WE CLAIM:

1. A draft gear assembly for cushioning buff and draft dynamic impact forces encountered during make-up and operation of a railcar and applied to said draftgear assembly along a central axis thereof, said draft gear assembly comprising:

(a) a housing; and

(b) a compressible elastomeric spring stack disposed within said housing along said central axis, said compressible elastomeric spring stack includinga plurality of compressible elastomeric springs disposed in series with each other, each of said plurality of compressible elastomeric springs including:

i. a compressible elastomeric pad,

ii. a rigid member having one surface thereof positioned in direct contact with one end surface of said compressible elastomeric pad, said rigid member further having a central aperture formed through a thickness thereof, said thickness defined by another surface spaced from said one surface of said rigid member along said central axis, said one and another surfaces are planar surfaces disposed normal to said central axis,

iii. an abutment upstanding axially on said one end surface of said compressible elastomeric pad, said abutment having a peripheral surface thereof so sized that said abutment is received within said central aperture formed through said thickness of said rigid member, and

iv. an annular lip disposed on a distal end of said axial abutment in aplane being substantially transverse to said central axis, whereby an annular thickness portion of said rigid member is caged between said one end surface of said compressible elastomeric pad and an inner surface of said annular lip, whereby an outer surface of said lip extends above said another surface of said rigid member.

2. The draft gear assembly of claim 1, further including another compressible elastomeric pad having one end surface thereof positioned in direct contact with another surface of a terminal rigid member disposed at one end of said compressible elastomeric spring stack.

3. The draft gear assembly of claim 1, further including an axial bore formed through said thickness of said compressible elastomeric pad and through said thickness of said abutment.

4. The compressible spring, according to claim 3, wherein at least fifteen percent of a length of said axial bore has a substantially uniform diameter throughout.

5. The draft gear assembly of claim 1, wherein said housing is rigid and includes a closed end, an axially opposite open end and four generally solid side walls defining a hollow interior of said rigid housing.

6. The draft gear assembly of claim 5, wherein said housing includes means for controlling radial expansion of said compressible elastomericspring stack.

7. The draft gear assembly of claim 6, wherein said means forcontrolling said radial expansion of said compressible elastomeric spring stack includes an annular ridge disposed on an end surface of aterminal compressible elastomeric pad and a recess within an inner surface of a closed end of said housing, said recess being sized to receive said annular ridge therewithin and wherein a peripheral wall of said recess restrains a radial movement of said compressibleelastomeric spring stack.

8. The draft gear assembly of claim 6, wherein said means forcontrolling said radial expansion of said compressible elastomeric spring stack includes a pair of side walls of said housing having inner curved surfaces thereof disposed at a predetermined nominal distance from peripheral edges of said rigid members.

9. The draft gear assembly of claim 6, wherein said means forcontrolling said radial expansion of said compressible elastomeric spring stack includes means for locating at least one end of said compressibleelastomeric spring stack.

10. The draft gear assembly of claim 9, wherein said locating means includes an annular grove disposed axially on an inner wall surface of said closed end of said housing.

11. The draft gear assembly of claim 10, wherein said annular groove has a generally rectangular cross-sectional shape.

12. The draft gear assembly of claim 6, wherein said means forcontrolling said radial expansion of said compressible elastomeric spring stack includes at least a pair of side walls of said housing having inner surfaces thereof disposed at a predetermined nominal distance from peripheral edges of said rigid members.

13. The draft gear assembly of claim 6, wherein said means forcontrolling said radial expansion of said compressible elastomeric spring stack includes an annular ridge disposed on an inner wall surface of said closed end of said housing, said inner wall surface of said closed end being positioned substantially normal to said central axis of said housing.

14. The draft gear assembly of claim 13, wherein an end of one terminal compressible elastomeric pad is positioned in direct abutment with an inner wall surface of said closed end of said housing.

15. The draft gear assembly of claim 14, further including an annular ridge disposed on an end surface of at least one terminal compressibleelastomeric pad.

16. The draft gear assembly of claim 5, further comprising a friction cushioning mechanism disposed at least within said open end and means for locating one end of said elastomeric compressible spring stack on an inner end surface of said friction cushioning mechanism.

17. The draft gear assembly of claim 1, wherein said housing includes ayoke end adapted to connect to an end of a coupler shank, a butt end axially opposing said yoke end, a pair of elongated substantially parallel spaced-apart top and bottom strap members each having an inner surface, an outer surface, a front end and a rear end, said rear end of each strap member being

joined to said butt end of said housing and said front end of said each strap member being joined to said yoke end of said housing.

18. The draft gear assembly of claim 17, further including a coupler follower positioned forward of said compressible elastomeric spring stack and a rear follower positioned rearward of said compressibleelastomeric spring stack when said draft gear assembly is installed on the railcar.

19. The draft gear assembly of claim 18, further including a central through bore formed through a thickness of said coupler follower.

