March 15, 1938. W. E. BEYER 2,111,087

TRAFFIC SIGNAL

Filed March 22, 1937 2 Sheets-Sheet 1

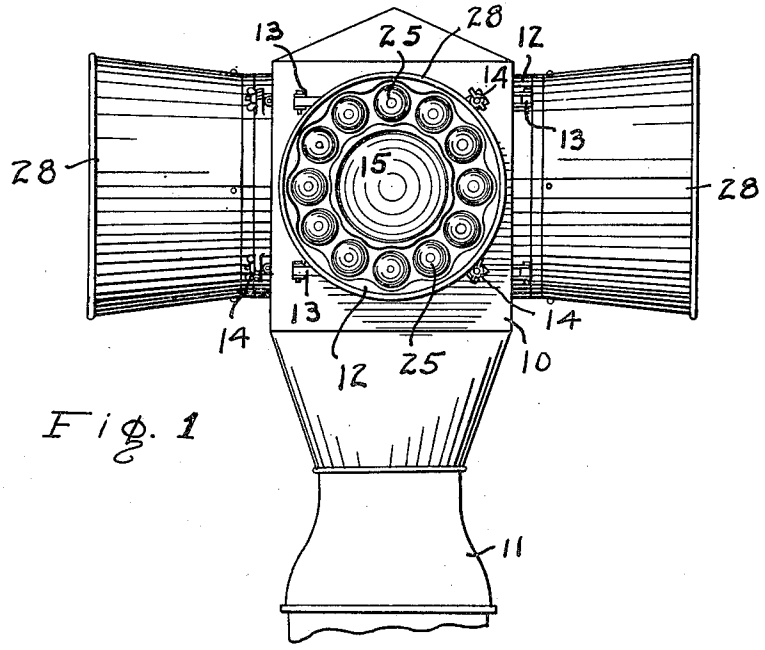


Fig. 1

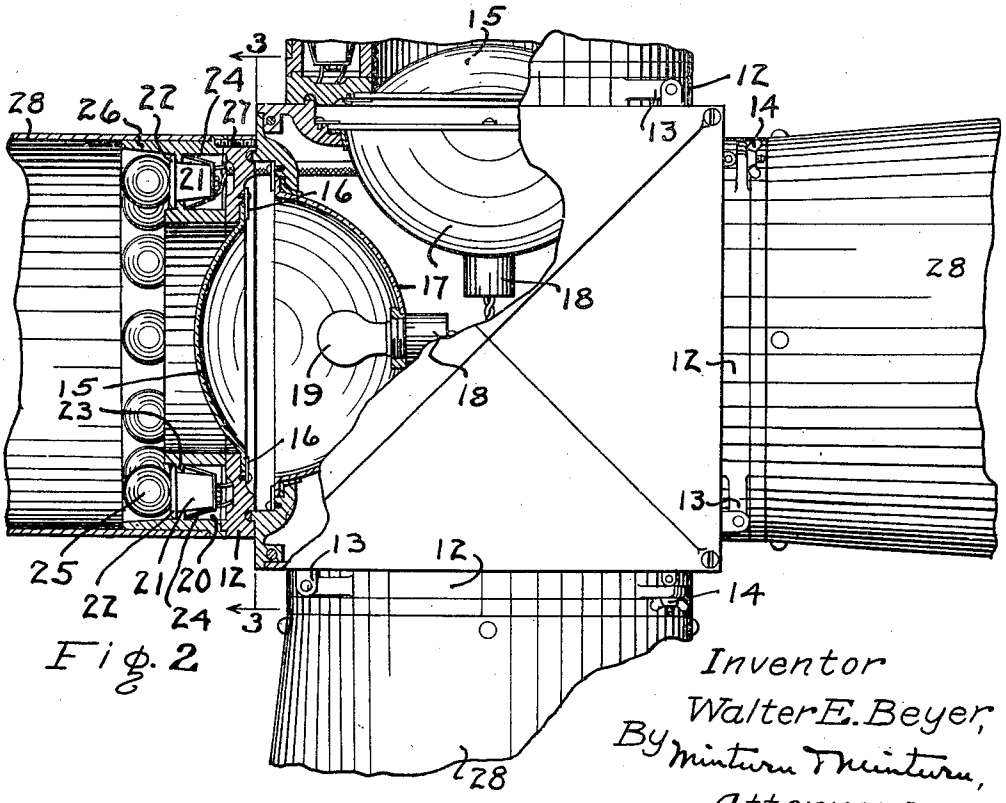


Fig. 2

Inventor
Walter E. Beyer,
By Minturn & Minturn,
Attorneys

March 15, 1938. W. E. BEYER 2,111,087

TRAFFIC SIGNAL

