Oct. 21, 1941. J. H. PARKER, JR 2,260,231

TRAFFIC SIGNAL

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Fig. 1.

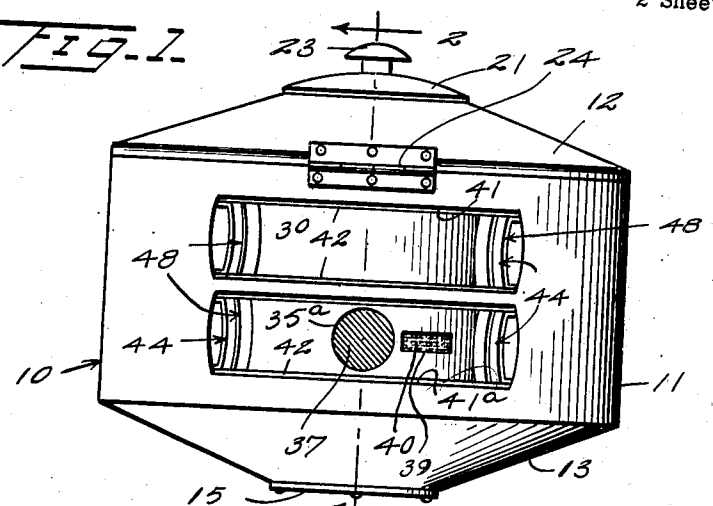


Fig. 2.

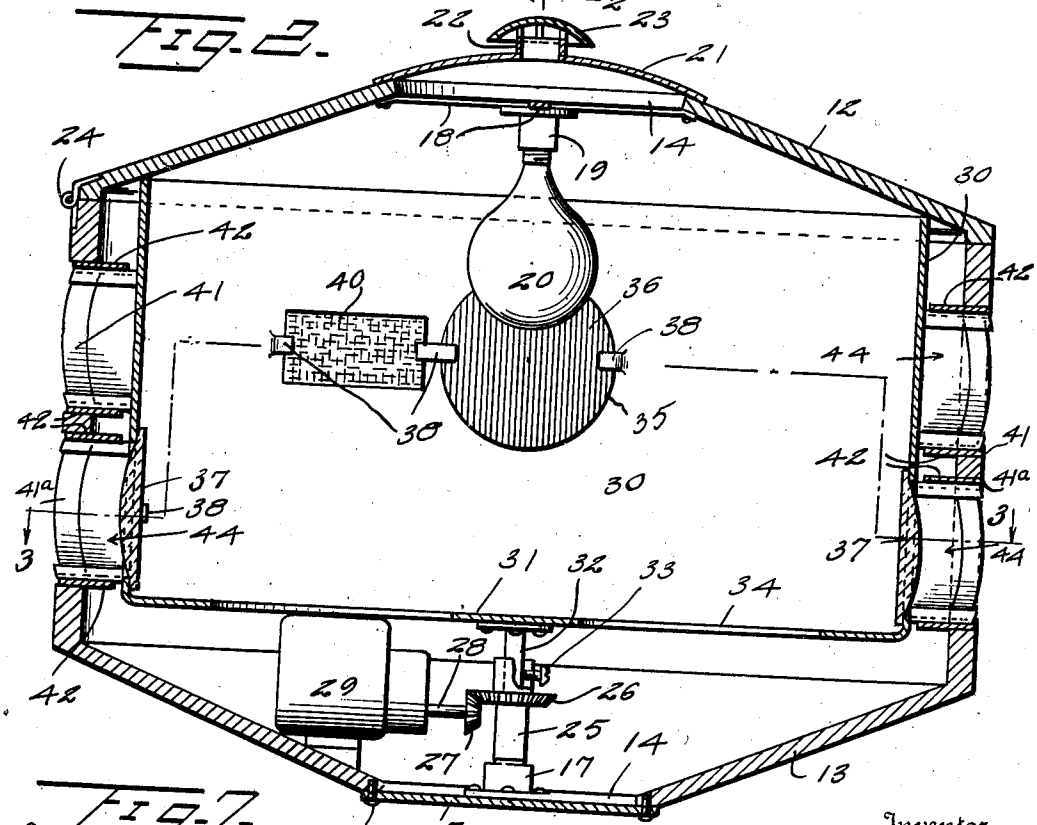
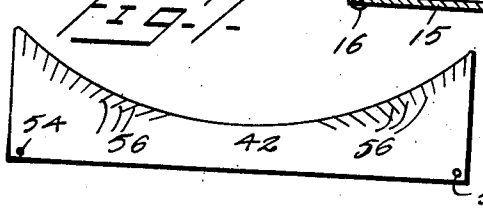


Fig. 7.



