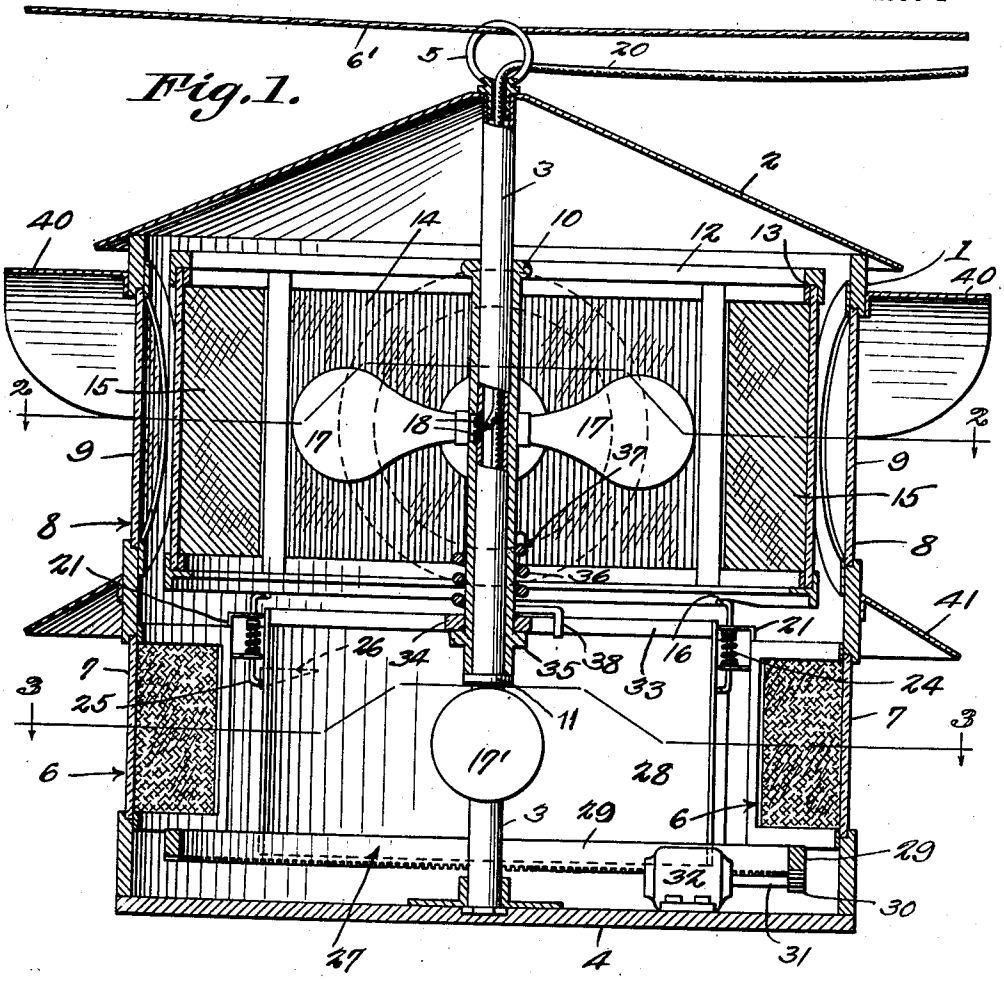
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TRAFFIC LIGHT SIGNAL

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Fig. 1.



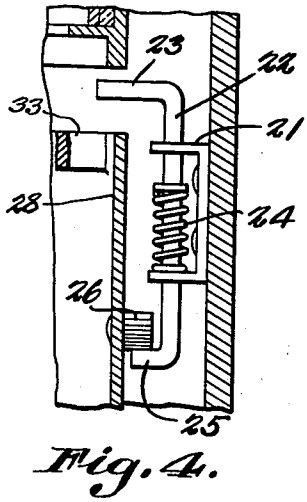


Fig. 4.

