May 21, 1935. W. E. SIGNOR 2,002,332

SIGNAL STRUCTURE

Filed Aug. 10, 1933 2 Sheets-Sheet 1

Fig. 2.

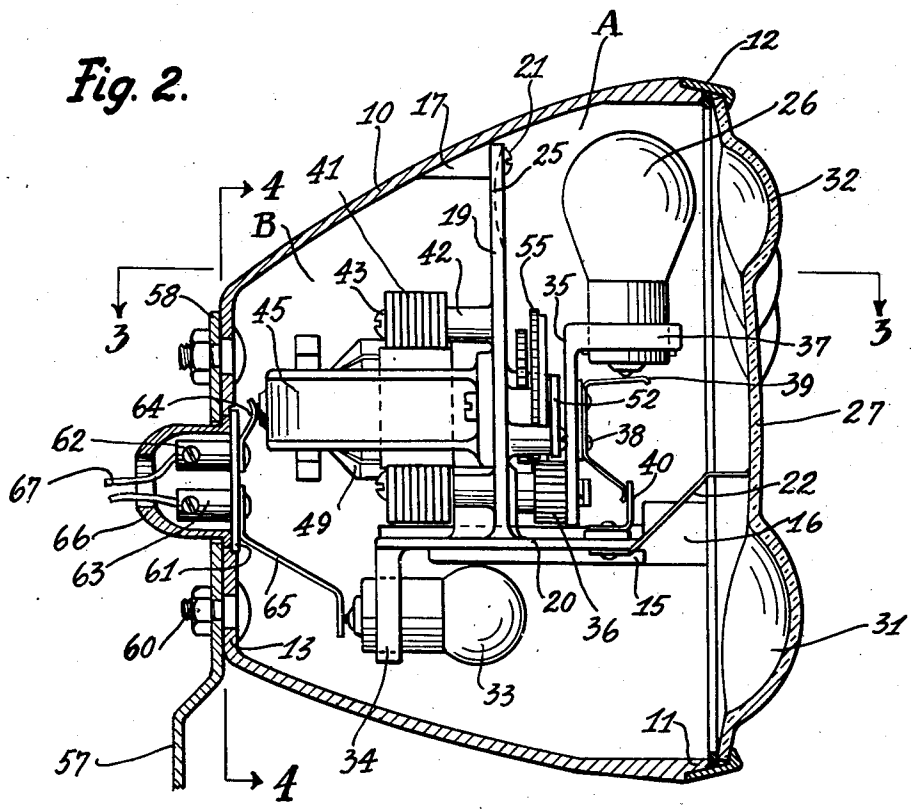


Fig. 1.

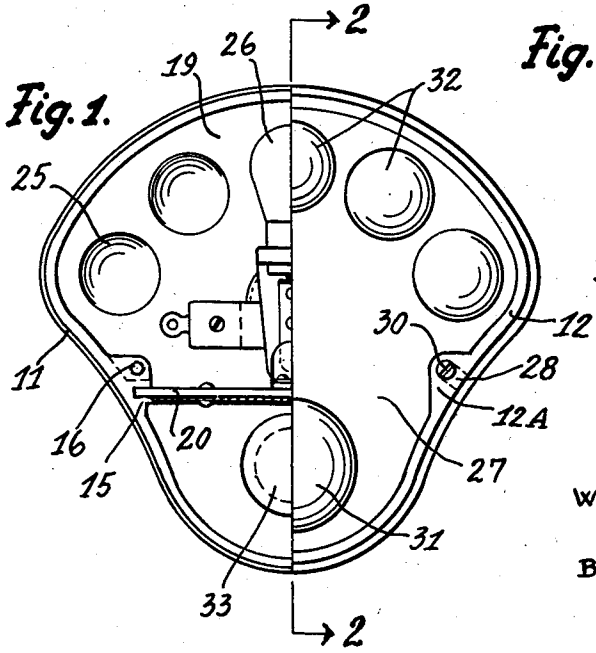
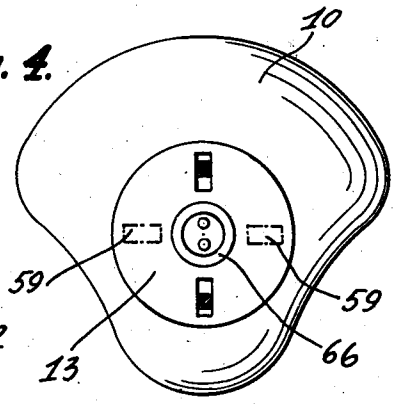


Fig. 4.



