March 4, 1930. A. O. OLAFSON 1,749,390

TRAFFIC SIGNAL

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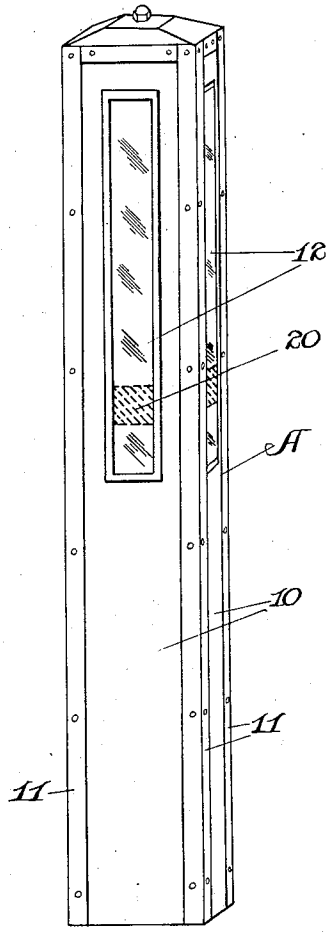


Fig. 1.

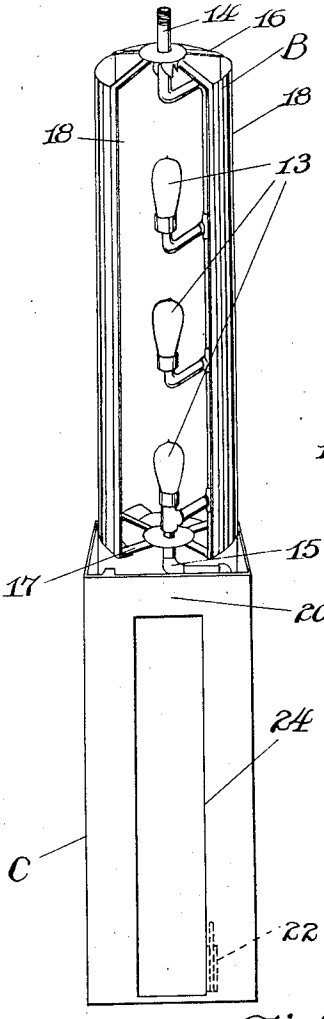


Fig. 2.

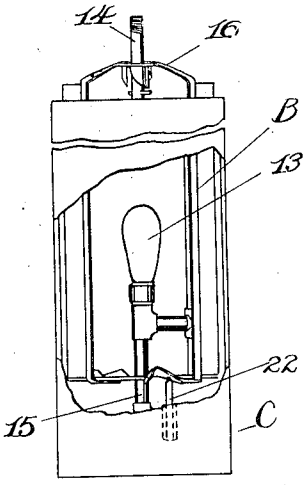


Fig. 3.

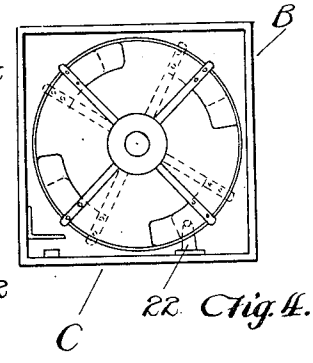


Fig. 4.

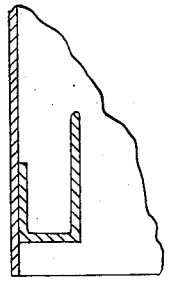


Fig. 5.

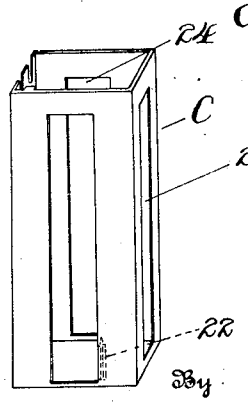


Fig. 6.