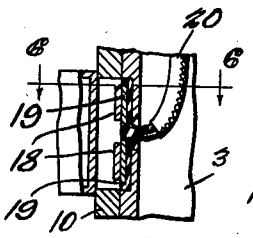


Fig. 5.

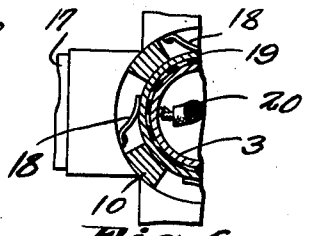


Fig. 6.

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Fig. 2.

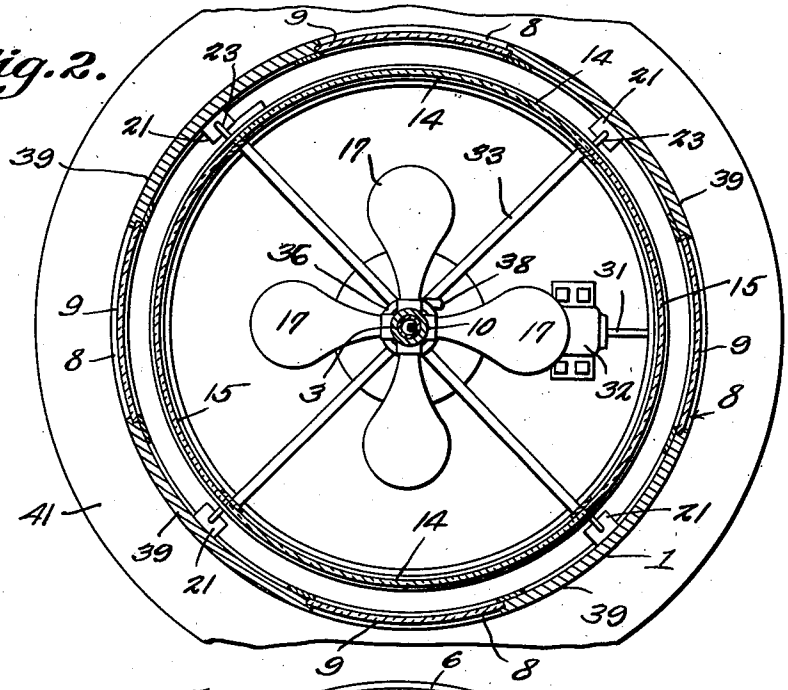
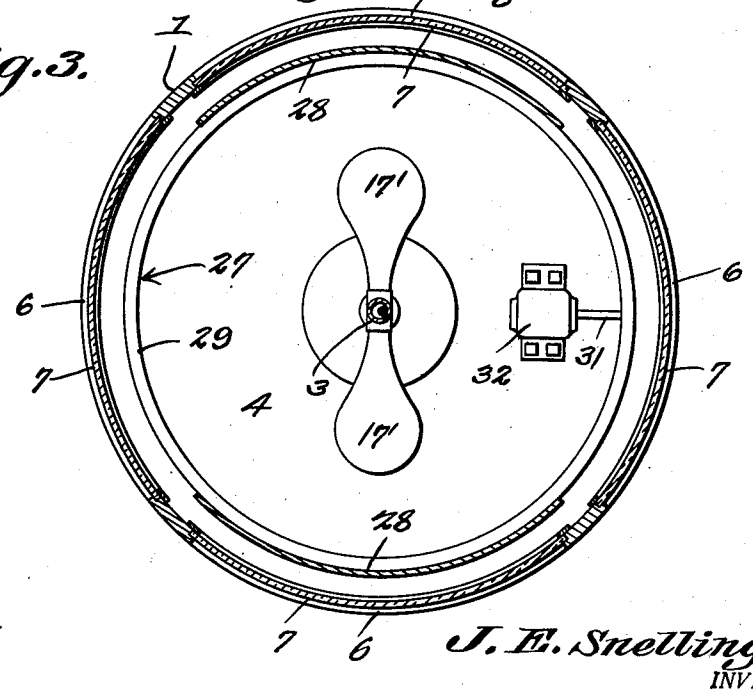


Fig. 3.