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Fig. 3.

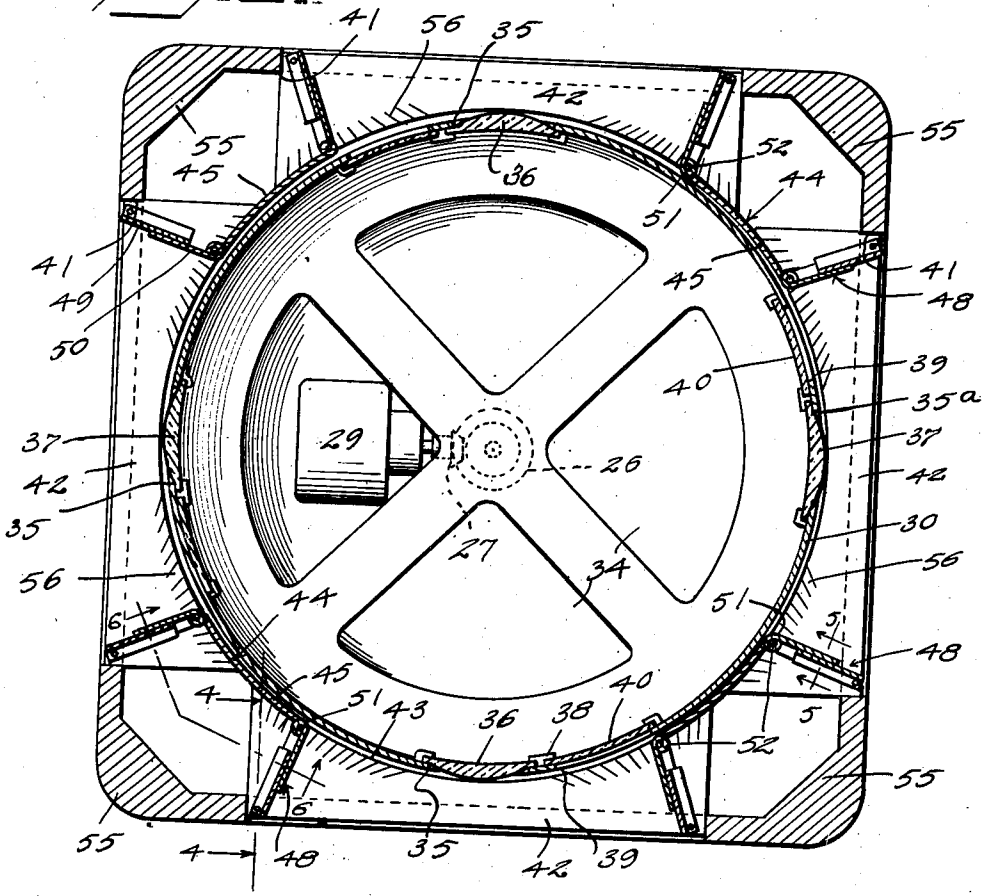


Fig. 4.

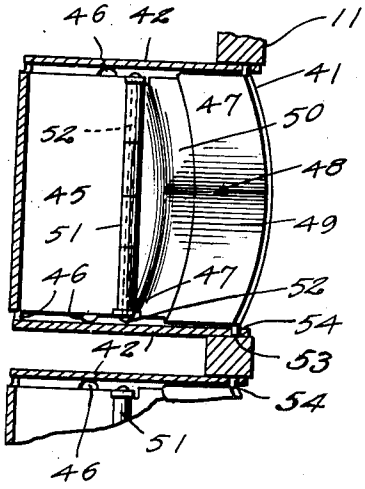


Fig. 5

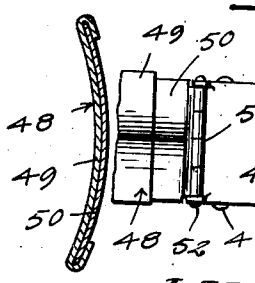


Fig. 6.

