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Kendall et al.

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[54] **ENERGY ABSORBING BARRIER POST ASSEMBLY**

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[52] **U.S. Cl.** **256/1,** 94/1.5, 256/13.1

[51] **Int. Cl.** **E01f 13/00**

[58] **Field of Search** ...256/13.1, 1; 94/1.5; 40/145 A; 188/5–8, 32

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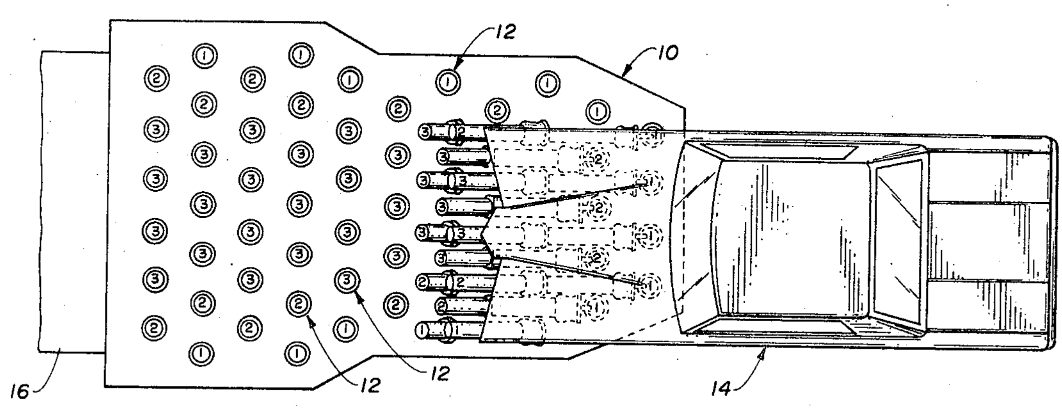
[57] **ABSTRACT**

A barrier post which is angularly movable at a predetermined angle from vertical upon impact at any angle, the point of the angular movement is damped by movement of a viscous material past a piston within a cylinder. The exterior surface of the post is formed to frictionally restrain the impacting object against upper sliding movement along the post. A group of such posts are to be employed to effect complete absorption of the impact force.

21 Claims, 9 Drawing Figures



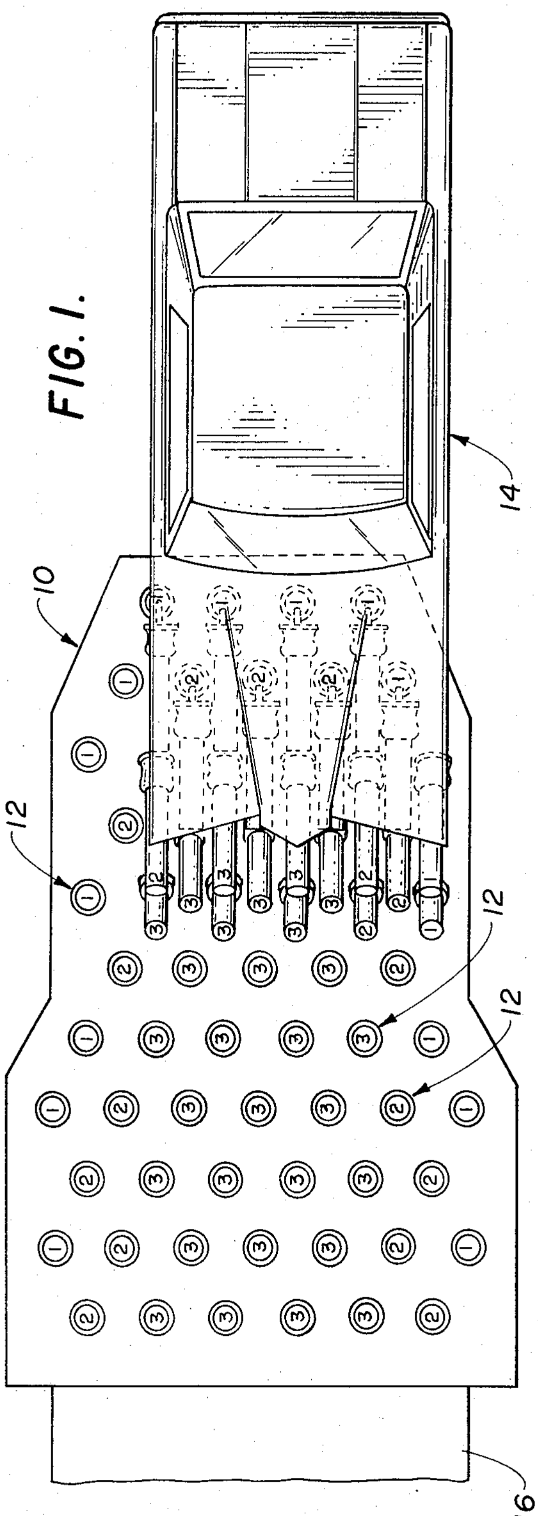


FIG. 1.

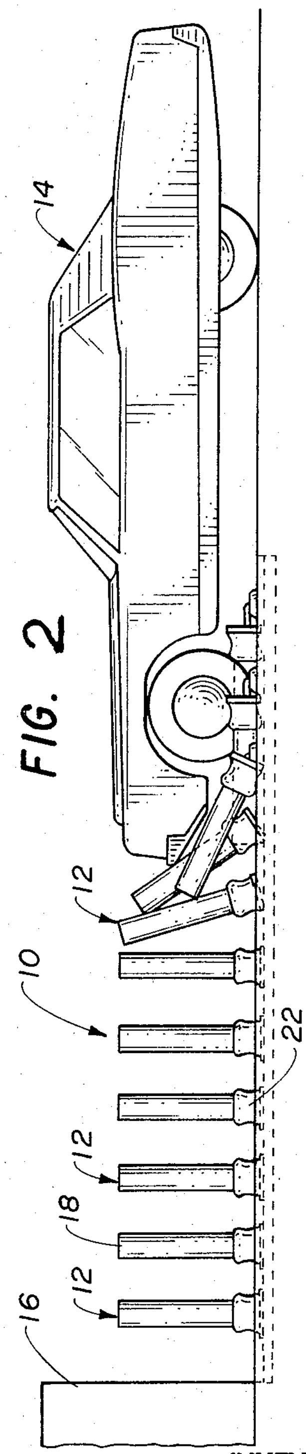


FIG. 2

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FIG. 3.

