Oct. 26, 1937. A. BRIECHLE 2,097,056

SIGNAL APPARATUS

Filed Feb. 10, 1937

Fig. 1

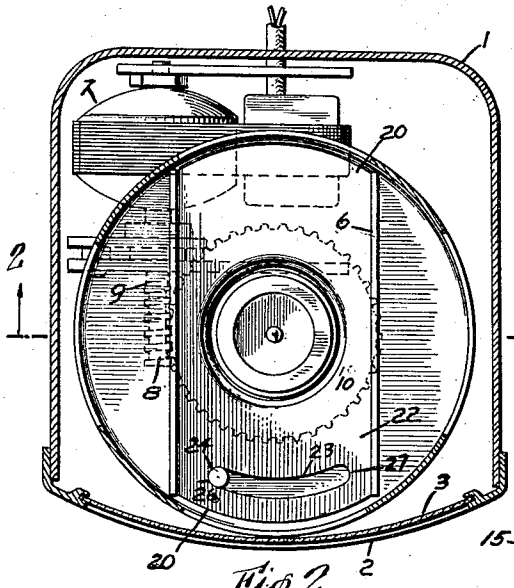


Fig. 4

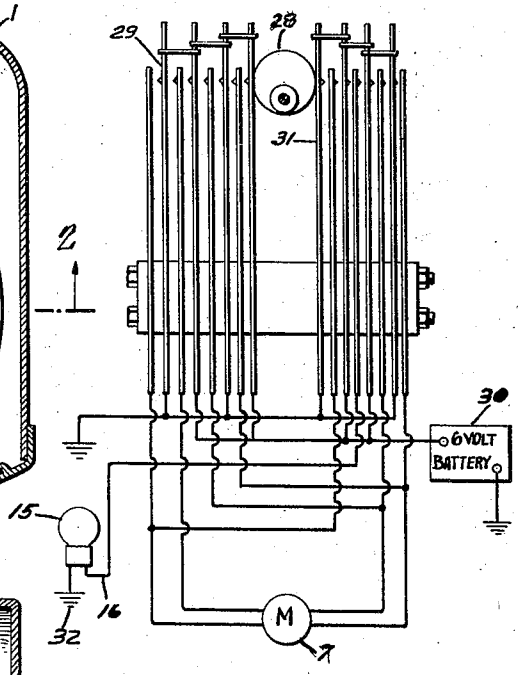


Fig. 2

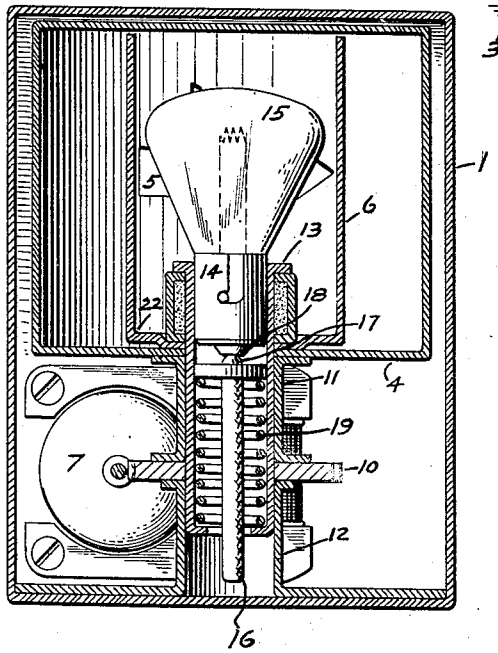
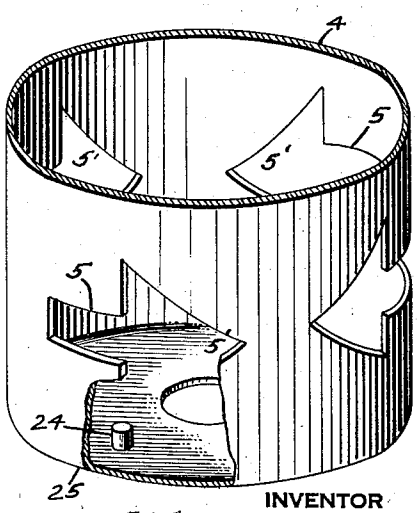