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Fig. 3.

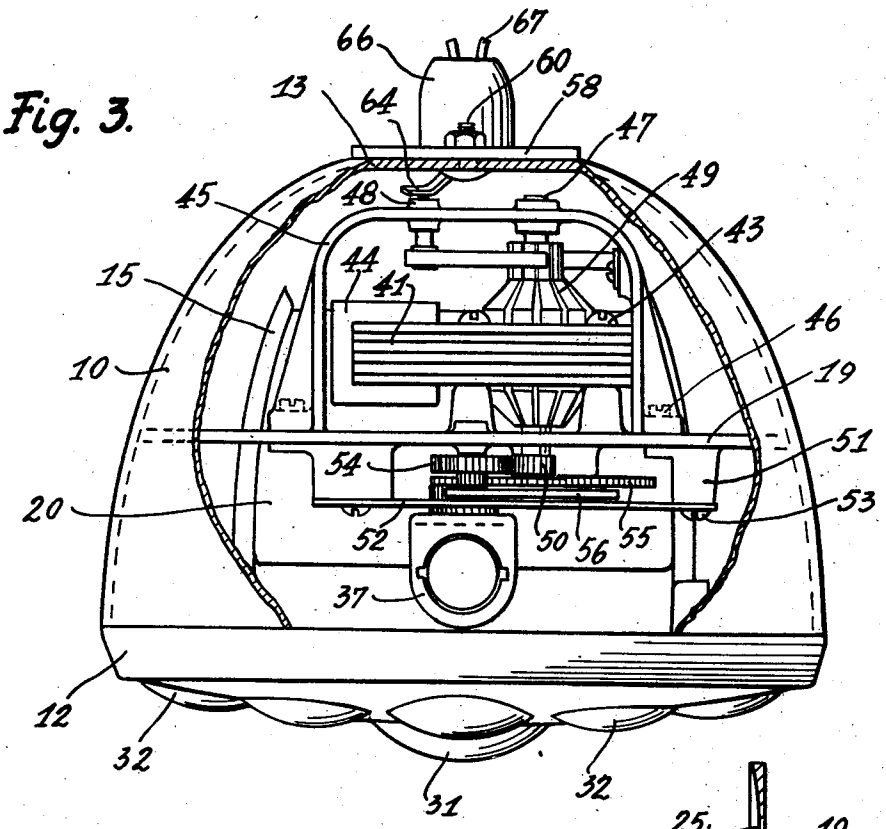


Fig. 5.

