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COMBINATION LAMP AND BELL

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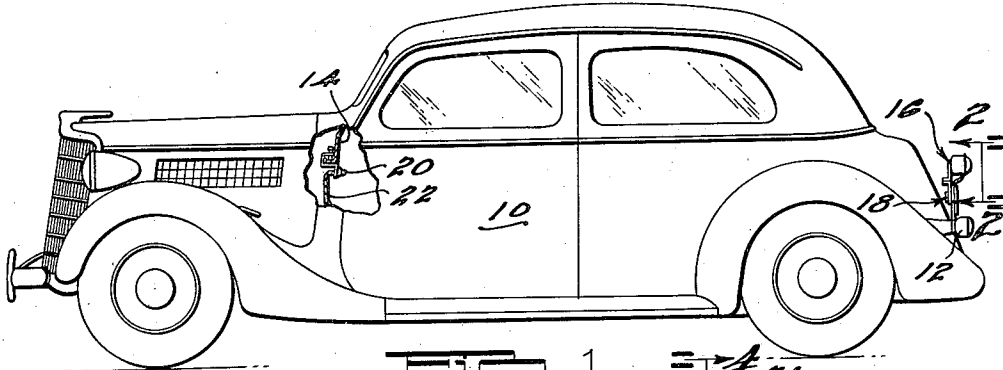
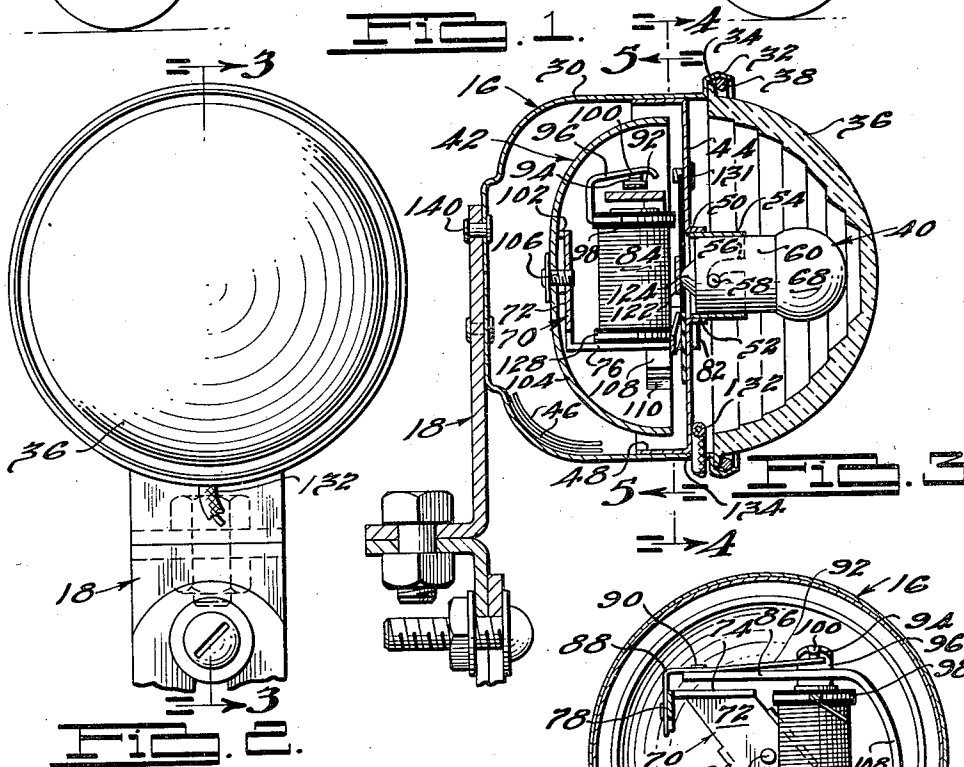
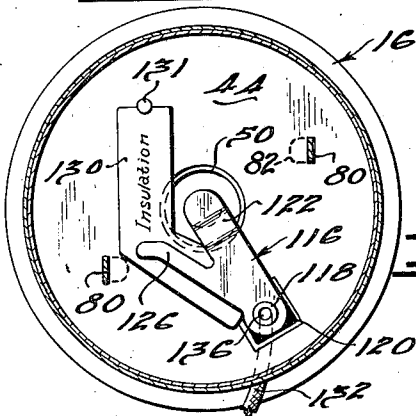
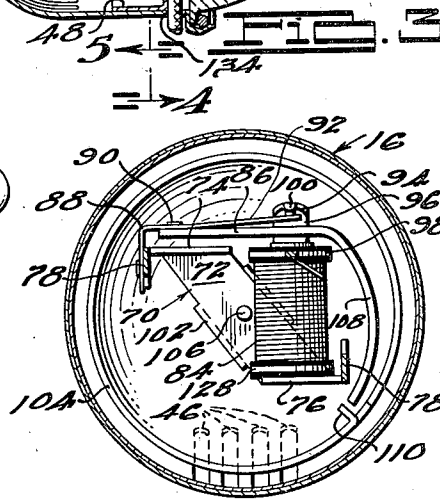


FIG. 5.

