J. T. McGRATH.

SIGNAL DEVICE.

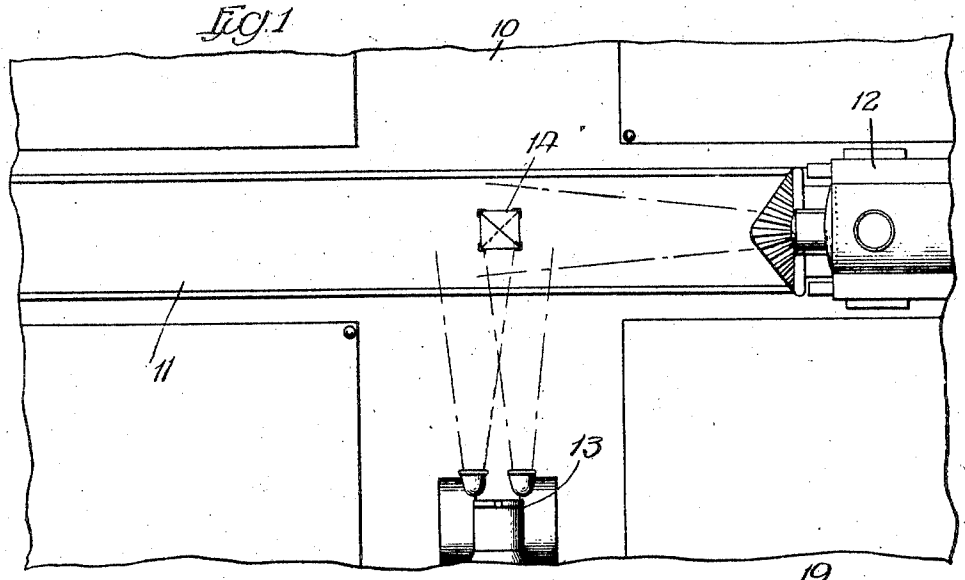
APPLICATION FILED NOV. 26, 1915.

1,249,795.

Patented Dec. 11, 1917.

3 SHEETS—SHEET 1.

Fig. 1



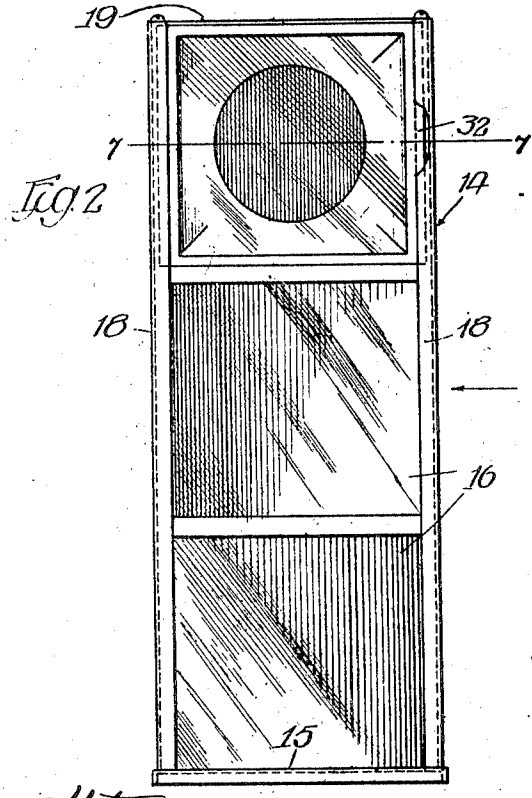


Fig. 2

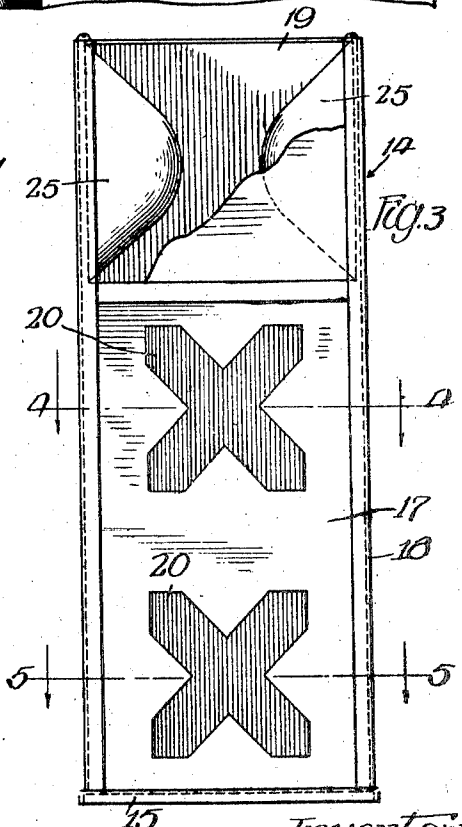


Fig. 3

Witnesses:

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3 SHEETS—SHEET 2.