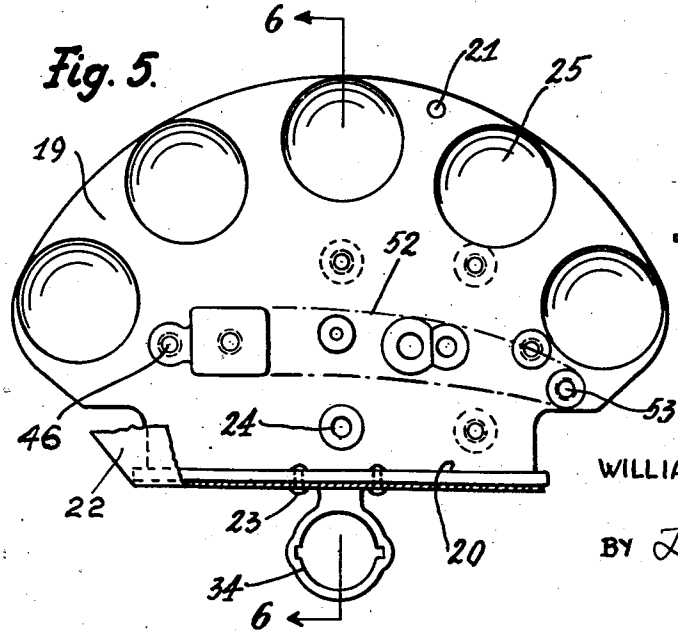
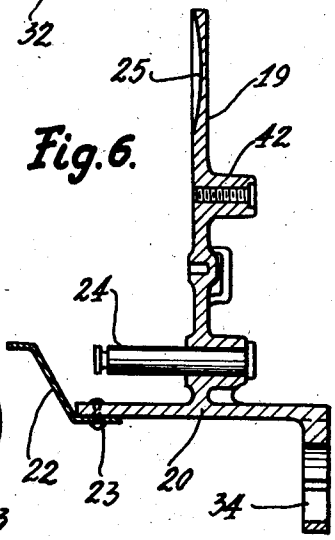


Fig. 6.



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UNITED STATES PATENT OFFICE

2,002,332

SIGNAL STRUCTURE

William E. Signor, Gettysburg, Pa., assignor, by mesne assignments, to Seco Manufacturing Company, Gettysburg, Pa., a corporation of Pennsylvania

Application August 10, 1933, Serial No. 684,489

15 Claims. (Cl. 177—329)

My invention relates to the art of display signals, and more particularly pertains to a novel flash signal of the wigwag type such as has been more fully disclosed in my copending application, Serial No. 646,502 filed Dec. 9, 1932 and which structure, the present appurtenances are intended to simplify and thereby reduce the manufacturing cost to a minimum.

A primary object of the present invention is to refine certain structural details and arrangement in the working parts of the above identified signal device and to generally improve the organization thereof, especially as applied to motor vehicle purposes, and all of which features will hereinafter be explicitly set forth.

Reference is had to the accompanying two sheets of drawings which are illustrative of a preferred assembly of my invention; and in which drawings:

Fig. 1 is an elevational front end view of my device, of which the lens is partly removed for illustrative purposes, while Fig. 2 shows a sectional view thereof as taken along center line 2—2 of Fig. 1.

Fig. 3 represents a horizontal sectional view through the line 3—3 of Fig. 2; and Fig. 4 depicts a rear end view as seen from line 4—4 of Fig. 2.

Fig. 5 details an elevational side view of the corner partition member, and Fig. 6 shows a cross-sectional view thereof taken along line 6—6 of Fig. 5.

Referring in detail to the drawings, 10 denotes a tubular, metal signal casing or housing whose relatively flat open mouth region may be given a sectorlike contour that is marginally inset as at 11, to embracingly receive an endless, cross-sectionally angle shaped rim 12 therearound and which rim may be provided with an apertured lip extension 12A as in Fig. 1. The present chambered casing is preferably die cast and may be shaped into a warped parabolic frustrum of which the contracted wall end terminates in an inturned flange or rear casing enclosure 13 having a centralized hole therethrough that is preferably provided with an interior counterbore as shown in Fig. 2. The casing is equipt with a pair of axially disposed guideways or parallel deck grooves such as 15 that interiorly overhang from opposite casing sidewall regions, as indicated. One edge of the respective grooves may be extended to constitute a screw-receiving boss as at 16 and the casing is additionally provided with a depending tapped lug 17 that is inset rearwardly of the casing mouth.

As detailed in Figs. 5 and 6, I further provide for a relatively rigid, cornerlike partition member or carrier that may be given a cross-sectional angle shape or T formation to comprise an upright wall leg or element 19 and a horizontally disposed foot flange 20. The opposite lateral edges of said flange are spaced to freely enter and withdrawably slide between the respective casing guideways. The uppermost marginal region of said erected wall element is shown inset with respect to the cover face and apertured to receive the lug screw 21 (see Figs. 2 and 5). The perimeter of said upright wall is herein given a fanlike shape intended to snugly conform to the abutting interior casing contour and thereby form two adjacent light compartments respectively designated as A and B. To complete such partitioning, a relatively flexible partition or resilient extension plate 22 may underlie the forward edge of the foot flange and be overhangingly secured thereto by the rivets 23. The pocketed secondary chamber B is given an L shape disposition that partially infolds the primary chamber A.

