loop under the train length at a particular instant will be connected to a different inductor element—this requirement can be satisfied by having a sufficiently large number of groups so that the loops in each group are spaced at least a train length apart. In the illustrative arrangement shown in FIGS. 21–22 the train is assumed to have a length equal to a single body section 35 and the length of the vehicle as a whole is equivalent to the spacing between four of the lifting track loops 61''. By dividing the track loop array into seven groups of loops, with each group connected to an associated inductor element, the desired current limiting effect is achieved with a minimal number of external inductors.

The terms and expressions which have been employed here are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding equivalents of the features shown and described, or portions thereof, it being recognized that various modifications are possible within the scope of the invention claimed.

What is claimed is:

1. An electromagnetic inductive suspension and stabilization system for a ground vehicle, comprising in combination, a plurality of superconducting magnets carried by the vehicle and a track bed formed by a longitudinally extending series of oriented shorted loops composed of metal conductors, said magnets and said shorted loops being arranged in electromagnetic inductive relationship to each other, whereby, when the vehicle is propelled at speeds above a certain transitional speed, there is generated a suspension force for floating the vehicle above the ground and for maintaining the vehicle at an equilibrium position above the track bed, stabilized against vertical displacements.

2. A system in accordance with claim 1, in which the said track bed comprises additional longitudinally extending series of oriented shorted loops, whereby, when the vehicle is propelled at speeds above a certain transitional speed, there are generated, in addition to said suspension force, restoring and damping forces to stabilize the vehicle against lateral, rotational and oscillatory displacements.

3. A system in accordance with claim 1, in which the track bed loops are spaced along the track bed, where the spacing distance may vary from zero to a maximum of the length of the vehicle magnet.

4. A system in accordance with claim 1, in which the longitudinal length of the individual track bed loop is short relative to the corresponding dimension of the individual magnet on the vehicle.

5. A system in accordance with claim 4, in which the longitudinal length of the individual track bed loop is approximately one-half the corresponding dimension of the individual magnet on the vehicle.

6. A system in accordance with claim 1, in which the track bed loops are composed of non-magnetic metal conductors.

7. A system in accordance with claim 6, in which the track bed loops are composed of non-superconducting metal conductors.

8. A system in accordance with claim 1, in which the track bed loops are composed of aluminum conductors constructed of multiple insulated turns of wire to reduce eddy current effects.

9. A system in accordance with claim 1, in which the individual magnet comprises a conductor loop lying in a plane substantially perpendicular to the plane of a track bed loop with which it is electromagnetically coupled.

10. A system in accordance with claim 1, in which the individual magnet comprises a conductor loop lying in a plane substantially parallel to the plane of a track bed loop with which it is electromagnetically coupled, and in which said track bed loop comprises two substantially rectangular sections cross-connected in a FIGURE 8 configuration, whereby lateral stability of the vehicle is provided, and no net material current is induced in said track bed loop when the vehicle is in the equilibrium position with reference to lateral motion.

11. A system in accordance with claim 1, in which the individual magnet comprises a conductor loop lying in a plane substantially parallel to the plane of a track bed loop, in which the longitudinal length of the individual track bed loop is long relative to the corresponding dimension of the individual magnet on the vehicle, and in which there is a net resultant magnetic coupling between the individual track bed loop and the entire plurality of magnets carried by the vehicle, whereby damping of a component of oscillatory motion of the vehicle about its equilibrium position is provided.

12. A system in accordance with claim 1, in which said magnets are disposed in a horizontal plane and said track bed loops comprise (1) a series of vertical loops providing magnetic suspension of the vehicle body, (2) two series of upper and lower horizontally disposed conductor loops providing lateral stability of the vehicle body, and (3) two series of horizontal and vertical loops of longitudinal length relatively long with respect to the corresponding dimension of the individual magnet on the vehicle, said latter two series of loops providing damping of lateral and vertical oscillations respectively in the moving vehicle.

13. A system in accordance with claim 1, in which the individual magnet comprises a conductor loop lying in a plane substantially parallel to the plane of a track bed loop with which it is electromagnetically coupled.

14. A system in accordance with claim 1, in which the individual magnet comprises a conductor loop lying in a plane substantially perpendicular to the plane of a track bed loop and so placed as to be normally substantially uncoupled therewith, whereby lateral stability of the vehicle is provided and no material current is induced in said track bed loop when the vehicle is in the equilibrium position with respect to lateral motion.

15. A system in accordance with claim 1, in which said magnets are disposed in a horizontal plane and said track bed loops comprise a first series of horizontal loops arranged in maximum coupling relationship with the individual magnet carried by the vehicle, and a second series of vertical loops arranged in minimum coupling relationship with the individual magnet carried by the train, whereby a suspension force and a vertical stabilization and damping force are provided by said horizontal track bed loops and a horizontal stabilization and damping force is provided by said vertical track bed loop when the vehicle is displaced from its position of lateral equilibrium.

16. A system in accordance with claim 1, in which said magnets are disposed in a horizontal plane and said track bed loops comprise a series of horizontally disposed loops providing magnetic suspension of the vehicle body and a series of vertically disposed loops providing lateral stability of the vehicle body.

17. A system in accordance with claim 16, in which said horizontally disposed shorted loops are connected with a plurality of inductors, each in series with a different one of said loops, whereby induced currents in said loops are limited to a desired maximum value.

18. A system in accordance with claim 16, in which there is

- a plurality of said horizontally disposed shorted loops divided into n groups, together with
- n inductors, each individual to a different one of said groups, and
- unidirectionally conductive means individual to each said loop,
- the said individual unidirectional means connecting the said loop to the inductor individual to the group to which the said loop belongs,
- each said unidirectional means being so connected as to permit current induced in the loop to flow to the