Fig. 4

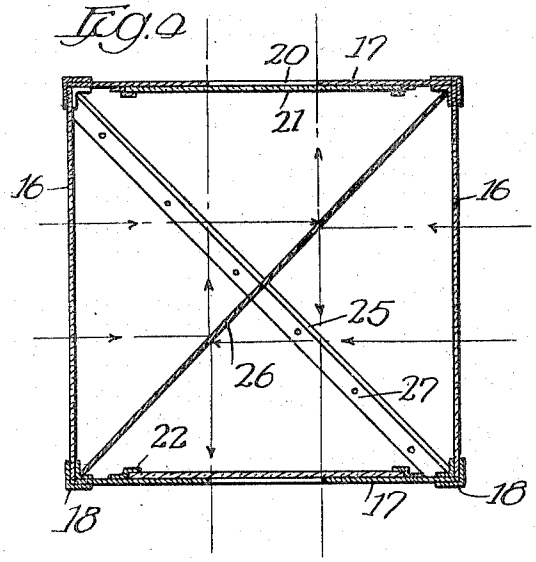


Fig. 5

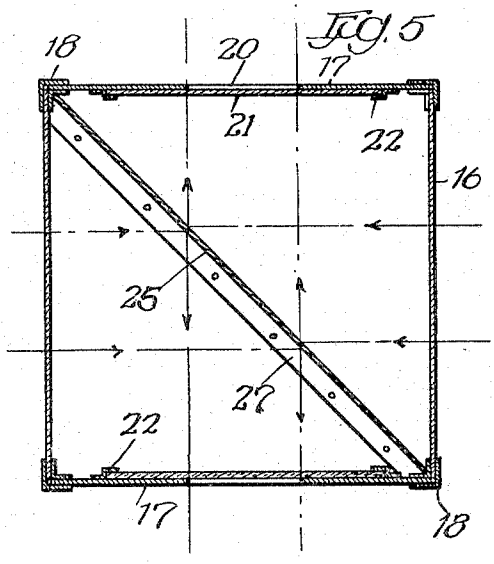


Fig. 6

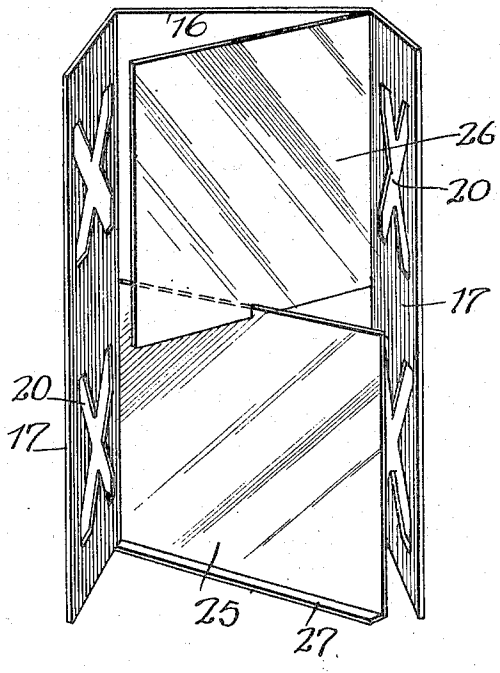


Fig. 7

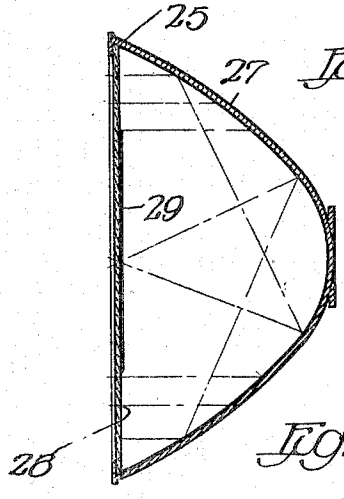
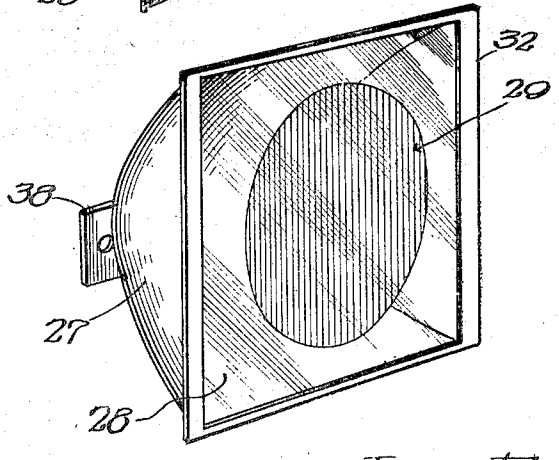


Fig. 8



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SIGNAL DEVICE.