Extending forwardly from the front face of the upright wall element 19, is a dead axle or trunnion 24 (see Fig. 6). This same wall face may be provided with a plurality of highly polished and rearwardly dished indentations or the like mirroring means such as 25, which may be perimetrically spaced apart in abreast relation and disposed radially about the trunnion axis. It will be observed that such stationary reflector elements are purposely kept closely inset with respect to the plane of my casing mouth and placed directly behind the swingable flash light bulb 26.

The mouth of my casing may be demountably covered by a one piece lens 27 having a cross-sectionally concavo-convex shape that may be cast from colored glass or the like translucent material. For present purposes, such plastic is preferably moulded to constitute a tapered marginal edge adapted to be gripped behind the rim 12 in the bezol fashion disclosed in Fig. 2. Said rim may be detachably retained by any suitable securing means. As shown in dotted outline, the perimeter of said lens is slotted inwardly as at 28 and the rim provided with an overlapping lip element 12A through which a screw 30 is entered into one of the registering casing bosses 16.

As herein disclosed, my improved lens 27 is shaped to provide for an inbuilt tail light transparency 31 of the forwardly protruding or so-called beehive type. Disposed therearound in integral relationship, are a series of perimetri-

cally spaced, flash light transparencies such as 32, of which the respective crown regions may be set to overhang the outermost spherical profile given to said lens. These various flash light transparencies respectively register axially with the laterally spaced wall reflectors while intermediate the base regions of such transparencies, the interior lens surface is preferably rendered opaque and forwardly reflective in the manner more fully set forth in my other copening application, Serial No. 684,488 as filed August 10, 1933. In the present instance, the tail light bulb 33 is horizontally mounted in a foot socket 34 that depends from the rear of the foot flange 20.

Referring further to the trunnion 24, there is pivotally mounted thereon a one piece wigwag arm or bulb guide means 35 comprising a sleeve element having a pinion 36 die cast thereabout and which arm is extended radially outward and terminates in a transversely disposed, annular arm socket 37. Intermediate its ends, said arm is further provided with an integrally cast rivet 38 adapted to attach an insulated U-shaped lead clip 39 thereto. The vertically disposed flash light bulb 26, when entered into the lamp socket 37, is intended to electrically contact one overhanging leg portion of said clip while the other clip extremity is carried forwardly into axial alignment with the trunnion 24, as shown. The upper face of the foot flange 20 carries an insulated strip 40 of the demountable type which resiliently maintains a slip contact with the lead clip 39 and serves to conduct energizing current to the oscillatory bulb 26.

In an actuated signal device of this kind, the cooperating electric motor parts usually represent a relatively large portion of the total shop costs, and in order to hold this outlay to a minimum, the upright partition wall 19 is constructed in such fashion as to constitute an essential element upon which to assemble the necessary motive members. Accordingly, said wall is preferably die cast and provided with suitable bosses, lugs, drillings and the like appurtenances adapted to cooperatively house said motor parts.

