

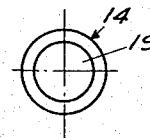
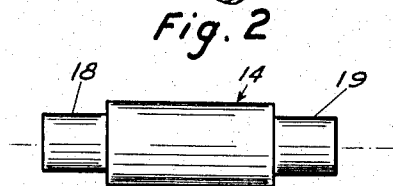
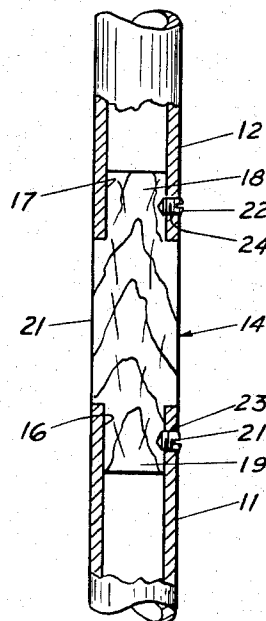
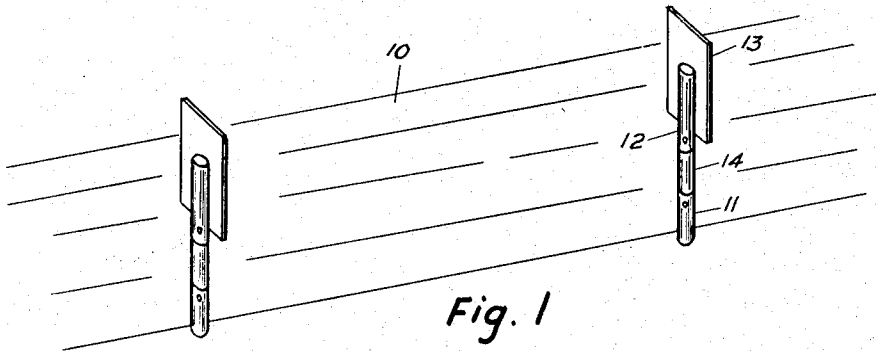
Dec. 5, 1967

A. V. ROEMISCH  
HIGHWAY MARKER DEVICE

3,355,998

Filed July 24, 1964

4 Sheets-Sheet 1



Allen V. Roemisch  
INVENTOR.

BY *Llewellyn B. Young*  
His Attorney

Dec. 5, 1967

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4 Sheets-Sheet 2

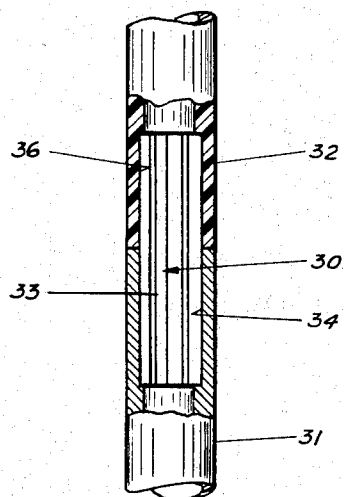


Fig. 5



Fig. 6



Fig. 8



Fig. 7

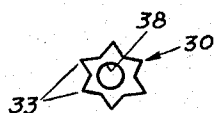


Fig. 9

Allen V. Roemisch  
INVENTOR.

