June 9, 1931. V. P. CARTER 1,809,374

RAILWAY SIGNAL

Original Filed Dec. 3, 1927

FIG. 1.

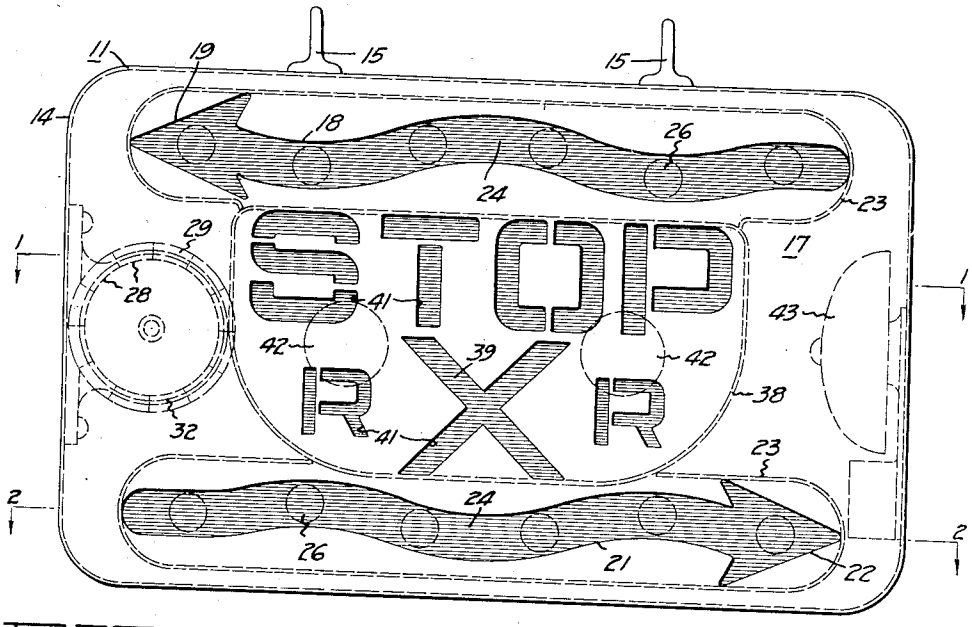


FIG. 2.

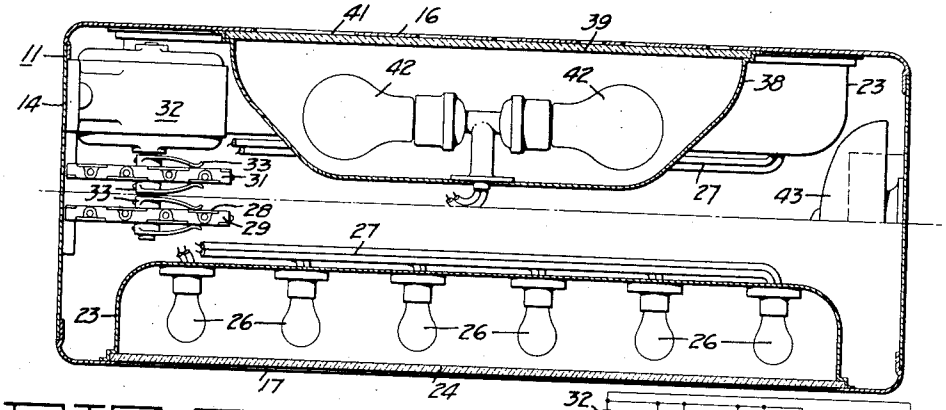
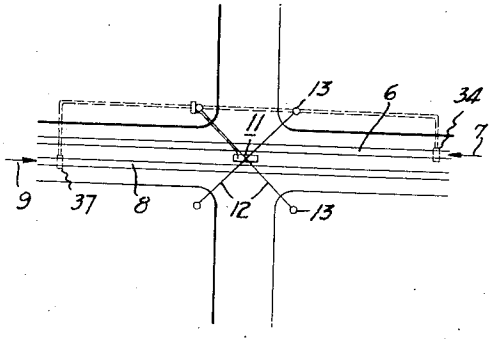
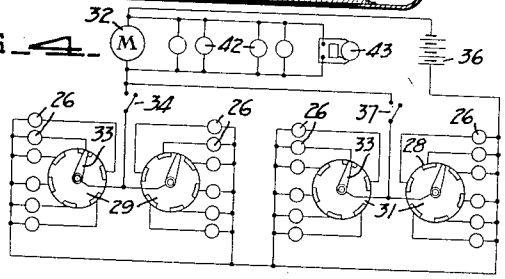