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Fig. 7.

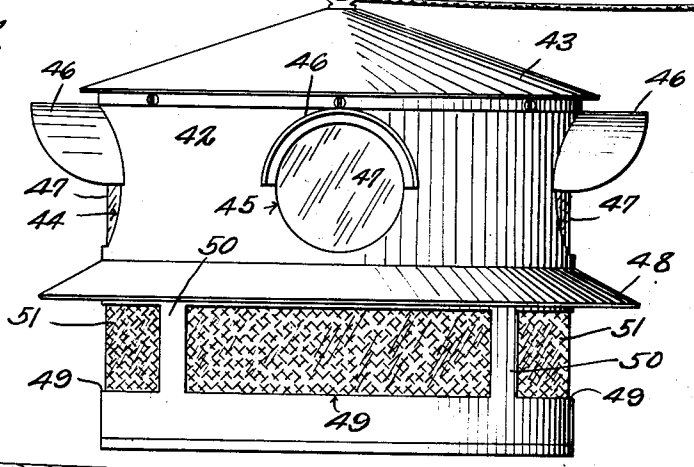
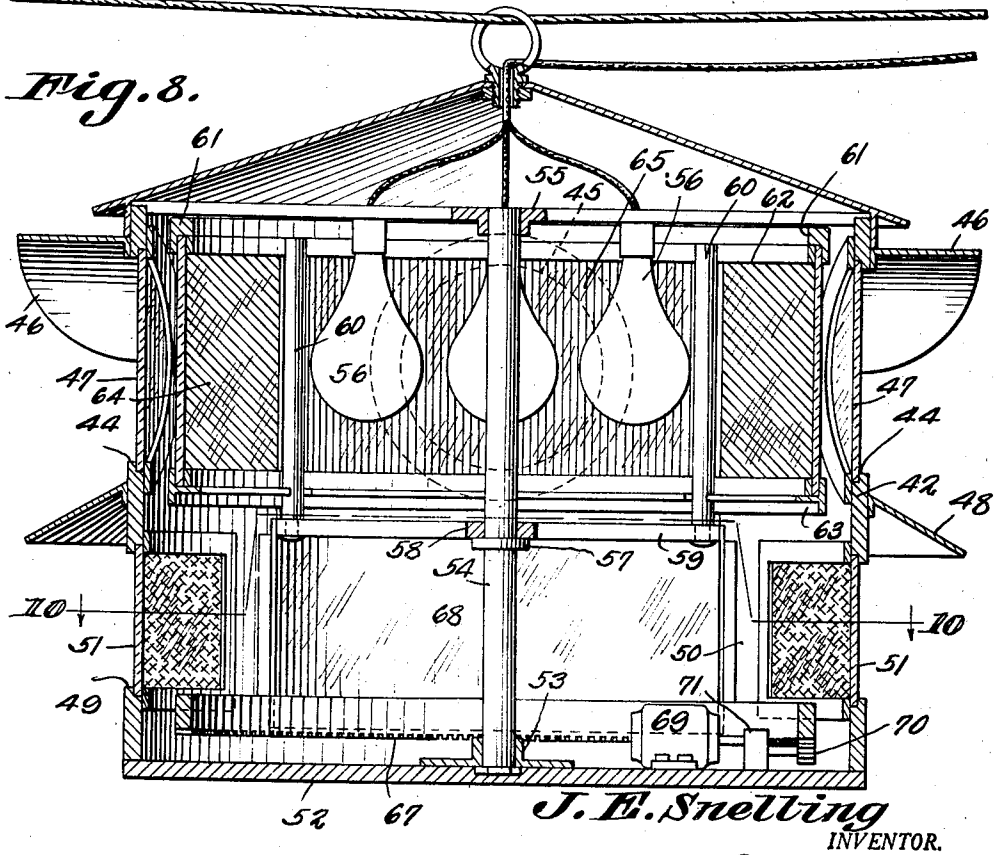


Fig. 8.



