March 18, 1941. H. N. CARVER 2,235,282

SIGNALING DEVICE

Filed April 21, 1938

Fig. 1.

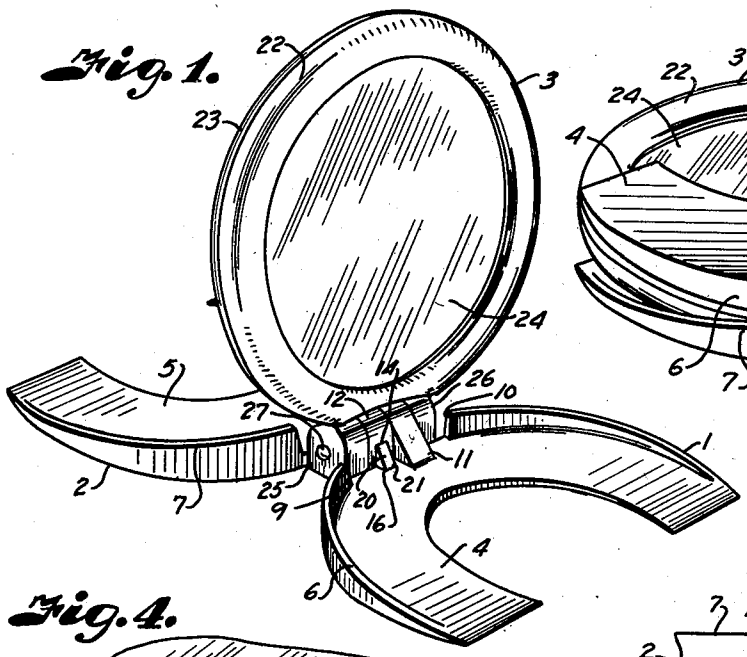


Fig. 2.

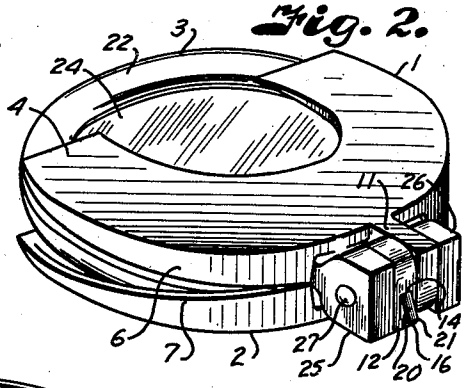


Fig. 3.

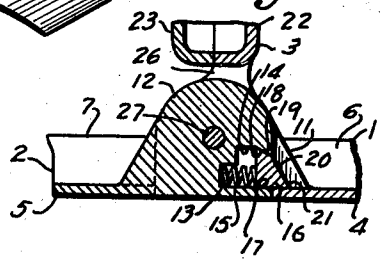


Fig. 4.

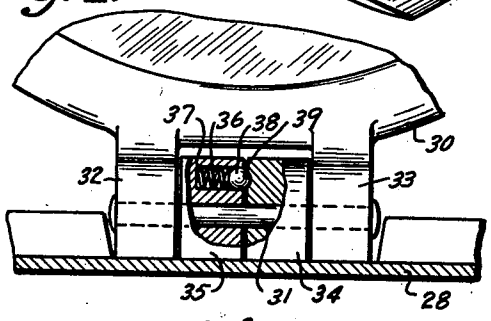


Fig. 5.

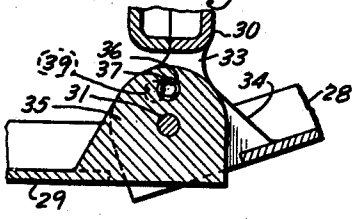


Fig. 6.

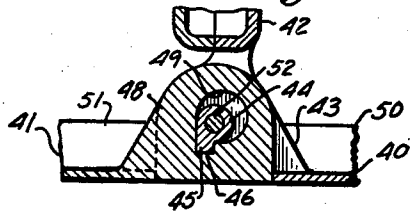


Fig. 7.