FIG. 3. FIG. 4.





INVENTOR
Vetobelle Phillips Carter
BY
White, Frost & Fryer
her ATTORNEYS

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UNITED STATES PATENT OFFICE

VETABELLE PHILLIPS CARTER, OF SAN FRANCISCO, CALIFORNIA

RAILWAY SIGNAL

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My invention relates to signals adapted to be installed at railway crossings for warning of the approach of a train.

Crossing signals at present installed at highway and railway intersections, usually comprise simply a means for indicating the approach of a train on a railway track. Such signals afford a warning, but one which is often inadequate, especially in instances where there are a plurality of parallel tracks over which trains pass frequently in different directions.

An object of my invention is to provide a signal for indicating at railway crossings the direction of approach of trains.

Another object of my invention is to provide a railway crossing signal which attracts attention when it is operated.

Another object of my invention is to provide a railway signal which is automatically operated by an approaching train to give the proper indication.

My invention possesses other advantageous features, some of which with the foregoing, will be set forth at length in the following description where I shall outline in full that form of the railway signal of my invention, which I have selected for illustration in the drawings accompanying and forming part of the present specification. In said drawings I have shown one form of railway signal embodying my invention, but it is to be understood that I do not limit myself to such form since the invention, as set forth in the claims, may be embodied in a plurality of forms.

In the drawings:

Fig. 1 is a side elevation of a preferred embodiment of my invention.

Fig. 2 is, in the upper half, a cross section on the line 1—1 of Fig. 1, and, in the lower half, is a cross section on the line 2—2 of Fig. 1.

Fig. 3 is a plan of a railway crossing with my signal installed thereon.

Fig. 4 is a diagram of a circuit appropriate for use with my signal.

The railway signal of my invention preferably comprises an indicium adapted to be operated by the approach of a train for indicating the direction of approach of the train.

As a typical environment for my signal, I have illustrated a railway crossing comprising a track 6 for trains approaching in the direction of the arrow 7 and a track 8 for trains approaching in the direction of the arrow 9. At the center of the crossing my signal 11 is suspended by means of overhead wires 12 secured to corner posts 13. Other mountings for the signal are advisable in some instances, but the one described is capable of general use. The signal 11 preferably comprises an exterior casing 14, preferably of sheet metal of rectangular outline and provided at the top with a pair of supporting hooks 15. Two opposite faces 16 and 17 of the casing are provided with suitable indicia to indicate the approach of trains.

While various warning legends can be utilized, each face preferably carries adjacent its top an indicium 18 comprising an arrow provided with an arrow head 19 pointing in the direction travelled by trains on the track 6. Adjacent the bottom of the casing, a second indicium is provided which comprises an arrow 21 differing from the arrow 18 in having the arrow head 22 pointing in the direction trains travel on track 8. Preferably, both faces 16 and 17 of the rectangular casing 14 are similar, with the two arrows near the top of the casing pointing in one direction and the two arrows near the bottom of the casing pointing in the opposite direction.

Means are provided for displaying the various indicia by suitable illumination to attract attention to the signal and to indicate the direction of approach of a train. The material of the casing 14 is apertured in accordance with the outline of the indicia and the apertures are backed by reflectors 23 secured within the casing and are covered on their exposed sides by translucent screens 24. Within each reflector a plurality of electric lights 26 are arranged in a series following the contour of the indicium. Instead of two separate series of lights for the two arrows adjacent the top of the casing, a single series of lights and a suitable reflector can be used.