BY *Lewellyn A. Young*  
His Attorney

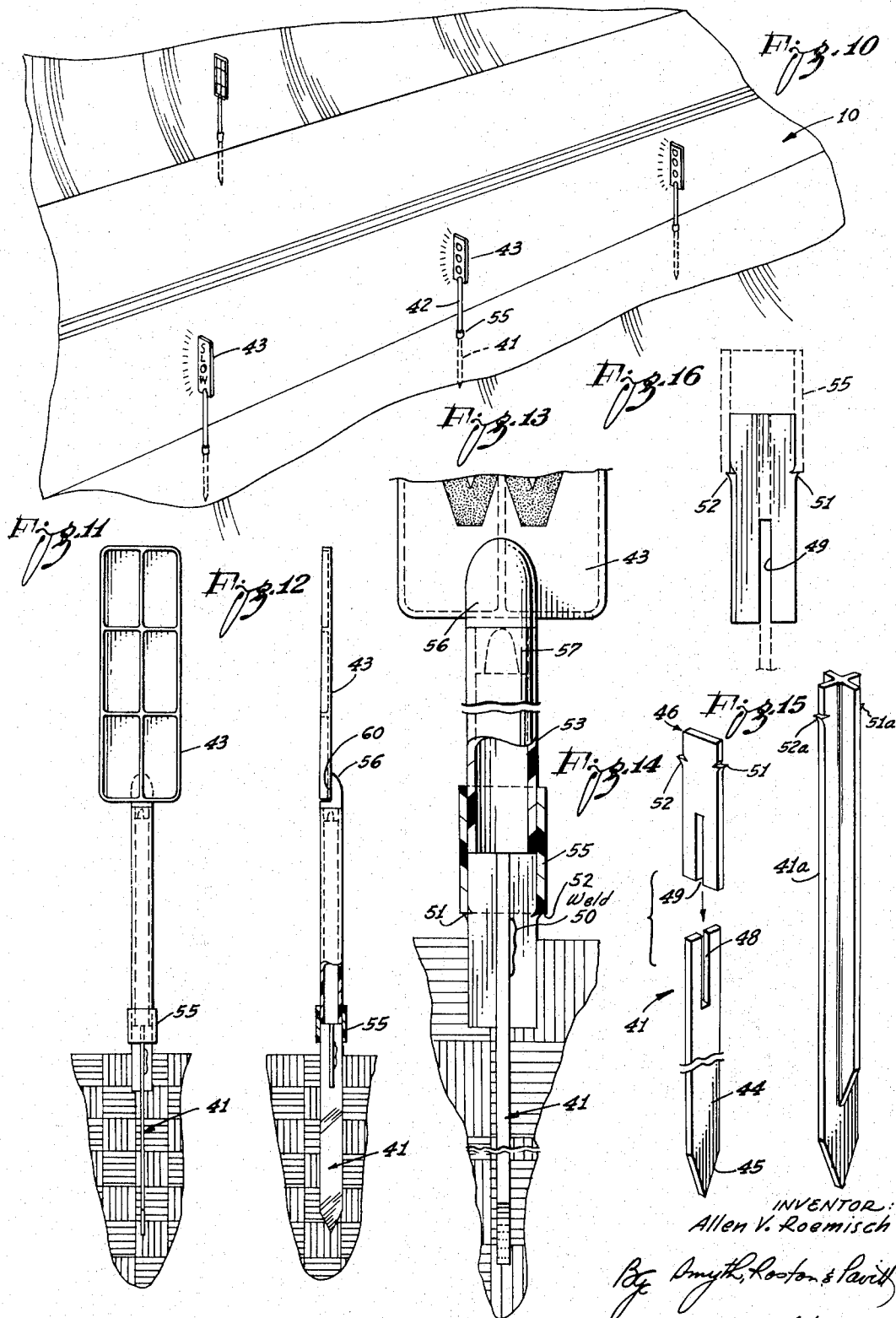
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A. V. ROEMISCH  
HIGHWAY MARKER DEVICE