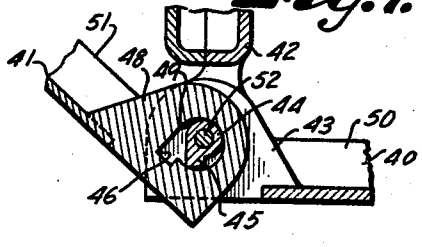
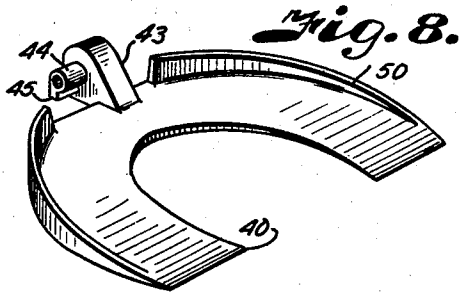


Fig. 8.



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SIGNALING DEVICE

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Application April 21, 1938, Serial No. 203,344

5 Claims. (Cl. 248—33)

This invention relates to signaling devices and more particularly to a portable signal adapted to be conveniently placed on highways and similar thoroughfares for warning motorists and the like of obstructions on a highway.

It is ordinarily difficult for operators of vehicles such as loaded trucks to pull off the road when it becomes necessary to make repairs on the vehicles under their control. Should the motor of a truck fail or the tires need changing, the stalled or otherwise stationary vehicle creates a hazard on the road, not only to approaching motorists, but also to the truck operators and the property under their control.

It is the principal object of the present invention to provide a signal of the character commonly known as a "road flare" which is capable of reflecting and/or refracting light rays generated by the lights of approaching vehicles, back approximate their source to warn the occupants of those vehicles of the presence of obstructions on roads.

Other important objects of the present invention are to provide a collapsible light reflecting and/or refracting signal of sturdy and durable construction capable of withstanding shocks and jars without damage to the signal; to so design the signal that it is difficult to tip over accidently; to provide a housing for the reflector or refracting element of the signal which also acts as a supporting standard therefor; to provide a compact and easily operable signal of a high degree of efficiency; to provide a protective mounting for the reflector or light refracting element of the signal; to provide improved locking devices for retaining the housing members in open condition and prevent accidental collapse of the signaling element; to provide novel housing members; and to provide improved parts and arrangements of parts making up a signaling device in accordance with the present invention.

In accomplishing these and other objects of the invention, I have provided improved details of structure, the preferred forms of which are illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective view of a signaling device embodying the present invention and illustrated in erected operative condition.

Fig. 2 is a perspective view of the signaling device in collapsed condition adapted for storage.

Fig. 3 is a detail longitudinal cross-section through the hinged portions of the housing members and signaling element particularly illustrating a locking device therefor.

Fig. 4 is a transverse sectional view of one of the housing members, a part of the hinge members being broken away to illustrate a modified form of locking device.

Fig. 5 is a fragmentary detail longitudinal cross-section through the hinged portions and locking device illustrated in Fig. 4 showing the housing members in semi-hinged relation.

Fig. 6 is a longitudinal cross-section through the hinged portions of a signaling device provided with a further modified form of locking device.

Fig. 7 is a view similar to Fig. 6 illustrating the locking device in released condition.

Fig. 8 is a detail perspective view of a housing member provided with the modified form of locking device illustrated in Figs. 6 and 7.

Referring more in detail to the drawing:

The invention generally includes a two-part cover or housing member 1—2, Fig. 1, forming a base and/or a standard for a light reflecting and/or refracting signaling element 3, the housing member 1—2 and signaling element 3 being interconnected in such a manner that the housing is adapted to partially enclose the signaling element for suitable storage; the housing, when opened, automatically raising the signal to operative position and forming a rigid standard for adequately supporting the signal to reflect and/or refract light rays in opposite directions back approximate their respective sources of incidence. The invention also includes a locking device interengageable with the housing members for locking the same in coplanar relation and the signaling element in perpendicular relation to the plane of the housing members when opened.

In the present instance, the housing members of a signaling device embodying this invention are shown to preferably include substantially duplicate plates 4 and 5 cast or otherwise suitably formed of substantially U or horseshoe shape, each having a peripheral laterally turned pair of oppositely disposed flanges 6 and 7, Fig. 1, initiating at the forward outer ends of the housing plates and tapering rearwardly upwardly to terminate in spaced ends 9 and 10 at the rear or joining portions of the housing plates. In the space between the ends 9 and 10 of the flanges for example, bosses 11 and 12 are mounted on the plates 4 and 5 and extend laterally and upwardly from the plates.