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Fig. 9.

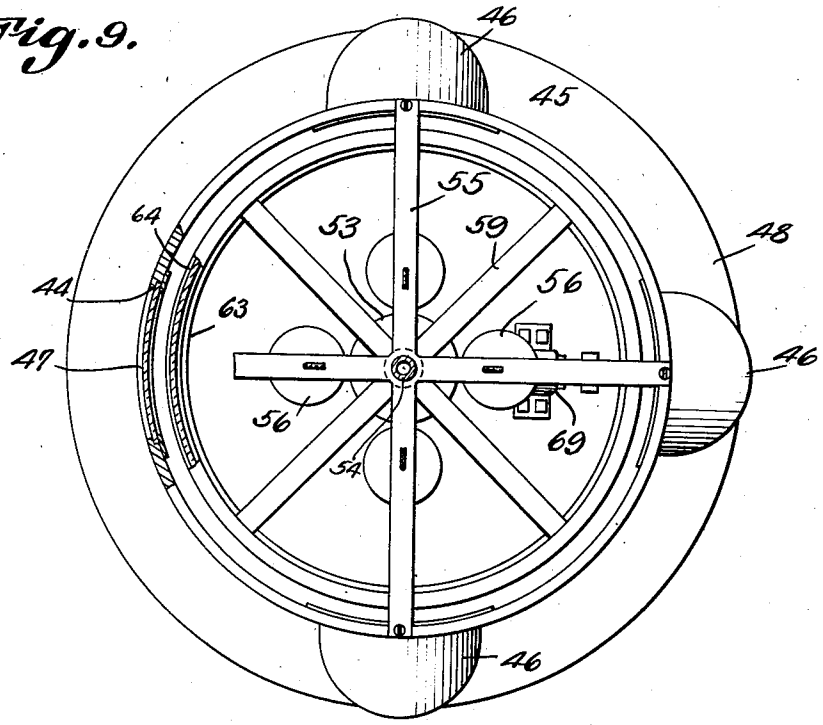
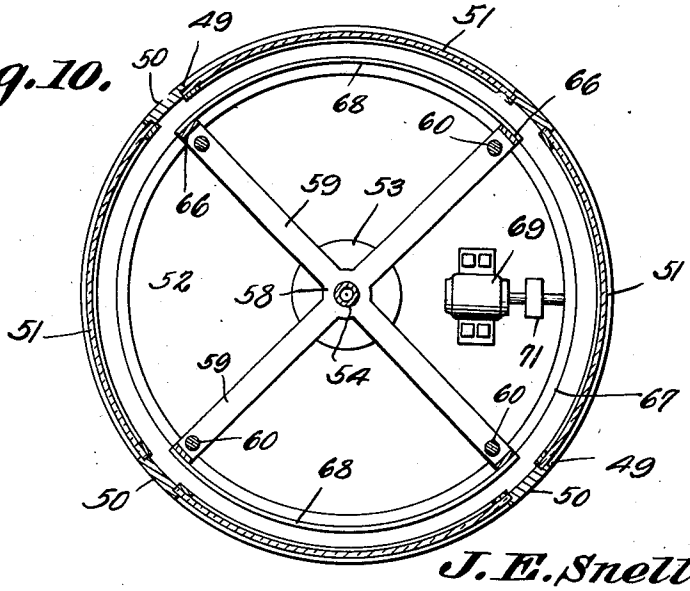


Fig. 10.



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Patented Nov. 12, 1940 2,221,272

UNITED STATES PATENT OFFICE

2,221,272

TRAFFIC LIGHT SIGNAL

Jesse Elmer Snelling, Columbus, Ohio

Application February 19, 1940, Serial No. 319,769

4 Claims. (Cl. 116—63)

This invention relates to traffic light signals of that type adapted to be used at street intersections and other points where traffic is to be controlled.