For present purposes, a low voltage, direct current motor may be utilized and as shown in Figs. 2 and 3, this may comprise a bored, laminated field piece of the conventional C shaped type designated as 41. As illustrated in Fig. 3, the rear face of said upright wall is provided with a plurality of rearwardly directed bosses 42 that mount the field laminations flatwise thereagainst and which laminations may be secured in place by the screws 43. The field winding 44 serves to magnetize the offset armature bore. A U shaped yoke member 45 mounts one end of the armature shaft and the respective yoke legs rest upon the rear face of my upright wall 19 and may be fastened thereto by the screws 46. The yoke is here disposed to straddle the installed field piece 41, and the overhanging intermediate yoke portion is provided with an armature bearing 47, also with a brush holder contact button 48 that is insulated and arranged to supply current to the commutating armature 49. The opposite end of the rotating armature shaft extends forward through and beyond the upright partition wall where it is provided with a motor pinion 50. The front face of said wall is likewise equipt with a plurality of outstanding bosses such as 51, and mounted thereacross is an elongated bearing plate 52 whose shape is indicated in Fig. 5 by dotted and dashed outline, and which plate is removably secured in place by the screws 53. Interposed between the bearing plate and said wall is a train of gears including an idler reduction gear 54, of which the pinion meshes with a drive gear 55 having an eccentric thereon designed to reciprocate a rack type of rectifying link 56. Said rack engages the previously described arm pinion 36 and serves to oscillate the flash light bulb 26 while the motor is running.

My compact partition wall disposition is such that the motor and gear parts may be expeditiously assembled thereon and bodily withdrawn from the casing in breechlike fashion. After removing the casing rim 12 and opening the cover lens, the screw 21 may be disconnected, whereupon the foot flange 20 may be freely slid along the complementary guideways 15 and out through the casing mouth. Because of the described unitary structural arrangement, such simultaneous withdrawal of all my working parts including both the tail and flash light bulbs, allows each of the various elements to be effectively tested in operative assembled relation prior to being entered into the casing.

It now remains to define the novel mode for removably mounting my casing upon a suitable support. For this purpose, I preferably resort to the use of a conventional motor car license plate bracket 57 or the like, which as fragmentally shown in Fig. 2, commonly terminates in an upstanding support flange 58 as propped from a mudguard or some other convenient vehicle member. In regular modern equipment such bracket flange may be forked and is usually furnished with a pair of standardized bolt holes that are either vertically or horizontally spaced apart to a fixed dimension with respect to a centralized bore or yoke gap. Reference to Fig. 4 shows a registering layout for the rear or tail end of my inturned casing flange 13, which is here provided with four rectangular partially sheared, knockout plugs such as 59 respectively disposed in quadrature relation. One pair of such opened holes are intended to fall into alignment with the aforesaid standardized bracket holes and respectively admit a carriage bolt 60 therethrough in the manner depicted in Fig. 2. The plug width is made substantially equal to the square headed shank size of said bolt to prevent turning while applying a nut thereto.

The centralized counterbore of my inturned casing flange has mounted therein an insulator disc or pluglike holder means 61 which may be fixedly secured in place by rivet means or the like. Said disc may be equipt with two rearwardly directed binding posts 62 and 63, respectively extending through the disc in insulated relationship. The post 62 carries a resilient clip 64 to make a releasable circuit with the motor contact button 48, while the other binding post is provided with a depending contact clip 65 that similarly supplies current to the tail light bulb 33. Said complementary clips automatically complete the dual wiring circuits when my self contained casing mechanism is slid into place. As will be understood, the binding post 62 may be suitably wired to the contact strip 40 so as to energize the flash light bulb 26 in synchronism with the motor.

As a further refinement, said binding posts may be protectively encased by a tubular hood 66 preferably cast from plastic insulator material such as vulcanized rubber, and provided with a circumscribing flange element that is clampingly gripped between the bracket flange 58 and the disc 61, the differential hood diameters pref-

erably serving to center the inturned casing flange with respect to the bracket bore in the manner cross-sectionally depicted in Fig. 2. Upon dismantling the bolts **60**, my signal casing may readily be removed from the supporting flange **58**, whereupon said hood may be slipped over the current lead wires such as **67** to give access to the binding post screws.

An outstanding structural feature of my improved signal devices, resides in its underlying breech loading arrangement by virtue of which all the self contained working parts can be unobstructedly inserted into or removed from the chambered casing through the opened mouth thereof, thus allowing a burned out bulb to be easily replaced or defective motor elements to be repaired at the minimum of time and labor. This unitary assembly feature is primarily centered in the demountable partition or carrier member **19**, which as now inbuilt, is also utilized to simplify and replace certain motor or other drive elements that have heretofore been fabricated as separate entities.