Fig. 3



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SIGNAL APPARATUS

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Application February 10, 1937, Serial No. 124,965

7 Claims. (Cl. 177—327)

This invention relates in general to signal devices being adapted to control and indicate the direction of movement of vehicular traffic at a street intersection and being more particularly directed to an improved signal device to indicate to an observer the direction in which the operator of a motor vehicle has an intention to turn, in which the desired results are accomplished by means of an illuminated directional index, preferably in the form of an arrow, constantly moving in a predetermined direction and in which the direction of movement is adapted to be automatically reversed by means of a simple automatically or manually controlled switching device.

It is recognized that it is old in the art to provide signal devices for the purposes set forth, that employ illuminated arrows that actually physically travel in the direction in which they are pointing, such as disclosed in patent numbered 1,976,213 issued October 9, 1934 to Henry Albert, Alois Stauber and myself.

The present invention is directed to improvements in such apparatus and has for an object the simplification of the mechanism adapted to provide an illuminated arrow with constant motion in a predetermined direction.

Another object of the present invention is to provide such a signal device so constructed that its over all dimensions will be materially less than any such device known heretofore and so that symmetry may be maintained between the device and the vehicle upon which it is mounted, at the same time providing an indicator that is readily visible.

With the foregoing and other objects in view, the invention resides in the combination of parts and in the details of construction hereinafter set forth in the following specification and appended claims, certain embodiments of the invention being illustrated in the accompanying drawing, in which:

Figure 1 is a top plan view of the device with the cover removed;

Figure 2 is a view in section taken along the line 2—2 of Figure 1;

Figure 3 is a view in perspective partly broken away of the rotating drum carrying the arrows;

Figure 4 is a wiring diagram of the electrical system for controlling the operation of the device.

Referring more particularly to the drawing, there is shown at 1 a casing within which the entire device is housed and which may be of any desired shape so as to conform to the general lines of the vehicle to which it is attached. One side of the casing is shown as provided with an opening 2 in which is mounted a translucent screen 3 upon which an image of the moving arrow may be cast.

In Figure 3 there is shown a drum 4 provided with a plurality of openings in the form of arrows generally indicated at 5 so arranged that the barbs 5' point in alternate directions. As the drum 4 is rotated in a predetermined direction a mask 6, mounted within drum 4 and in operative relationship therewith, is adapted to mask out arrows 5 having common directional indicating barbs 5', by means to be described more in detail hereinafter, so that light emanating from a light source within the casing 1 will illuminate the remaining arrows in a manner to cause a constantly moving illuminated image of the arrow to be cast upon the screen 3 having a predetermined direction of motion. The arrows 5 are arranged around the periphery of the drum in pairs and are so spaced that as an image of one arrow indicating the direction of the intended turn passes out of the field of the screen another arrow image will simultaneously enter the field and will be pointing in the same direction. In this manner a constantly moving arrow image is maintained on the screen.

To effect rotation of drum 4 in the direction desired there is shown at 7 a suitable reversible electric motor. Fixed to the armature shaft 9 of the motor 7 is a worm 8. Worm 8 meshes with a worm gear 10 fixed to a hollow shaft 11 upon which is fixed the drum 4. A member 12 upon which gear 10 is free to rotate provides spacing and supporting means for the drum 4 and its associated parts. Thus it can readily be seen that as the direction of rotation of motor 7 is selectively controlled by means of the switch and electrical circuits, as shown diagrammatically in Figure 4 and to be described more in detail hereinafter, a corresponding direction of rotation is imparted to drum 4.