An object of the invention is to provide a structure of this character utilizing rotatable drums which are suitably illuminated from within and are adapted to automatically change from red to green and vice versa and also indicate to the approaching driver the approximate time which will elapse before the color is changed.

A further object is to provide a traffic light signal which is simple and compact in construction and can be installed readily.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings

Figure 1 is a central vertical section through the device, parts being broken away.

Figure 2 is a section on line 2—2, Figure 1.

Figure 3 is a section on line 3—3, Figure 1.

Figure 4 is an enlarged elevation of one of the latches, adjacent parts being shown in section.

Figure 5 is an enlarged section through a portion of the post and the rotatable sleeve thereon.

Figure 6 is a section on line 6—6, Figure 5.

Figure 7 is an elevation of a modified form of traffic light.

Figure 8 is an enlarged central vertical section therethrough.

Figure 9 is a plan view with the cover removed and a portion shown in section.

Figure 10 is a section on line 10—10, Figure 8.

Referring to the figures by characters of reference, 1 designates a cylindrical housing having preferably a conical top 2 joined by a tubular post 3 to the center of the base 4 of the housing. The upper end of this post can be suitably connected to a support. For example an eye 5 can be attached to the post and a supporting cable 6' can be extended therethrough.

A set of lower windows 6 is provided in the lower portion of the wall of housing 1. The centers of these windows are preferably approximately ninety degrees apart and the windows are spaced apart at their ends. Each window is closed, in the structure illustrated, with a translucent sheet 7 which can be of any desired color but preferably amber which is the color commonly empolyed to indicate "caution."

Above the windows 6 is a set of upper windows 8 corresponding in position to the windows 6 and closed preferably by sheets 9 of transparent glass or the like.

Mounted for rotation on the post 3 is a sleeve 10 the lower end of which can bear upon a collar 11 on the post. This sleeve is connected by spokes 12 or the like to a drum 13 supported adjacent to the wall of housing 1 and containing arcuate translucent panels 14 and 15 alternately arranged, the panels 14 being of one color and the panels 15 of another color. For example the panels 14 can be of red glass or the like while the panels 15 are of green glass.

Drum 13 can be open at the top and bottom and it can be provided in its bottom edge with a notch 16 providing a stop shoulder.

Lamps 17 are connected to the rotatable sleeve 10 and are located in line with the respective panels of the drum. The terminals of the lamps are provided with brushes 18 adapted to travel along spaced collector rings 19 which, as shown in Figures 5 and 6, are insulated from each other and from the post 3 and sleeve 10. These collector rings are connected to wires 20 of an electric circuit and by assembling the parts as described, the lamps can be kept in circuit while they are revolving about the post with the drum 13.

A bracket 21 is secured to the inner side of housing 1 adjacent to one end of each window 6 and these brackets are spaced apart equal distances. Each bracket has a latch slidably mounted therein as shown at 22, there being a stop finger 23 projecting from the upper end of the latch and normally bearing upon the bottom edge of the drum 13. A spring 24 mounted on the latch serves to urge it upwardly. A tripping finger 25 is extended from the lower portion of the latch and projects into the path of a tripping cam 26. This cam is secured to the outer side of a shutter 27 consisting of opposed arcuate members 28 upstanding from a ring 29 in the form of a circular gear. This gear is in constant mesh with a gear 30 carried by the shaft 31 of an electric motor 32. Lamps 17' are mounted on post 3 between the shutters and are included in the electric circuit with lamps 17 and motor 32.

The upper portion of the shutter is provided with radial spokes 33 extending from a bearing

ring 34 which is rotatably mounted on sleeve 10 and is supported by a collar 35 on said sleeve. Thus the shutter is held properly centered and supported.

A coiled spring 36 is mounted on the sleeve 10 and is anchored at one end thereto as shown at 37 while its other end, 38, is anchored to one of the spokes 33.