20. The draft gear assembly of claim 17, further including an annular groove formed in an inward surface of each of said coupler follower and said rear follower.

21. The draft gear assembly of claim 1, further including a plurality of rings upstanding in a predetermined pattern on each surface of said rigid member and at least partially disposed within a thickness of an adjacent compressible elastomeric pad.

22. The draft gear assembly of claim 1, further including an additional rigid member being mechanically secured to an exposed end surface ofa terminal compressible elastomeric pad.

23. A method of assembling a draft gear assembly, said method comprising the steps of:
(a) providing a housing having a closed end and an axially opposite open end;
(b) providing a plurality of compressible elastomeric springs, each of said plurality of compressible elastomeric springs including a compressibleelastomeric pad secured axially to a rigid member and having an axial through bore formed through a thickness of said compressible elastomericpad and through a thickness of said rigid member;
(c) stacking said plurality of compressible elastomeric springs into said hollow housing in an axial manner along a longitudinal axis of said draft gearassembly; and
(d) compressing said plurality of compressible elastomeric springs along said longitudinal axis of said draft gear assembly.

24. The method of claim 23, further including a step of inserting an elongated rigid member through said axial through bore of said each of said plurality of compressible elastomeric springs after stacking in step (c).

25. The method of claim 24, further including a step of providing an axial bore in an inner surface of said closed end of said housing and the step of positioning one end of said elongated rigid member within said axial bore.

26. The method of claim 24, further including the additional step of removing said elongated rigid member after compressing said plurality of springs in step (d).

27. The method of claim 23, wherein said method includes a step of positioning another compressible elastomeric pad on a surface of aterminal rigid member, said another compressible elastomeric pad having said axial bore formed through a thickness thereof.

28. The method of claim 23, wherein said step of compressing includes the step of applying a temporary axial force to an outer end of a terminal compressible elastomeric pad of a resulting compressible elastomericstack.

29. The method of claim 23, wherein said method includes a step of positioning a seat of a friction cushioning mechanism at a terminalelastomeric spring after stacking said plurality of compressibleelastomeric springs in step (c).

30. The method of claim 29, further including the additional steps of providing an axial bore in said seat of said friction cushioning mechanism, the step of inserting an elongated rigid member through said axial bore and the step of disposing one end of said elongated rigid member within said axial bore.

31. The method of claim 23, wherein said step of stacking said plurality of springs includes a step of positioning one end of a terminal compressible elastomeric pad in a direct contact with an inner wall surface of said closed end of said housing.

32. The method of claim 31, further including an additional step of providing means for locating said one end of said terminal compressibleelastomeric pad on said inner wall surface of said closed end of said housing.

33. The method of claim 23, further including the additional step of maintaining said plurality of springs at a predetermined compressed height.

34. The method of claim 33, further including the additional step of positioning a friction cushioning mechanism in said open end of said housing.

35. The method of claim 23, further including the step of providing aplurality of rings on each surface of each rigid member.

36. A draft gear assembly for cushioning buff and draft dynamic impact forces encountered during make-up and operation of a railcar and applied to said draftgear assembly along a central axis thereof, said draft gear assembly comprising:
(a) a housing having an open end and an axially opposite closed end;
(b) a compressible elastomeric spring stack disposed within said housing along said central axis, said compressible elastomeric spring stack includinga plurality of compressible elastomeric springs disposed in series with each other, each of said plurality of compressible elastomeric springs including acompressible elastomeric pad affixed to a rigid member in a surface to surface contact therewith;
(c) an annular grove provided, concentric with said central axis of said housing, in an inner wall surface of said closed end of said housing; and
(d) an annular ridge upstanding, concentric with said central axis of said housing, on an end surface of a terminal compressible elastomeric pad, wherein said annular ridge is sized to be received within said annular groove and wherein an end surface of said terminal compressible elastomeric pad is positioned in a direct abutment with said inner wall surface of said closed end of said housing.

37. The draft gear housing of claim 36, further comprising:
(a) a friction cushioning mechanism disposed at least within said open end of said housing;
(b) another annular grove provided, concentric with said central axis of said housing, in a surface of said friction cushioning mechanism; and
(c) another annular ridge upstanding, concentric with said central axis of said housing, on an end surface of an axially opposite terminal compressible elastomeric pad, wherein said another annular ridge is sized to be received within said another annular groove and wherein an end surface of said another terminal compressible elastomeric pad is positioned in a direct abutment with said surface of said friction cushioning mechanism.