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1,249,795.

Patented Dec. 11, 1917.

3 SHEETS—SHEET 3.

Fig. 9

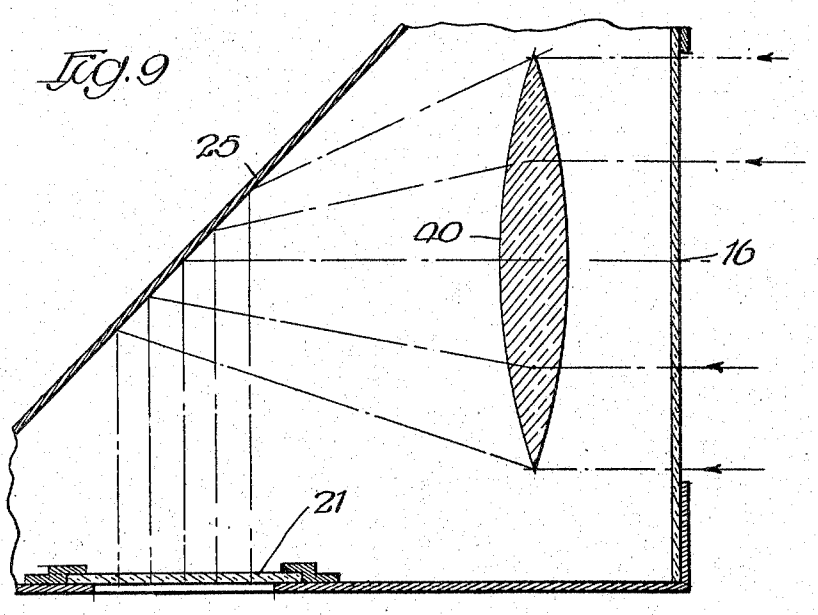
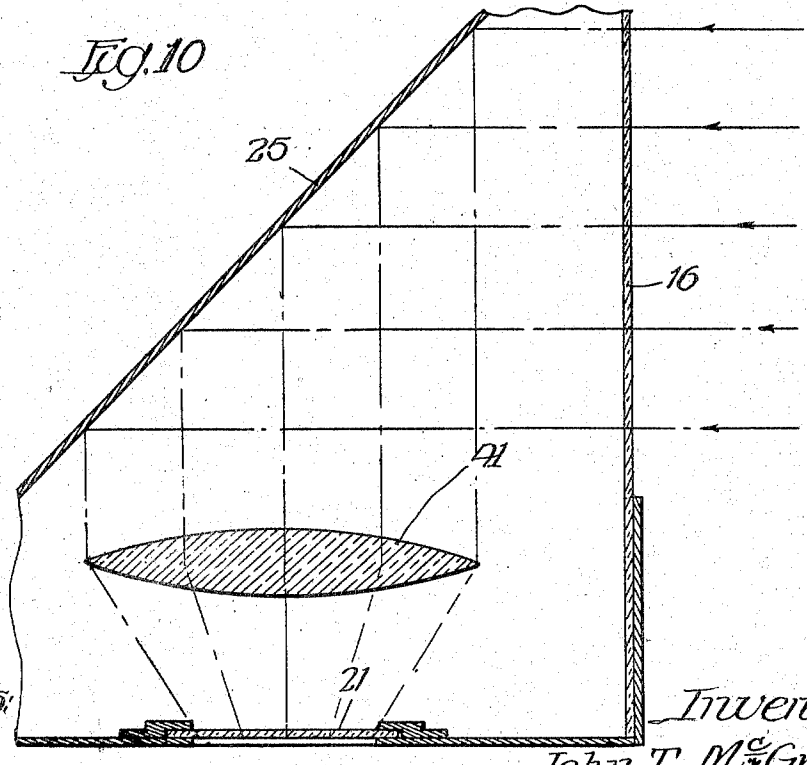


Fig. 10



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UNITED STATES PATENT OFFICE.