Inventor

Alvin O. Olafson

By Horace Pippin

Attorney

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TRAFFIC SIGNAL

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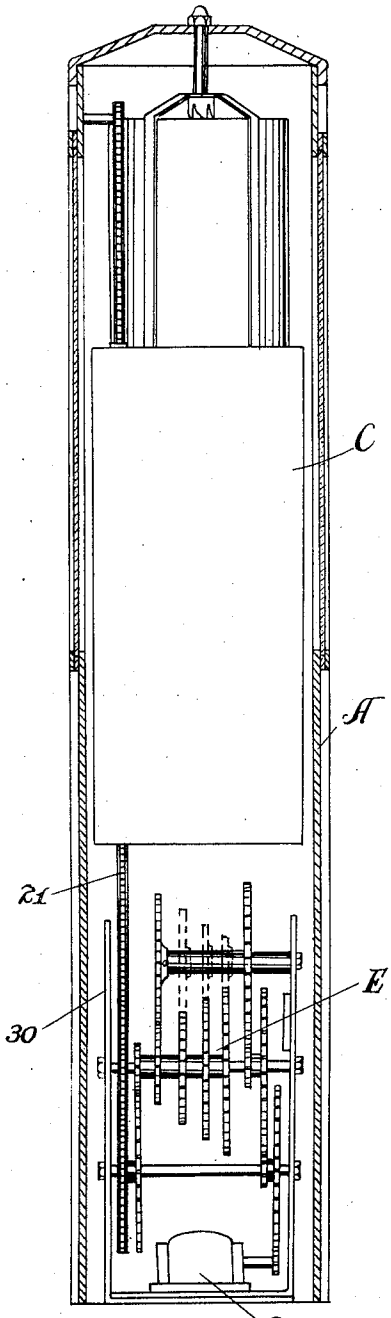


Fig. 7.

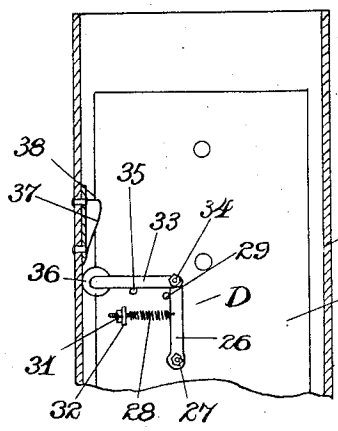


Fig. 8.

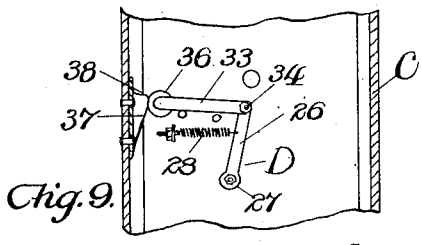


Fig. 9.

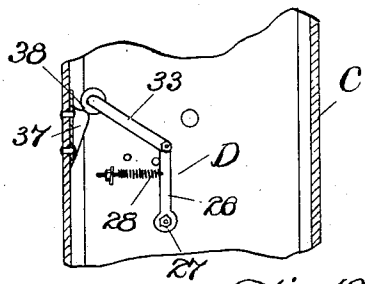


Fig. 10.

Inventor

Alvin O. Olafson

By Howard Proctor

Attorney

Patented Mar. 4, 1930

1,749,390

UNITED STATES PATENT OFFICE

ALVIN O. OLAFSON, OF ST. PAUL, MINNESOTA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO NATIONAL TRAFFIC SIGNAL COMPANY, OF ST. PAUL, MINNESOTA, A CORPORATION OF MINNESOTA

TRAFFIC SIGNAL

Application filed November 18, 1927. Serial No. 234,167.

My invention relates to traffic signals wherein I desire to provide means for indicating the change of traffic at street corners and road crossings. The primary object of my invention is to provide a simple yet effective signal clearly visible in the daylight and at night.

A feature of my invention resides in means arranged within a casing adapted to indicate the change of traffic by causing either the color of the signal light to change or to change the direction by indicating the words "Stop" and "Go" in different positions within the signal.