One of said bosses is particularly illustrated in Fig. 3. These bosses are preferably duplicates with the exception that the boss 12 is provided with a recess 13 therein having an upwardly extending offset portion 14. A spring 15 is mounted in the recess 13 and urges outwardly a locking

device 16 which seats on the floor 17 of the recess and extends upwardly into the offset portion 14 of the recess. The offset portion 14 of the recess terminates in a downwardly tapering top wall 18 adapted to engage the tapered top face 19 of the locking device 16, the locking device being provided with a more steeply inclined front face 20 freely movable outwardly relative to the top wall 18 in response to pressure by the spring 15.

The lower forward end 21 of the locking device is also adapted to engage the upper face of the housing member 4 to prevent buckling of the housing members relative to each other when said members are hinged together. It is apparent that pressure on the top wall 19 of the locking device forces the locking device rearwardly against tension of the spring to permit the housing members to be hinged together.

The signaling element 3 preferably comprises a pair of duplicate frame members 22 and 23 adapted to support therebetween a light reflecting and/or refracting element 24 adapted to "pick up" and return in multiplied form light rays impinging thereagainst from a source of incidence within a wide range angularly relative to the reflecting element. The signaling element frames 23 and 22 are provided with ears 25 and 26 respectively adapted to engage the frame or housing member bosses at opposite sides thereof, as illustrated in Figs. 1 and 2, said ears having substantially squared outer corners to provide a flat base-like structure when the signaling element is in perpendicular relation to a flat support. The ears 25 and 26, together with the bosses 11 and 12, are provided with apertures adapted to be aligned in such a manner as to receive a suitable hinge pin 27 for hinging or pivoting the housing members onto and about the signaling element.

The operation of a signaling device constructed as described is as follows:

Assuming a signaling device to be in collapsed condition as shown in Fig. 2, and that it is desired to employ the signaling device for warning approaching motorists of an obstruction on a road, the housing plates 4 and 5 are hinged outwardly relative to each other into a coplanar position, as shown in Fig. 1. While the housing members are being hinged outwardly relative to each other, the adjacent edges of the hinged ends thereof at opposite sides of their respective bosses 11 and 12 engage opposite sides of the ears 25 and 26 on the signaling element 3, the signaling element being pivoted by whichever housing member engages it to lift the signaling element into perpendicular relation to the outermost coplanar position of the housing members. As the hinged end of the housing member 4 passes downwardly over the outer face 20 of the locking device 16, it forces the locking device inwardly to permit passage of that portion of the housing member 4 over the extreme forward end of the locking device whereupon the spring comes into play to again force the locking device forwardly into overlying engagement relative to the housing plate 4 to lock the same in coplanar position relative to the housing plate 5.

The signaling device is then placed at a strategic point on the road in such a manner that light rays from the headlights of approaching vehicles may impinge against the reflecting element 24, which rays are by the signaling element returned to their source to attract the attention of occupants of the vehicle, thus warning them of the obstruction.

When the signaling device has served its purpose and it is desired to store the device, the housing members are merely forced together on their hinge pin 27, manual pressure forcing the locking device rearwardly against tension of the spring to permit passage of the housing plate 4 into housing engagement with the signaling element 3.

It is believed apparent that the housing members not only partially enclose the signaling element when in closed position, but also form a standard covering a substantial area on the ground to adequately support the signaling element in upright operative condition.

In Figs. 4 and 5, a modified form of locking device is illustrated, the housing elements 28 and 29, together with the signaling element 30, being similar to the corresponding elements described in connection with the preferred form of invention. In this instance, also, the housing members and signaling element are hinged relative to each other by passing the hinge pin 31 through apertures in the signaling element bosses 32 and 33 and the bosses 34 and 35 in the housing members 28 and 29 respectively.

In this form of invention, one of the housing member bosses is provided with a recess 36 adapted to receive a spring 37, which urges a retaining device such as the ball 37 into seating engagement with a recess 39 in the housing member boss 35 which is alignable with the recess 36 when the housing members are in coplanar position. The spring-pressed ball thus tends to lock the housing members in the same horizontal plane to provide a rigid base support or standard for maintaining the signaling element in upright or perpendicular relation to a flat support.