JOHN THOMAS McGRATH, OF BLOOMINGTON, ILLINOIS.

SIGNAL DEVICE.

1,249,795. Specification of Letters Patent. Patented Dec. 11, 1917.

Application filed November 26, 1915. Serial No. 63,641.

To all whom it may concern:

Be it known that I, JOHN T. McGRATH, a citizen of the United States, and a resident of Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Signal Devices; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a novel signal device for use in dark places designed to be illuminated by an approaching light, as for instance a light on a vehicle, so as to give warning of the approach to a danger point either to the occupants of the vehicle which carries the approaching light or to others who are approaching said vehicle or the path of said vehicle at an angle to said path.

A signal device embodying my invention embraces, in general terms, a box or inclosure provided with one or more interior light deflecting or directing means and preferably with one or more transparent walls, so arranged as to deflect or change the course of light rays that are projected against the deflector from a source external to said inclosure behind a colored transparent or semi-transparent signal area so as to furnish a background to illuminate the signal area. The light deflecting or directing means may be arranged to condense the rays of the approaching light on the signal area so as to better illuminate the same so that the signal may be seen for a long distance. In some instances, the signal area may be arranged in a wall of the inclosure located at an angle to the side thereof through which the light rays enter the inclosure so as to exhibit the signal in a direction at an angle to the direction of the entering and illuminating light rays. In other cases the signal area may be formed on or associated with the transparent wall through which the light rays pass into the inclosure so as to illuminate a signal which faces toward the direction in which the light rays pass into the said inclosure.

One specific instance of the use of my invention is found at the intersection of a highway with a steam or electric railway, in which use the deflecting device is so arranged as to receive the light from an approaching locomotive or electric car and deflect it, so that it will illuminate a signal which may be seen by drivers on the highway which crosses the railway and thereby warns the drivers of the approach of a locomotive or an electric car.

The device may also be adapted to be used in a like manner at the intersection of highways to warn drivers of vehicles on one highway of the approach of a vehicle on an intersecting highway.

Furthermore the device may be applied at danger points, either highway crossings or the crossings of railways and highways, merely for the purpose of indicating the danger point through the deflected light of the vehicle approaching such danger point.

Again the device may be carried by a vehicle, ordinarily not provided with a light, such for instance as a buggy in country districts, to be made active as a signal by the light of an automobile approaching the buggy from the rear.

These various uses of the invention are disclosed in the following description and the accompanying drawings, from which further uses will readily suggest themselves to those skilled in this art, and the invention consists in the construction and arrangement of the parts shown in said drawings and described in the specification and is pointed out in the appended claims.

In said drawings:—

Figure 1 illustrates the use of my invention at the intersection of a highway and railway track.

Fig. 2 is a side elevation of one form of the device adapted to be used at such intersection.

Fig. 3 is a side elevation of the device at a right angle to that shown in Fig. 2.

Figs. 4 and 5 are horizontal sections on the lines 4—4 and 5—5, respectively, of Fig. 3.

Fig. 6 is a perspective view of the active deflecting elements of the device shown in Figs. 2 to 5 inclusive.

Fig. 7 is a sectional detail on the line 7—7 of Fig. 2.

Fig. 8 is a perspective view of a form of deflecting signal device similar to that shown in Fig. 2 and adapted for separate use.

Figs. 9 and 10 are diagrammatic views of other forms of signal devices, embracing, in addition, means to concentrate the light on the signal area.

As shown in the drawings and referring more especially to Fig. 1, 10 designates a highway and 11 an intersecting railway. 12 designates a locomotive on the railway and 13 designates an automobile on the highway approaching the railway. 14 designates as a whole my novel signal device located at the intersection of the track and the highway. It may be supported either at the center of said intersection or near one side thereof in any suitable manner not necessary to be shown.

The signal device 14 shown in Fig. 1 is illustrated in detail in Figs. 2, 3, 4 and 5. It consists of a casing embracing a bottom wall 15, two oppositely disposed transparent walls 16, 16 and other oppositely disposed partially translucent and partially opaque walls 17, 17. Said walls are supported at the corners of the casing by posts 18, 18 of any suitable or preferred construction, and preferably of a nature to permit of sliding engagement of the edges of the walls 16 and 17 therewith so that said walls may be removed by sliding them upwardly along the posts and a new wall readily replaced. The posts are connected at their bottoms by the bottom wall 15 in any suitable manner and at their tops by the top wall 19. The walls 17, which may preferably be made of sheet metal, are provided with openings 20 of any preferred shape which are covered by colored (preferably red) glass panels 21 which are removably attached to the inner sides of said walls 17 as by means of the offset strips 22 shown in Figs. 4 and 5. The said openings 20, formed in opposed walls, are located one at the bottom and the other near the top of the casing.