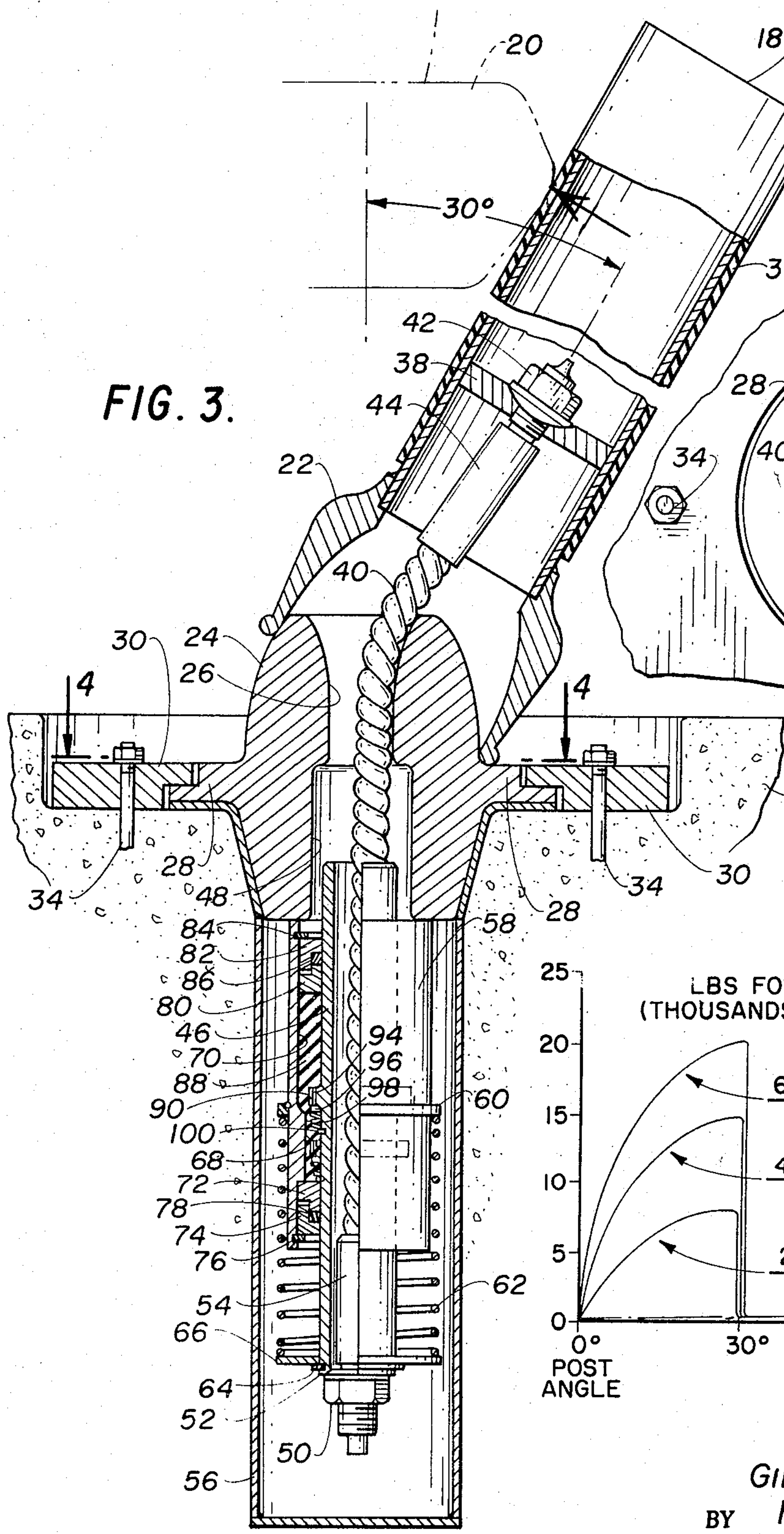

FIG. 4.

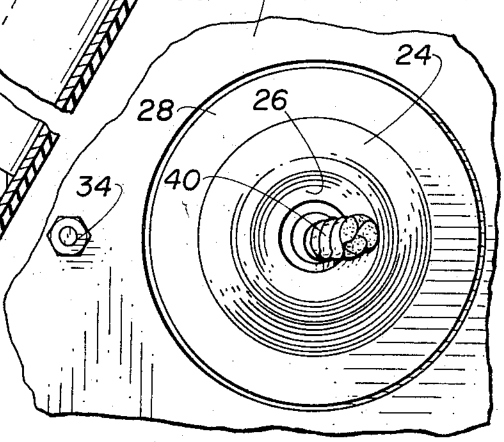

FIG. 5.