It will be observed that I provide resilient means **22** between the cover lens **27** and the front edge of the foot flange **20** of my carrier and that the oppositely disposed, yieldable clips **64** and **65** are also interposed between the inturned casing flange and said carrier member.

As regards the function of my wigwag signal, this is thought obvious to those skilled in this art in view of the more complete explanations contained in the aforesaid copending disclosures. To briefly recapitulate, the motor driven oscillatory arm **35** together with its flash light bulb **26** are energized and set into motion whenever it is desired to make the signal operative. Said light source is adapted to swing behind and successively register with the series of spaced transparencies **32** which in turn sets up a highly attractive automobile or truck stop warning signal.

In certain of our States, the allowable candle power intensity for such signal lamps is definitely limited by law and in order that the maximum of effective display illumination may still be obtained without undue dissipation, the primary casing compartment A has deliberately been kept compact and held within relatively narrow confines by placing the upright partition wall **19** and its stationary reflectors **25**, closely contiguous to the movable bulb **33**. In addition, my wigwag bulb serves to intermittently intensify the illumination of the particular reflector that momentarily lies next adjacent to such swinging light. Said bulb at the same time disperses some light upon all of the remaining reflectors, and thus superimposes a modified flash light display thereon that is in turn sent forth through the registering lens transparencies. For certain stop signal purposes, such practice is preferred over a more sharply defined flash light display in which a single reflector is movably carried by the wigwag arm.

Finally, attention is directed to the substantial mounting of my swingable flash light arm which affords an amply long trunnion designed to resist wear and overcome defective guidance on part of the movable bulb **26**. The associated drive gearing is not only compactly disposed but kept easily accessible for repair or readjustment. Certain other details of the described appurtenances assume relevancy because of their bearing upon my present objective; namely, to simplify and reduce the fabrication costs to a point where an attractive wigwag signal can be profitably sold to motor car owners in large volume at a non-prohibitive price and thereby attain the desired wide market distribution.

It is believed that the preceding disclosure makes apparent the resulting advantages afforded by my improved structural features. It is to be understood that various changes in the illustrative detailed arrangement of my devices may be resorted to, all without departing from the spirit and scope of my invention heretofore described and more particularly pointed out in the appended claims.

I claim:

1. In a wigwag signal comprising a chambered casing having a relatively flat mouth, the combination of a pair of aligned guideways that are laterally spaced within the casing interior and extend inwardly from the casing mouth, a partition member dividing the casing interior into complementary open compartments and component parts of which member include a slidable foot flange mounted in the respective guideways and a wall element erected upon said flange, said flange and wall being simultaneously enterable into and withdrawable from the casing through the mouth thereof, mouth cover means of which a region closes one of the open compartments and which region is provided with a series of flash transparencies in arcuate formation, an arm pivot supported within the confines of said one compartment in approximate coaxial relation to the center of curvature of the aforesaid arcuate formation, a driven rocker arm mounted to turn about said pivot, a lamp bulb carried by the rocker arm into successive registry with the cover transparencies, motive means located in the other compartment and supported by said partition member, and interconnecting gear means operatively driving said rocker arm from the motive means and which arm and motive means are respectively located in different compartments.

2. A signal comprising a chambered casing having a relatively flat mouth region and an inturned rear flange, a pair of aligned guideways oppositely disposed within the casing confines and respectively extending interiorly away from the mouth region in the direction of said inturned flange, a slidable foot flange carried in the guideways and which foot flange is enterable into and withdrawable from the casing through the mouth thereof, a cover for said mouth, rim means retaining the cover to said casing, and complementary resilient means cooperatively interposed between said foot flange and the retained cover and also between the inturned rear flange and said foot flange.