3,355,998

Filed July 24, 1964

4 Sheets-Sheet 3



INVENTOR:  
Allen V. Roemisch

By *Dmyth, Roston & Lavitt*  
Attorneys

Dec. 5, 1967

A. V. ROEMISCH

3,355,998

HIGHWAY MARKER DEVICE

Filed July 24, 1964

4 Sheets-Sheet 4

*Fig. 3.17*

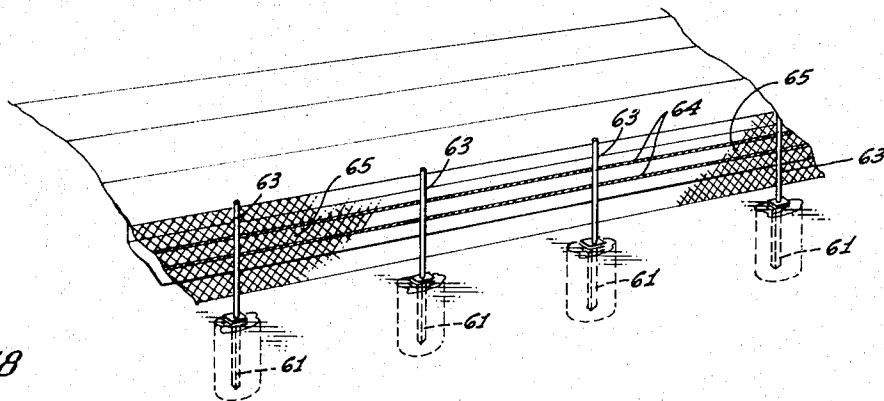


*Fig. 3.18*

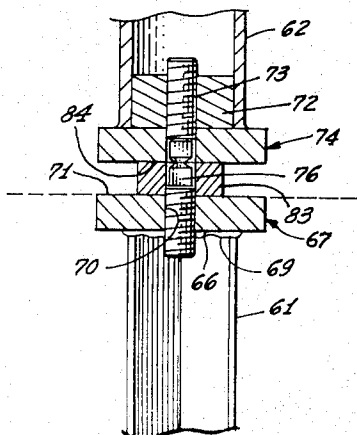


*Fig. 3.19*

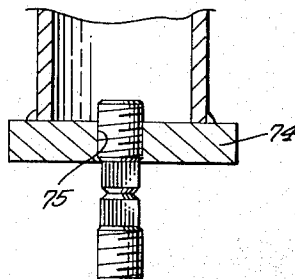


*Fig. 3.20*

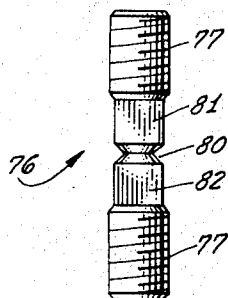
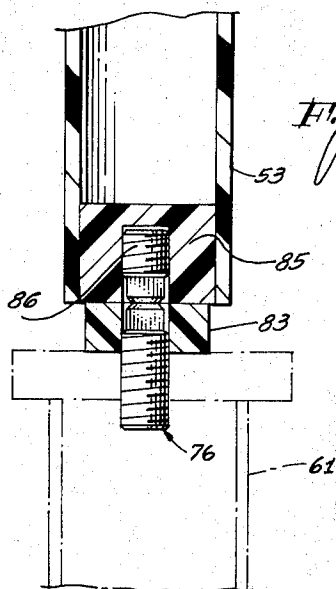


*Fig. 3.21*



INVENTOR:  
Allen V. Roemisch

By *Smith, Rooten & Pavitt*  
Attorneys

1

3,355,998

## HIGHWAY MARKER DEVICE

Allen V. Roemisch, 2411 W. 78th St.,

Inglewood, Calif. 90305

Filed July 24, 1964, Ser. No. 386,106

5 Claims. (Cl. 94-1.5)

This is a continuation-in-part of copending application Ser. No. 257,664 filed Feb. 11, 1963, by Allen V. Roemisch for Highway Marker Device, now abandoned.

This invention relates to supports for holding highway devices such as a highway marker or a road edge marker, or for holding elements of a highway divider such as used in freeways.

In connection with the former devices, namely markers, to clearly mark highways, particularly for night driving, the custom has been adopted by the highway departments of various state governments to place highway markers at predetermined points along the highway edge. These edge marker posts may be painted with fluorescent paint, white paint or they may have reflectors attached to them. All serve the same purpose of showing the driver the edge of the road. Such signs are a necessity with the large amount of traffic now on the highways and particularly with the large amount of night driving.

Very frequently drivers get too close to the edge of the highway. Whether through necessity or carelessness, drivers knock down the conventional markers that are usually wooden posts. In some instances, some drivers have deliberately knocked down markers along the edge of the highway for several miles. Each broken post, of course, has to be replaced. To do this, a new hole has to be dug in compacted earth, and a post has to be put in position. In those instances where the support for a conventional marker is set in a concreted post hole, it is common practice to remove the concrete and the broken parts of the marker and replace the same with a new support and perhaps a new marker in a newly formed concrete post hole. As is readily apparent, this is a time consuming process. For example, it has been found that to replace a number of broken supports for highway markers knocked down by accident or otherwise requires quite a number of man-days, which time can be reduced to a few minutes with the use of supports for highway markers constructed in accordance with the teachings of this invention reducing the cost of using and maintaining highways considerably.