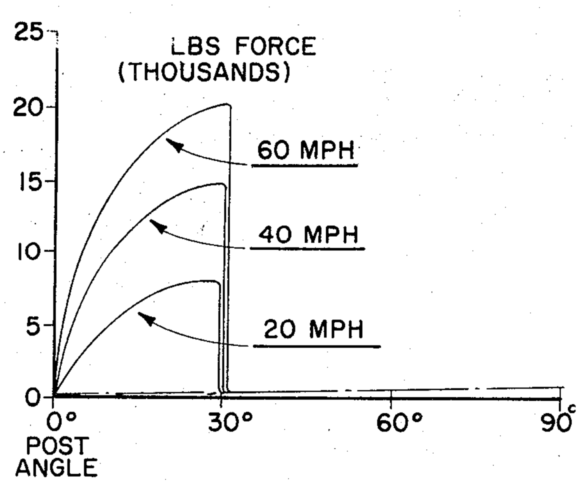

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FIG. 6.

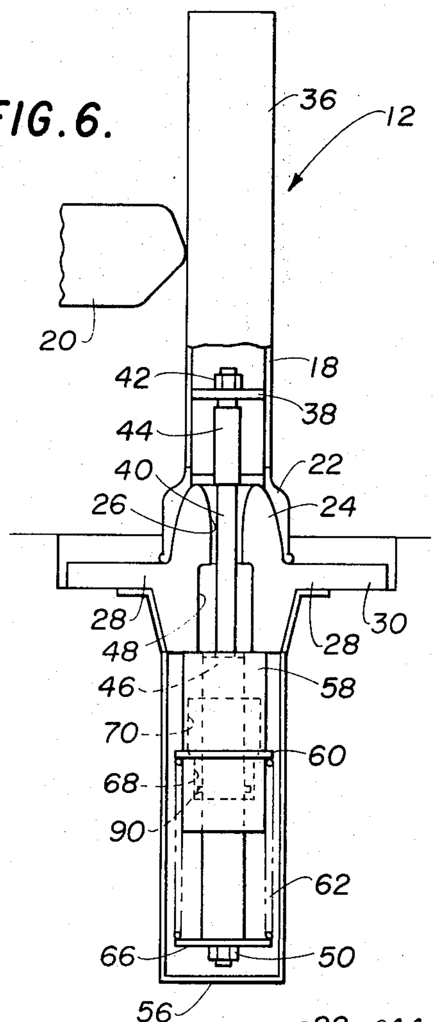


FIG. 7.

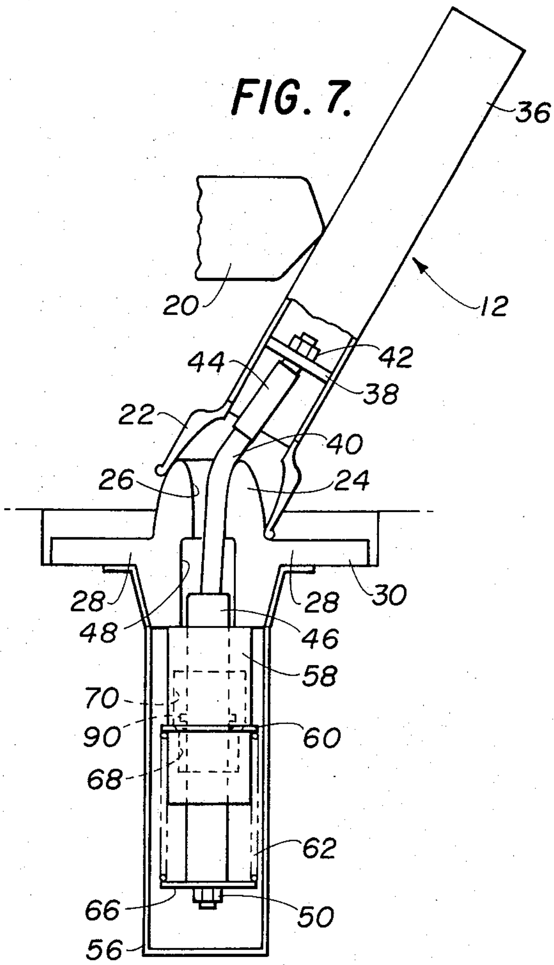


FIG. 8.

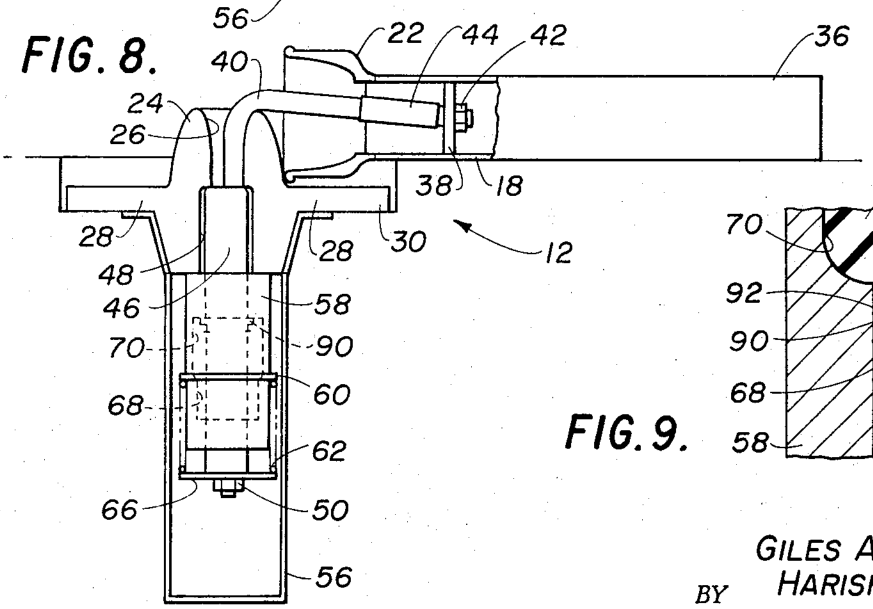
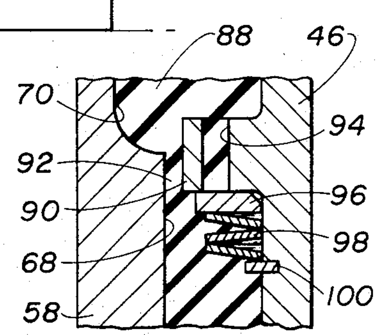


FIG. 9.