3. A signal assembly comprising a tubular casing element having a mouth region at one end thereof, a depending lug supported interiorly from said casing element in an inset relation to said mouth region, a pair of oppositely disposed guideways mounted within the casing confines and respectively extending axially of the casing element in a straddled relation to said depending lug, a partition member dividing the casing interior into a primary compartment and a secondary compartment disposed to partially incase the primary compartment, said partition member including a slidable foot flange mounted in said guideways and having a wall erected thereon and which wall engages said lug, and fastening means securing the erected wall to said lug.

4. In a signal comprising a chambered casing, a pair of aligned guideways oppositely disposed within the casing confines, a slidable foot flange

carried in the guideways and which flange has a wall element erected thereon having complementary front and rear sidefaces, a bored motor field piece mounted upon the rear sideface, a yoke member of which the extremities are respectively attached to said wall element in a straddling relation to the field piece, an armature shaft entered through the field bore with one of the shaft ends supported by the yoke and the other shaft end extending forwardly through said wall element, a motor pinion carried by the extended shaft end, a dead axle supported by said wall and projecting forwardly therefrom, arm means including a tubular pinion mounted to turn upon said axle, and gear means operatively interconnecting the tubular pinion with said motor pinion.

5. In a signal comprising a chambered casing provided with a mouth, a pair of aligned guideways oppositely disposed within the casing confines, a partition member dividing the casing interior into complementary compartments and which member includes as components thereof a slidable foot flange mounted in the respective guideways and a wall element erected upon said flange, said components being simultaneously enterable into and withdrawable from the casing through the mouth thereof, dead axle means mounted upon the wall element and extending into one of said compartments, an actuated rocker arm including a tubular drive pinion mounted to turn about said axle, and motive means disposed in the other compartment and carried by the partition member, said motive means being operatively interconnected with said pinion to actuate the rocker arm.

6. A wigwag signal comprising a chambered casing provided with a course of flash transparencies in arcuate formation, axle means mounted within the casing confines in approximate coaxial relation to the center of curvature of the aforesaid arcuate formation, rocker arm means including a rivet tit, one end portion of said arm being provided with a tubular gear that surrounds said axle and the opposite arm end being equipped with a lamp socket, an insulated lead clip secured to said arm by the rivet tit thereof, an electric lamp bulb carried by the socket to swing into successive registration with said transparencies and which bulb electrically contacts the lead clip, motive means including a movable actuating member, drive means operatively interconnecting the actuating member with said gear to simultaneously oscillate the rocker arm and its associated lead clip, and means including a relatively stationary contact strip delivering energizing current to the lamp bulb through the gear driven lead clip.

7. In a motor actuated signal, a motor mounting member including a flange element and an apertured wall element respectively disposed in L-shaped formation, one side face of said wall being equipped with a pair of raised spacer bosses, electric motor means sustained by said bosses and which motor includes an armature shaft of which one shaft end is journaled in and extends through the wall aperture, dead axle means carried by said wall outwardly from the opposite sideface thereof, a rocker arm including a tubular hub portion pivotally mounted upon said axle, and gear means operatively interconnecting said rocker arm with the extended shaft end, said gear means being wholly disposed upon the aforesaid opposite sideface of said wall.

8. A tubular signal casing comprising an apertured compartmental wall of which one sideface is equipped with spacer boss means, a removable field piece fastened to said means, a yoke member of which the respective extremities are secured to the aforesaid one sideface in a straddled relation to the field piece, an armature cooperating with said field piece, said armature including a shaft of which one shaft end is sustained by the yoke and the other shaft end is extended through the wall aperture and provided with a shaft pinion, a bearing plate carried upon the opposite sideface of said wall in laterally spaced relationship, and a train of gears operatively mounted between said plate and said opposite sideface and which gears are actuated by the shaft pinion.

