March 18, 1930. W. E. SIGNOR 1,751,018

WIGWAG STOP SIGNAL

Filed April 6, 1928 2 Sheets-Sheet 1

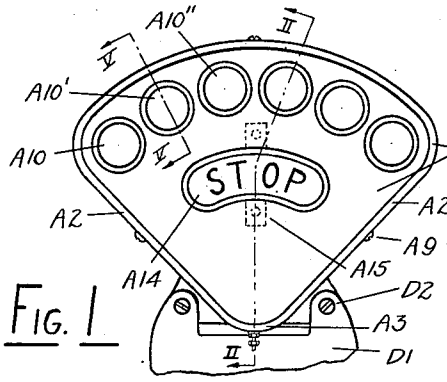


FIG. 1

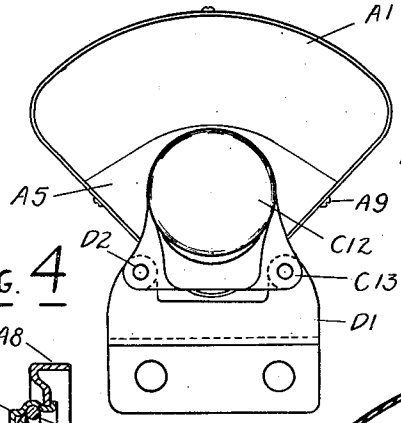


FIG. 4

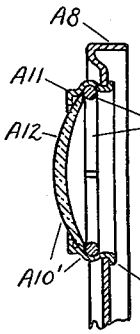


FIG 5

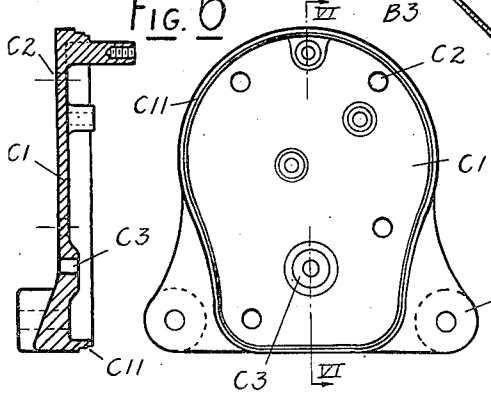


FIG. 6