Filed March 22, 1937 2 Sheets-Sheet 2

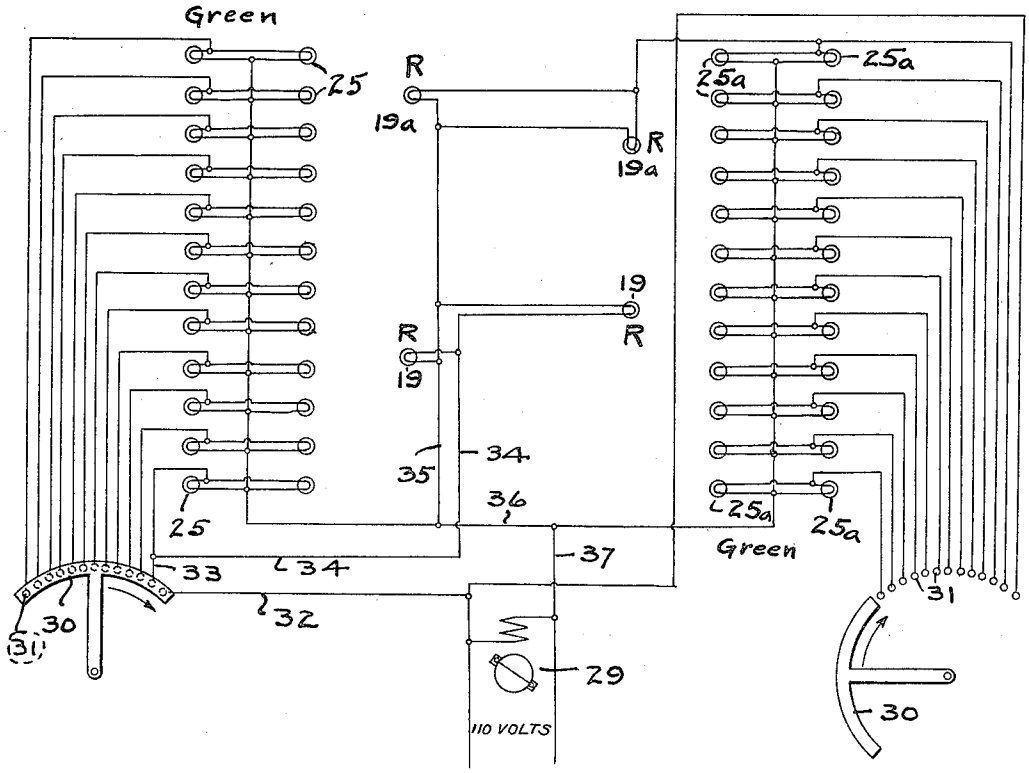


Fig. 4

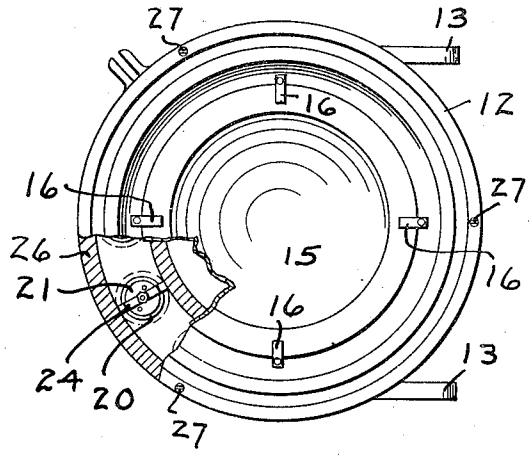


Fig. 3

Inventor
Walter E. Beyer,
By Minturn & Minturn,
Attorneys

Patented Mar. 15, 1938 2,111,087

UNITED STATES PATENT OFFICE

2,111,087

TRAFFIC SIGNAL

Walter E. Beyer, Indianapolis, Ind.