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UNITED STATES PATENT OFFICE

2,260,231

TRAFFIC SIGNAL

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Application August 8, 1940, Serial No. 351,827

5 Claims. (Cl. 116—63)

This invention relates to an improved traffic signal for controlling the movement of traffic at the intersection of two highways or streets, and aims particularly to provide a traffic signal of simple construction for illuminating a visual stop and go indicator visible to each approach of the intersection.

Still another object of the invention is to provide a traffic signal having means for visually indicating the unexpired term of the visual signal to enable motorists approaching the intersection to accurately judge when the signals will be changed.

Still another aim of the invention is to provide a traffic signal of the above described type wherein the pause between the stop and go signals will be very brief thereby speeding up the movement of traffic at the intersection.

Still another aim of the invention is to provide means of simple construction capable of being readily adjusted for varying the term or period of time of the stop and go signals of two highways or streets so that where the signal is disposed at an intersection of a main highway and a side street, for example, the traffic on the main highway may be given a longer go signal and a shorter stop signal, than traffic on the side street.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, which illustrate a preferred embodiment of the invention, and wherein:

Figure 1 is a side elevation view of the traffic signal,

Figure 2 is an enlarged vertical central sectional view taken substantially along the plane of the line 2—2 of Figure 1,

Figure 3 is a horizontal sectional view taken substantially along the plane of the line 3—3 of Figure 2,

Figure 4 is an enlarged vertical sectional view taken substantially along the plane of the line 4—4 of Figure 3,

Figure 5 is an enlarged vertical sectional view taken substantially along the plane of the line 5—5 of Figure 3,

Figure 6 is a vertical sectional view taken substantially along the plane of the line 6—6 of Figure 3, and

Figure 7 is a plan view of one of the gauge plates.

Referring more particularly to the drawings wherein like reference characters designate like or corresponding parts throughout the different views, a traffic signal, designated generally 10, and comprising the invention, includes a casing 11, which is substantially rectangular in cross section and which is provided with the tapered ends 12 and 13 forming the top and bottom, respectively, thereof. The top and bottom 12 and 13, respectively, are provided with corresponding central openings 14. The opening 14 of the bottom 13 is closed by means of a plate 15 which is detachably mounted by means of the fastenings 16 and which is provided on its upper or inner side with a centrally disposed bearing 17, for a purpose which will hereinafter be described. A pair of crossarms are secured across the opening of the top 12 to form a bracket 18 to which is secured a depending lamp socket 19 in which is mounted a lamp bulb 20 which extends downwardly into the casing 10 and which is adapted to be connected to a source of electric current, by wiring not shown. The opening 14 of the top 12 is adapted to be covered by means of a hood 21 provided with an outwardly opening vent 22 over which is disposed a shield 23. The vent 22 provides means for the escape of heat from the casing 10 created by the lamp bulb 20. The top 12 is preferably hingedly connected at 24 to the main portion of the casing 10 to provide ready access to the interior thereof and may be provided with a latch of any conventional construction, not shown, for retaining the top 12 in a closed position, as illustrated in Figure 2.

A sleeve 25 is journaled at its lower end in the bearing 17 and extends upwardly therefrom and is provided with a beveled gear 26 which meshes with a beveled gear 27 keyed to the outer end of a driven shaft 28 of an electric motor 29 which is mounted in the lower portion of the casing 11 and which is likewise adapted to be connected to a source of electric current by wiring, not shown. A cylinder 30 is disposed in the casing 11 and is provided with a bottom 31 to which is secured a centrally disposed depending shaft 32 which extends into the upper end of the sleeve 25 and which is secured thereto by means of a set screw 33 for rotatably supporting the cylinder 30 in the casing 11. The bottom 31 is preferably provided with a plurality of openings 34 to lighten the weight of the cylinder 30 and to provide ready access to the set screw 33 for attaching and detaching the shaft 32 to and from the sleeve 25. The side wall of the cylinder 30 is provided with two pairs of openings 35 and 35a. The openings of each of said pairs are disposed in diametrically opposed relationship to each other and the pairs of openings are disposed at substantially right angles to each other with said