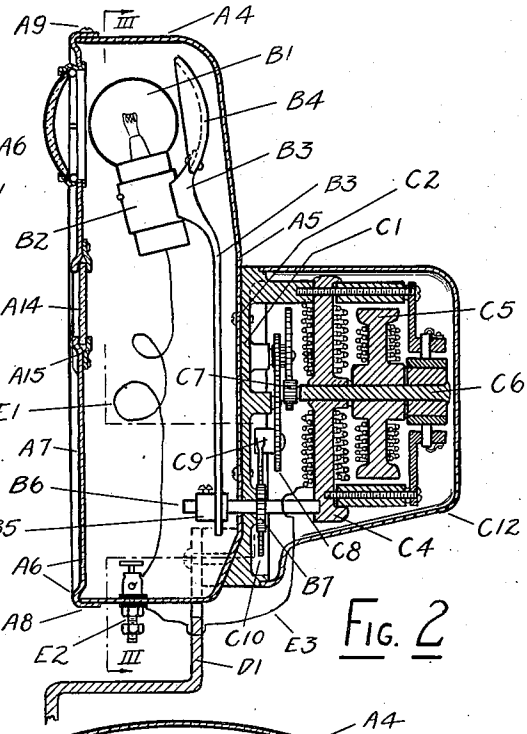


FIG. 2

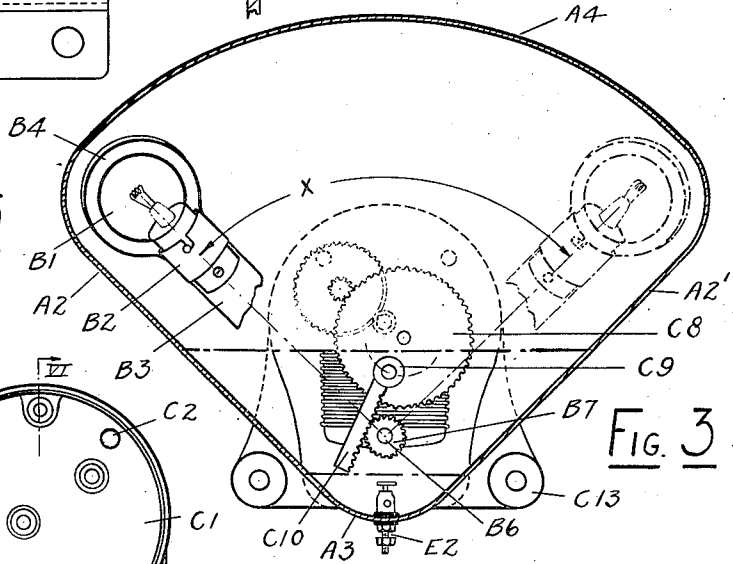


FIG. 3

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FIG. 7

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WIGWAG STOP SIGNAL

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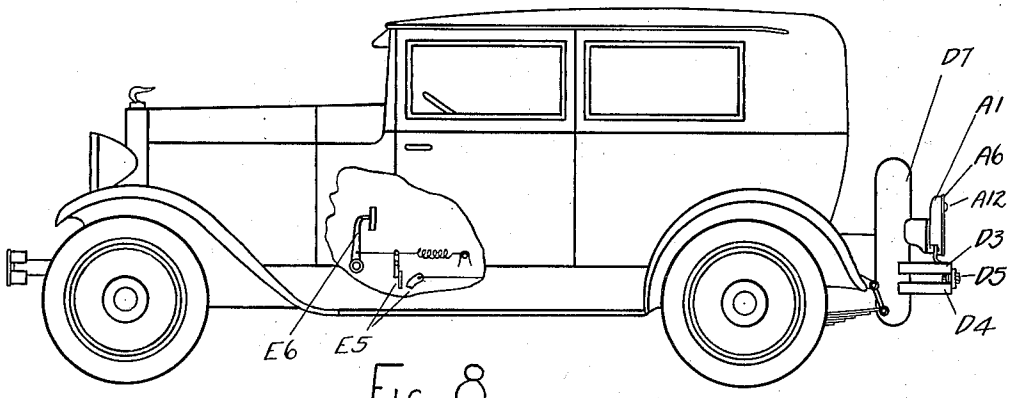