Mounted within the hollow shaft 11 is a sleeve 13 about which shaft 11 is free to rotate. Fitted in one end of sleeve 13 and within mask 6 is an electric lamp socket 14 being adapted to receive an electric lamp 15. Lamp 15 being in such a position as to register with arrows 5 in drum 4 so that light emanating therefrom will illuminate arrows 5 not masked out by the mask 6 so as to cast an image thereof upon the screen 3. Lead wire 16 housed within sleeve 13 is provided with a contact 17 which contact is maintained in operative engagement with contact 18 of lamp socket 14 by means of compression spring 19. The elec-

trical circuit of lamp 15 is completed in the conventional manner by a ground 32 as shown in Fig. 4.

Loosely mounted upon the sleeve 13, within the drum 4 and adapted to be driven thereby, is the mask 6 provided with open ends 20 and 21. The base 22 of mask 6 is provided with a slot 23, said slot being adapted to receive a pin 24 fixed to the base 25 of the rotatable drum 4. Pin 24 is so positioned relative to base 25 so that as drum 4 is rotated in a counter-clockwise direction in Figure 1, the mask 6 is carried along with it by reason of the engagement of pin 24 with the end 26 of slot 23. In this position arrows 5 having barbs indicating a clockwise direction are masked out by the walls of mask 6 and the arrows 5 indicating a counter-clockwise direction register with open ends 20 and 21 of mask 6 and thus are illuminated so as to cast an image thereof upon the screen 3 by the light emanating from the lamp 15. In the event the direction of rotation of drum 4 is reversed there will be no movement of mask 6 until pin 24 comes into engagement with the end 27 of the slot 23. This limited relative movement between drum 4 and mask 6 is sufficient to cause the illuminated arrows 5 indicating a counter-clockwise direction to be masked out and at the same time unmasking those indicating a clockwise direction. Thus it can readily be seen that provision is made for a constantly moving arrow image on the screen 3 pointing in the desired direction to indicate to an observer the direction of an intended turn simply by controlling the direction of rotation of drum 4.

The device is adapted to be remotely controlled by the switching and wiring means diagrammatically shown in Figure 4. An eccentric cam 28 is shown as being adapted to be actuated by a hand lever (not shown) which, when rotated to the left, closes contacts 29 to complete the electrical circuit between the source of current supply 30 and the lamp 15 causing it to be lighted and between the motor 7 and said source of current supply to create an electrical field in said motor of predetermined polarity to obtain the desired direction of rotation of motor 7. A rotation of cam 28 in the other direction will close contacts 31 again completing the circuit but reversing the polarity of the motor field and thus its direction of rotation.

Thus it can be seen that I have shown a very compact, convenient and positively operating device for indicating the direction of an intended turn.

While I have described a particular application of my invention it is to be understood it is not to be limited to the precise application described.

I claim:

1. A signal device comprising a casing having an opening therein, a reversible motor, illuminating means interior of said casing, a drum within said casing, signal arrows carried by said drum, said signal arrows being predeterminedly spaced and arranged so that the barbs thereof point in alternate directions, driving connection between said motor and said drum so as to impart rotary motion thereto in opposite directions, opaque means carried by said drum, said last named means being predeterminedly positioned so as to provide for only illumination of said arrows having similar directional characteristics so as to provide a constantly moving arrow in the direction of rotation of said drum as said illuminated arrows are viewed from the exterior through said opening, and a lost motion driving connection between said opaque means and said drum to effect limited movement of said opaque means to cause said illuminated arrows to become dark and simultaneously therewith the illumination of said other arrows having opposite directional characteristics as said drum is rotated in the reverse direction.

2. A signal device comprising a casing having an opening therein, a reversible electric motor, illuminating means interior of said casing, a drum within said casing, signal arrows carried by said drum, said signal arrows being predeterminedly spaced and arranged so that the barbs thereof point in alternate directions, driving connections between said motor and said drum so as to impart rotary motion thereto in opposite directions, opaque means carried by said drum, said last named means being predeterminedly positioned so as to provide for only illumination of said arrows having similar directional characteristics so as to provide a constantly moving arrow in the direction of rotation of said drum and operative connections between said opaque means and said drum, for automatically positioning said opaque means as to cause said illuminated arrows to become dark and simultaneously therewith the illumination of said arrows having opposite directional characteristics as said drum is caused to rotate in the opposite direction so as to provide a constantly moving arrow in either one of two directions as viewed from the exterior through said opening in said casing.