pair of openings 35 disposed above the level of the openings 35*a*. The upper pair of openings 35 are provided with red lenses 36 and the lower openings 35*a* are provided with green lenses 37, said lenses being retained in said openings by means of brackets or clips 38. Referring to Figure 3, an opening 39 is disposed in horizontal alinement with and on the corresponding side of each of the openings 35 and 35*a*, said openings 39 extending in a counter-clockwise direction from their adjacent openings 35 or 35*a* and being each provided with an amber or yellow lens 40 similarly mounted by brackets 38. The cylinder 30 is formed of an opaque material such as metal and extends to substantially the upper portion of the casing 11, so that the lamp bulb 20 is disposed therewithin in substantially the same plane as the axis thereof.

The casing 11 in each of its four sides is provided with two superimposed spaced horizontally elongated openings 41 and 41*a*. A plate 42 is secured to the top and bottom edge of each of the openings 41 and 41*a*. The plates 42 extend substantially the length of the openings 41 and 41*a* and project inwardly of the casing 11 and are provided with inwardly bowed inner edges 43. The edges 43 combine to form a plurality of spaced superimposed substantially continuous circles of substantially the same diameter within which the cylinder 30 is mounted to rotate. The lenses 36 and the lenses 40 associated therewith are positioned to move between the upper and the lower plates 42 of the upper openings 41 and the lenses 37 and the lenses 40 associated therewith are similarly positioned to move between the upper and lower plates 42 of the lower openings 41*a* so that in each revolution of the cylinder 30 each of the red lenses 36 and the upper amber lenses 40 will move horizontally across each of the upper openings 41 and each of the green lenses 37 and the lower amber lenses 40 will similarly move across each of the lower openings 41*a*.

A shutter 44 is associated with the adjacent ends of the upper and lower sets of openings 41 and 41*a*. Each of the shutters includes an arcuately shaped shield 45 having upwardly and downwardly extending protuberances 46 for slidably engaging the adjacent sides of adjacent ends of the plates 42 of the adjacent upper openings 41 and the adjacent lower openings 41*a*. The shields 45 are provided with rearwardly or outwardly projecting ears 47, at the ends thereof, which are provided with apertures, not shown. Each of the shields 45 also includes a pair of flanges 48 formed of the arcuately shaped sections 49 and 50. The side edges of the sections 49 are turned outwardly and back upon themselves to slidably engage the side edges of their sections 50 to form the extensible flanges 48, as best seen in Figure 5. The free ends of the sections 50 are provided with perpendicular barrel portions 51, each of which is adapted to be disposed between a pair of the ears 47 for receiving a pin 52 which projects through the alined ears and barrel to thereby pivotally connect each of the flanges 48 to an end of the shield 45. The free ends of the flange sections 49 are provided at their upper and lower edges with the upwardly and downwardly projecting studs 53 which are loosely disposed in openings 54 of the plates 42, and adjacent the corners 55 of the casing 11 to thereby pivotally connect the flanges 48 to the casing 11. The shields 45 are of slightly greater lengths than the width of the lenses 36 and 37, for a purpose which will hereinafter become apparent. It will be apparent that the shutters 44 may be moved relatively to the corners 55 to vary the size of the openings 41 and 41*a* with which said shutters are associated and when thus moved, in either direction, one of said openings will be elongated and the other of said openings, which is disposed at a right angle thereto, will be shortened to the same extent. The upper side of the lower plates 42 of all of the openings 14, 41*a* are calibrated or marked, as at 56, along the edges 48 thereof and adjacent the ends of said plates to provide means for uniformly adjusting the shutters 44, for a purpose which will hereinafter be more fully explained.