It is a feature of this invention to provide a signal wherein a thermometer-like indicator is adapted to creep upward or in a particular direction in the casing to indicate the approximate time of change in a simple yet effective manner, so that the pedestrian and autoist, together with the traffic, may clearly have indicated before them the approximate time of change of the signal and the particular direction of the traffic.

It is a feature of my invention to provide a signal wherein a rotatable indicating cylinder is positioned within a casing and a curtaining indicator is adapted to be slidably operable in relation to or over said rotatable indicating cylinder. This construction provides a signal wherein a compact signal of a desirable nature may be provided with the indicators for the direction of traffic illuminated to provide a substantially long, clearly visible signalling means which may be lighted and by the curtaining element the signal may be shut off gradually or partially shaded by a bar carried by the curtain which indicates the approximate time of change of the signal.

The curtain in my signal is similar in some respects to that illustrated in my co-pending application, Serial Number 199,276, and the curtain is lifted by the chain which carries lugs in a similar manner as in this co-pending application.

These features, together with other details and objects of my invention will be more clearly and fully set forth in the specification and claims thereof.

In the drawings forming part of this specification:

Figure 1 is a side view of my signal.

Figure 2 is a diagrammatic illustration showing the approximate position of the signal cylinder and the curtaining member when positioned one below the other.

Figure 3 illustrates a detail of my signal showing the curtain partly broken away and extending over the signal cylinder to indicate the curtain operating the signalling cylinder upon reaching its uppermost position within the casing of the signal.

Figure 4 is a top view of Figure 3.

Figure 5 is a detail of a portion of the curtain.

Figure 6 illustrates a perspective view of the curtain used in Figure 1.

Figure 7 diagrammatically illustrates a sectional view of my signal, showing the curtain in a different form than that illustrated in Figure 3.

Figure 8 is a detail of a portion of my signal.

Figure 9 is a detail of a portion of my signal.

Figure 10 is a detail of a portion of my signal.

My signal A includes a suitable standard forming a casing having side walls 10 which are connected together and provided with corner members 11. Obviously the casing and general standard formation can be of any suitable nature to provide the signal of the construction adapted to operate as will be hereinafter more clearly set forth.

The principal feature of my invention is a signal having an elongated signal light or portion which may be easily and clearly visible to the approaching traffic. I accomplish this by the window openings 12 in the sides of the signal A and these openings are adapted to be illuminated by a series of electric lights 13 positioned within the signal A.

I provide a color screen or lens element associated with the lights 13. This screen B is mounted upon the shafts 14 and 15 within the casing of the signal A, and is formed with a head frame portion 16 and a base frame portion 17. The screen B is provided with

colored side plates 18 and I prefer to provide this screen with colors of the same nature positioned diametrically opposite so that two sides of the screen B will have, for instance, red colored plates 18, and the other two sides diametrically opposite the axis of the screen B will be of a green color.

The screen B is adapted to be rotated about the lights 13 and when the light from these electric lamps shines through the plates 18 the respective colors will be indicated through the openings 12 of the signal A. In this manner the openings 12 will provide a longitudinally extending elongated signal showing red for "stop" on two sides, while the other two sides show green for "go", thus indicating to the approaching traffic the direction of travel of the same. In this manner I provide a signal A with a long, clearly visible signal element.

To indicate to the approaching traffic the time of change of the direction for movement of traffic by the signal A, I provide a curtain of this nature C which is slidably held within the casing of the signal A and which is formed of a nature to be adapted to surround or slide over the outside of the screen B. In its operation this curtain screen C is formed with an indicating bar portion 20 at the top thereof which is adapted to be clearly visible through the openings 12 to indicate the time of change of the signal A. The curtain C is adapted to be elevated by suitable operating mechanism and transmission E operated by motor G in the base of the signal, as indicated in Figure 7, and a suitable lifting chain 21 is provided which engages a portion of the curtain C to lift the same in a manner to cause the bar 20 to travel up along the openings 12, indicating by the rising movement of the bar 20, the approximate time of change of the signal A.