Located within the casing, one at the bottom thereof and the other near the top are two diagonally disposed deflectors 25, 26 respectively, each extending from one corner of the casing to the diagonally opposite corner. Said deflectors 25, 26 are preferably made of planished sheet metal and finished on both sides so that each constitutes a double faced deflector. The posts 18 of the casing are provided with grooves into which the edges of the deflectors are adapted to slide and by which they are held in place. The lower deflector 25 may, if desired, be provided with a flange 27 by which to attach it to the bottom wall of the casing, and one of said deflectors is notched to receive the edge of the other at their point of intersection, as most clearly shown in Fig. 6.

The result of the arrangement of the upper and lower deflectors which diagonally cross the casing at right angles to each other and of their relation to the transparent walls 16 and to the openings in the walls 17 of the casing will be best understood by reference to Figs. 4 and 5 of the drawings taken in connection with Figs. 2, 3 and 6.

It may first be premised that when the signal device is used at the location indicated in Fig. 1, the transparent walls 16 face toward approaching vehicles on the track 11 and the walls provided with the openings 20 face toward the highway 10. It will be furthermore observed that the light rays from a head light of an approaching vehicle on the track 11 have access to both the upper and lower deflectors 26 and 25.

By reference to Figs. 1 and 4, and having in mind conventionally indicated directions and assuming that a locomotive or an electric car is approaching the signal device from the east, the rays of light which strike the upper deflector member will be deflected at right angles to the track so as to illuminate the colored glass 21 which covers the upper signal opening 20 on the north side of the casing and that the light which strikes the lower deflector member will be likewise deflected so as to illuminate the colored glass that covers the lower opening 20 on the south side of the casing. A reversal of the direction of approach of a projected light on a locomotive or electric car will result in reversing the vertical positions of the displayed signals.

In order that the engineer or motorneer of a vehicle on the railway track may be apprised of crossings on a route with which he is not familiar, so that he may thereby give warning to occupants of roadway vehicles by the use of a whistle, bell or the like, the casing may be provided on two opposite sides thereof with auxiliary signal devices 25 which are adapted to be illuminated by an approaching light in a manner to be seen by the driver of the vehicle carrying such light.

Such an auxiliary signal device is shown most clearly in Figs. 7 and 8 and is shown in position in the signal casing in Figs. 2 and 3. It comprises an outwardly flaring casing, the wall 27 of which, as herein shown, has the form of a parabola. Said casing is closed at its larger front side by a glass or other transparent wall 28 which is provided with a central colored transparent or semi-transparent area 29. The inner face of the wall of the casing is highly polished. The diameter of the central signal area of the front transparent wall of said device is such, relatively to the area of the entire wall, that the rays of an approaching light are free to pass in substantial volume into said casing, and said rays are by the polished wall deflected and thrown upon the rear of the signal area to illuminate the same. The parabolic contour of the deflector of the signal device 25 is advantageous in that it serves, by deflection

and reflection, to concentrate the light rays upon the signal area and thereby better illuminate the same.

Thus the occupant of a vehicle approaching the track on the roadway 10 is safeguarded, not only by the audible signal on the approaching vehicle, but also is notified of his approach to the crossing by the visual signal, which is automatically illuminated by the light rays of the head light of an approaching car or other vehicle on the railway track.

As a means of conveniently mounting the auxiliary signals in the signal casing, the casing of the auxiliary signal may be provided at its sides with laterally extending flanges 32 to enter the same grooves in the posts 18 which receive the transparent and partially transparent walls of the casing. The said walls and the signal devices, when the latter are employed, may be locked in the frame by means of the upper plate or wall 19 which is applied over and removably fastened to the posts 18 in such manner as to constitute a weather proof protecting cover for the device. In the event of breakage of one or more of the walls of one of the auxiliary signal devices, said top plate may be removed and the injured parts slid upwardly out of the casing and replaced by perfect parts.