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ENERGY ABSORBING BARRIER POST ASSEMBLY

BACKGROUND OF THE INVENTION

Many serious and fatal traffic accidents result from moving vehicles striking rigid immovable structures such as trees and other natural hazards along the highway right of way, or man made objects such as bridge abutments. In such instances, where an immovable object is encountered, practically the entire energy of impact is absorbed by collapse of the vehicle structure. As a general rule, such man made structural objects located along the highway are designed without consideration for energy absorbing characteristics, but rather are designed to minimize damage to the object itself.

Guardrails have been used for many years to reduce the chance of vehicles going in an undesired direction. Also, such guardrails in recent years have been designed to absorb a portion of the impact energy as by failing plastically. However, such guardrails are not used in many places because of the expense of installation, maintenance and replacement. Furthermore, such guardrails function primarily to accommodate side-swiping action of the vehicle, and are not designed to act as energy absorbing devices in a direct or head-on collision. In this respect, guardrails have little energy absorbing effect when directly impacted and, therefore, when such are employed for this purpose, are dangerous.

It has been known in the past, for maximum protection to both the vehicle and the vehicle's occupants, that energy absorption of the impact prior to contact with the fixed object is most desirable. Heretofore, most such energy absorption devices fall either within the category of the spring type of damping device or a fluid type of damping device. The main disadvantage of spring dampers is that the impact force is not absorbed but is stored within the spring assembly of the damper. The energy return after impact may cause further damage in addition to the damage resulting from the initial impact. Also, where a vehicle strikes an object alongside the road, the return of the spring may project the vehicle out into the traffic path or propel it in some undesirable direction. Additional disadvantages of the spring type of energy absorbing device is that, if the impact force is localized in a particular area and exceeds a specific level, the spring assembly or a portion thereof may break resulting in a lack of further energy absorption. Additionally, such springs are usually made of metallic material which is subject to corrosion. Such an energy absorption device will be exposed to the elements continuously for a period of several years. The deterioration of the spring assembly, due to corrosion, can cause a substantial loss of effectiveness of the energy absorbing characteristics. Further, such spring damping assemblies, to effect halting of a several thousand pound vehicle, must be of a substantial physical size and length. Normally, the physical dimensions of such spring assemblies are so great as to preclude their use.

SUMMARY OF THE INVENTION

The energy absorbing barrier post assembly of this invention is to be located within a group of other such posts adjacent a fixed object alongside a roadway. The group of such posts are to be spaced a predetermined distance apart such as 18 inches from each other. The group of posts are to be located so as to anticipate the misguided path of the vehicle thereby requiring the vehicle to contact the greatest number of such posts prior to coming into contact with the fixed solid object (if such occurs). Each of the post assemblies include a post which is to extend in a vertical direction above the surface of the ground a sufficient distance so as to come into contact with the forward lowermost portion of the vehicle (such as a bumper). The post has a cylindrical cross-sectional configuration and is mounted upon a universal joint at ground level and is capable of being struck at any angle. The exterior surface of the post is covered with a rubber material so as to frictionally restrain the bumper of the vehicle from sliding along the post surface which would cause the vehicle to move above the height of the post and not contact such. Interiorally of the post a cable is fixed which passes through the joint and is connected to a movable shaft located beneath ground level. The movable shaft includes a piston which is movable within a first chamber and a second chamber. A return spring assembly is employed to maintain the piston at the lower end of the first chamber. A viscous material such as a compressible solid or some liquids are located within both the first chamber and the second chamber and confined between a specific sealing arrangement to prevent leakage. Upon the post being impacted, tending to displace such at an angle from vertical, the piston is moved within the first chamber toward the second chamber. A certain amount of clearance is provided between the piston and the walls of the first chamber so as to extrude the viscous material through the clearance upon strong angular movement from vertical of the piston. A relief valve assembly is employed in combination with the piston so as to prevent the post ever incurring sufficient force to effect permanent damage of the post. Upon the piston reaching the second chamber, the post has been angularly deflected a particular angle such as 30°. It is undesirable to permit the post to deflect under high load at a greater angle as such will only cause the vehicle to be pushed off the ground and moved through the air above the posts. The second chamber is at a sloppy fit with respect to the piston which results in substantially no energy absorbing characteristics. As a result, the post then moves itself at practically no resistance, out of the way to a horizontal position and parallel to ground level. A certain amount of the impact energy has been absorbed by this post and the vehicle is now permitted to move continually onto other posts where the same procedure is to be repeated. When sufficient posts have been knocked down, the vehicle is brought to rest.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an overall plan view of a group of the posts employed within this invention showing cooperation of such to effect absorption of energy of the vehicle prior to coming into contact with the fixed object;

FIG. 2 is a front view of the post grouping shown in FIG. 1 depicting the collapsible out of the way feature after absorption of its required amount of energy;

FIG. 3 is a cross-sectional longitudinal view through one of the barrier post assemblies of this invention showing clearly its inner working parts;

FIG. 4 is a plan view of the universal type joint upon which the post of this invention is mounted taken along line 4—4 FIG. 3;

FIG. 5 is a post reaction force versus post angle diagram at various impact velocities;

FIG. 6 is a schematic view of the post assembly of this invention in the vertical or non-impact position;

FIG. 7 is a schematic of the barrier post assembly of this invention in the impact position at approximately completion of the energy absorption of the post;

FIG. 8 is a schematic view of the barrier post assembly of this invention showing the barrier post in the horizontal position so as to unhinder passage of the vehicle; and

FIG. 9 is an enlarged view of the piston and cylinder arrangement employed within this invention showing more clearly the orifice structure about the piston and the associated relief valve structure.