Also, in the case of freeways, it is customary to separate lanes of traffic going in one direction from on-coming traffic by highway dividers. These dividers conventionally comprise a plurality of supports or posts of relatively soft, bendable metal set in concrete at spaced intervals between the lanes to be separated, which posts support a plurality of cables disposed at spaced intervals horizontal to the traffic and wire mesh. The primary purpose of forming the center divider in this fashion is to avoid or lessen damage in the event of an accident where an automobile hits the center divider. This divider serves not only to prevent the automobile from jumping the center, but also serves to reduce the impact of hitting by providing a cushion which slowly decelerates the automobile and at the same time does not throw the automobile back into the lane from whence it came, causing damage to following cars. Usually, when an accident occurs, the support for the cable is immediately damaged by bending or breaking and the wire mesh is torn. The cable being designed to withstand the impact performs most of the work involved but it too is often broken. Inasmuch as serious damage does occur to the divider, the cable, the wire mesh and nearly always the posts have to be replaced, and, like the concreted post hole for the conven-

2

tional marker, as aforesaid, it is common practice to break up the concrete and the broken parts of the posts and replace the same with a new support. Again, as in the case of the highway markers, to replace the broken supports requires a number of man days which can be reduced to a few minutes by the use of supports for highway dividers constructed in accordance with the teachings of this invention, reducing the costs of using and maintaining freeways considerably. Accordingly, one of the objects of this invention is the provision of a novel support for a highway or freeway device such as a highway edge marker or a center divider that requires a minimum of work in order to change it or maintain it in operable condition.

Another object of this invention is the provision of a novel support for a highway or freeway device such as a marker or divider that, after it is once installed and then broken, can be readily replaced with a minimum of effort and cost.

Another object of the invention is the provision of a support for road marker, divider or any highway device that is simple to construct, easy to use and inexpensive to produce.

The above objects are accomplished in accordance with the teachings of this invention by the provision of a fractureable means used in connection with highway devices such as markers or center dividers and connecting the same to a member embedded in the roadway. Any impact which would cause the conventional support to be completely destroyed merely causes the part connected to the embedded member to break and replacement thereof is by the simple step of replacing the broken part and connecting the same onto the embedded member. As will be clear from a more detailed description hereinafter, this simple step reduces the replacement time of supports or highway devices immensurably and reduces the cost thereof by reason of the fact that only a part thereof need be replaced.

Other objects of the invention will become apparent when taken into conjunction with the drawings in which:

FIGURE 1 is a perspective view of a support embodying one of the forms of the present invention and supporting a highway marker;

FIGURE 2 is an enlarged view showing a cross-section of the mid-portion of the support;

FIGURE 3 shows a detailed construction of a fractureable member;

FIGURE 4 is an end view of FIGURE 3;

FIGURE 5 shows a modified form of the invention;

FIGURE 6 is a fragmentary part of the invention shown in FIGURE 5 with a portion cut away to show details of construction;

FIGURE 7 is an elevation view of a member for supporting the components of the support in end to end relation;

FIGURE 8 is an end view of FIGURE 6;

FIGURE 9 is an end view of FIGURE 7;

FIGURE 10 is a perspective view of a highway utilizing markers embodying another form of the support comprising the present invention;

FIGURE 11 is an elevational view of a support for a highway marker shown in FIGURES 12-16, inclusive;

FIGURE 12 is an end elevational view of the support for a highway marker shown in FIGURE 11, partially broken away to illustrate the details of construction;

FIGURE 13 is an enlarged elevational end view of the support for a highway marker partially broken away to illustrate the details of construction;

FIGURE 14 is a perspective view of one form of the support member to be embedded in the roadside as illustrated in FIGURES 11 and 12;

FIGURE 15 is a perspective elevational view of an-

other form of the support member to be embedded in the roadside;

FIGURE 16 is an enlarged elevational view illustrating the connection between the replaceable parts of the support for the marker and the embedded member;

FIGURE 17 is a perspective view of a freeway utilizing center dividers embodying another form of support comprising the present invention;

FIGURE 18 is an enlarged elevational view of the support for the center divider, partially broken away to illustrate the details of construction thereof, and particularly the connection between the replaceable parts and the embedded member;

FIGURE 19 is an enlarged detail view, illustrating a form of support member used in connection with the freeway divider illustrated in FIGURES 17 and 18;

FIGURE 20 is an enlarged elevational view illustrating the connection between the replaceable parts of a highway marker when used in connection with the fractureable member such as described in connection with the freeway divider; and

FIGURE 21 is a view of the fractureable member used in connection with the supports illustrated in FIGURES 17-20, inclusive.