When the curtain C reaches its uppermost position at the top of the signal A, by means of a suitable trip-arm 22, carried by the curtain C, the cam surface of the frame portion 17 of the screen B is engaged and lifted as illustrated diagrammatically in Figure 3, to raise the depending teeth carried by the frame 16 out of engagement with the lug carried by the shaft 14. Thus when the member 22 engages the cam surface on the frame 17 as soon as the teeth depending from the frame 16 are released from the lug carried by the shaft 14, the screen B will rotate owing to the cam surface on the frame 17 which is engaged by the lug 22 a slight distance and as the curtain C lowers the shape of the depending teeth on the frame 16 will engage against the lug carried by the shaft 17 and cause the screen B to rotate on the shafts 14 and 15, causing the screen B to turn a quarter turn, changing the position of the plates 18 in relation to the openings 12, so that the sides which formerly indicated a red signal will indicate a green signal to permit traffic to move past the green signal lights and stop at the red signal lights.

This operation of my signal A is very simple and in the automatic rising of the curtain C which indicates either by an indicating bar 20 or by the closed type of curtain C illustrated in Figures 3 and 7, the time for changing the signal is indicated to the traffic approaching the signal.

Where the curtain C is made with the indicating bar 20, longitudinal openings 24 are provided in the sides of the curtain C. These longitudinal openings are approximately the same nature and width as the openings 12, so as to permit the signal light to be indicated through the openings 12 and to be shut off only by the width of the bar 20. In the construction of the curtain C indicated in Figures 3 and 7, the curtain is not provided with the openings 24 but has closed side walls which screen off the signal through the openings 12 until the entire signal light is concealed off through these openings when the curtain C reaches its uppermost position.

In the operation of my signal A, the moment the curtain C reaches the uppermost position in the casing of the signal A, the trip 22 will change the color screen B and the curtain C is released from the lifting chain 21 automatically, permitting the same to drop into the lower portion of the casing of the signal A. The curtain C remains in the lower portion of the signal until it is again picked up by the lifting chain 21, and then it begins to travel upward, either gradually shutting off the signal light through the openings 12, or causing the shade 20 to travel in an upward direction across the opening 12 to indicate that the signal will change at the time the bar 20 reaches the top of the opening 12. Thus by either screening off the entire openings 12 or by an indicating bar which travels up the openings 12 I provide means for illustrating clearly the change of the signal A. This permits traffic to get ready and prevents accidents.

The curtain C is provided with a retarder D which includes an arm 26 pivoted at 27 and adapted to be held by the spring 28 against the stop 29. This retarder D is carried by the side plate 30 in the base portion of the signal A. By means of an adjusting nut 31 which operates against the fixed stop 32 the tension of the spring 28 may be adjusted. This adjusts the tension on the arm 26 so that the same may operate in its retarding action in accordance with the setting of the spring 28. An operating arm 33 is pivotally connected at 34 to the free end of the arm 26 and this arm is adapted to rest by gravity against the stop 35 and is provided with an anti-friction wheel 36 which is engaged by the cam lug 37 secured to the side of the curtain C. The lug 37 is so positioned on the curtain C as to engage the

retarder D as indicated in Figure 9 to retard the down-drop of the curtain sufficiently to prevent the same from jarring against the bottom of the signal A. As soon as the curtain has dropped to the lowermost position the wheel 36 will engage in the notch 38 on top of the lug 37 to retard the rebound of the curtain or screen C. When the curtain or screen is picked up by the lifting chain 21, then the arm 33 raises without affecting the spring 28, as illustrated in Figure 10. In this manner I provide a retarder peculiarly adapted to the functions required and wherein the same may be adjusted as to tension to retard the dropping force of the screen or curtain C.

