Oct. 16, 1923. 1,471,286

E. SHARPE

PASSENGER CAR SIGNAL

Filed Sept. 26, 1921 3 Sheets-Sheet 1

Fig. 1.

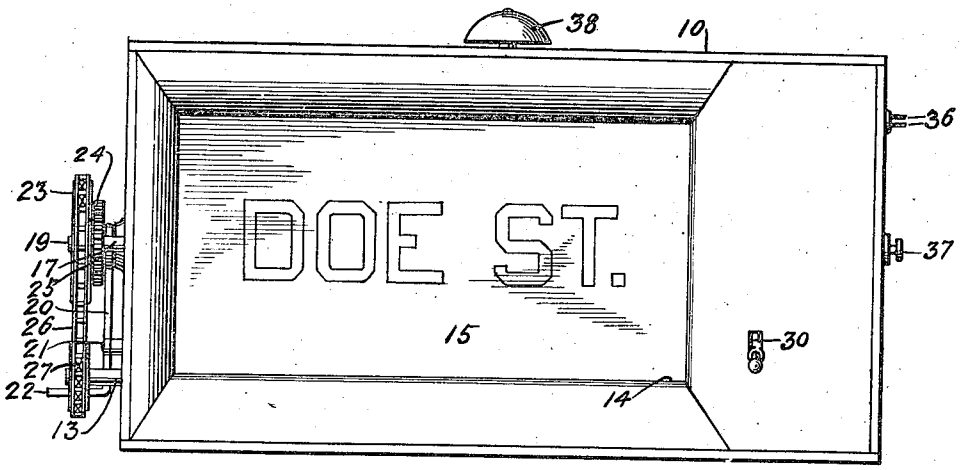
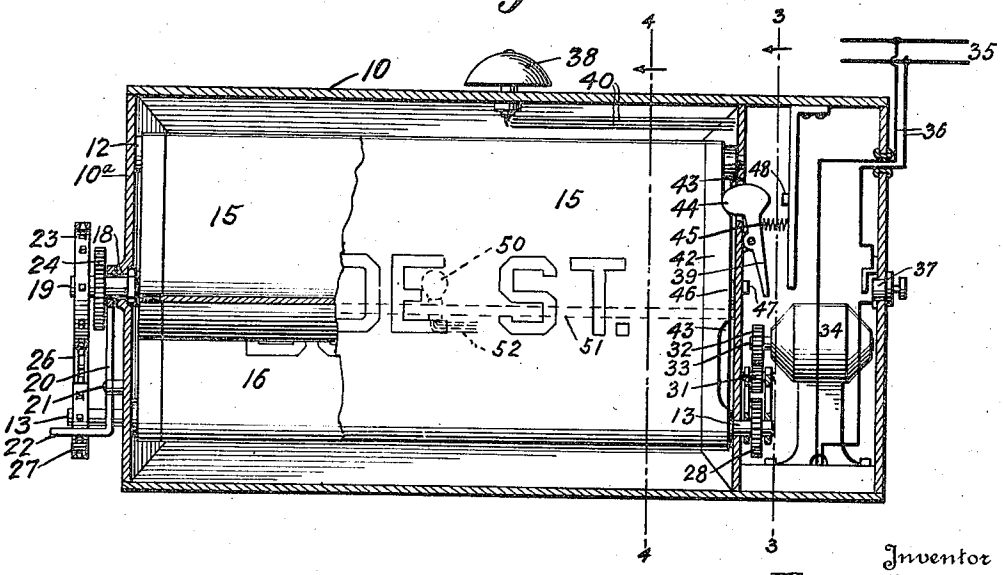


Fig. 2.



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Fig. 3.

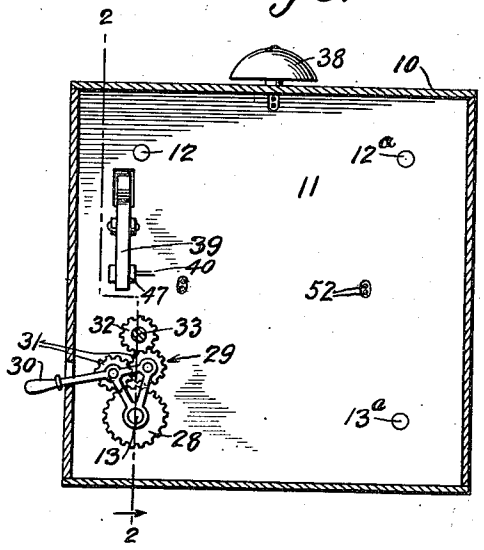


Fig. 4.