*Description of invention in connection with the highway marker*

Referring now to the drawings, the invention is shown embodied in and forming part of a highway edge marker of the type adapted to show a motorist the edge of a roadway or highway 10. In general, the support for the marker comprises a first or base member 11 adapted to be embedded in the roadway, a support member 12 adapted to be in end to end relation with the member 11 and capable of supporting a sign 13 for observation by a motorist and means 14 for holding the members 11 and 12 in rigid relation but adapted when a predetermined force is applied to the member 12 to fracture so that the member 12 is broken away from the embedded member 11 without materially affecting the position of the embedded member 11.

As shown in FIGURES 1 and 2, the member 11 is formed by an elongated, tubular member having a cylindrical bore or recess 16 formed at its upper end. The lower end of member 11 may be of any suitable construction as this portion of the member is intended to be embedded in the shoulder of the roadway. While any suitable material may be used, I have found that a piece of metallic pipe is very suitable for this purpose. The length and diameter of the pipe may vary as desired by the user.

The member 12 is formed by a tubular member having at its lower end a downwardly facing recess 17. The member 12 may be formed of any suitable material; and for purpose of illustration, I have used metallic pipe. The member 12 is arranged at its upper end to support the sign or marker 13. Any suitable means, such as welding, bolting or the like, may be used to secure the marker 13 to the member 12.

The fractureable means 14 in this instance is formed by a wooden plug. As shown, the upper end 18 of the plug is arranged to be received in the recess 17, and the lower end 19 is arranged to be received in the recess 16 at the upper end of the base member 11. The central portion 21 of the plug is shaped so that when the members 11 and 12 are in end to end alignment, the diameter of the central portion is substantially the same as the diameters of the members 11 and 12. The wood should have the characteristic such that with the member 11 firmly embedded in the roadway a force, such as that caused by contact with a moving automobile, applied to the upper portion 12 causes the member 13 to fracture and permit the member 12 to be broken away from the member 11 which remains embedded in the roadway.

It is to be understood that the ends 18 and 19 of the

plug 14 may be shaped so that they have a snug fit in the respective recesses with which they are associated. To facilitate manufacture of the plugs, however, the ends 18 and 19 may be shaped so that their respective diameters are less than the diameters of the recesses with which they are associated. In the latter instance, I have found it desirable to secure the plug 14 in assembled relation with the members 11 and 12 by set screws 21 and 22. As shown, the set screw is threaded through opening 23 in the wall of the member 11 so as to abut against the end 19. By threading the screw 21 into the wall of member 11, the end of the screw engages the end 19 of the plug and secures the member 11 and the plug in assembled relation. In a similar manner, the screw is threaded through an opening 24 formed in the wall of the member 12. By threading the screw 22 into the opening 24, it is seen that the end of the screw engages the end 18 of the plug and clamps the plug 14 and the member 12 in assembled relation.

With this construction it is readily apparent that when the plug 14 is fractured and the member 12 is disengaged from the embedded member 11, to restore the support for the marker it is only necessary to loosen the screws 21 and 22, remove the fragmentary parts of the plug 14 in the recesses 16 and 17, the broken plug is then replaced with a new plug 14, the set screws 21 and 22 are reset and the highway marker is again ready for use. It can be readily seen that this construction minimizes maintenance time. Thus, for example, when a conventional marker is destroyed, it is necessary to dig a new hole to embed the base of the marker. This is time consuming and costly. In addition it places the maintenance men in jeopardy on the highway for a longer period of time than is necessary. It is also obvious that the cost of manufacturing a wooden plug is much cheaper than in manufacturing a conventional highway marker. With this marker, the user is assured of a long life with low maintenance costs.

In FIGURES 5-9, inclusive, there is shown a modified form of the invention. In general, the support for the marker shown comprises a base member 31, a support member 32 adapted to support a sign (not shown) and a fractureable member or plug 30 arranged to support the members 31 and 32 in assembled relation without the use of set screws.

As shown, the member 31 is adapted to be embedded in the roadway and is formed with a recess 34. The member 31 may be formed from metallic pipe.

The member 32 in this instance is formed from plastic or the like synthetic resinous material. At its lower end, the member is formed with a recess 36 having substantially the same size as the diameter of the recess 34.