DETAILED DESCRIPTION OF THE SHOWN EMBODIMENT

Referring particularly to the drawings, there is shown, in FIG. 1, a group 10 of the barrier post assembly 12 included within this invention. The group 10 is to comprise a particular arrangement or pattern of the barrier post assemblies 12 so that it will be insured that the vehicle 14 will be halted prior to coming into contact with the fixed object 16. The fixed object 16 could comprise a natural condition such as the side of a hill or could comprise a man made condition such as a bridge abutment. The group 10 is located between the fixed object 16 and the anticipated misguided direction of the vehicle 14. By referring particularly to FIG. 1 of the drawings, it can be seen that different sections of the group 10 of the barrier post assemblies 12 are referred to by numerals one, two and three. It is to be noted that the three's are generally in the area of the interior of the group 10 with the one's being located about the periphery of the group 10, and the two's being located between the three's and the one's.

It is to be remembered that the vehicle 14 upon coming into contact with the group 10 will contact the outer post assemblies 12 at the maximum velocity. As the vehicle 14 moves progressively through the group 10, the velocity of the vehicle 14 continues to decrease. As a result, the barrier posts numbered one will encounter maximum velocity from the vehicle 14. Therefore, barrier post assemblies one are designed with a larger orifice area than post assemblies two and three. In other words, from a layman's point of view, it would be easier to effect angular movement of post assembly one as opposed to post assembly two. Similarly, it will be easier to angularly deflect post assembly two than post assembly three. As an example of the variation in orifice area, the one post assembly would have a 0.02 inch clearance between the piston and the wall of the cylinder, where the post assembly two would only have a 0.01 inch between the piston and the cylinder wall, and the post assembly three would only have 0.005 inch clearance between the piston and the cylinder wall.

Although the orifice area within each group of post assemblies 12 is different, each type of the post assemblies is designed to absorb approximately the same amount of energy. The post assembly damper of this invention effects damping by means of velocity. In other words, the higher the velocity the post assembly is struck, the higher the energy absorbing characteristics. Therefore, in an effort to make constant each type of post assembly as to energy absorbing characteristics, the perimeter posts, which will be impacted at the maximum velocity, are designed with the largest orifice area. The posts that will be contacted with the slowest velocity are designed with the smallest orifice area. In other words, the resistance of the damper struck at the higher velocity will be approximately the same as the resistance of the damper struck at the lower velocity. Therefore, each of the post assemblies will absorb approximately the same amount of energy. Obviously, just prior to the vehicle 14 coming to a rest (at a very slow velocity), this is not possible. But for the main portion of impacted posts, such is the case.

Although the use of three different types of post assemblies 12 are shown, it is to be considered within the scope of this invention to employ the use of less than three different types or more than three different types. The principal objective to employing different types of post assemblies is, as was previously stated, so that each type of post assembly will absorb approximately the same amount of energy.

Referring particularly to FIG. 3 of the drawings, there is shown the post assembly 12 of this invention including a post 18 of substantially hollow cylindrical configuration. Post 18 is of sufficient length to be able to easily come into contact with the bumper 20 of the vehicle 14. The upper end of the post 18 is normally closed but such is not absolutely necessary to the employment of this invention. The lower end of the post 18 is attached to a sleeve 22 which is open at its free end thereof. Sleeve 22 is to comprise the female portion of a universal joint and is to cooperate with the male portion of the joint, protrusion 24. A central opening 26 is located within protrusion 24 with an outer peripheral flange 28 located about protrusion 24. Flange 28 is to cooperate with annular plate 30 to securely retain post assembly 12 in a fixed position within the ground 32. Normally, as shown in the drawing, the post assembly 12 will be mounted within a molded cement opening which has been formed within the ground. Bolts 34 are to be employed to secure the annular plate 30 to the ground 32.

Exteriorly located about the post 18 is a frictional rubber like coating material 36. The rubber coating 36 is to frictionally engage the bumper 20 to prevent the bumper 20 from sliding upwardly along the post 18. It is to be considered in the scope of this invention that other types of frictional materials may be employed instead of the rubber coating 36. For example, it may be found that a serrated or knurled outer surface of the post 18 will be just as satisfactory. Also, a plurality of vertically spaced apart protruding elements may be employed about the periphery of post 18 for the same purpose.

An attaching plate 38 is fixedly secured within post 18 with the attaching plate 38 having a central opening therein. A cable 40 is secured by a nut 42 within the central opening of the attaching plate 38. A conventional swaged connecting sleeve 44 is located about the cable 40 adjacent the attaching plate 38. The function of the sleeve 44 is to maintain the portion of the cable

40 substantially rigid adjacent the attaching plate 38. It is desired to maintain the portion of the cable 40 substantially rigid adjacent the attaching plate 38 so that the amount of angular deflection of the post 18 can be accurately determined. If the cable 40 was flexible in the area of the attaching plate 38, it would not be possible to accurately determine the angle of the deflection of the post.

The cable 40 is passed through opening 26 of the protrusion 24 to within hollow shaft 46. Hollow shaft 46 is to be vertically movable into and out of cooperation with recess 48 formed within the lower end of protrusion 24. Recess 48 is designed to be in substantially axial alignment with the central opening 26 and of a diameter in excess of such. The cable 40 is securely fixed by nut 50 and washer 52 to the lower end of the hollow shaft 46. A conventional swaged connecting sleeve 54 is also located about cable 40 adjacent nut 50. The function of the sleeve 54 is substantially similar to the function of sleeve 44. Hollow shaft 46 is located within barrier housing 56 which has been formed within the ground 32.