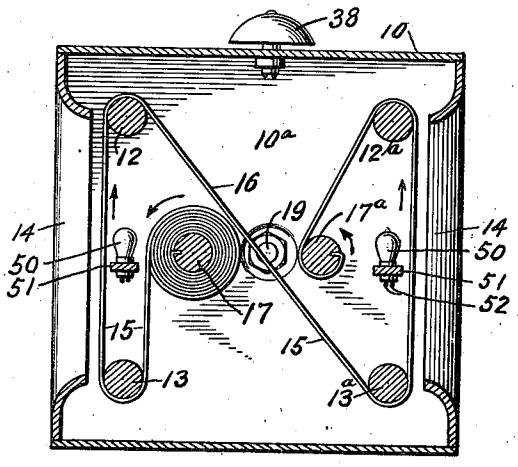


Fig. 5.

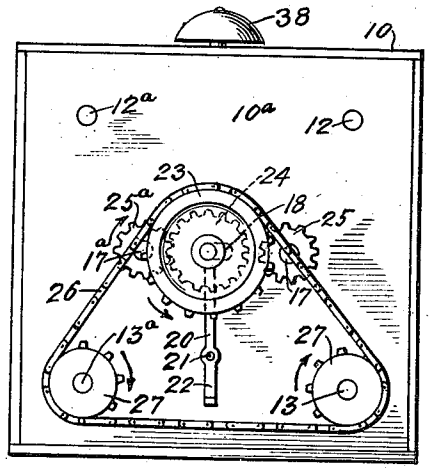
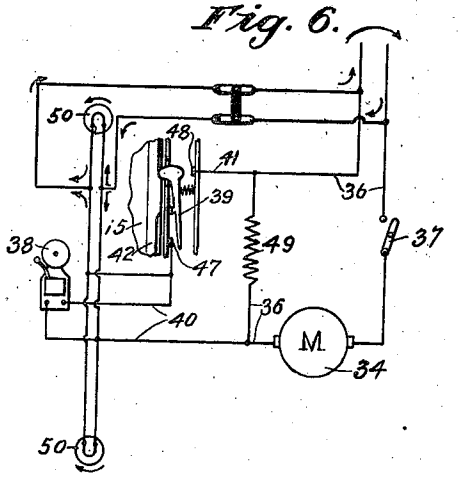


Fig. 6.



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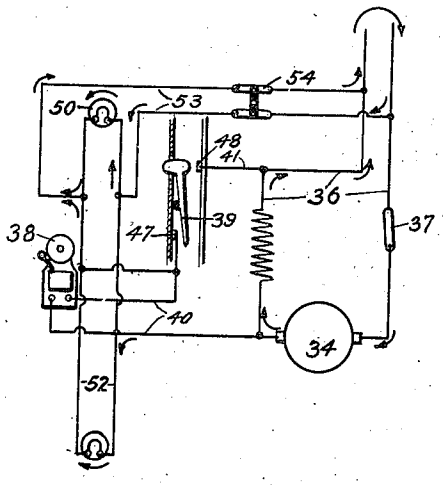


Fig. 7.

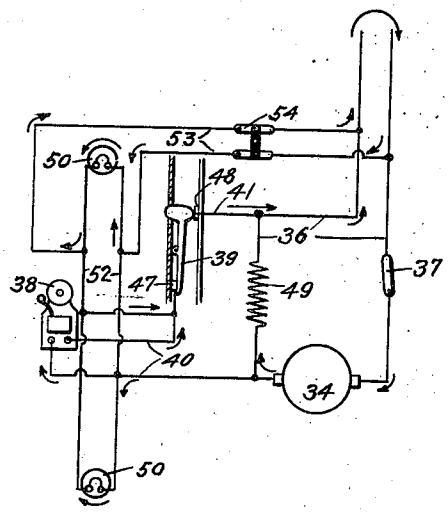


Fig. 8.

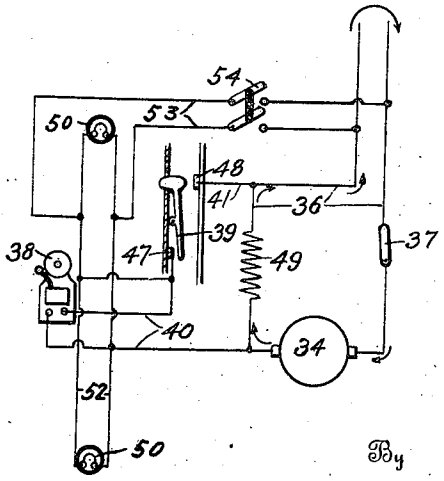


Fig. 9.