The member 30 in this instance is formed from a wooden plug having a fluted or ribbed outer surface 33 as shown in FIGURES 7 and 9. The outside diameter of the plug is slightly larger than the diameter of the recesses 34 and 36 so that a press or force fit is required to assemble the component parts. The center of the plug is formed with an axially extending opening 38. The purpose of this is to effect easy withdrawal of the broken parts in the event such parts should remain in the recesses 34 and 36 after the plug is broken.

Either of the above embodiments provide a highway marker that can be produced inexpensively, assures the user of a minimum of maintenance and is easy to install.

Turning now to FIGURE 10, it can be seen that the markers therein illustrated are placed along the highway 10 and are embedded in the roadway adjacent thereto in a manner similar to that shown in FIGURE 1.

In general, the markers therein illustrated each comprise a first or base member 41 adapted to be embedded in the roadway and a second or support member 42 adapted to be in end to end relation with the member 41 and capable of supporting a sign 43.

As shown in FIGURES 11-14, inclusive, and in par-

5

ticular FIGURE 14, the member 41 is a stake comprising a relatively flat blade-like body member 44, pointed as at 45 for easy insertion into the ground, and a second flat plate-like body member 46 adapted to telescope over the body member 44 at right angles thereto, body members 44 and 46 being notched respectively as at 48 and 49 to accommodate this telescoping relationship and being preferably of metal may be connected permanently to each other in any suitable manner as by welding as at 50 to form a stake having four walls at right angles to each other. Member 46 is also upset to form notches 51 and 52 which, when the stake is embedded as shown in FIGURE 12, are adjacent the upper end of the member 41 for the purpose to be described.

Second member 42, as more clearly shown in FIGURE 13, comprises an elongated hollow tube 53 of any suitable material such as plastic or the like (such as polyvinylchloride), or synthetic resinous material like the material forming the member 32, previously described so that it is sufficiently strong to support the signs 43. This hollow tube 53 is provided with an end or connecting sleeve 55 of suitable plastic at its lower end and attached thereto in overlapping or telescoping relation to form a means for connection between the top of embedded member 41 and the hollow tube illustrated in FIGURE 13. In this figure, the hollow tube and the embedded member are in end to end abutting relationship with the connecting sleeve of plastic material 55 being of such a size to slip-fit over the top of the embedded member.

At the opposite or upper end of the tube, an end plug or cap 56 is provided which, in this embodiment, has a reduced extension 57 for insertion into the upper end of the tube. The cap 56 is also formed with a suitable notch 60 into which the plastic highway sign 43 is inserted for attachment to the cap 56 in any suitable manner as by cementing or bolting or the like. In the practical embodiment of this invention, the highway sign 43 is plastic and is suitably cemented to the cap 56. Obviously, cap 56 and sign 43 could be of one piece plastic material, if desired, and the sign may be provided with reinforcing ribs on one side thereof while the other side is relatively flat for accommodating reflectors (see FIGURE 10) onto which letters and symbols such as illustrated in FIGURE 10 may be applied.

From the above description, it is apparent that when the marker is hit with an impact force such as that caused by contact with a moving automobile, the force is applied to the upper sign supporting member 42 and the road sign 43 and causing its telescoping sleeve 55 to fracture, leaving the embedded member 41 in place. To replace the broken highway marker, it is then only necessary to replace the marker by the simple step of slip-fitting sleeves 55 of a new hollow tube and sign over the ends of the embedded member 41. A workman simply pushes the replacement part over the ends of the embedded member until the end of the sleeve 55 is stopped by the notches 51 and 52, i.e., to a position as shown in FIGURES 12, 13 and 16. This operation, as can be appreciated, takes only a fraction of a minute for each replacement of a marker, reducing the time to replace a number of markers to a matter of minutes as compared to the replacement time of conventional markers.

FIGURE 15 illustrates another form of embedded member or stake 41a where the entire stake and its four side walls of any suitable metal are formed by any suitable process such as extruding. In like manner, this stake 41a is also upset to form flanges or notches 51a and 52a to form a stop for the tubular member 53 as hereinabove described.

#### *Description of invention in connection with the highway divider*

Turning now to FIGURE 17, it can be seen that the support of the center divider therein illustrated is placed between traffic lanes of the freeway 10 and in general

6

the supports therein comprise a first or base member 61 adapted to be embedded in the concrete which may be a concrete shoulder between the traffic lanes and the support member or post 62 adapted to be in end-to-end relationship with the first member 61 and capable of supporting the center divider 63 and form part thereof. The center divider comprises, in addition to the supports, a plurality of cables 64 (two shown) disposed horizontally with the traffic lanes and supported on the second member or post 63 and wire mesh 65 which is disposed between adjacent posts 63 along the center divider. Means are provided on the posts 63 to connect the cables and wire mesh thereto.