38. A draft gear assembly for cushioning buff and draft dynamic impact forces encountered during make-up and operation of a railcar and applied to said draftgear assembly along a central axis thereof, said draft gear assembly comprising:
(a) a housing having an open end and an axially opposite closed end;
(b) a compressible elastomeric spring stack disposed within said housing along said central axis, said compressible elastomeric spring stack includinga plurality of compressible elastomeric springs disposed in series with each other, each of said plurality of compressible elastomeric springs including acompressible elastomeric pad affixed to a rigid member in a surface to surface contact therewith;
(c) a first annular ridge upstanding, concentric with said central axis of said housing, on an inner wall surface of said closed end of said housing; and
(d) a second annular ridge upstanding, concentric with said central axis of said housing, on an end surface of a terminal compressible elastomeric pad, wherein said second annular ridge is sized to be received within said first annular ridge and wherein an end surface of said terminal compressibleelastomeric pad is positioned in a direct abutment with said inner wall surface of said closed end of said housing.

39. A draft gear assembly for cushioning buff and draft dynamic impact forces encountered during make-up and operation of a railcar and applied to said draftgear assembly along a central axis thereof, said draft gear assembly comprising:
(a) a housing having an open end and an axially opposite closed end;

(b) a compressible elastomeric spring stack disposed within said housing along said central axis, said compressible elastomeric spring stack includinga plurality of compressible elastomeric springs disposed in series with each other, each of said plurality of compressible elastomeric springs including acompressible elastomeric pad affixed to a rigid member in a surface to surface contact therewith;

(c) a recess provided, concentric with said central axis of said housing, in an inner wall surface of said closed end of said housing; and

(d) an annular ridge upstanding, concentric with said central axis of said housing, on an end surface of a terminal compressible elastomeric pad, wherein said annular ridge is sized to be received within said recess, wherein an end surface of said terminal compressible elastomeric pad is positioned in a direct abutment with said inner wall surface of said closed end of said housing, and wherein a peripheral wall of said recess restrains aradial movement of said compressible elastomeric spring stack.

40. A draft gear assembly for cushioning buff and draft dynamic impact forces encountered during make-up and operation of a railcar and applied to said draftgear assembly along a central axis thereof, said draft gear assembly comprising:

(a) a housing having an open end adapted to connect to an end of a coupler shank and an axially opposite closed end;

(b) a coupler follower positioned within said housing adjacent said open end;

(c) a rear follower positioned within said housing adjacent said closed end;

(d) a compressible elastomeric spring stack disposed within said housing along said central axis between said coupler and rear followers, said compressible elastomeric spring stack including a plurality of compressibleelastomeric springs disposed in series with each other, each of said plurality of compressible elastomeric springs including a compressible elastomericpad affixed to a rigid member in a surface to surface contact therewith;

(e) an annular grove provided, concentric with said central axis of said housing, in an inner surface of each of said coupler and rear followers; and

(f) an annular ridge upstanding, concentric with said central axis of said housing, on an end surface of each terminal compressible elastomeric pad, wherein said annular ridge is sized to be received within a respective annular groove and wherein an end surface of said terminal

compressibleelastomeric pad is positioned in a direct abutment with said inner surface of said each of said coupler and rear followers.

41. A draft gear assembly for cushioning buff and draft dynamic impact forces encountered during make-up and operation of a railcar and applied to said draftgear assembly along a central axis thereof, said draft gear assembly comprising:
(a) a housing having an open end and an axially opposite closed end, said housing further having a pair of side walls, each defining an inner curved surface;
(b) a compressible elastomeric spring stack disposed within said housing along said central axis, said compressible elastomeric spring stack includinga plurality of compressible elastomeric springs disposed in series with each other, each of said plurality of compressible elastomeric springs including acompressible elastomeric pad affixed to a rigid member in a surface to surface contact therewith; and
(c) wherein said inner curved surfaces are so disposed at a distance from peripheral surface of said compressible elastomeric spring stack that said inner curved surfaces are adapted to control a radial expansion thereof.

42. A housing for a draft gear assembly employed for cushioning buff and draftdynamic impact forces encountered during make-up and operation of a railcar and applied to said draft gear assembly along a central axis thereof, said housing comprising:
(a) an open end;
(b) a closed end spaced apart from said open end along said central axis;
(c) a continuous peripheral wall extending between said open and closed ends; and
(d) an irregularity in said closed end, said irregularity being one of an annular groove provided, concentric with said central axis of said housing, in an inner wall surface of said closed end, an annular ridge upstanding, concentric with said central axis of said housing, on an inner wall surface of said closed end, and recess formed in a thickness of said wall of said closed end.

43. The housing of claim 42, further comprising an axial bore formed in said inner wall surface of said closed end.

44. A method of assembling a draft gear assembly, said method comprising the steps of:

(a) providing a housing having a closed end and an axially opposite open end;

(b) providing a plurality of compressible elastomeric springs, each of said plurality of compressible elastomeric springs including a compressibleelastomeric pad secured axially to a rigid member by way of a lip caging athickness portion of said rigid member;

(c) stacking said plurality of compressible elastomeric springs into said hollow housing in an axial manner along a longitudinal axis of said draft gearassembly; and

(d) compressing said plurality of compressible elastomeric springs along said longitudinal axis of said draft gear assembly.

Dated this 8th day of April 2014.

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