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Patented Oct. 16, 1923. 1,471,286

UNITED STATES PATENT OFFICE.

ELMER SHARPE, OF HAMILTON, ONTARIO, CANADA.

PASSENGER-CAR SIGNAL.

Application filed September 26, 1921. Serial No. 503,181.

To all whom it may concern:

Be it known that I, ELMER SHARPE, a subject of the King of England, residing at Hamilton, in the Province of Ontario and country of Canada, have invented certain new and useful Improvements in Passenger-Car Signals, of which the following is a specification.

This invention relates to signals, and more specifically to improved passenger-car-signals.

One of the objects of this invention is to provide a signalling device which, upon closing an electric circuit, simultaneously operates a changeable sign, illuminates the sign and rings a bell, thereby attracting attention of the passengers to the changing sign which displays names of the railway station in their consecutive order.

A further object is to provide a signalling device of this character with a reversing mechanism whereby the device, on the return trip of the car, displays the names of the stations in the converse order.

Other objects and advantages will be pointed out or implied in the following details of description, in connection with the accompanying drawings in which:

Figure 1 is a side elevation of a signalling device constructed according to my invention.

Figure 2 is a fragmentary sectional view, the section being taken substantially along the line 2—2 of Figure 3 portions of the electric circuit being omitted for the sake of clearness.

Figure 3 is a transverse sectional view, the section being taken substantially along the line 3—3 of Figure 2.

Figure 4 is a transverse sectional view along the line 4—4 of Figure 2.

Figure 5 is a view of the device as observed from the left end of Figure 1, and

Figures 6 to 9 inclusive are diagrammatic views illustrating the electric circuit or system in the different stages of rest and operation of the device.

Referring to the drawings in detail, in which similar reference characters correspond with similar parts throughout the several views, the invention consists in the construction and arrangement of parts as will now be fully described as follows:

Within a casing 10 is a partition 11, and this partition and one end of the casing are provided with openings or bearings in which are journaled two pairs of curtain-rollers, the upper rollers being indicated by the numerals 12 and 12^a, and the lower rollers being indicated by the numerals 13 and 13^a. Each pair of rollers is arranged adjacent to a window 14, there being two of these windows provided in the casing 10. A sign curtain 15 is held by the rollers in such relation that portions of the curtain are stretched across the windows 14 in such manner as to display opposite sides of the curtain through the respective windows; also in such manner that when the curtain travels over these rollers, both display portions of the curtain simultaneously travel in the same direction, that is, either up or down. This operation is obtainable because the curtain extends from the upper roller of one pair to the lower roller of the other pair, as indicated at 16 in Figure 4.

Between the center of the casing 10 and the vertical planes of the pairs of the rollers 12 and 12^a and 13 and 13^a, a pair of winding rollers 17 and 17^a is journaled in the partition 11 and end 10^a of the casing 10. The ends of the curtain 15 are secured to these winding rollers, and when one roller as 17^a is turned or winding up the curtain 15, the other roller 17 is idly rotated by the unwinding of the curtain 15. Any appropriate means (not shown) may be employed to retard the unwinding motion of each roller 17 and 17^a.

A slot or elongated bearing 18 is provided in the end 10^a, and a stub shaft 19 extends through this opening 18 and through a movable bearing 20 which is pivotally mounted at 21 and provided with a handle 22 by means of which the stub shaft 19 can be shifted laterally. A sprocket wheel 23 and a spur gear 24 are mounted on the shaft 19, and this spur gear is alternately movable into mesh with a pair of spur gears 25 and 25^a on the shafts 17 and 17^a respectively, as clearly shown in Figure 5. A sprocket chain 26 connects the wheel 23 with a pair of sprocket wheels 27 and 27^a, the former of which is rigid with the roll 13, while the latter is loosely mounted on the journal of the roll 13^a.

On the opposite end of the roll 13, from the sprocket wheel 27 a spur gear 28 is secured, and a reversing gear mechanism 29 of well known construction is in mesh with the gear 28 and provided with a handle 30 for alternately shifting two pinions 31 into

mesh with a pinion 32 on a shaft 33 of an electric motor 34.

