibus over the odometer thereof. The gearing 56 comprises a mechanism 58 to reverse the direction of rotation of the screw in a manner known per se. This mechanism actuates at the same time the contact member 60 for reversing the direction of rotation of the motor 22. A bell crank 62 is movable in the longitudinal direction of the screw 50, the same being guided by a fixed cylindrical guide 64 through a strap 66 about the latter. The bell crank 62 carries a knife 68 fitting into the thread of the screw 50 and maintained pressed against the latter with the aid of contact springs 70, 72 each pressed against a contact rail 74, 76, said rails extending in parallel to the screw 50 for the whole length thereof. The arm 62 and thus the knife 68 may be brought out of engagement with the thread of the screw 50 through the actuation of a handle 78 in a downward direction as viewed in Fig. 3 and against the action of the contact springs 70, 72. On having been moved along the screw 50 the knife 68 may then be brought into engagement with the thread thereof at another selected point. The contact rails 70, 72, which are electrically insulated from each other by means of

gaskets 80, 82, extend angularly upwardly over the screw 50 by portions 70¹, 72¹.

Arranged above the screw 50 is a scale frame 84, which may be rotatably mounted in bearings 86, and which may be of a square section, for example, thus being adjustable into four different positions. Each side of the scale frame indicates the names of stations displaced in accordance with the distance therebetween. The scale frame has a longitudinally extending kerf 88 with abutting members 90 extending between the station points and being thus of different lengths. Now, when the bent portion 72¹ of the contact spring 72 hits an abutment member 90 by its end portion 92, it will be forced into contact with the bent portion 70¹ of the contact spring 70. When the vehicle is in motion, the screw 50 rotates and moves the bell crank 62 together with the contact springs 70, 72 through the knife 68 projecting into the thread of the screw. The primary indicator occupies only a small space and may therefore be advantageously mounted on the upper border of the wind screen of an omnibus, for example.

The operation of the contrivance will now be explained more in detail, particularly with reference to the wiring diagram in Fig. 5. Let it be assumed that the vehicle is started after having made a stop. The arm 62 travels, for instance, toward the right in Fig. 4, and when a certain stretch of road has been covered, the electric current is closed between the contact springs 70, 72 by the fact that the portion 92 of the contact springs hits an abutment member 90. Thus the current will also be closed to a relay 94 which is so devised as to interrupt the current again after a short period of time. Such relays known generally as time delay relays are well known in the art and a modern example of such device is disclosed in detail in U. S. Patent No. 2,489,381, granted on the application of Carl Lindahl. Since the details of the time delay relay form no part of the present invention it need not be further described herein. At the same time, a second relay 96 receives current, this relay interrupting in turn the current to a relay 98. This results in contact being established in the switch 100 of this relay, so that the motor 22 is caused to rotate. At the same time supply of current has been established to a signalling device, such as a buzzer 102, while a lamp 104 in the station indicator is simultaneously extinguished. Provided on the foil web 42 arc contact members 106, one of which is located right between two contacts 108, 110, when the vehicle is started. By the fact that the foil web is now advanced the contact springs 108, 110 will be insulated from each other by the foil web, for which reason no current will pass therethrough and thus through the relay 98, until the next contact member 106 is brought between the contact springs. When this takes place, the current to the relay 98 is closed again, while the current for the motor 22 is interrupted simultaneously with the lighting of the lamp 104. When the vehicle approaches the next stop, the portion 92 of the contact springs is brought into the space between two contact members 90, so that the current is interrupted between the contact springs 70, 72. When the vehicle has been driven as far as to "Akarp," where the vehicle turns, the driver reverses the direction of movement of the screw 50 by means of the mechanism 58, the arm 62 with its contact springs 70, 72 now travelling in the opposite direction. At the same time the direction of movement of the motor will have been reversed by the contacts 60.

The relay 98 is connected over a link 112, Fig. 2, to an arm 114 adapted by means of a brake shoe 116 to act upon a disc 118 secured on the shaft of the motor 22, so that the motor will be rapidly braked.