Preferably, the top arrows 18 on the two

faces 16 and 17 are operated in unison to indicate the approach of a train from one direction and the bottom arrows 21 indicate the approach of a train from the opposite direction. Lead wires 27 extend from the individual electric lights 26 to a plurality of contacts 28 arranged on one of two circular discs 29 and 31 affixed to the casing 14. Each disc carries on each face a plurality of the contacts 28 circumferentially spaced and corresponding in number to the number of electric lights 26 in each series. Adapted to be revolved by the shaft of an electric motor 32 are a plurality of electric brushes 33 which are disposed to sweep in a circle over the several contacts 28 of the associated disc, completing the electrical circuits in sequence to give a progressive illumination to the various electric lights 26 in each series.

Preferably I alternate the energization of the individual lights of the two series operating in unison to decrease the fluctuations in current demand. The contacts 28 on corresponding sides of the discs 29 and 31 are staggered or offset with respect to the contacts on the other side of the discs 29 and 31 and, inasmuch as the brushes 33 are radially coincident, an alternating illumination is given to the two unitarily operating series of electric lights 26. The direction of rotation of the motor 32 and the electric connections are preferably such that the electric lights 26 are sequentially operated beginning at the tail of the arrow and progressing toward the arrow head then starting again at the tail of the arrow and again progressing to the arrow head. With that manner of sequential energization the lights illuminate the indicium in such a way that there is given the visual effect of a motion corresponding to the direction of approach of a train.

Means are provided for operating the two series of lights in the upper part of the casing upon the approach of a train from one direction, and for operating the two series of lights near the bottom of the casing upon the approach of a train from another direction. Trains approaching on the track 6 and going in the direction indicated by the arrow 7, actuate a circuit closer 34 which connects a source of electromotive force 36 in circuit with the motor 32 and with the brushes 33 on both sides of the disc 29. In Fig. 4, the two sides of the disc 29 are indicated separately to show the staggered relationship of the contacts. Upon completion of the circuit by the circuit closer 34, the motor is energized and current is distributed by the brushes and the disc 29 to the two series of electric lights 26 in the arrows 18 near the top of the casing 14. The approach of a train on the track 6 is thereby indicated to observers on both sides of the casing.

Similar means are provided for indicating the approach of a train in the direction of the arrow 9 on track 8. A circuit closer 37 is provided on track 8 and is operated by the approach of a train to complete an electric circuit thru the brushes 33 on the disc 31. The electric motor 32 is simultaneously energized and rotates the pair of brushes to make the necessary contacts in sequence. The two series of lights in the lower portion of the casing are thereby energized to present two illuminated indicia indicating to observers on both sides of the casing the direction from which the train is approaching on the track 8.

In conjunction with the primary indicia described, I preferably incorporate in my railway signal secondary indicia which can alternatively be operated only during the approach of trains, or can be operated at all times to serve as a warning of the presence of a railway crossing. In the intermediate portion of the casing, a pair of reflectors 38 are affixed to the opposite faces 16 and 17 and are provided with a translucent screen 39 backing apertures 41 to form a suitable legend. Each reflector contains a source of illumination which is conveniently a pair of electric lights 42 connected in an electric circuit to be constantly illuminated, or, as shown herein, to be energized during the approach of trains on either track and in either direction.

The secondary indicia may include an audible warning means such as a warning bell 43 secured to the side of the casing 14 and placed in the electric circuit with the motor, so that during the operation of the electric motor 32 the audible warning signal is energized.

It will be appreciated that I have provided a railway signal which is visible on both sides of the crossing and displays an indication of the direction of approach of trains. Not only are the primary indicia effective in indicating the direction of approach, but since they include flashing lights they are easily visible and attract attention. The audible signal supplements the visible indicia to give a warning of the presence of a railway crossing. While I have shown my signal as installed at a crossing having separate tracks for trains moving in opposite directions, it will be understood that it is equally applicable to crossings having but a single track or having a large number of tracks.