FIG. 8

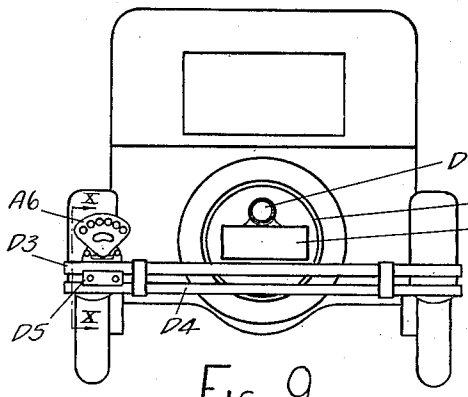


FIG. 9

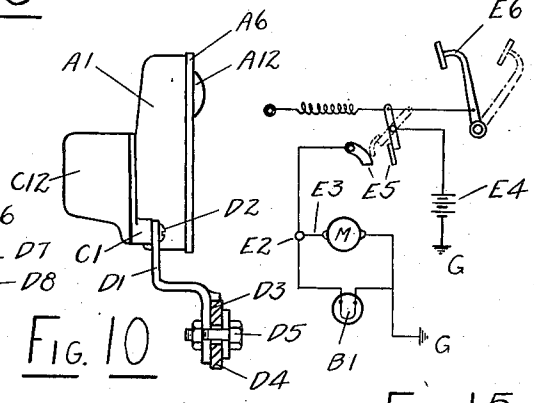


FIG. 10

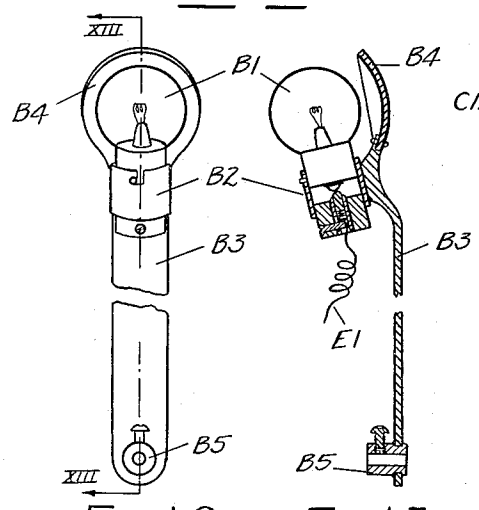


FIG. 12 FIG. 13

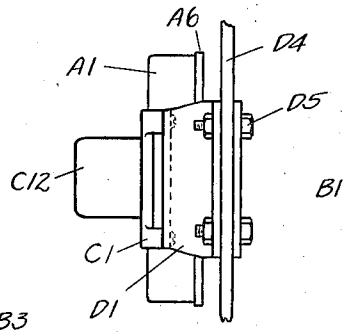


FIG. 11

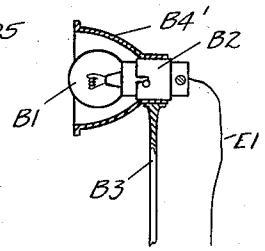


FIG. 14

FIG. 15

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Patented Mar. 18, 1930 1,751,018

UNITED STATES PATENT OFFICE

WILLIAM E. SIGNOR, OF GETTYSBURG, PENNSYLVANIA

WIGWAG STOP SIGNAL

Application filed April 6, 1928. Serial No. 268,015.

This invention relates to stop signals, and more particularly to a signal of the wig-wag type primarily intended for attachment to motor vehicles and serving to avoid collision or other accident by visually and effectively notifying any following driver of intent on part of the preceding driver to slow up or bring his car to a halt.

It is the object of this invention to provide an improved stop signal of this character capable of strikingly attracting attention to itself on part of any rear driver especially under conditions of fast night highway driving, and to this end my improved device is preferably equipt with a motor driven oscillating arm carrying an electric light bulb that is energized whenever it is desired to make the signal operative. This single light source is adapted to swing behind and successively register with a series of spaced lenses preferably of different colors, and said oscillating lamp means may further be provided with a supplementary reflector thereby to direct a greater portion of its rays through said lenses. As a result of the use of such differently colored lenses, the movement of the wig-wag arm is vitally accentuated, thus producing a novel and highly attractive signal effect that can be readily distinguished at distance far greater than applies to conventional automotive stop devices.

The present invention further comprehends the provision of a dust-proof casing enclosure for swinging the wig-wag arm therein, and also provides for improved arrangement and constructive features for carrying out the combination above indicated, all of which will hereinafter be set forth in detail.

Reference is had to the accompanying two sheets of drawings which are illustrative of a specific embodiment of my invention as applied to motor vehicle stop lights, in which like characters of reference indicate like parts in the several views, and in which drawings:

Fig. 1 is an elevational front or lens view of my assembled device, while Fig. 2 is a vertical transverse section thereof as taken along line II—II of Fig. 1.

Fig. 3 shows a sectional view of my device as seen from the off-set line III—III of Fig. 2 to show a fragmental portion of the motor drive gearing.

Fig. 4 represents a rear view of the assembled device shown in Fig. 1.

Fig. 5 is an enlarged detail of one of the plural lenses mounted into the removable cover of my signal casing as taken through the section line V—V of Fig. 1.

Fig. 6 and 7 detail a support flange adapted to mount said casing to one side thereof with the motor drive equipment disposed upon the other flange side.

Fig. 8 shows an elevational side view of a motor vehicle provided with rear bumpers having my signal device mounted thereon.

Fig. 9 is a rear elevational view of the car shown in Fig. 8, while Figs. 10 and 11 provide for a suitable style of bumper bracket adapted to carry the support flange of my device.

Figs. 12 and 13 respectively detail elevational and sectional views of the swingable light arm as equipt with a plain reflector, while Fig. 14 shows a modification in that a similar arm is provided with a parabolic reflector.

Fig. 15 schematically represents the signal wiring diagram as applied to the motor vehicle shown in Fig. 8.