Concentrically located about hollow shaft 46 and diametrically spaced in the outward direction therefrom, is a fixed cylinder 58. Cylinder 58 is fixedly secured to the lower end of protrusion 24. Exteriorly integrally secured to cylinder 58 is an annular collar 60. Collar 60 cooperates with one end of return pring 62. Return spring 62 is concentrically located about cylinder 58. Secured to the hollow shaft 46, adjacent nut 50, is a snap ring 64. Positioned about hollow shaft 46 and in abutting relationship with snap ring 64 is a disc 66. The free end of the spring 62 is in continuous abutting relationship with the disc 66.

The interior of cylinder 58 is formed into a first hollow chamber 68 and a second hollow chamber 70. First chamber 68 is of a smaller internal diameter than the second chamber 70 as is readily apparent from FIG. 3 of the drawings. Adjacent first chamber 68 is an inner bearing 72 which is positioned between cylinder 58 and the hollow shaft 46. Inner bearing 72 interfittingly cooperates with an outer bearing 74. Outer bearing 74 abuts a snap ring 76 located within cylinder 58. It is to be noted that the inner bearing 72 normally is to be located in an abutting relationship with an annular shoulder adjacent first chamber 68. Seal 78 is to be positioned between inner bearing 72 and outer bearing 74.

Adjacent second chamber 70, determining the upper end of chamber 70, is located an inner bearing 80 which is also located between cylinder 58 and hollow shaft 46. In a similar manner to the previous description, inner bearing 80 cooperates with an outer bearing 82 which is in abutting relationship to snap ring 84 formed within cylinder 58. Seal 86 is positioned between the inner bearing 80 and the outer bearing 82. Both the seals 78 and 86 are to be in continuous contractual relationship with the hollow shaft 46. A compressible solid material 88 is to be located within both the first chamber 68 and the second chamber 70. As pressure is built up within the compressible solid material 88, both the inner bearings 72 and 80 will tend to move toward their outer bearings 74 and 82 respectively. As a result, the respective seals 78 and 86 are compressed and pushed into tighter contractual relationship with the hollow shaft 46. It is to be noted that the pressure area is greater upon the surface of the inner bearings 72 and 80 than that area exhibited by the seals 78 and 86. Therefore, the pressure itself upon each of the seals is proportionately greater than the pressure applied to the inner bearings 72 and 80. Therefore, as the pressure upon the inner bearings 72 and 80 increases, the pressure upon the seals also proportionately increases thereby insuring non-leakage of the compressible solid material 88 past the seals 78 and 86.

The compressible solid material 88 can take many forms. However, a common form of such material comprises a silicone rubber composition. This type of compressible solid is marketed under the trade name of "-Silastic" by Dow-Corning. Basically, the features of the compressible solid material are that it is capable of flowing somewhat similar to a liquid when put under pressure, while also being compressible to a certain extent somewhat similar to a gas. A combination of the compressibility as well as the flowing characteristics are most desirable in the performing of the energy absorbing characteristics of this invention.

Secured exteriorly about hollow shaft 46 is a piston 90. Piston 90 is designed to be located within first chamber 68 so that a clearance 92 is formed between the wall of the first chamber 68 and a piston 90. Clearance 92 constitutes the orifice area through which the compressible solid material 88 is to be passed during movement of the piston 90. As previously mentioned, the clearance 92 may be varied and it is actually envisioned by applicant that the clearance 92 will be varied to obtain different types of barrier posts to operate at different velocities. It is also to be considered within the scope of this invention that a plurality of orifices could be provided through the piston 90 with the piston 90 being in an abutting contact with the wall of chamber 68. This will merely be another way in which a compressible solid material would be caused to flow past the piston 90.

Formed through piston 90 are a plurality of relief orifices 94. An annular shaped valve plate 96 is to be located in abutting relation to one side of piston 90 such that valve plate 96 closes off relief orifices 94. A belleville spring arrangement 98 is located between valve plate 96 and snap ring 100 which is fixed to hollow shaft 46. Belleville springs 98 are installed between snap ring 100 and valve plate 96 so that a predetermined amount of spring force exists therebetween. The spring force is to be such that if the particular barrier post assembly is being subjected to a value of force which exceeds the maximum permitted amount, such force likely to cause permanent damage to the barrier post assembly structure, the valve plate 96 will be moved against the action of the spring assembly 98, causing an opening of the relief orifices 94. As a result, the compressible solid material 88 which is under this maximum allowable pressure can be additionally passed through the relief orifices 94, thereby causing a decreasing of the force value below the maximum allowable. Therefore, no permanent damage should occur to the barrier post assembly.

The operation of each of the barrier post assemblies 12 of this invention is as follows: It will be presumed that each of the barrier post assemblies 12 within a group 10 is located in a vertical position as shown in FIGS. 4 and 6 of the drawings. In this vertical position, the piston 90 is located directly adjacent or in abutting contact with inner bearing 72. The compressible solid material 88 is normally not under any initial pressure. Upon the bumper 20 of the vehicle 14 coming into contact with the post 18, angular deflection of the post is initiated. Almost instantaneously the post 18 is brought up to the velocity of the moving vehicle 14. With the post 18 in the vertical direction the cable 40 is in a taut position. Upon initiation of angular deflection of the post 18, the cable 18 is extended causing an upward movement of hollow shaft 46 with respect to cylinder 58. As a result, the piston 90 begins to move upward within the first chamber 68. It is to be remembered, as was previously stated, the energy absorbed is directly related to the velocity of movement of the piston 90, which is directly dependent to the velocity of movement of the automobile 14. In other words, if the automobile is moving at a relatively low velocity, only a small amount of energy absorption will occur upon upward movement of the piston 90. However, if the automobile was moving at a rather high velocity, substantial energy absorption will occur upon movement of piston 90. Or, it can be inferred from the previous statement that, a human being with a manual pushing force easily angularly deflect the post 18. However, upon striking the post 18 with substantial velocity, substantial resistance occurs which resists the movement of piston 90.