Application March 22, 1937, Serial No. 132,252

4 Claims. (Cl. 177—337)

This invention relates to traffic regulating signals and has for a primary object the provision of a simple compact means incorporating two major signals, one signal being displayed uniformly for the desired signal display length and the other major signal being displayed in gradually reducing sizes or degree of illumination to indicate the remaining period of duration thereof. A still further primary object of the invention is to provide means prohibiting stationary traffic from observing the condition of the moving-traffic signal whereby the stationary-traffic may not anticipate changes in the signal and move before the actual signal change.

The invention comprises essentially a standard having a major signal lamp exposed on the side or sides in the direction of a traffic lane and then having a plurality of signal lamps grouped immediately around the above indicated major lamp, whereby, for example, the major signal may have the usual red lamp or lens to indicate "stop" and the other major signal may be a plurality of green lamps concentrically arranged around the red lamp and so operated that following the end of the illumination of the red lamp, all of the green lamps will be then illuminated to form a complete circle which, when viewed from a distance through the multiplicity of light rays appear as a common source of light to indicate the "go" signal. These green lamps are so operated that one after another is extinguished in clockwise rotation in timed sequence thereby indicating the amount of time left before the last of the green lamps is extinguished to end the display of the "go" signal.

By this operation of the signal, the standard carrying the signals is made in a very compact form and the drivers or operators of cars in the traffic do not have to change their line of vision from one place to the other on the standard as has been heretofore required when a number of operated signals have been displayed one above or below the other in spaced relation on a stand.

These and other objects and advantages of the invention will become apparent to those versed in the art in the following description of one particular form of the invention which is more or less diagrammatically illustrated in the accompanying drawings, in which

Fig. 1 is a side elevation of a standard head embodying the invention;

Fig. 2, a top plan view on an enlarged scale on partial section;

Fig. 3, a detail in rear elevation of a standard head door; and

Fig. 4, a wiring diagram.

Like characters of reference indicate like parts throughout the several views in the drawings.

Referring first to the mechanical arrangement, I form a standard head 10 supported in any suitable manner by a standard 11 and on each side of the head 10 provide some suitable means for carrying the signals. In the particular embodiment herein shown, this means consists of a door 12 preferably mounted on the head by hinges 13 in each instance and held in a closed position by thumb screws 14.

Each door 12 is provided with a central major aperture therethrough over which is mounted a glass or lens 15, here shown as being held in position by a plurality of clips 16, Fig. 3. This glass 15 may be of the desired color for the signal to be displayed. Without limiting the invention thereto but merely for the sake of describing one particular form, the glass 15 will be hereinafter referred to as being red in color.

Within the head 10 behind each door 12 is mounted a reflector 17 carrying centrally thereof a suitable socket 18 in which is mounted a lamp 19 which may be clear in color when the lens or glass 15 is colored. The reflector 17 is mounted on the head proper so that the door 12 may be opened without disturbing the reflector and access may be had to the lamp 19 for replacement as becomes necessary.

The door 12 in each instance is provided with a plurality of openings 20 therethrough spaced in circumferential relation about the central aperture. Each of these openings 20 is formed to receive a lamp socket 21 therein to be secured in any suitable manner. In the present form, the socket 21 is formed with an annular flange 22 to rest on an angular shoulder 23 presented within the hole 20. The flange 22 abuts the shoulder 23 from the forward or outer side and a clamp or bracket 24 is attached to the rear or inner side of the socket 21 and has legs extending forwardly or outwardly within the hole 20 along the sides of the socket 21 to abut by the leg ends the inner side of the shoulder 23.