Referring more particularly to said drawings, A^1 denotes as a whole, a sheet metal signal casing preferably of sector-like shape having converging radially disposed side walls A^2 and $A^{2'}$ which are rounded off at A^3 with the outermost ends thereof subtended by the arcuate side wall A^4. These interconnected side walls may be integrally closed by a substantially flat bottom wall A^5 but leaving the mouth edge of the upright side walls open and adapted to be closed by the front enclosing casing cover A^6.

This sheet metal cover preferably comprises a slightly indented flat sector-shaped plate of metal A^7 having a circumscribing laterally disposed rim A^8 adapted to snugly embrace the outside contour of the casing mouth edge, and which rim portion may be removably retained in place by screw means such as A^9. Disposed within and closely ad-

jacent to the contour of the arcuate portion of said rim A^8, are shown a series of spaced lens assemblies such as A^{10}, $A^{10'}$, etc., which may be mounted in any suitable manner. As detailed in Fig. 5, the cover plate A^7 may be suitably perforated with spaced holes and in each such there may be mounted a separately formed cylindrical frame A^{11} having an inturned lip at its one end adapted to embrace the circumference of a transparent lens A^{12}, and further having un undercut recess of which the exterior abuts the plate A^7 and into which recess there is removably fitted the retaining snap ring A^{13}.

The other end of said frame may be crimped, expanded or otherwise secured in place as indicated by $A^{11'}$. One distinctive feature of the present invention lies in a suitable combination of contrasted colors or tints. For instance, the color scheme intended in connection with Fig. 1, may comprise green lenses such as A^{10} carried in the two outermost or end frames, then two red lenses in the inwardly adjacent frames such as $A^{10'}$, and finally yellow, amber or any other distinctive color for the two centrally or medially disposed lenses such as $A^{10''}$.

Radially inward from said lens frames, the sector-like plate A^7 is provided with a further elongated aperture behind which may be mounted a transparent colored glass pane A^{14} preferably of amber or other light tint bearing the legend "Stop" thereon, and in turn removably held in place by the clips A^{15}. It will be obvious that the cover A^6 together with its described associated parts may be removed as a unit so as to expose the interior of the otherwise closed and dust proof casing A^1.

Mounted behind said plural spaced lenses, is a swingable electric light bulb B^1 that may be intermittently energized by any suitable source of current in the manner presently to be described. Said bulb may be removably mounted in a socket B^2 which is suitably insulated and carried upon the outer end of the wig-wag arm B^3. Immediately behind said bulb and also carried with the movable arm B^3 is a reflector B^4 serving to direct the light rays through the respective lenses while they are passed in sequence by the lamp B^1. It has been found in practice that the individual lenses are distinctly lighted up in successive order as viewed from a distance, although the casing interior may at the same time be kept dimly illuminated throughout. The desired fantastic effect is materially enhanced by use of the described different colored lenses since this expedient more sharply focuses attention upon the signal immediately upon setting said wig-wag light into sustained oscillation. If desired, the contour of said reflector B^4 may be modified so as to comprise a parabolic shape $B^{4'}$ having an open mouth portion as shown in Fig. 14, adapted to closely sweep by the adjacent lens frames. This alternative cuts off more of the surplus light from the interior of the casing A^1 and at the same time promotes sending more light rays through the particular lens that may at that instant be standing in registering with the bulb B^1.