FIG. 5.

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COMBINATION LAMP AND BELL

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3 Claims. (Cl. 177-7)

This invention relates to warning devices and particularly to warning devices in the form of a combination visual and audible signal to be employed on the rear of motor vehicles to serve as a warning during backing of such vehicles, the principal object being the provision of a device of the type described that is simple in construction, efficient in operation and economical to manufacture.

Objects of the invention include the provision of a combination lamp and audible signal particularly adaptable as a back-up warning signal for motor vehicles and including a casing provided with a lens and enclosing a unitary assemblage including a lamp and an audible signal, insertable into and removable from the casing as such; the provision of a device of the type described including a casing having a wall therein disposed transversely thereof, the wall serving to support a bell on one side thereof and a lamp on the other side thereof, and a suitable lens closing the open face of the casing; the provision of a device of the type described including a casing having a transverse wall removably secured therein, an electric warning signal being supported by the wall on one side thereof and an electric lamp being supported by the wall on the opposite side thereof, the casing having apertures in that portion thereof within which the signal is contained whereby to more readily emit the sound thereof, and that end of the casing in which said lamp bulb is exposed being closed by a suitable lens; the provision of a device of the type described including a casing having an open end, a closed end and a transverse wall removably secured in the casing between the open and closed end thereof, the wall carrying an electrical contact member, an electric signaling device being secured to one side of the casing and thereby making contact with said contact member to permit energization thereof, a lamp socket carried by the opposite side of said wall, and an electric lamp carried by said contact and making contact with said contact member whereby to receive its source of energy therethrough; and the provision of a construction as above described including a casing having a transverse wall and an electric signaling element carried thereby including a supporting bracket carrying a magnet, an armature support and a bell in operative relation with respect to each other, and lugs carried by the bracket projecting through and being fixed with respect to said

wall whereby to fix and support the electrical signaling element with respect to the wall.

The above being among the objects of the present invention the same consists in certain novel features of construction and combinations of parts hereinafter described with reference to the accompanying drawing, and then claimed, having the above and other objects in view.

In the accompanying drawing which illustrates a suitable embodiment of the present invention and in which like numerals refer to like parts throughout the several different views,

Fig. 1 is a partially broken, partially sectioned side elevational view of a motor vehicle of the pleasure type having suitably secured to the rear end thereof a signaling device constructed in accordance with the present invention and being capable of operation from a suitable switch supported by the instrument panel of the vehicle;

Fig. 2 is an enlarged face view of the warning signal constituting the present invention, taken on the line 2-2 of Fig. 1;

Fig. 3 is a vertical sectional view taken axially through the warning device on the line 3-3 of Fig. 2;

Fig. 4 is a transverse vertical sectional view taken on the line 4-4 of Fig. 3; and,

Fig. 5 is a transverse vertical sectional view taken on the line 5-5 of Fig. 3.

A common form of motor vehicle accident is that occurring during backing up of the vehicle. Under such circumstances the vehicle is usually travelling at a slow rate of speed and, accordingly, moving relatively noiselessly, and the driver is watching his backward movement either through the conventional rear view mirror which affords him a relatively limited extent of observation, or through the window or door at his near side which restricts his range of view to substantially only that side of the vehicle. In such cases there is usually neither warning given to the driver or to the person struck by the vehicle, with the result that a high percentage of such accidents are fatal to the person struck. One of the most common cases of accidents of this sort is in connection with vehicles backing out of a driveway and striking children playing on the driveway or persons passing the driveway on a walk crossing the same.

It has been proposed heretofore to provide a warning signal at the rear end of a motor vehicle that is operated either manually, or operated automatically by the act of shifting the motor vehicle transmission into reverse gear, in

an effort to minimize if not entirely eliminate this type of accident. Some of these prior suggestions have taken a form of a light, some have taken the form of an audible signal, and some have taken the form of both a light and signal combined. As far as can be determined, however, none of these devices have been accepted by the public and none of them have been marketed in any substantial quantities. In view of the obvious desirability of such device the apparent reasons for their lack of commercialization is that the design has been too expensive to permit its being sold to the motoring public at a price sufficiently low to be readily adopted. One of the main objects of the present invention is to provide such device of such simplicity of construction as to make it possible to sell it at a price well within the range of the ordinary automobile owner, and with this in mind the device provided in accordance with the present invention is extremely simple in construction and, therefore, economical to manufacture and sell.