As the piston 90 is moved upward within first chamber 68, the compressible solid material 88 flows about piston 90 through clearance 92. Upon the piston 90 reaching the second chamber 70, a substantial increase in the clearance between the piston 90 and the wall of the second chamber 70 occurs. As a result, practically no resistance or energy absorption occurs in the conducting of the compressible solid material past piston 90. The reason for this is as follows: It is important in the absorbing of the impact energy of the vehicle that the vehicle is not projected upwardly away from the ground into the air. Upon deflecting the post 18, an upward component of force is applied against the bumper 20 of the vehicle 14. It is desired to maintain this upward component as small as possible. It has been found that as long as the angular deflection of the post 18 does not exceed 30°, the upward component of force is maintained sufficiently low enough so as to not cause projecting of the vehicle upwardly into the air. Therefore, the beginning of the second chamber 70 is such that the angular deflection of the post 18 does not exceed 30°. Again, it is to be known that the amount of this angular deflection can be varied, either being increased or decreased as desired.

To further insure that the vehicle is not permitted to move upwardly into the air, a friction rubber-like coating material 36 is applied to the exterior surface of post 18. This material 36 is to prevent the bumper 20 of the vehicle 14 from sliding upwardly along the surface of the post 18.

Upon the piston 90 reaching the start of the second chamber 70, there is now little resistance to movement of the piston 70, continued movement of the bumper 20 merely causes the post 18 to move to substantially horizontal position as shown in FIG. 8 of the drawings. With the post 18 in this horizontal position, the automobile is permitted to easily pass over such post and proceed on to additionally contact one or more of such vertical posts. The reason for the post 18 to assume this horizontal position is so that it would not interfere with the underbody structure of the vehicle 14. But prior to the post falling into this horizontal position, the post has absorbed the required amount of impact energy which it is desired to absorb. In other words, the automobile 14 has been slowed by a certain velocity. The automobile 14 then is to continue its procedure of knocking down posts progressively until all of the impact energy has been absorbed by the combined number of posts which have been deflected.

Each of the barrier post assemblies in either type one, type two, or type three are designed to absorb the same amount of energy. For example, it has been found desirable to design each of the post assemblies to absorb somewhat in the range of 20,000 foot-lbs. of force. A force angle diagram is shown in FIG. 5 of the drawings for the type one type of barrier post assembly. The maximum level of 20,000 foot pounds of force will occur at approximately 60 m.p.h. of the vehicle. This diagram is based on a vehicle weighing approximately 5,000 lbs. and the maximum velocity to which the vehicle would normally enter the group 10 of the barrier posts. It is to be noted that in referring to FIG. 5 that at 40 m.p.h. approximately 15,000 foot pounds of energy is absorbed and at approximately 20 m.p.h. approximately 7 ½ foot pounds of energy is absorbed. If the maximum force of 20,000 lbs. is exceeded due to a greater than anticipated velocity of the vehicle 14, the increased pressure within the compressible solid 88 is transmitted within the relief orifices 94. This pressure causes a movement of the valve plate 96 against the belleville spring assembly 98 resulting in an opening of orifices 94. The compressible solid then is permitted to escape through the relief orifices 94 thereby providing additional conducting passages from one side of the piston 90 to the other side. The force of the spring assembly 98 is selected so that the maximum amount of force must be exceeded before valve plate 96 will be permitted to move away from relief ports 94. Although in the drawing only two such relief ports 94 are shown, it is to be considered a matter of choice or design as to the particular number of such ports being employed. In actual practice it is envisioned to employ a substantially greater number of such ports, as 24 in number.

Let it be assumed that the vehicle 14 has now come to a stop within the grouping 10 of the barrier post 12. Some of the barrier posts 12 were never contacted by the vehicle and therefore remain in the upright position. Others of the barrier posts have fallen to the horizontal position and remain in that position. Possibly, a small number of such posts, that are in contact with the bumper of the vehicle in the stopped position, are only partially deflected. To remove the vehicle 14 from the group 10, it is only necessary to reverse the direction of movement of the vehicle somewhat along the same path that the vehicle entered within the group 10. In all cases it should be that the vehicle 14 will be stopped prior to coming into contact with the fixed object 16. There also should be little damage to the vehicle 14 by coming into contact with each of the barrier posts 12. Further, there should be no damage to any of the barrier post assemblies 12.

Upon the vehicle 14 having been removed from the group 10, the small number of barrier posts which were partially deflected will automatically right themselves under the action of the return spring 62. Return spring 62 tends to move hollow shaft 46 downwardly away from cylinder 58. Upon the maximum downward movement being achieved, the post 18 will be in the directly vertical upright position. As to the posts that are laying in the horizontal position, it is necessary for a person to manually move each of the posts 18 toward the upright position. Upon initiating such an action, the sleeve 22 again recooperates with the protrusion 24 and the spring 62 will again function to return the post 18 to the completely upright vertical position. With all the barrier posts 12 again in the upright position, the entire group 10 is again ready to absorb the impact force of another misguided vehicle.

Numerous modifications can be employed in conjunction with the barrier post assembly 12 of this invention and its associated grouping 10. For example, the damping force within the barrier posts within a single line within the group could be varied so that the vehicle could be caused to rotate in a certain direction. For example, it may be desirable in certain installations to insure that once a vehicle enters to within the group 10, it will not be caused to exit laterally from the group 10 but will always be continued right toward the fixed object 16. This will insure a maximum number contacted of the post assemblies 12 with the vehicle 14, thereby insuring that the vehicle will be halted.

Also, the post 18 could be initially tipped a certain amount to modify the energy absorbing characteristics. Also, the cable 40 could be displaced off center thereby again varying the energy absorbing characteristics. Numerous other modifications can readily become apparent to those skilled in the art which may fall within the scope of this invention.