Referring further to the structural details of said wig-wag arm B^3, its pivot end is provided with a hub B^5 adapted to be locked to the shaft B^6. This shaft is preferably mounted closely adjacent to the center portion of the arcuate side wall A^4 and may extend rearwardly away from and in normal relation to the cover A^6. The bottom casing wall A^5 may be provided with an offset flat portion against which the support flange C^1 is abutted, and these parts may be secured together by screw means such as C^2. As shown in Fig. 7, said flange is further provided with a bearing aperture C^3 through which the shaft B^6 oscillates and such movement may be imparted thereto through the medium of the pinion B^7. On the rear side of said flange (see Fig. 2), there may be mounted a conventional electric motor of suitable design and essentially comprising the pole piece C^4, a rotating armature C^5 preferably provided with commutator equipment including an armature shaft C^6. The drive end of this shaft may be provided with a pinion C^7 adapted to be driven through a train of reduction gears or the like, serving in the present instance to bring about a slow rotation on part of the component gear C^8 of which the pintle is carried by said flange C^1 in a rearwardly overhanging relation. This gear is shown as equipt with crank pin member C^9 adapted to carry one end of the rack C^{10} and arranged to impart a reciprocating movement thereto. This rack meshes with the fulcrum shaft pinion B^7; when the motor is set in motion, the train of drive gears will cause the wig-wag arm to swing back and forth in a comparatively slow period through the angle marked "X" (see Fig. 3). My relatively high speed motor is intended to run at substantially constant revolutions but a dwell will occur whenever the bulb B^1 assumes alignment with the respective end lens assemblies such as A^{10}; accordingly, the color of these particular lenses will predominate in my signal because the intermediate lenses will be swept past at a more rapid rate.

One face of the support flange C^1 is further provided with an upstanding circumscribing rim C^{11} adapted to be snugly received into the mouth of the drive cover C^{12}, which enclosure protects the motor drive parts and at the same time enhances the appearance of the assembled signal device. It will also be observed that the casing A^1 as mounted upon the opposite face of said flange C^1, is similarly fully enclosed and this serves to keep

the lenses together with the light bulb free from obstructive road dust deposits and the like. For the purpose of conveniently mounting my unitary signal structure, each corner of the flange C^1, is preferably provided with perforated ear lug such as C^{13} extending laterally with respect to the respective radial casing walls A^2 and A^3.

Turning now to the intended application of my signal device, the specific disclosure indicated by Figs. 8 and 9 shows this device attached to the rear bumper of a motor car. In this instance, the complementary flange lugs C^{13} may be secured to a bracket D^1 by the screws D^2, this bracket being purposely given a cross-sectional Z shape, of which the free leg may be clamped against the face of the spaced twin bumper bars D^3 and D^4 by means of the bolt D^5. Said Z shape bracket allows of offsetting my signal forwardly toward the car body in order to keep all such non-projecting signal members within the protective limits of the bumper.

The illustrated style of wig-wag signal is preferably used in association with a conventional tail light D^6 which is here shown as mounted within the spare tire carrier D^7 and disposed to illuminate the license plate D^8 in the usual fashion. It will be apparent however that my device may likewise be mounted upon the front bumper or on both front and rear bumpers if so desired, also that a suitable tail light element could readily be embodied within a separately formed compartment of my signal casing.

Fig. 11 shows in detail a common motor car bulb socket B^2 as equipt with a centrally disposed insulated feed wire E^1 that is preferably led to the insulated binding post E^2. From this post there may be connected another lead wire E^3 which runs to the electric motor terminal. As will be understood, the complementary motor terminal and also that of the bulb socket are intended to be grounded in the usual manner. The accompanying wiring diagram is represented in Fig. 15 where the wig-wag lamp B^1 and the motor M are connected in parallel with respect to the post E^2. From the car battery E^4, a lead wire may be carried to the post E^2 and placed under command of the throw switch E^5. The preferred mode of control is shown in partial section in Fig. 8 where the switch is actuated by the foot brake pedal E^6 such that the switch will make contact only when said lever is pressed forward to exert brake action upon the wheel arm. Upon closing the switch, the battery E^4 starts the motor and simultaneously lights up the lamp B^1, whereupon the latter is given its characteristic wig-wag movement and this sustained regular beat-like movement unabatedly continues until the pedal is again released.

As a result, a distinctive stop signal will be sent forth and the effect of the oscillating lighted lamp is made all the more conspicuous because of the constantly changing colored light which my device is capable of emitting. When desired, the use of the described colored lenses permits of so closely spacing the housing thereof as to virtually maintain a continuous flood of projected signal light. It is however within the province of the present invention to resort to any distinctly separated lenses either tinted or otherwise, particularly when so spaced as to constitute a blind parting therebetween adapted to bring about a successive flashing on part of a single movable source of light that will cause the dimmed rays to substantially or wholly fade out while said light source passes from one lens to another.