The present invention takes the form of a combined audible and visual signal formed as a unitary device attachable to and removable from a motor vehicle as such. The audible portion of the signal is preferably a bell, this for the reason that a bell arouses more curiosity and commands more attention than any other form of warning. Furthermore, a horn is so commonly used by all motor vehicles, that when it is heard as a warning, it is instinctively associated with a car coming head on, and not backing up.

The light which is combined in the device with the horn is preferably of a type which will throw a relatively bright and white light, thus to differentiate it from the usual red tail light conventionally employed and to provide a light which will be projected to much greater distance and to a greater intensity than the usual tail light so as to serve as an effective visual warning device at night, as well as to serve the additional purpose of lighting up the roadway back of the vehicle to better enable the driver to observe the roadway and persons or obstruction thereon during a backing up movement.

As in previously suggested constructions, the combined lamp and bell constructed in accordance with the present invention may be selectively operated manually by the driver of the motor vehicle from a conveniently located switch, as for instance mounted on the instrument panel in easy reach of the driver when the transmission is shifted into reverse, or it may be rendered entirely automatic by associating the switch with the transmission so that whenever the transmission is shifted into reverse gear the combined lamp and bell will be automatically energized as a result thereof. For the purpose of simplicity in description, however, in the drawing the first arrangement only is illustrated.

Referring now to the drawing and particularly to Fig. 1, a motor vehicle of the pleasure type is illustrated generally at 10 and as having the usual or conventional tail lamp 12 at the rear thereof and the usual or conventional instrument panel 14 extending transversely across the interior of the vehicle immediately in advance of the driver and below the cowl. In accordance with the present invention a combined visual and audible warning device indicated generally at 16 is shown mounted at the rear of the vehicle 10 and for the purpose of illustration only, above

the tail lamp 12, by means of suitable brackets indicated generally at 18 and which may be secured, as a matter of illustration, to the brackets which support the usual rear bumper (not shown). A suitable switch 20 is shown mounted upon the lower edge of the instrument panel 14 conveniently located in the width thereof for operation by the driver of the vehicle. One side of switch 20 is connected to a suitable source of electrical energy, such as the usual storage battery, the other side of which is grounded. The other side of switch 20 is connected to one side of signal 16 through lead 22, the other side of signal 16 being grounded.

Referring now to Figs. 2 to 5, inclusive, it will be noted that the warning device 16 includes a generally cylindrical casing 30 the rear end of which is closed except as hereinafter specifically pointed out and its rear edge preferably rounded so as to impart a more pleasing appearance to the same. The opposite end of the casing 30 is open and the metal at the margin thereof is outwardly turned and beaded at 32 to provide an axially facing shoulder 34 and an inwardly presented channel. A lens 36, preferably of a substantially hemi-spherical configuration as shown in order to aid in the lateral diffusion of light therethrough, and formed from translucent or preferably transparent material such as glass, Celluloid, plastic or the like, marginally seats against the shoulder 34 and is retained thereagainst by means of a split spring ring 38 removably received within the channel of the edge 32. As previously stated the lens 36 is preferably, although not necessarily, of a clear material so as to transmit a white or substantially white light therethrough in order to render its warning characteristics of greater value by differentiating it from the usual tail light.

Housed within the casing 30 and lens 36 is a light unit indicated generally at 40, an audible signal unit, shown in the form of an electric bell and indicated generally at 42, and a transverse wall or partition 44 located intermediate the ends of the casing 30 which serves as a means for mounting both the light unit 40 and audible signal unit 42. For the purpose of enhancing the transmission of sound from the audible signal unit 42 to the outside atmosphere, the casing 30 is preferably provided with a plurality of openings 46 therein. The openings 46 are preferably positioned in the lower portion of the casing 30 so as to facilitate the drainage of any water which might possibly find its way into the casing therethrough, although it will be understood that the casing is otherwise weatherproof and waterproof. Preferably such openings are in the form of elongated slots as shown. It is desirable, of course, that the bell does not ring so loudly as to annoy the driver of the vehicle upon which it is mounted, and at the same time it is desirable that the warning signal given by the bell be effective for a distance of at least fifty feet back of the motor vehicle. The casing 30, of course, tends to muffle the sound of the bell and, accordingly, by properly proportioning the size and number of the slots 46, the desired result can be achieved. It has been found that four such slots, each of approximately one-eighth of an inch in width and three-quarters of an inch long, are sufficient to effect the desired results.