The traffic signal 10 is adapted to be mounted at the center of a two street intersection, in any suitable manner, not shown, with each of the sides of the casing 11 facing toward an approach to the intersection. The motor 29 and lamp bulb 20 are energized for rotating and illuminating, respectively, the cylinder 30 which is adapted to be driven by the motor 29 so that it will make a complete revolution every three minutes, for example. The cylinder 30 turns in a counter-clockwise direction, as seen in Figure 3, and when the illuminated red lenses 36 are visible through one pair of the upper openings 41 the green lenses 37, which are likewise illuminated by the bulb 20, will be visible through the pair of lower openings 41*a* which are at right angles to the aforementioned upper openings 41. Since the cylinder 30 is constantly moving the lenses 36 and 37 will be moving in a counter-clockwise direction from end to end of the openings 41 and 41*a*, respectively, so that motorists approaching the intersection may readily judge the unexpired term of the stop and go signals, the red signals indicating stop and the green signal indicating go, as is conventional in traffic signals. The amber illuminated lenses 40 will be moving in advance of the lenses 36 and 37 so that while said last mentioned lenses are still visible the lenses 40 will have moved behind the shields 45, and out of view indicating that the present signal is approaching the end of its term. Due to the fact that the combined length of the lenses 36 and 37 and their associated lenses 40 is greater than the length of the shields 45 the amber signals adjacent the green lenses will begin to appear in the lower openings 41*a* of the same side on which the red lenses 36 are visible through the upper openings 41. It will therefore be readily apparent that the upper red lenses 36 and their associated amber lenses 40 when visible through two of the upper openings 41, which are in opposed relationship, will visually indicate a signal to stop to traffic approaching the intersection in opposite directions on one of the streets or highways. At the same time the illuminated green lenses 37 will be visible in the lower openings 41*a*, which are at right angles to the aforementioned upper openings 41 to indicate to operators of vehicles approaching the intersection along the other street or highway that they may proceed through the intersection. As the stop and go signals 36 and 37, respectively, are constantly moving from left to right of the openings in which they are visible motorists approaching the intersection or waiting at the intersection for a change of signal will be able to judge the unexpired period of the signal then being given and be prepared to stop when approaching the intersection on a street or highway where a go signal is visible but approaching a point where it will be obscured behind one of the shutters 44. As a result, traffic

will be able to stop in time before reaching the intersection to avoid entering the intersection after a go signal has been obscured and traffic waiting for a stop signal to change to go will be enabled to judge in advance approximately when the go signal will appear and be ready to move promptly. The shields **45** are of such a length that the amber signals **40** of the green signals **37** will be visible in the openings **41***a* beneath which the red signals **36** are in view and in a like manner the amber signals **40** of the red signals **36** will be visible through the openings **41** above which the green signals are showing as the red and green signals approach the ends of their terms. The shields **45**, as heretofore mentioned, are only slightly longer than the diameter of the lenses **36** and **37** to provide only a slight pause between the change signals, during which time all of the amber signals **40** will be in view to indicate that the change of singals is about to occur. This short pause is sufficient to clear the intersection of traffic due to the provision of means, as heretofore explained, for indicating to the operators of vehicles approaching the intersection the unexpired term of the signal then showing.

Under certain conditions, it is advantageous to provide means whereby one of the two intersecting streets or highways will be given a longer go signal and a shorter stop signal than the other, as for example, where one is a main street or highway used to a greater extent by traffic than the other street or highway. In Figure 3, the shutters **44** are set so that stop and go signals will all be visible on all sides of the casing **11** for the same periods of time. The openings **41** and **41***a* may be varied in size by adjusting the shutters **44** to similarly restrict opposed lower openings **41** and opposed upper openings **41**. This adjustment will enlarge the other two upper openings **41** and lower openings **41***a* to the same extent and by making this adjustment alternately between the upper and lower sets of openings **41** and **41***a* the go signals will be made longer and the stop signals shorter for one of the two streets or highways and varied conversely for the other street or highway. The calibrations **56** provide means for accurately adjusting the shutters **44** so that the red and green signals will appear and disappear simultaneously when the openings have been adjusted, as just previously explained.

The motor **29** is adapted to turn the shaft **28** one revolution per minute and the gear **26**, in the embodiment of the invention as disclosed, is intended to be three times the diameter of the gear **27** so that the cylinder **30** will make one revolution each three minutes so that the red and green signals **36** and **37** will be maintained between forty and forty-five seconds before disappearing. The shutters **44**, in the embodiment of the invention as illustrated, may be adjusted so that the stop and go signals may be maintained for a period as long as approximately 54 seconds or as short as approximately 27 seconds, or in other words so that if desired, the go signal may be maintained in view for one highway substantially twice as long as for the other highway.