9. In a signal comprising a tubular casing of which one end region is provided with a mouth and the other end region comprises an inturned flange having a contracted hole therethrough, a mouth cover provided with a course of flash transparencies in arcuate formation, a pair of aligned guideways oppositely disposed within the casing confines, a partition dividing the casing interior into complementary compartments, said partition including as component parts thereof a slidable foot flange mounted in the respective guideways and a wall element erected upon said flange, arm pivot means supported within the confines of one such compartment in approximate coaxial relation to the center of curvature of the aforesaid actuate formation, a driven rocker arm mounted to turn about said pivot, an electric lamp bulb carried by the rocker arm into successive registry with said cover transparencies, electric motor means located in the other compartment and supported by said partition, gear means operatively interconnecting said motor with the rocker arm, binding post means simultaneously delivering energizing current to both the motor and said bulb, said means including an insulator holder that is affixed to the inturned flange in an interiorly overlapping relation to the marginal edge thereof and further including a flanged cylindrical hood of which the flange portion is mounted within the confines of the inturned flange hole, a supporting bracket plate having an opening through which the cylindrical hood portion is entered, and clamping means drawing the bracket plate toward said holder with the hood flange interposed therebetween.

10. A chambered signal casing having a relatively flat mouth region and which casing is equipped with oppositely disposed guideways that reversely overhang the casing interior and respectively extend inwardly with respect to the casing mouth, the mouth terminal region of one such guideway being disposed to constitute a fastener receiving boss, a translucent lens spanning the casing mouth, said lens being provided with a slot that extends radially inward from the lens perimeter and which slot overlappingly registers with said boss, an apertured rim cooperating with the casing to retain the lens in place, and fastener means extending through the rim aperture and the lens slot for entry into said boss.

11. A chambered signal casing having a mouth region, an interiorly disposed wall element that is inset with respect to the casing mouth, a series of reflectors disposed in abreast relation upon the outermost sideface of said wall, a cover for the casing mouth and which cover is provided with a plurality of flash transparencies mounted in a substantially parallel relation to said wall and

which transparencies are respectively set apart to register with the several reflectors, a movable lamp bulb interposed between said reflectors and the transparencies, actuated guide means for carrying the bulb lengthwise of and into successive registry with the series of reflectors, and means for actuating the guide means.

12. In a wigwag signal comprising a tubular casing having a mouth region at one end thereof, aligned companion guideway means that are oppositely disposed and laterally spaced within the casing confines, a partition member dividing the casing interior into complementary compartments and component parts of which member include a slidable foot flange mounted in the respective guideways together with a wall element erected upon said flange, mouth cover means provided with a series of flash transparencies arranged in abreast relationship, a lamp bulb, reciprocative lamp guide means located wholly within one such compartment and serving to convey said lamp bulb into successive registration with the cover transparencies, motive means located in the other compartment, and drive means for reciprocating the lamp guide means from the motive means and which drive means includes an interconnecting operative part that extends through the partition member.

13. An article of manufacture comprising a one piece wigwag arm having a pinion at one end region thereof and a lamp socket at the opposite arm end.

14. An article of manufacture comprising a chambered signal casing having a mouth region, a partition member dividing the casing confines into complementary compartments and which member is enterable through the casing mouth, mouth cover means provided with a series of flash transparencies arranged in abreast relationship, a movable lamp bulb, driven reciprocative lamp guide means located within one such compartment and serving to convey said lamp bulb into successive registration with the cover transparencies, an electric motor located in the other compartment and including an armature shaft of which one end extends through said partition member, gear means disposed wholly within the aforesaid one compartment and serving to drive the reciprocative lamp guide means from the extended armature shaft, and a supplementary lamp bulb fixedly supported by the partition member and located in the other of said compartments.

15. An article of manufacture comprising a die-cast motor mounting member including a foot flange having an apertured wall erected upon one side face of said flange and which flange has a lamp socket depending from its opposite side face, a resilient extension plate carried by the foot flange, and a dead axis entered into the wall aperture and extending axially lengthwise of the aforesaid one side face.

WILLIAM E. SIGNOR.

CERTIFICATE OF CORRECTION.

Patent No. 2,002,332. May 21, 1935.

WILLIAM E. SIGNOR.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, second column, line 28, claim 15, for "axis" read axle; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 25th day of June, A. D. 1935.

(Seal)

Bryan M. Battey
Acting Commissioner of Patents.