The transverse wall 44 is in the form of a disc and is preferably provided around its margin with a preferably continuous axially turned flange 48

effecting a cylindrical bearing between it and the inner walls of the casing 30. Although the wall 44 may be secured in the casing in any suitable manner it is preferably removably mounted therein and for the purpose of economy it is preferably of such size as to effect a light press fit between it and the inner walls of the shell 30, thus eliminating the necessity of employing any separate securing means for locating it within the casing 30 and at the same time permitting its removal and insertion without undue difficulty.

The transverse wall 44 is centrally provided with a circular aperture 50 therein, the margins of which are axially and forwardly turned at 52 to provide a short sleeve in which the cylindrical lamp socket 54 is suitably received and secured. The lamp socket 54 is provided at diametrically opposite sides thereof with bayonet slots 56 leading to the forward face of the socket 54 and adapted to cooperate with the diametrically opposed outwardly projecting pins 58 on the shank 60 of a lamp bulb 68 which is received in the socket 54 in a conventional manner.

As best illustrated in Figs. 3 and 5 the bell unit 42 is built up on a bracket indicated generally at 70 and including a flat central portion 72 extending in a generally diametrical direction with respect to the axis of the casing 30 and provided with perpendicularly extending end portions 74 and 76, respectively, the planes of which are parallel to each other but arranged at an angle to the longitudinal center line of the portion 72. The portions 74 and 76 and opposite marginal edges thereof are each provided with a perpendicularly extending flange 78 each of which terminates at that end thereof adjacent the transverse wall 44 in a lug 80, of less width than the corresponding flange 78, and which hugs project through correspondingly shaped openings in the wall 44 and are bent over on the opposite side thereof at 82 to secure the bracket 70 in fixed relation with respect to and supported by the wall 44.

A magnet 84 is rigidly fixed at one end to the end portion 76 of the bracket 70 and an armature 86 is mounted by means of a spring member 88 upon the flange 78 of the opposite end member 74, the armature 86 extending over the operative end of the magnet 84 in a conventional manner. A spring arm 88 which serves as a hinged support for the armature 86 is fixed to the flange 78 of the end portion 74 and at 90 to one end of the armature 86 and then extends in the same general direction but at an angle thereto to form a supporting arm 92 for a contact element 94. A strap 96 carried by a ring member 98 on the end of the magnet 84 is bent, as best illustrated in Fig. 3, to outwardly embrace the outer end of the arm portion 92 and in turn carries a contact element 100 in opposed relation with respect to the contact element 94, and adapted to cooperate therewith and control the energization of the magnet 84.

The opposite sides of the central portion 72 of the bracket 70 are provided with short marginal flanges 102 turned in a direction opposite to the end members 74 and 76, and the flanges 102 receive thereon a bell 104 which is secured to the central portion 72 of the bracket by means of a screw 106 or other suitable fastening means. The armature 86 is extended as a curved end member 108 to a point adjacent the anchored end of the magnet 84 and the marginal edge of the bell 104 is provided with an inwardly

struck lug 110 in cooperative relation with respect thereto.

As best illustrated in Fig. 4, on the backside of the wall 44 a contact element indicated generally at 116 is secured by means of a hollow rivet 118, suitable insulation 120 being provided to insulate the contact element 116 and rivet 118 from the wall 44. The contact element 116 is provided with one finger portion 122 providing a center contact which extends to and terminates at a point centrally in back of the opening 50 in the transverse wall 44 and in a position to engage the terminal 124 for the lamp bulb 68. The contact element 116 is provided with a second finger 126 which extends at an angle with respect to the finger portion 122 and into a position to contact the metallic ring 128 carried by the anchored end of the magnet 84 and suitably insulated from the bracket 76. A strip 130 of suitable insulating material is positioned against the back face of the wall 44 between the contact 116 and particularly the finger 126 thereof and the wall 44 so as to prevent inadvertent shorting of the contact element 116 with the wall 44. The strip 130 may be notched at both ends and arranged to be located by the notches engaging the exterior walls of a small depression formed in the wall 44 for receiving and locating the insulation 120, and a screw 131 threaded through the wall 44 and serving as a means for connecting a ground wire thereto when the casing 30 is not directly grounded.