The operation of a device constructed in accordance with the modified form of invention is substantially similar to that of the preferred form, it being apparent that manual pressure in opening or closing the housing members relative to each other overcomes the tension of the spring 37 to the end that the housing members may be opened or closed at will.

In Figs. 6 to 8 inclusive, a further modified form of locking device is illustrated wherein the housing members 40 and 41 are similar to those previously described, as is the signaling element 42. In this case, however, the boss 43 on the housing element 40 is provided with a key 44 extending laterally from one side of the boss, the key having a downwardly extending lug 45 thereon engageable in a recess 46, Fig. 7, provided in the boss 48 on the housing member 41. The recess 46 terminates in an enlarged substantially cylindrical offset portion 49 having a diameter substantially equal to the greatest thickness of the key 44, together with its lug 45.

The normal position of the key 44 and lug 45 is within the enlarged cylindrical recess 49 of the boss 48. That is, when the signaling device is collapsed, the flanges 50 and 51 of the housing members are in abutting relating and the outer edge of the key lug frictionally engages the periphery of the cylindrical portion of the recess. When it is desired to open the signaling device to operative position, the housing members are hinged outwardly relative to each other on the hinge pin 52 passing through suitable aligned apertures in the housing member and signaling element bosses to the position illustrated in Fig. 6, whereupon the lug on the boss 43 is permitted to drop into the recess to lock the base members in coplanar position.

When it is desired to collapse the signaling device for storage purposes, the base member **40** is lifted to raise the boss **43** relative to the boss **48**, thus removing the lug **45** from the recess **46** and permitting hinging movement of the base members toward each other.

In collapsed condition, the signaling device is compact and may be easily stored in any type of vehicle. In open condition, the base members form a rigid support for the signaling element and may be positioned in any direction for refraction and reflection of light rays in opposite directions.

The advantages in a device constructed in accordance with the present invention are that it is strong and durable, efficient in operation, and economical to manufacture. The locking device prevents accidental collapse of the signaling element and the device as a whole is admirably suited for the purpose for which it is intended.

What I claim and desire to secure by Letters Patent is:

1. A road signal including a frame adapted to carry a signaling element, a pair of housing members hinged to said frame and adapted to support the same in perpendicular relation thereto when in opened condition, and a locking device for maintaining the housing members in opened condition including a member slidably mounted in one of said housing members and lockingly engageable with the other of said housing members, said locking device being retractible upon positive swinging movement of said members to closed condition.

2. A road signal of the character described comprising a pair of mating members, a frame adapted to carry a signaling element arranged between said members, means hinging together said mating members and frame, interengageable cooperative means on said mating members and frame for moving the frame to operative condition relative to said members in response to opening of said members relative to each other and for limiting movement of said mating members relative to each other and to said frame, and means for locking said mating members in opened condition.

3. In a road signal, a pair of housing members, a frame member adapted to carry a signaling element, means hinging said members relative to each other, said members having bosses thereon, one of said bosses having a recess, and a locking device mounted in the recess of said boss and engageable with one of said members other than that in which said device is mounted to lock the same against movement, said locking member being retractible within the recess upon positive swinging movement of said members to closed position to allow relative movement of the same.

4. A road signal including a frame adapted to carry a signaling element, a pair of housing members hinged to said frame and adapted to support the same in perpendicular relation thereto when in opened condition, and a locking device for maintaining the housing members in opened condition including a member slidably mounted in one of said housing members and lockingly engageable with the other of said housing members, said locking device being retractible upon positive swinging movement of said members to closed condition, and means urging said locking device. to locking position.

5. In a road signal, a pair of housing members, a frame member adapted to carry a signaling element, means hinging said members relative to each other, said members having bosses thereon, one of said bosses having a recess, and a locking device mounted in the recess of said boss and engageable with one of said members other than that in which said device is mounted to lock the same against movement, said locking member being retractible within the recess upon positive swinging movement of said members to closed position to allow relative movement of the same, and means urging said locking device to locking position.

HORACE N. CARVER.