The operation of my signal is simple, it includes the changing of the light by a rotating color screen which is automatically operated to change the same by an indicator which travels up about the same and which indicates by an obstructing bar passing through the signal light or by gradually shutting off the signal light diminishing the same, the change of the signal. It is important to indicate the change of the signal because it permits the traffic approaching the signal to be warned in advance. While temporary flashers have been used to indicate the change, they do not indicate it accurately enough nor clearly enough to permit the approaching traffic to be properly warned as I believe should be done, and my signal accomplishes this result in a very simple and practical manner.

In accordance with the patent statutes I have described the principles of operation of my traffic signal together with the best embodiment thereof, and while a particular formation and construction is shown, I desire to have it understood that the same may be applied to other uses and carried out by other means within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A traffic signal comprising, a signal window extending longitudinally along the side thereof, a color screen for changing the signal extending virtually the length of said window, and an indicator intercepting the signal to indicate the change of the same.

2. A traffic signal including, a casing, a series of lights within said casing, an elongated color screen having different colored panels thereon, a longitudinal signal opening in said casing coinciding with said screen panels, a signal change element adapted to automatically travel along said signal opening to indicate the time of change of said signal and means adapted to automatically turn said color screen to change the direction of traffic indicated by the signal.

3. A traffic signal including, a series of lights within the same, a longitudinal opening along the signal to indicate the direction of travel of traffic and to indicate stop of the traffic, a longitudinal panel color screen for changing the stop and go lights of the signal by interposing a different color screen between said lights and said signals opening, and means adapted to travel over said color screen to indicate the time of change of said color screen and to automatically change the color screen upon reaching the destination of travel in one direction.

4. A signal including, light elements positioned therein, a long color screen adapted to support different color panel plates, a casing for inclosing said color screen and lighting elements, long openings in said casing adapted to display the colors of said screen therethrough to indicate stop and go signals, and means for screening off the colors indicating the stop and go in a manner to gradually diminish the same to indicate the time of change of said signal.

5. A traffic signal including, means for indicating stop and go by elongated colored lights, the colors of said lights being controlled by a changeable color screen to indicate the same color on the two diametrically opposite sides of said signal at the same time, means for intercepting the color signal to cause a traveling shadow thereacross to indicate by the same the time of change of the signal, said intercepting means automatically changing said color screen to indicate the direction of travel and stop of the traffic.

6. A traffic signal comprising, a signal standard having longitudinal signal lights on four sides thereof to indicate a long signal to approaching traffic, a rotatable color screen within said signal adapted to change the color of the respective signal lights, and means for indicating the time of change of the signal and to automatically change the position of the color screen.

7. A signal including, a standard, elongated signal windows in the sides of said standard, a rotatable color screen within said standard having elongated color screens for said windows, lights for directing colored light through said windows, means for gradually screening off said light from all of the windows simultaneously until the light is entirely screened off, said screening means automatically changing said color screen at the respective windows of said signal.

8. A traffic signal including, elongated signal windows in the sides thereof adapted to indicate the direction of stop and go of traffic by colored lights, lighting means within said signal, a color screen operable in a manner to direct a colored light to the respective windows of said signal, and means for indicating a change and simultaneously changing said color screen, whereby a stop and go signal is directed to traffic by elongated colored lights which are adapted to change on the respective sides of the signal.

9. A signal to indicate stop and go for traffic comprising, an elongated signal head, signal windows on four sides of said signal in said head, lighting means within said signal, means adapted to direct a colored light to said windows to show similar colors on oppositely disposed sides thereof at the same time, and means adapted to travel along said windows to cause a shadow in the same to indicate the time of change of said signal.

10. A traffic signal including, a signalling standard, elongated signal windows in said standard on four sides thereof, means within said signal adapted to direct colored light through said signal windows to show the same color on oppositely disposed sides at the same time, means for changing the colors at the respective windows, and bar means adapted to travel longitudinally along said signal to indicate the change of the colors by visible means through said signal windows.

ALVIN O. OLAFSON.