As shown in Figures 2 and 3 the windows 8, while centered above the respective windows 6, are narrower than said windows 6 so that arcuate opaque areas 39 are thus located between the windows 8 and extend over the end portions of the windows 6.

Outwardly extending hoods 40 are located above the respective windows 8 and an additional hood 41 is located above the windows 6.

In practice the lamps are lighted and when the motor 32 is energized it causes the drum 27 to rotate at a predetermined speed. This causes the cut-off portions 28 of the shutter to move slowly into position between opposed windows 6 so as to gradually cut off the light from the panels 7 adjacent thereto. At the same time the shutter members will gradually withdraw from across the remaining windows 6 so that light will gradually be allowed to filter therethrough in a gradually widening area. During this movement one of the latches 22 has its finger 23 seated in the notch 16 where it is engaged by the stop shoulder so that the drum 13 cannot rotate in the same direction with the drum 27. It might here be stated that when drum 27 is rotated it tends to wind the spring 36. As soon as two of the shutter members 28 move into position to completely cut off the escape of light rays through opposed windows 6, the cam 26 which has been rotating with these shutter members, comes against the lower or tripping finger 25 of the spring-supported latch 22 which is seated in notch 16 so that said latch is pulled downwardly out of the notch. This immediately releases the upper drum 13 which is thus free to rotate through a one-quarter turn until the stop shoulder formed by notch 16 comes against the next latch in the path thereof. This movement will be sufficient to shift the panels 14 and 15 through 90 degrees so as to change the light in the windows 8. Immediately thereafter the panels 7 below the green light thereabove are gradually covered by the revolving shutter members 28 during which time the upper drum is held against rotation but the transmission spring 36 is placed under increasing tension. This continues until cam 26 travels through another one-quarter turn whereupon the restraining latch 22 is pulled downwardly to release the drum 13 and said drum again rotates through ninety degrees to again change the upper lights. This of course occurs as soon as the "caution" light beneath each green light has been wiped out by the revolving shutter member. Thus the operation will continue as long as the motor is driven, the "caution" light appearing under the green light following each change and being gradually blotted out until the time of effecting the next light change. Thus an approaching driver can have knowledge of the approximate time required to wait for a change of light and this is true whether the driver is approaching the red light or the green light.

In the structure illustrated in Figures 7 to 10 inclusive a greatly simplified mechanism has been provided. In this modified structure the housing, which is preferably provided with a conical top 43 similar to the top 2, has properly spaced windows 44 and 45, the windows 44 being oppositely disposed and the windows 45 also being oppositely disposed. Over each of these windows can be located a hood 46 and each window can be closed with colorless glass as shown at 47. Below the windows is located an annular hood 48 arranged above windows 49 which have their centers directly under the respective windows 44 and 45 and are of such lengths as to be separated solely by narrow strips 50. These windows 49 are preferably closed with amber glass as indicated at 51.

The base 52 of the housing has a central bearing 53 in which is journalled the lower end of the shaft 54 the upper end of which is journalled in a frame or spider 55 secured in the upper end of the housing 42. Depending from this frame 55 in line with each of the windows 44 and 45 is a lamp 56 and these lamps are adapted to be constantly energized while the structure is functioning. Obviously the number of lamps employed can be increased or reduced to meet the requirements.

Shaft 54 has a bearing collar 57 on which is mounted a ring 58 having radial arms 59 and these arms are provided at their outer ends with posts 60 the upper ends of which are fixedly secured to the top ring 61 of a drum 62. This drum also includes a bottom ring 63 connected to the post and supported between and by the two rings of the drum are translucent segments 64 and 65 each of which extends through approximately 90 degrees. The segments 64 are preferably green while the segments 65 are preferably red.

These segments are located where they will be positioned successively behind the respective window openings 44 and 45, the two green segments being diametrically opposed while the two red segments are likewise diametrically opposed.