Before proceeding to describe the electrical system in connection with the motor 34 the operation of winding and guiding rollers and their adjuncts will be explained as follows.

Assuming that the motor 34 has its gear wheel or pinion 32 in mesh with one of the wheels 31, as shown in Figure 3; this imparts motion to the chain 26, through the medium of the gear wheel 28, shaft or roller 13 and the sprocket wheel 27 on this shaft. The chain 26 imparts motion to the sprocket wheel 23 and gear wheel 24, and this motion is imparted to the gear wheel 25^a which is in mesh with the gear wheel 24, thereby rotating the shaft 17^a which has the lesser portion of the curtain wound thereon (see Figure 4). This pulls the curtain over the guide rollers 12 and 12^a, so that it unwinds from the other roller 17.

Now, when it is desired to change the direction of motion of the winding shafts and sign curtain, the handle 22 is manipulated for disengaging the gear wheel 24 from the left hand wheel 25^a, in Figure 5, and engaging it with the right hand wheel 25. Obviously this results in applying power to the right hand roller 17, in Figure 5 or left hand roller 17 in Figure 4. Now, in order to turn the rollers 17 and 17^a in the direction opposite to that indicated by the arrows adjacent thereto, the handle 30 is shifted for moving one of the wheels 31 out of mesh with the wheel 32 while moving the other wheel 31 into mesh with the wheel 32. This reverses the direction of movement of the wheel 28 and shaft 13 in a well known manner.

It will be noted in this connection that the triangular arrangement of the chain 26 about the sprockets 23, 27 and 27^a permits of the said sprocket 23 being swung about the pivot 21 of the arm 20, whereby the gear 24 may be caused to engage with either of the gears 25 or 25^a without unduly tightening or loosening the said chain. This could not be effectively accomplished if the said chain passed only about the sprockets 23 and 27, due to the eccentricity of the pivot 21, but the triangular arrangement shown permits the shifting of the sprocket 23 as described.

As illustrated in Figure 2, it will be seen that signs are painted or provided on both sides of the curtain 15, and in Figure 4, it will be seen that one side of the curtain 15 is displayed through one window while the opposite side is displayed through the other window. Therefore, the signs can be so arranged on the curtain 15 that two signs representing the same station are displayed through the respective windows simultaneously.

The motor 34 is preferably in circuit with the main power circuit when this device is employed on electric cars, this main power circuit being indicated at 35 in Figure 2. However, the motor circuit, which is indicated at 36, may be connected with any appropriate source of electro-motive force. This motor circuit includes a switch 37 which is here illustrated as a pushbutton, and when this switch is closed, the current flows through the motor and causes its shaft 33 and wheel 32 to drive the curtain carrying shafts in the manner explained in the foregoing.

A bell 38 is secured on the casing 10 and its ringing mechanism constitutes part of an electric circuit extension of the motor circuit 36, as illustrated in the diagrammatic Figures 6 to 9 inclusive. An automatically opening switch 39 is also included in the circuit extension, the conducting wires being indicated at 40 and 41. This switch is automatically closed upon movement of the curtain 15 by means of a cam-strip 42 secured to one edge of the curtain 15 and being windably therewith on the rollers 17 and 17^a, and movable over the guide rollers 12 and 13, as indicated in Figure 2. This strip may be of metal or other appropriate material and is provided with recesses 43 along its outer edge. A lateral extension 44 of the switch 39 is pressed against this recessed edge of the strip 42 by means of a spring 45, so that when the extension 44 is in any one of the recesses 43, the switch 39 is open; but when the portion 44 rides upon the edge portion 46 of the strip 42, the switch 39 is closed by being pressed against a pair of contacts 47 and 48. Therefore, as soon as the motor 34 starts, the curtain 15 and its strip 42 close the switch 39, as indicated in Figure 8, so that the current now passes not only through the motor circuit, but also passes through the bell circuit extension, that is, through the conductors 40 and 41 through the bell operating mechanism and thence into the conductor 36. Of course the switch 37 must be closed for energizing the motor 34. In order that the current be not short-circuited with relation to the bell circuit extension a resistance 49 is included in the conducting wire 36. When the motor has driven the curtain 15 and strip 42 a predetermined distance, the extension 44 of the switch 39 enters one of the elongated recesses 43, and the spring 45 opens the switch 39, so that the bell 38 ceases to ring. This bell, which has been attracting attention of the passengers to the changing of the sign now notifies the conductor, motorman or other operator that the switch 37 should immediately be opened, to prevent the motor from carrying the curtain further than intended or desired. The momentum of the motor and curtain causes the latter to continue travelling until the lateral

extension 44 reaches the end of the recess 43, and it now serves to stop the curtain at the proper place for displaying the sign intended to be displayed at this time.