A lamp 25 is placed in each of the sockets 21. In the form herein shown, there are twelve of these lamps 25 mounted concentrically of the glass 15. As indicated, each of the lamps 25 is accessible from the exterior side of the door 12. For convenience in manufacture, the holes 20 and the lamps 25 with their respective sockets 21 are provided in an annular member 26 which is secured to the door 12 by any suitable means such as the screws 27, and extends outwardly around

the lamps as a reflector. As indicated by the drawings, in the form of the invention herein shown and described, the head 10 is provided with four faces, each having a door 12 with the lamps directed as above indicated so that the particular example is suitable for a right angle intersection of roadways. In order to prevent traffic in one line from observing the condition of the signal for traffic in the line to the right or left, the member 26 will serve to conceal from side traffic the illumination or passage of light through the glass 15 but in addition thereto to not only further conceal this condition but also to prevent side observance of the condition of illumination of the lamps 25, a tubular extension 28 is provided from each member 26 as a complete shroud or hood, opening only at its outer end to traffic approaching in that direction.

Now referring to the electrical operation of the various lamps, reference is made to Fig. 4. In this view each of the lamps 19, there being four in the particular example herein explained, are indicated as the red lamps. It is to be remembered of course that like signals will be displayed on opposite sides of the head 10 to traffic travelling in both directions in the same roadway. Any suitable timing mechanism may be employed such as an electric motor 29 which will operate to open and close electrical contacts in the required sequence for the required periods of illumination of the various lamps. One particular form of such a mechanism may be operated by the motor 29 to revolve continuously one or more contact members 30 in the paths of contacts 31.

Now assuming that the left hand contact member 30, Fig. 4, has been revolved to that position wherein all of the contacts 31, here shown as thirteen in number have just been covered and connected with the wire 32 which leads to any suitable source of current, current is thereby conducted from the wire 32 through the contact member 30 to the second contact 31 and then through the wire 33, wire 34, through the two red lamps 19 interconnected in parallel, these two red lamps being in this case on opposite sides of the head 10, from which lamps the circuit is completed through the wire 35, wire 36, back to the wire 37 to the source of the current. Simultaneously the electrical circuit is completed from the wire 32 through all of the remaining contacts 31 by the contact member 30 and through each of the twelve green lamps 25 which are on the opposite sides of the head 10 removed from the sides in which the red lamps 19 are then illuminated. With this illumination of all of the green lamps 25 on the respective opposite side of the head 10, traffic in that lane is given the signal to proceed whereas the illumination of the two red lamps 19 on the other opposite sides of the signal head 10 indicated to the traffic in the right angle lane to remain stationary. With this illumination, it is understood that, Fig. 4, the other set of red lamps 19a which are on the sides of the head 10 then carrying the illuminated green lamps 25 remain dark as do also the other green lamps 25a appearing on the sides carrying the illuminated red lights 19, a condition accomplished by reason of the fact that the right hand contact member 30 has not as yet been carried around to close the circuit leading to those respective lamps.

The contact member 30 on the left hand side, Fig. 4, is moved in the direction indicated by the arrow by the motor 29, so that step by step the contacts 31 are uncovered to the left thereby opening the electrical circuit to the green lamps 25 one at a time leaving the remaining lamps illuminated until all of those contacts 31 have been uncovered to open the circuit completely between all of the green lamps 25 and the red lamps 19. When this condition is reached, the right hand contact member 30 has advanced over the respective right hand contacts 31 until the last contact 31 to the right is reached whereupon current is then supplied to all of those right hand contacts 31 theretofore contacted by the member 30, in which case the red lamps 19a on those sides of the head 10 on which the green lamps 25 were just extinguished are then illuminated and the green lamps 25a are illuminated on those other sides of the head 10 on which the red lamps 19 were just extinguished.