Various modifications and changes are contemplated and may obviously be resorted to as only a preferred embodiment of the invention has been disclosed.

I claim as my invention:

1. A traffic signal comprising a casing having openings in the sides thereof, an opaque rotating member mounted in said casing, means for revolving said member at a uniform speed, said member being provided with a plurality of spaced colored transparent portions disposed to aline with certain of the openings of said casing during each revolution of said member, means for illuminating the interior of said member, and means for adjusting the size of the openings of said casing for varying the period that said transparent portions will be in communication therewith.

2. A traffic signal comprising a casing having an annular wall provided with circumferentially spaced openings, an opaque cylinder mounted to rotate in said casing, means for turning said cylinder at a uniform speed, said cylinder being provided with spaced colored transparent portions arranged to communicate with said openings during each rotation of the cylinder, said colored transparent portions each including sections of two colors circumferentially spaced relatively to each other, means for illuminating the interior of the cylinder, and said casing being provided with shutters adjustably mounted relatively to the openings thereof for varying the size of said openings.

3. A traffic signal comprising a casing, square shaped in cross section, each of the sides of the casing being provided with vertically spaced upper and lower openings, an opaque rotating cylinder mounted in the casing, said cylinder having circumferentially spaced colored translucent portions arranged in pairs, the translucent portions of each of said pairs being in substantially diametrically opposed relationship, and the pairs of translucent portions being substantially at right angles to one another with one of the pairs of translucent portions disposed below the level of the other, the translucent portions of one of said pairs being positioned to communicate with each of the upper openings of the casing during each revolution of the cylinder and the translucent portions of the other pair being similarly positioned in relationship to the lower openings of the sides of the casing, the pairs of translucent portions being distinctively colored, means for illuminating the interior of the cylinder, and shutters pivotally and slidably mounted relatively to the casing for varying the size of the openings thereof.

4. A traffic signal comprising a casing, square shaped in cross section, each of the sides of the casing being provided with vertically spaced upper and lower openings, an opaque rotating cylinder mounted in the casing, said cylinder having circumferentially spaced colored translucent portions arranged in pairs, the translucent portions of each of said pairs being in substantially diametrically opposed relationship, and the pairs of translucent portions being substantially at right angles to one another with one of the pairs of translucent portions disposed below the level of the other, the translucent portions of one of said pairs being positioned to communicate with each of the upper openings of the casing during each revolution of the cylinder and the translucent portions of the other pair being similarly positioned in relationship to the lower openings of the sides of the casing, the pairs of translucent portions being distinctively colored, means for illuminating the interior of the cylinder, and shutters pivotally and slidably mounted relatively to the casing for varying the size of the openings thereof, and gauge means associated with said openings and over which said shutters are disposed for properly positioning the differ-

ent shutters relatively to the different openings.

5. A traffic signal comprising a casing, square shaped in cross section, each of the sides of the casing being provided with vertically spaced upper and lower openings, an opaque rotating cylinder mounted in the casing, said cylinder having circumferentially spaced colored translucent portions arranged in pairs, the translucent portions of each of said pairs being in substantially diametrically opposed relationship, and the pairs of translucent portions being substantially at right angles to one another with one of the pairs of translucent portions disposed below the level of the other, the translucent portions of one of said pairs being positioned to communicate with each of the upper openings of the casing during each revolution of the cylinder and the translucent portions of the other pair being similarly positioned in relationship to the lower openings of the sides of the casing, the pairs of translucent portions being distinctively colored, means for illuminating the interior of the cylinder, and shutters for varying the size of said openings, each of said shutters being associated with adjacent portions of two of the openings and including a shield section and a pair of flanges each formed of extensible sections, said flanges being connected at their corresponding ends to the ends of said shield sections and at their opposite ends to the casing whereby a variation in the positioning of any one of the shutters by movement of the shield section will proportionally increase and decrease the size of the two openings with which the shutter is associated.

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