In addition to the audible alarm or signal 38, it is desirable to attract the attention of the passengers by means of an ocular signal, such for instance, as an electric light or lights being suddenly displayed. For this purpose and for the purpose of illuminating the sign curtain, I provide any appropriate number of lamps or electric lights 50, two of these lamps being here illustrated. As shown in Figure 4, the lamps 50 are each supported on a bar or bridge 51 and are disposed inwardly of the portions of curtain which extend across the windows 14. The curtain is composed of translucent material, so that the exterior as well as the interior of the curtain is illuminated and when these lamps are lighted suddenly the change from comparative darkness naturally attracts attention of the passengers to the signs. As illustrated in Figures 6 to 9 inclusive, the lamps 50 include portions of a circuit extension 52, this circuit extension being electrically connected to the circuit extension 40 in such manner that when the switch 39 is closed as illustrated in Figure 8 the current passes through the lamp 50 as well as through the bell circuit 40 and thus an audible and ocular effect is simultaneously produced while the motor 34 is changing the sign in the manner previously described.

For the purpose of keeping the lamps continually lighted, when desirable, the circuit extension 52 is connected by a pair of conductors 53 to the outer portion of the circuit 36; that is, to say the portion of this circuit between the source of E. M. F. and the motor 34. The conductors 53 include a double pole switch 54, which can be opened, as in Figure 9 to keep the lamps 50 normally unlighted, so that they serve as flashlights during the changing of the sign, or during the first part of the sign-changing operation; but when the switch 54 is closed, the lamps 50 are continually lighted, as illustrated in Figure 6 where the switches 37 and 39 are open.

Referring to Figure 7, it may be considered that the switch 37 has just been closed, that the current has started to flow through the motor circuit 36 and through a portion of the bell circuit and thence through the lamp circuit 52 as well as through the lamp circuit 53. Immediately, the motor begins to shift the sign curtain, and this results in closing the switch 39 in the manner previously explained. The switch now being closed, as shown in Figure 8, the current passes through the entire bell circuit 40 and 41; or in fact it now passes through the entire system including the motor, the lamps and the bell ringing mechanism.

In Figure 9, the switch 54 is open, and the lamps 50 are dark notwithstanding the fact that the current is passing through the motor circuit, for it is seen that the switch 39 is open; and when the motor 34 has closed the latter switch, the current will then pass through the bell circuit and lamps in the manner illustrated in Figure 8, except that there will be no current through the conductors 53.

Although I have described this embodiment of my invention very specifically, it is not intended to limit myself to this exact description and construction, but changes may be made within the scope of the inventive ideas, as implied and claimed.

What I claim as my invention is:

1. A device of the class described comprising a casing provided with a pair of oppositely disposed windows; a pair of winding rollers journalled in said casing; a pair of guiding rolls journalled in said casing adjacent each window; a web provided with indicating characters secured to said winding rollers and passing over said guiding rolls; a gear rigid with each of said winding rollers; a gear pivotally mounted on said casing adapted to engage either of said first mentioned gears to drive said rollers; sprocket and chain connections between two of said guiding rolls and said last named gear, said connections permitting the oscillation of said gear about its pivot; and means for positively driving one of said guiding rolls.

2. A device of the class described comprising a casing provided with a pair of oppositely disposed windows; a pair of winding rollers journalled in said casing; a pair of guiding rolls journalled in said casing adjacent each window; a web provided with indicating characters on both sides thereof, secured to said winding rollers and passing over said guiding rolls; a gear rigid with each of said winding rollers; an arm pivotally mounted on said casing; a gear rotatably carried by said arm, adapted to engage either of said first mentioned gears; a sprocket wheel rigidly connected with said last named gear; a sprocket wheel rigidly carried by one of said guiding rolls; a sprocket wheel loosely carried by another of said guiding rolls; a sprocket chain engaging all of said sprocket wheels, and permitting the oscillation of said first named sprocket wheel and gear, whereby the latter may engage either of said winding roll gears; and means for positively driving the guiding roll carrying said second named sprocket wheel.

In testimony whereof, I, affix my signature.

ELMER SHARPE.