While one more or less specific embodiment of the invention has been shown, it is to be understood that this is for purpose of illustration only, and the invention is not to be limited thereby, but its scope is to be determined by the appended claims.

What I claim is:

1. In an indicating apparatus for a vehicle, a rotatably mounted first shaft, a first roller rotatably mounted on said first shaft, a first helical spring surrounding said first shaft and connected at one end to said first shaft and at the opposite end to said first roller to provide a yieldable coupling, a reversible motor, drive means connecting said motor and said first shaft, a second shaft rotatably mounted parallel to said first shaft, a second roller rotatably mounted on said second shaft, a second helical spring surrounding said second shaft and connected at one end to said second shaft and at the opposite end to said second roller to provide a yieldable coupling, the points of connection between said second spring and said second shaft and said second roller being at opposite ends of said second shaft and said second roller from the points of connection between said first spring and said first shaft and said first roller, a web wound on said first roller in one direction and on said second roller in the opposite direction, a first winding drum on said first shaft, a second winding drum on said second shaft, a flexible member wound on said first drum in one direction and on said second drum in the opposite direction whereby upon rotation of said first shaft by said motor in one direction said web will unwind from said first roller and wind up on said second roller and said second roller will be driven at a progressively increasing speed by said flexible member as the diameter of said member on said first drum increases and the diameter of said member on said second drum decreases, the change in relative speed between said first and second shafts resulting in progressively increasing the tension in said second spring, this operation being reversed upon reversal of said motor, means for intermittently operating said motor in response to travel of said vehicle a predetermined distance comprising a lead screw driven from the running gear of said vehicle, traverse means driven by said lead screw and including normally open contacts, means for closing said contacts at predetermined points in the travel of said traverse means, spaced conducting means in said web, switch means disposed in the path of movement of said conducting means and being closed when in contact therewith and relays connected in a circuit including said contacts, said switch means and said motor whereby said motor will be operated upon closing said contacts and stop upon closing of said switch means to intermittently transfer said web from said first to said second roller and vice versa in accordance with the direction of rotation of said motor.

2. In an indicating apparatus for a vehicle, a rotatably mounted first shaft, a first roller rotatably mounted on said first shaft, a first helical spring surrounding said first shaft and connected at one end to said first shaft and at the opposite end to said first roller to provide a yieldable coupling, a reversible motor, drive means connecting said motor and said first shaft, a second shaft rotatably mounted parallel to said first shaft, a second roller rotatably mounted on said second shaft, a second helical spring surrounding said second shaft and connected at one end to said second shaft and at the opposite end to said second roller to provide a yieldable coupling, the points of connection between said second spring and said second shaft and said second roller being at opposite ends of said second shaft and said second roller from the points of connection between said first spring and said first shaft and said first roller, a web wound on said first roller in one direction and on said second roller in the opposite direction, a first winding drum on said first shaft, a second winding drum on said second shaft, a flexible member wound on said first drum in one direction and on said second drum in the opposite direction whereby upon rotation of said first shaft by said motor in one direction said web will unwind from said first roller and wind up on said second roller and said second roller will be driven at a progressively increasing speed by said flexible mem-

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ber as the diameter of said member on said first drum increases and the diameter of said member on said second drum decreases, the change in relative speed between said first and second shafts resulting in progressively increasing the tension in said second spring, this operation being reversed upon reversal of said motor, means for intermittently operating said motor in response to travel of said vehicle a predetermined distance including normally open contacts, means for closing said contacts at predetermined points in the travel of said vehicle, spaced conducting means in said web, switch means disposed in the path of movement of said conducting means and being closed when in contact therewith and relays connected in a circuit including said contacts, said switch means and said motor whereby said motor will be operated upon closing said contacts and stop upon closing of said switch means to intermittently transfer said web from said first to said second roller and vice versa in accordance with the direction of rotation of said motor.