A wire 132, as best illustrated in Figs. 3 and 4, projects through an opening 134 in the bottom of the casing 30 between the wall 44 and the flange 34 and is connected to a screw 136 which threads into the hollow rivet 118 on the wall 44 and which is suitably insulated from the wall 44 as previously mentioned. Electrical current for the electric lamp 68 is conducted from the wire 132 through the rivet 118 to the conductor 116 and through the finger 122 thereof to the terminal 124 of the lamp 68, through the lamp 68 and then through the shell of the shank 60 thereof to the socket 54, wall 44, casing 30 and bracket 18 to the grounded side of the vehicle 10. In cases where the bracket 18 is not grounded a second wire (not shown) may be directly connected to the casing 30 or wall 44 to effect the same purpose.

The winding for the magnet 84 is connected at one end to the ring 128 and to the ring 98 at the opposite end. Accordingly, in energizing the bell portion of the device, the current is fed through the wire 132 to the contact element 116 and through the finger 126 thereof to the ring 128, thence through the winding for the magnet to the ring 98, through the arm 96 thereof to the contact element 100, through the contact element 94, through the spring arm 92 and bracket 70 to the transverse wall 44 and casing 30 to the ground. The spring element 88 normally acts to maintain the contacts 94 and 100 in contact and upon energization of the magnet 84 the armature 86 is drawn toward the magnet, thus causing the contacts 94 and 100 to separate, breaking the flow of current and permitting the springing hinge 88 to return the armature 86 towards its normal position. Each time the armature 86 is attracted towards the magnet 84 the terminal end of the end portion 108 of the armature is caused to strike against lug 110 on the bell 104 and cause the bell to sound. Thus by closing the switch 20 on the instrument panel 14 the light 68 is caused to be energized and ren-

dered luminescent and the bell 104 is caused to ring.

The entire device thus described may be secured to the bracket 18 by rivets 140 or other suitable means. The bracket 18 itself forms no part of the present invention and may be of any suitable construction permitting ready mounting of the device 16 upon a suitable part of the motor vehicle.

From the foregoing it will be understood that both the visual signal 40 and the audible signal 42 are secured to and carried solely by the transverse wall 44, and the transverse wall 44 being removable from the casing 30, these two signals with the wall 44 provide a unitary assemblage which is applicable to and removable from the casing 30 as such. In practice both the visual signal 40 and audible signal 42 are first assembled upon the wall 44 to provide a complete operative and unitary structure and this structure is then inserted in its desired position within the shell 30. This provides a means whereby a small and readily accessible unit is provided for assembly purposes which when completed and tested out for operativeness may be readily inserted to its desired location in the shell 30, and then the lens 36 applied and secured in place by the split ring 38 to complete the entire assembly. This feature, together with the fact that the construction is such as to enable all of the metallic parts to be formed as stampings, results in a construction that is extremely simple in construction and, therefore, economical to manufacture, and yet provides a construction that is readily accessible for service if required and may be repaired with a minimum amount of trouble and expense.

It will also be appreciated that when the signal device described is actuated during backing up movement of the vehicle 10 the warning thus given by the device to any one in back of the vehicle or about to pass it back of the vehicle will be amply sufficient to attract their attention to the possible danger in ample time to avoid the same.

Formal changes may be made in the specific embodiment of the invention disclosed without departing from the spirit or substance of the broad invention, the scope of which is commensurate with the appended claims.

What is claimed is:

1. A warning signal for vehicles including two

portions, means for securing said portions together, one portion including an electromagnetic audible signal having a contact on one end of the magnet, the other portion including an electric signal lamp support having a shell contact facing in one direction adapted to hold a lamp with its center contact facing in the other direction, said other portion also including an insulated resilient electrical contact member having two portions, said contact portions engaging the magnet contact and the center contact of the lamp respectively when the signal portions are secured together.

2. A warning signal for vehicles including two portions, means for detachably securing said portions together, one portion including an electromagnetic audible signal having a contact on one end of the magnet, the other portion including an electric signal lamp support having a shell contact facing in one direction adapted to hold a lamp with its center contact facing in the other direction, said other portion also including an insulated resilient electrical contact member having two portions, said contact portions engaging the magnet contact and the center contact of the lamp respectively when the signal portions are secured together.

3. In a back-up warning device for vehicles, in combination, a cup-like housing, a light transmitting cover closing the open end of said housing, a marginally flanged sheet metal transverse wall member having a lamp contact member mounted thereon and disposed on one side thereof, an audible electric signal mounted upon said wall member and grounded thereon and having an insulated contact, said audible signal being wholly disposed on the side of said wall member opposite said first contact member, said wall contact member and audible signal forming a unit applicable to said housing as such and secured in said housing with said flanged margin of said wall in contact with the inner walls of said housing, said wall separating the interiors of said housing and cover into two chambers in one of which said audible signal is located and in the other of which, toward the open end of said housing, said contact member is located, means providing an insulated center contact, and means providing a connection with the insulated contact for the audible signal.

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