As shown in FIGURES 17-19, and in particular in FIGURES 18 and 19, the member 61 is a stake substantially identical with the stake 41 shown in FIGURES 11-14, inclusive, except that the very top 66 of the stake is provided with a relatively thin, rectangular plate 67 attached thereto by any suitable means such as welding as illustrated at 69 and the plate 67 is bored and threaded centrally thereof as at 70. As illustrated, the plate 67 is embedded to the top level 71 of the concrete.

The second member or post 62, as more clearly shown in FIGURES 18 and 19, comprises an elongated, hollow tube of any suitable material sufficiently strong to hold the cables 64 and the wire mesh 65, such as soft iron. This hollow tube or post is provided at its lower end with a plug 72 telescoped thereon and which is internally threaded as at 73. In the embodiment illustrated in FIGURE 19, the lower end of the tube may be provided with a relatively thin plate 74 connected thereto as by welding and bored and threaded centrally thereof as at 75 in lieu of the plug 72, but in either case, the plug 72 or the plate 74 complement the plate 67 of the stake 61 and the threads 70, 73 and 75 when disposed in coaxial relationship are adapted to receive a threaded plug or fractureable member 76.

This fractureable member 76, as more clearly shown in FIGURE 20, comprises a relatively soft metallic stud nut threaded at each of its ends 77 and provided centrally thereof with a relatively thin zone or breakneck 80. For purposes of installation into either the member 61 or the upper member 71, the frangible member is also provided with wrench flats 81 and 82 on each side of the breakneck adapted to receive a wrench to permit the threads torqued into or out of their respective members.

When the support is assembled as illustrated in FIGURES 17 and 18, the support is also provided with a protecting ring 83 which separates the two members 61 and 62 a sufficient distance to correlate the top 84 of the ring with the breakneck 80 for a purpose later to be described.

With the construction above described, it is readily apparent that when the center divider is hit with an impact force such as that caused by contact with a moving automobile, the force is applied to the upper member 62 causing the fractureable member 76 to fracture at the breakneck 80 leaving the embedded member 61 in place. To replace the post 62 for repairing of the center divider, it is then only necessary to screw out the fractured portion of the fractureable member 76 and replace it with a new one. The ring 83 has protected the member 76 during the fracturing so that the lower wrench flats 82 remain and so that no damage has occurred to the threads 77 and 70. With the new fractureable member, the workmen simply replace the ring 83 and a new post by threading the same onto a new fractureable member 76. This operation, as can be appreciated, takes only a fraction of a minute for the replacement of each post, reducing the time to replace a number of supports to a matter of minutes as compared to the replacement time of conventional posts forming part of dividers which heretofore had to be drilled out of the concrete and re-set in concrete before the highway divider could be repaired. Of course, what has been said above in connection with freeway dividers would apply equally well to any protective

fence used in connection with highways such as, for example, those wire mesh fences located on the highway or freeway edges designed to prevent automobiles from jumping off the freeway. These fences are supported much like the center dividers and are often embedded in concrete and their replacement conventionally is like the replacement and repair of conventional freeway dividers, that is to say, by drilling out the broken post and resetting the same in concrete. With this invention, it is simply necessary to replace the fracturable member and the new post or hollow tube in a manner described in connection with FIGURES 17-20, inclusive, above.

Turning now to FIGURE 21, it can be seen that there is therein illustrated a stake or post 61 embedded in concrete with a fracturable member 76 and a ring 83 like that described in connection with FIGURES 17-20, inclusive. However, in this figure, there is illustrated a plastic tube which is identical with the plastic tube 53 to support the highway sign 60 described in connection with FIGURES 10-16, except that this tube 53 is provided with an internal plug 85 internally bored and threaded as at 86 to receive the upper end of the fracturable member 76. This shows that, in those cases where it is desired that the embedded members and fracturable means be alike, the invention is adaptable so that the embedded stakes could be connected to upper members which could vary and be used interchangeably as highway markers or center dividers or fences. Also, in this case where the upper member 62 is plastic, the fracturable means 76 could be made of plastic of a design similar to the metallic fracturable means 76 previously described. The ring 83 being shown as plastic is used, when desired, to provide a means of insuring that the fracturable means breaks at the breakneck so that the broken fracturable means could be easily unthreaded from the embedded member.