Posts 66 are extended downwardly from the outer ends of the arms 59 and serve to connect a ring gear 67 to said arms 59. They also serve to support opposed arcuate shutters 68 each of which extends through approximately 90 degrees, these shutters being located beneath the red segments 65.

An electric motor or the like has been indicated at 69 and is adapted to transmit motion through the gear 70 to the gear 67, any suitable speed reduction means indicated generally at 71, being employed.

Obviously when the motor is operating and the lamp lighted, the drum will slowly rotate in one direction. Some of the light rays from the lamp 56 will be intercepted by the shutters 68 as they move with gear 67 and the positions of the advancing ends of these shutters as viewed through the amber portions 51, will indicate the time remaining preparatory to a change of signal. At the same time, while red is showing through one set of windows 44 or 45, green will be showing through the other window and each shutter is so proportioned that during its movement to gradually shut off two of the amber lights, the remaining amber lights will be gradually exposed. At the same time the red lights appearing in one set of windows will gradually change to green while the green lights are gradually changing to red and the changed lights will remain exposed for the desired period of time whereupon they will change back, the green returning to red and the red returning to green. It is while these lights are exposed that the driver approaching or standing at the crossing can determine, by the position of the shutters back of the amber

lights the time elapsing before there is a complete change of lights.

What is claimed is:

1. A traffic light signal including a housing having annularly spaced lower windows of one color indicating caution and annularly spaced upper windows centered above the respective lower windows, a motor-actuated drum rotatable in the housing and having opposed shutter members movable into position across the lower windows successively, an upper drum rotatable between the upper windows and having opposed panels of one color and interposed panels of another color oppositely disposed, resilient means for transmitting motion from the lower drum to the upper drum, annularly spaced latches in the housing, means on the upper drum for engaging one of the latches after a limited movement of the upper drum in one direction thereby to hold the drum against further partial rotation, and means operated by the lower drum for actuating the drum-holding latch to release the upper drum for further partial rotation after the lower drum has been rotated a predetermined distance.

2. A traffic light signal including a housing having annularly spaced lower windows of one color indicating caution and annularly spaced upper windows centered above the respective lower windows a motor-actuated drum rotatable in the housing and having opposed shutter members movable into and out of position across the lower windows successively to expose and blot out light to the windows from within the housing, an upper drum rotatable between the upper windows and having opposed panels of one color and opposed panels of another color, the latter panels being interposed between the first panels, said panels being translucent, a spring anchored to the respective drums and constituting means for transmitting motion from the lower drum to the upper drum, regularly spaced latches within the housing, means on the upper drum for engaging one of the latches, thereby to be held against rotation by the spring, said lower drum, when actuated by the motor, constituting means for placing the spring under tension, and means movable with the lower drum and against the latches successively thereby to release the upper drum for partial rotation into engagement with another latch in advance of the release of the last named latch by the rotating lower drum.

3. A traffic light signal including a housing having spaced lower windows of one color and annularly spaced upper windows centered above the respective lower windows, a continuously rotatable lower drum having opposed shutter members movable successively into and out of position across the respective lower windows, an upper drum rotatable between the upper windows and having opposed panels of one color and opposed panels of another color, the latter panels being interposed between the first panels, and means operated by the lower drum during the continuous rotation thereof for intermittently rotating the upper drum.

4. A traffic light signal including a housing having spaced lower windows of one color and annularly spaced upper windows centered above the respective lower windows, a continuously rotatable lower drum having opposed shutter members movable successively into and out of position across the respective lower windows, an upper drum rotatable between the upper windows and having opposed panels of one color and opposed panels of another color, the latter panels being interposed between the first panels, and means operated by the lower drum during the continuous rotation thereof, for intermittently rotating the upper drum, said means including a spring connection between the drums adapted to be placed under tension during the movement of the lower drum independently of the other drum, separate latches, means on the upper drum for successively engaging the latches, and means carried by the lower drum for successively actuating the latches following their engagement by the upper drum.

JESSE ELMER SNELLING.