I claim:

1. A railway signal comprising a plurality of electric lights, means adapted to energize repeatedly said lights in progression to represent the direction of approach of a train, and means operated by the approach of a train from said direction for actuating said means.

2. A railway signal comprising a plurality of electric lights arranged in series in the direction of approach of a train, and means actuated by the approach of a train from said direction for repeatedly actuating said lights in a progressive order.

3. A railway signal comprising a plurality of electric lights arranged in series, a second plurality of electric lights arranged in series, means for repeatedly energizing in a progressive order the lights in said first plurality for indicating the approach of a train from one direction, and means for repeatedly energizing in a progressive order the lights in said second plurality for indicating the approach of a train from another direction.

4. A railway signal comprising a plurality of electric lights, a plurality of contacts adapted to be operated in series to energize said lights in a sequence to indicate the approach of a train from one direction, a second plurality of electric lights, a second plurality of contacts adapted to be operated in series to energize said lights in a sequence to indicate the approach of a train from another direction, means for operating said first and said second pluralities of contacts, means operated by the approach of a train from one direction for actuating said operating means and said first plurality of contacts, and means operated by the approach of a train from another direction for actuating said operating means and said second plurality of contacts.

5. A railway signal comprising a casing, a plurality of electric lights arranged in series within said casing, means for repeatedly energizing said lights in progression to indicate a direction, a railway track, and means responsive to the passage of a train over said track for actuating said means.

6. A railway signal comprising a casing, a plurality of electric lights arranged in series in said casing, an indicium on said casing illuminated by said lights, a plurality of contacts for said lights, means for repeatedly operating said contacts to cause said lights to be energized progressively whereby said indicium indicates a direction, a railway track, and means responsive to the passage of a train over said track for actuating said means.

7. A railway signal comprising a casing, a plurality of electric lights arranged in series in said casing, a plurality of contacts for said lights adapted to be operated in sequence to energize said lights progressively, a second plurality of electric lights arranged in series in said casing, a second plurality of contacts for said second plurality of lights adapted to be operated in sequence to energize said lights progressively, means for operating said first and said second pluralities of contacts, railway tracks, means responsive to the passage of a train over said tracks in one direction for operating said first named means and said first plurality of lights, and means responsive to the passage of a train over said tracks in another direction for operating said first-named means and said second plurality of lights.

8. A railway signal comprising a casing, an indicium on said casing adapted to indicate a direction, a plurality of electric lights in said casing for repeatedly illuminating said indicium, means for energizing said lights in progressive order upon the approach of a train from said direction, and a secondary indicium adapted to be displayed upon the approach of said train.

9. A railway signal comprising a casing, an indicium on said casing for indicating the approach of a train from one direction, another indicium on said casing for indicating the approach of a train from another direction, means for operating said indicia to indicate repeatedly the direction of approach, a secondary indicium on said casing, and means for operating said secondary indicium during the operation of either of said indicia.

10. A signal for a railway crossing comprising an indicium adapted to indicate the direction of approach of a train, and means for giving said indicium an apparent movement in said direction, the apparent movement of said indicium being repeated successively during the approach of said train.

11. A signal for a railway crossing comprising a casing, means in said casing functionally movable in one direction for indicating the approach of a train in that direction, and a second means in said casing functionally movable in another direction for indicating the approach of a train in said other direction, said means being repeatedly operated during the approach of the train.

12. A signal for a railway crossing comprising a casing, means in said casing functionally movable parallel with the railway, a second means in said casing functionally movable parallel with the railway and means operated by the approach of a train for repeatedly functionally moving said means in the direction of said approach during said approach.

13. A signal for use as at a railway crossing comprising an indicium, and means for causing a repeated shifting illumination of said indicium in the direction of approach of a train.

14. A signal for use as at a railway crossing comprising an indicium, means for illuminating said indicium, and means for causing said illumination to shift repeatedly in one direction.

In testimony whereof I have hereunto set my hand.

VETABELLE PHILLIPS CARTER.