In the use of the device at the intersection of a railway and a highway but two of the auxiliary signal devices are required, it being understood that said auxiliary signal devices face toward the direction of approaching cars or other vehicles on the railway track. It is practical also to employ my improved signaling device at the intersection of highways so that when two vehicles, carrying head lights, approach the intersection of the highways the rays of the head light of the vehicle approaching on one roadway will illuminate a signal for a vehicle approaching the highway intersection on the other roadway and thereby warn the driver of the latter vehicle of danger. Where such device is used at the intersection of two highways or the intersection of two railways, it will be desirable to provide four of the auxiliary signal devices 25 referred to, one facing in each cardinal direction, so that said device is illuminated or made active by the head light or lamp of a vehicle approaching in either direction to enable the driver of the vehicle to give proper audible warning to others approaching said crossing.

The auxiliary signal device 25 may, by the use of a very simple expedient, be readily adapted as an individual signal. For instance, at a highway crossing four of said auxiliary signal devices may be attached to a supporting frame so that each signal faces one branch of the intersecting highways whereby one of said signals will be in a position to be illuminated by a vehicle approaching the crossing from either of the four directions. Moreover the device may be attached to the rear of a vehicle, not usually equipped with a light, such for instance as a buggy in the country districts, so that a motor vehicle approaching the buggy from the rear, with its head lamps lighted, will illuminate the signal a sufficient length of time before latter vehicle overtakes the vehicle ahead to enable the driver of the motor vehicle to give warning to the occupants of the vehicle ahead. As a means of adapting the auxiliary signal device to the latter uses, it may be equipped at its rear side with a mounting bar 38 provided with any suitable means by which it may be attached to a support.

In Fig. 9 I have shown another means of concentrating the light rays received from a source external to the signal device upon the signal area so as to better illuminate said area. As shown in said figure there is interposed between the transparent wall 16 and the deflector 25 a condensing lens 40, which concentrates the light rays received from an external source on a localized portion of the deflector so as to thereby deflect a concentrated light upon the signal area 21.

As shown in Fig. 10 the condensing lens 41 is located between the deflector 25 and the signal area 21 for a like purpose.

It is to be understood that the structural details of the illustrated embodiments of my invention may be varied within the spirit and scope of the claims appended hereto and that it is the intent to claim all of inherent novelty described in the specifications and disclosed in the drawings.

I claim as my invention:—

1. A signal device provided with two walls located at right angles to each other, one of which is transparent and the other of which is provided with a signal area and a light deflector extending diagonally between the opposite edges of said walls and facing said walls.

2. A signal device comprising an inclosure provided with a transparent wall and adjoining and at an angle thereto with a wall having a signal area and a light deflector arranged within the inclosure and extending from one side of the transparent wall to the opposite side of the signal area wall and disposed at oblique angles to said walls.

3. A signal device comprising an inclosure having two oppositely located transparent walls and other adjoining walls arranged opposite to each other with signal areas in said other walls and a double faced light deflector extending diagonally across said inclosure.

4. A signal device provided with two walls located at right angles to each other, one of which is transparent and the other of

which is provided with a signal area, a light deflector extending diagonally between the opposite edges of said walls and facing said walls, and a condenser between said deflector and signal area.

5. A signal device comprising an inclosure provided with two opposing transparent walls, signal areas in adjoining opposing walls thereof, and double faced light deflectors extending diagonally across the inclosure, one above the other and at an angle to the other.

6. A signal device comprising an inclosure having two opposed transparent walls other opposed walls having upper and lower signal areas, and upper and lower deflector members each arranged opposite two opposed signal areas.

7. A signal device comprising an inclosure having two opposed transparent walls, other opposed walls having upper and lower signal areas, and upper and lower deflector members extending diagonally across the inclosure in planes at an angle to each other and each arranged opposite to two opposed signal areas.

8. A signal device comprising an inclosure provided at one side with a light opening and provided at an adjoining side with a signal area, a deflector extending diagonally across the inclosure to deflect light rays against the signal area which pass into the inclosure from without and a supplementary signal device comprising a deflector arranged in rear of a signal area which faces toward the first mentioned light opening of the inclosure.

9. A signal device comprising a casing composed of grooved posts, a bottom wall attached to the posts, upright walls slidable in the grooves of the posts, with two opposed walls made of transparent material, and other opposed walls provided with signal areas, upper and lower deflector members extending diagonally across the casing and slidingly engaging said posts at their side edges, and locking means to lock said wall and deflector members in place.

10. A signal device comprising an inclosure provided with a signal area and with an interior deflector spaced from the signal area to deflect light rays passing into the inclosure from without at right angles against the rear of said signal area.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 12th day of October, A. D. 1915.

JOHN THOMAS McGRATH.

Witnesses:

MARY RUTLEDGE,

A. K. ST. CLAIR.