3. A signal device comprising a casing having an opening therein, a translucent screen in said opening, a reversible electric motor, a drum within said casing, signal arrows carried by said drum, driving connections between said motor and said drum, said signal arrows being predeterminedly spaced and arranged so that the barbs thereof point in alternate directions, illuminating means, opaque means carried by said drum, said last named means being predeterminedly positioned between said illuminating means and said drum and said screen so as to provide for only illumination of said arrows having similar directional characteristics for projecting onto said screen an image of a constantly moving arrow having a predetermined direction of motion as said drum is rotated by said motor in one direction, driving connections between said opaque means and said drum provided with means for causing limited movement of said opaque means so as to cause said illuminated arrows to become dark and simultaneously therewith the illumination of said other arrows having opposite directional characteristics as said drum is rotated in the reverse direction.

4. A signal device comprising a casing having an opening therein, a translucent screen in said opening, a reversible motor, a drum within said casing, signal arrows carried by said drum, driving connections between said motor and said drum, said signal arrows being predeterminedly spaced and arranged so that the barbs thereof point in alternate directions, illuminating means, opaque means carried by said drum, said last named means being predeterminedly positioned between said illuminating means and said drum and said screen so as to provide for only illumination of said arrows having similar directional characteristics for projecting onto said screen an image of a constantly moving arrow having a predetermined direction of motion as said drum is rotated by said motor and operative connections between said opaque means and said drum for

automatically positioning said opaque means as to cause said illuminated arrows to become dark and simultaneously therewith the illumination of said arrows having opposite directional characteristics as said drum is caused to rotate in the opposite direction so as to reverse the direction of motion of said image on said screen.

5. A signal device comprising a casing having an opening therein, a reversible motor, illuminating means interior of said casing, a drum within said casing, signal arrows carried by said drum, said signal arrows being predeterminedly spaced and arranged so that the barbs thereof point in alternate directions, driving connection between said motor and said drum so as to impart rotary motion thereto in opposite directions, opaque means carried by said drum, said last named means being predeterminedly positioned so as to provide for only illumination of said arrows having similar directional characteristics so as to provide a constantly moving arrow in the direction of rotation of said drum as said illuminated arrows are viewed from the exterior through said opening, said last named means comprising a mask, driving connections between said drum and said mask, said mask being interposed between said illuminating means and said drum.

6. A signal device comprising a casing having an opening therein, a reversible electric motor, illuminating means interior of said casing, a drum within said casing, signal arrows carried by said drum, said signal arrows being predeterminedly spaced and arranged so that the barbs thereof point in alternate directions, driving connection between said motor and said drum so as to impart rotary motion thereto in opposite directions, opaque means carried by said drum, said last named means being predeterminedly positioned so as to provide for only illumination of said arrows having similar directional characteristics so as to provide a constantly moving arrow in the direction of rotation of said drum as said illuminated arrows are viewed from the exterior through said opening, and operative connections between said opaque means and said drum for automatically positioning said opaque means as to cause said illuminated arrows to become dark and simultaneously therewith the illumination of said arrows having opposite directional characteristics as said drum is caused to rotate in the opposite direction, said last named means comprising a mask, said operative connections being adapted to permit limited relative movement between said drum and said mask, said mask being interposed between said illuminating means and said drum.

7. A signal device comprising a casing having an opening therein, a reversible motor, illuminating means interior of said casing, a drum within said casing, directional indicating means carried by said drum, said indicating means adapted to point in alternate directions, driving connections between said motor and said drum so as to impart rotary motion thereto in opposite directions, opaque means carried by said drum, said last named means being predeterminedly positioned so as to provide for only illumination of said indicating means having common directional characteristics so as to provide a constantly moving index in the direction of rotation of said drum as said illuminated indicating means are viewed from the exterior through said opening, said last named means comprising a mask, driving connections between said drum and said mask, said mask being interposed between said illuminating means and said drum.

AMBROSIUS BRIECHLE.