3. In an indicating apparatus for a vehicle, a rotatably mounted first shaft, a first roller rotatably mounted on said first shaft, a first helical spring surrounding said first shaft and connected at one end to said first shaft and at the opposite end to said first roller to provide a yieldable coupling, a reversible motor, drive means connecting said motor and said first shaft, a second shaft rotatably mounted parallel to said first shaft, a second roller rotatably mounted on said second shaft, a second helical spring surrounding said second shaft and connected at one end to said second shaft and at the opposite end to said second roller to provide a yieldable coupling, the points of connection between said second spring and said second shaft and said second roller being at opposite ends of said second shaft and said second roller from the points of connection between said first spring and said first shaft and said first roller, a web wound on said first roller in one direction and on said second roller in the opposite direction, a first winding drum on said first shaft, a second winding drum on said second shaft, a flexible member wound on said first drum in one direction and on said second drum in the opposite direction whereby upon rotation of said first shaft by said motor in one direction said web will unwind from said first roller and wind up on said second roller and said second roller will be driven at a progressively increasing speed by said flexible member as the diameter of said member on said first drum increases and the diameter of said member on said second drum decreases, the change in relative speed between said first and second shafts resulting in progressively increasing the tension in said second spring, this operation being reversed upon reversal of said motor, and means for intermittently operating said motor in response to travel of said vehicle a predetermined distance to intermittently transfer said web from said first to said second roller and vice versa in accordance with the direction of rotation of said motor.

4. In an indicating apparatus for a vehicle, a rotatably mounted first shaft, a first roller rotatably mounted on said first shaft, a first helical spring surrounding said first shaft and connected at one end to said first shaft and at the opposite end to said first roller to provide a yieldable coupling, a reversible motor, drive means connecting said motor and said first shaft, a second shaft rotatably mounted parallel to said first shaft, a second roller rotatably mounted on said second shaft, a second

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helical spring surrounding said second shaft and connected at one end to said second shaft and at the opposite end to said second roller to provide a yieldable coupling, a web wound on said first roller in one direction and on said second roller in the opposite direction, a first winding drum on said first shaft, a second winding drum on said second shaft, a flexible member wound on said first drum in one direction and on said second drum in the opposite direction whereby upon rotation of said first shaft by said motor in one direction said web will unwind from said first roller and wind up on said second roller and said second roller will be driven at a progressively increasing speed by said flexible member as the diameter of said member on said first drum increases and the diameter of said member on said second drum decreases, the change in relative speed between said first and second shafts resulting in progressively increasing the tension in said second spring, this operation being reversed upon reversal of said motor, and means for intermittently operating said motor in response to travel of said vehicle a predetermined distance to intermittently transfer said web from said first to said second roller and vice versa in accordance with the direction of rotation of said motor.

5. In an indicating apparatus, a rotatably mounted first shaft, a first roller rotatably mounted on said first shaft, a first helical spring surrounding said first shaft and connected at one end to said first shaft and at the opposite end to said first roller to provide a yieldable coupling, a reversible motor, drive means connecting said motor and said first shaft, a second shaft rotatably mounted parallel to said first shaft, a second roller rotatably mounted on said second shaft, a second helical spring surrounding said second shaft and connected at one end to said second shaft and at the opposite end to said second roller to provide a yieldable coupling, a web wound on said first roller in one direction and on said second roller in the opposite direction, a first winding drum on said first shaft, a second winding drum on said second shaft, a flexible member wound on said first drum in one direction and on said second drum in the opposite direction whereby upon rotation of said first shaft by said motor in one direction said web will unwind from said first roller and wind up on said second roller and said second roller will be driven at a progressively increasing speed by said flexible member as the diameter of said member on said first drum increases and the diameter of said member on said second drum decreases, the change in relative speed between said first and second shafts resulting in progressively increasing the tension in said second spring, this operation being reversed upon reversal of said motor.

References Cited in the file of this patent

UNITED STATES PATENTS

55	78,349	Zacharias	May 26, 1868
	1,009,253	Mann	Nov. 21, 1911
	1,144,673	Wheeler	June 29, 1915
	1,202,306	Olvis	Oct. 24, 1916
	1,716,575	Corso	June 11, 1929
60	1,853,458	Rullman	Apr. 12, 1932
	2,158,644	Ward	May 16, 1937

FOREIGN PATENTS

2,885	Great Britain	Sept. 8, 1910
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