In either case, the light movement with respect to the several lens bottoms is sharply emphasized and the optical display produced is most effective particlularly at night, in that it instantly catches the eye of a casual observer. In this regard, the light effects that can be attained with my colored combination lenses, are far superior as a stop signal to that which results when a swinging light is made to oscillate behind a single piece of colored glass without blind spots or even behind a series of spaced lenses of one and the same color.

Said wig-wag light is intended to be kept operative during day-time driving but for such use, it is preferably supplemented by simultaneous illumination on part of the stop pane A^{14} which can readily be observed in daylight by any driver of a closely following car. However, this improved wigwag light signal proves most advantageous when used after night fall and particularly for high speed high-way driving since it can then be picked up and seen ahead at a very considerable distance as compared to any ordinary non-movable stop light devices. The legend used in connection with such conventional means lacks proper visibility, and otherwise proves inadequate at a distance; with my wig-wag device on the contrary, the cited display of changing colored lights dispatches an impressive signal rearward that any careful night driver intuitively understands to mean danger ahead.

An important aspect of the present invention therefore resides in devising a series of separate transparencies adapted to provide for a suitable contrasting color scheme, such that when a single movable light member is swung behind said cooperating lenses, it will successively register and flash projecting rays therethrough for stop signalling purposes.

It is believed that the preceding disclosure makes apparent the intended mode of operation and outstanding advantages of my improved device as applied to motor cars and similar purposes, since the function of stop

signals has now become well known in the automotive art. Various changes in the structural details and arrangement of my device may be resorted to, such for instance as the substitution of pneumatic motive or like actuating means, also the use of spaced cover lenses without resort to frame mountings which in whole or in part carry clear or only partially tinted lenses or the like, all without departing from the spirit and scope of my invention heretofore described and more particularly pointed out in the appended claims.

Claims:

1. In a vehicle stop signal of the wig-wag type, comprising a casing provided with an opaque wall having plural apertures adapted to mount therein a series of spaced transparencies which as a unit provide for a color scheme of which the endmost transparencies are given a like color while the intermediate transparencies are given a color sharply contrasting therewith, a single movable light means disposed to oscillate within said casing and reciprocatively sweep along the course of said transparencies, electromotive actuating means wholly housed within said casing and serving to bring said light into successive registry with said transparencies, said means being adapted to produce a dwell on part of said light upon reaching and registering with either of said endmost transparencies, and manipulative switch means adapted to start said motor at will and which motor while running imparts a sustained regular beat-like oscillation to the aforesaid single light.

2. In a unitary vehicle stop signal of the wig-wag type, comprising a casing enclosure provided with a removable opaque cover having a series of apertures therethrough, a transparent lens adapted to close each of said apertures and certain of said lenses are fashioned into a contrasting color scheme of which both end lenses are given a green tone, a movable light means disposed within said casing and adapted to sweep reciprocatively along the course of said lenses, electromotive actuating means for oscillating said light, said motor being housed within the casing enclosure and adapted to bring said light into successive alignment with said series of lenses and produce a dwell upon reaching either of said outermost green lenses, and manipulative switch means adapted to start said motor at will and which motor while running imparts a sustained regular beat-like oscillation to the aforesaid single light.

3. In a unitary vehicle stop signal of the wig-wag type, comprising a casing of sector-like pan shape having a bottom wall with adjoined complementary side walls disposed in angular relation of which the diverging ends are subtended by an arcuate side wall member, a cover having a pendant rimlike centering edge adapted to exteriorly embrace and removably close the open mouth of said casing, said cover being provided with a series of spaced apertures disposed adjacent to and inwardly of said arcuate rim edge, a separate lens of colored tint mounted within each of the cover apertures of which lenses the two endmost are given a like color while the intermediate lenses are given a color sharply contrasting therewith, a single movable light means disposed to oscillate within said casing and reciprocatively sweep along the course of said lenses, and electromotive actuating means housed and carried by said casing and adapted to successively move said light into registry with said lenses and to produce a dwell when reaching its limit of travel in either direction.

In testimony whereof, I have herewith set my hand this 2nd day of April, 1928.

WILLIAM E. SIGNOR.