While a number of embodiments of the present invention are disclosed and described herein, it will be readily apparent to persons skilled in the art that numerous changes and modifications may be made without departing from the scope of the invention. Accordingly, the foregoing disclosure and description thereof are for illustrative purposes only and do not in any way limit the invention which is defined only by the claims which follow.

I claim:

1. In an apparatus for supporting a highway device above a road, the combination of:

a first elongated member formed from metal adapted to be embedded in the road and having an upwardly facing recess;

a second elongated member formed from plastic material adapted to support the highway device and be in end to end relation to said first member, said second elongated member having a downwardly facing recess; and

a fracturable wooden plug having an end shaped to snugly fit in said downwardly facing recess, and the opposite end shaped to be snugly received in said upwardly facing recess whereby to positively and rigidly support said first and second members in alignment and being fracturable upon an impact applied to said second member whereby said second member breaks free from said first member.

2. In an apparatus for supporting a highway device above a road, the combination of:

a first member adapted to be recessed in the road;

a second member adapted to be in end to end alignment with said first member;

means on said second member for supporting the highway device;

fracturable sleeve means telescoped over portions of said first and second members to hold said second member in end to end alignment with said first member and fracturable upon an impact of a predetermined force applied thereto; and

stop means projecting outwardly from said first member to limit the amount of overlap between said sleeve and said first member.

3. In an apparatus for supporting a highway device above a road, the combination of:

a first member adapted to be recessed in the road;

a second member adapted to be in end to end alignment with said first member;

means on said second member for supporting the highway device;

means defining a threaded stud nut with a breakneck acting between said first and second members to hold said second member in end to end alignment with said first member and fracturable upon an impact of a predetermined force applied thereto; and

means between said first and second members to insure fracturing at the breakneck to prevent damage to the first member.

4. In an apparatus for supporting a highway device above a road having a surface and adapted to receive an impact force, the combination of:

a base member rigidly embeddable in and supportable by the road, said base member having an upper end portion positionable adjacent the surface of the road;

an elongated support member having upper and lower end portions, said lower end portion of said support member being positionable closely adjacent said upper end portion of said base member, said upper end portion of said support member extending above the road and being connectible to the highway device;

each of said upper end portion of said base member and said lower end portion of said support member including upwardly and downwardly opening threaded recesses, respectively;

fracturable means for substantially rigidly interconnecting said upper end portion of said base member and said lower end portion of said support member closely adjacent the road, said fracturable means including a fracturable member having threaded end portions receivable in said threaded recesses, respectively, said fracturable member supporting said base member and said support member in spaced relationship and having a portion intermediate the ends thereof structurally weaker than either of said members whereby when said support member receives the impact force, said fracturable member breaks to cause separation of said members and to leave said base member embedded in the road and substantially unmoved by the impact force; and

a protecting ring around said fracturable member intermediate said base member and said support member.

5. In an apparatus for supporting a highway device above a road having a surface and adapted to receive an impact force, the combination of:

a base member rigidly embeddable in and supportable by the road, said base member having an upper end portion positionable adjacent the surface of the road;

an elongated support member having upper and lower end portions, said lower end portion of said support member being positionable closely adjacent said upper end portion of said base member, said upper end portion of said support member extending above the road and being connectible to the highway device;

each of said upper end portion of said base member and said lower end portion of said support member including upwardly and downwardly opening threaded recesses, respectively;

fracturable means for substantially rigidly interconnecting said upper end portion of said base member and said lower end portion of said support member closely adjacent the road, said fracturable means including a fracturable member having threaded end portions receivable in said threaded recesses, respectively, said fracturable member having a portion in-

intermediate the ends thereof structurally weaker than either of said members whereby when said support member receives the impact force said fracturable member breaks to cause separation of said members and to leave said base member embedded in the road and substantially unmoved by the impact force; and said fracturable member having wrench flats on both sides of said weakened portion thereof to assist in the removal of the threaded end portions from said threaded recesses following separation of said base member and said support member.

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10

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CHARLES E. O'CONNELL, *Primary Examiner.*

NILES C. BYERS, *Examiner.*