With a 4,000 lb. vehicle 14 which enters group 10 at approximately a velocity of 65 m.p.h., 30 such post assemblies 12 will have to fall prior to halting of the vehicle. Each of the barrier posts 12 are to be spaced apart from each other a distance of approximately 18 inches. However, this distance is variable with it normally being that the conventional American size automobile will strike three such posts at a time. In order to stop the vehicle, ten such rows of posts must be knocked down for a total stopping distance of 15 feet. This is relatively a short stopping distance compared to the braking distance of the average automobile at 65 m.p.h. in excess of 200 feet. A smaller type of foreign vehicle will normally contact two posts at a time. Because of the smaller mass of the smaller vehicle, although contacting only two posts at a time, such vehicle should be stopped within the same distance as for the large vehicle.

What is claimed is:

1. A barrier system for stopping a misguided vehicle travelling upon a roadway comprising:

a plurality of barrier posts arranged in a group, each of said posts including means for absorbing energy by angular movement from a first position to a second position, each of said posts movable to a third position after absorption of energy, said second position being limited to an angle away from vertical such that each post would not substantially elevate the vehicle off of the roadway, said means for absorbing energy being operative only during movement between said first and said second position, said third position being such to permit the vehicle to pass over said posts.

2. A barrier system as described in claim 1 wherein:

said first position being substantially vertical, said second position being a predetermined angular movement from said first position, said third position being substantially horizontal.

3. A barrier system as described in claim 2 wherein:

said second position being angularly closer to said first position than said third position.

4. A barrier system as defined in claim 3 wherein:

said second position being approximately thirty degrees displaced from said first position.

5. A barrier system as defined in claim 1 wherein:

said group being divided into peripheral posts and interior posts, the energy absorption of said posts increasing as the velocity of said vehicle increases, said peripheral posts absorbing substantially the same amount of energy as said interior posts although being subjected to a greater impact velocity.

6. A barrier system as defined in claim 5 wherein:

said interior posts also being divided into outer posts and inner posts, said outer posts being adapted to be subjected to a greater impact velocity than said inner posts, said outer posts to absorb substantially the same amount of energy as said inner posts.

7. A barrier system as defined in claim 1 wherein:

said means to absorb energy by a compressible solid material.

8. A barrier post assembly for absorbing the kinetic energy of a movable object, said object to physically contact a portion of said barrier post assembly, said barrier post assembly comprising:

a fixed housing;

a post connected to said fixed housing to be angularly movable in respect thereto, said post being located to be contactable by said movable object, energy absorption means connected to said post to absorb kinetic energy during movement from a first position to a second position, said post movable to a third position in respect to said movable object, said means for absorbing energy being inoperative during movement from said second position to said third position, said second position being limited to an angle away from vertical such that each post would not substantially elevate said movable object off of the surface upon which the movable object is moving, said third position being such as to permit the movable object to pass over said posts.

9. A barrier post assembly as defined in claim 8 wherein:

said post being angularly movable in any direction 360° with respect to said fixed housing.

10. A barrier post assembly as defined in claim 9 wherein:

said first position being substantially vertical, said second position being a predetermined angular movement from said first position, said third position being substantially horizontal.

11. A barrier post assembly as defined in claim 10 wherein:

said second position being angularly closer to said first position than said third position.

12. A barrier post assembly as defined in claim 11 wherein:

said second position being approximately thirty degrees displaced from said first position.

13. A barrier post assembly as defined in claim 8 wherein:

said post includes a friction resisting exterior surface, whereby said fixed object is resisted from movement along the surface of post.

14. A barrier post assembly as defined in claim 13 wherein:

said friction resisting exterior surface comprises a rubber-like coating.

15. A barrier post assembly as defined in claim 8 wherein:

said means to absorb energy includes a compressible solid material.

16. A barrier post assembly for absorbing the kinetic energy of a movable object, said object to physically contact a portion of said barrier post assembly, said barrier post assembly comprising:

a fixed housing:

a post being angularly movable with respect to said fixed housing, said post being located to be contactable by said movable object, said post to absorb kinetic energy during movement from a first position to a second position, said post being movable to a third position with respect to said movable object, the absorption of kinetic energy being negligible during movement from said second position to said third position;

means connected to said post to resist movement of said post from said first position to said second position, said means includes a compressible solid material; and

said compressible solid material being located within a chamber assembly, said chamber assembly being defined as the spacing between a movable shaft and a cylinder, said cylinder being concentric to said movable shaft, said cylinder being fixed to said fixed housing, said movable shaft being directly connected to said post, upon angular movement of said post said movable shaft is moved lineally with respect to said cylinder, a piston secured to said movable shaft and movable within said chamber assembly, orifice means associated with said piston to permit conductance of said compressible solid past said piston during movement within said chamber assembly.

17. A barrier post assembly as defined in claim 16 wherein:

a sealing means located at each end of said chamber assembly to prevent escape of said compressible solid, said sealing means includes a flexible sealing element, the pressure upon said sealing element being proportionately greater than the pressure within said compressible solid.

18. A barrier post assembly as defined in claim 16 wherein:

said orifice means comprises a clearance between said piston and said chamber assembly.

19. A barrier post assembly as defined in claim 16 wherein:

pressure relief orifices formed within said piston, said relief orifices being opened to permit passage of compressible solid therethrough upon the pressure exceeding a predetermined level.

20. A barrier assembly as defined in claim 18 wherein:

said chamber assembly comprises a first chamber and a second chamber, the clearance between said first chamber being substantially less than said second chamber.

21. A barrier assembly as defined in claim 16 wherein:

a spring connected between said cylinder and said movable shaft, said spring continuously biasing said movable shaft in a direction so that said post will assume said first position.

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