It is therefore to be noted that for the stop signal there is a single red display of constant duration as to intensity or size throughout the period of existence of that particular signal whereas the other major signal, the "go" signal, comprises the ring of green lamps immediately surrounding the glass 15 and that this ring of green lamps is in timed sequence broken down, one lamp at a time being extinguished until the last lamp is reached and extinguished thereby indicating to the moving traffic the length of duration of the "go" signal from the time it is flashed on until immediately preceding the period it is extinguished.

The signal is unique in that from the same apparent source, comes both the stop and go signals to the oncoming traffic. From a distance the ring of green lamps appears as a single central source of illumination but upon approaching closer, the attention of the driver in traffic is attracted immediately by the decreasing continuity of the illumination which warns him of the approach of the change from the "go" to the "stop" signal.

Since the signals are completely concealed from view to the traffic approaching from the side, a great degree of safety is afforded in that the side approaching traffic is not inclined to "jump" the signal and proceed into the intersection before the moving traffic has come to a halt. In other words, the inherent delay between the stopping of traffic in one lane and the beginning of motion of the traffic in the other lane is produced without the necessity of having to employ an intermediate signal commonly of the yellow or caution nature. Furthermore by reason of the major go signal itself decreasing in size or intensity, this feature serves to supply the necessary caution indication to the moving traffic.

Another safety factor of this signal is that the driver is not dependent on the colors of the lights because the moving light will always indicate "go", and the stationary light will indicate "stop". Even completely color-blind individuals can read this signal.

While I have herein shown and described my invention in the one best form as now known to me, it is obvious that structural variations may be employed without departing from the spirit of the invention and I, therefore, do not desire to be limited to that precise form beyond the limitations as may be imposed by the following claims.

I claim:

1. A traffic signal comprising a major "stop" signal of red light displayed over an appreciable area, and a major "go" signal of green light to all intents and purposes displayed over the same said area from a distance, said green signal comprising a plurality of individual green lights arranged circumferentially immediately around said area and a hood completely encircling said green lights and extending outwardly therefrom a sufficient distance to cause a commingling of the green light rays to simulate a ball of green lights from a distance, means illuminating and extinguishing said red and green lights in timed sequence, and extinguishing said green lights one after another following initial illumination of all of them, whereby said ball of green light from a relatively nearer point decreases in size to a band of green light decreasing in length around said area.

2. A traffic signal comprising a major "stop" signal of red light displayed over an appreciable area, and a major "go" signal of green light to all intents and purposes displayed over the same said area from a distance, said green signal comprising a plurality of individual green lights arranged circumferentially immediately around said area and a hood completely encircling said green lights and extending outwardly therefrom a sufficient distance to cause a commingling of the green light rays to simulate a ball of green lights from a distance, means illuminating and extinguishing said red and green lights in timed sequence, and extinguishing said green lights one after another following initial illumination of all of them, whereby said ball of green light from a relatively nearer point decreases in size to a band of green light decreasing in length around said area, and means interposed between said red and green lights interrupting light reflection therebetween but permitting diffusion of the green light forwardly of the red light.

3. A traffic signal comprising a major "stop" signal of red light displayed over an appreciable area, and a major "go" signal of green light to all intents and purposes displayed over the same said area from a distance, said green signal comprising a plurality of individual green lights arranged circumferentially immediately around said area, and a hood completely encircling said green lights and extending outwardly therefrom a sufficient distance to cause a commingling of the green light rays to simulate a ball of green lights from a distance, means illuminating and extinguishing said red and green lights in timed sequence, and extinguishing said green lights one after another following initial illumination of all of them, whereby said ball of green light from a relatively nearer point decreases in size to a band of green light decreasing in length around said area, said green lights being surrounded by a reflector within said hood effecting criss-cross reflection of rays within said hood from said green lights.

4. In a traffic signal, a standard carrying a "stop" indicating lamp, a lens over the lamp, a ring formed to fit around said lens, a plurality of sockets carried by the ring, a green indicating lamp in each socket setting forwardly of said lens, and a substantially cylindrical diffusing hood encircling said circle of lamps and extending an appreciable distance therefrom.

WALTER E. BEYER.